



أكاديمية البحث العلمي والتكنولوجيا
Academy of Scientific Research & Technology



International Conference for Woman in Science and International Networking

Bridging the Gender Gap in STEM in Favor of Sustainable Development

(Woman in Science Without Borders-WISWB)

21-23 March 2017 - Hilton Ramses Hotel

Under Auspices of

Prof. Dr. Khalid Abdel Ghaffar
Minister of Higher Education & Scientific Research

Prof. Dr. Mahmoud Sakr-President of ASRT
Honorary Chair of the conference
President of Academy of Scientific Research & Technology

Chair of the conference
Dr. Amal Amin-EYAS advisory board member



INTERNATIONAL COUNCIL FOR SCIENCE
REGIONAL OFFICE FOR AFRICA

L'ORÉAL EGYPT





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Dr. Amal Amin-EYAS advisory board member

Students` competition coordinator
Dr. Bahaa Elgendy - EYAS Cochair

Conference coordinator
Dr. Merit Rostom - SNG Manager

Welcome message from Prof. Dr. Mahmoud M. Sakr- President of ASRT

As the president of ASRT, the Academy of Scientific Research and Technology, I take up this position at a time when Egypt is facing unprecedented challenges, and this requires bold steps and innovative solutions to support people and government to find science-based alternatives to support socioeconomic sustainable development. The last two years have witnessed hard work to restructure ASRT, analyzing science, technology and innovation (STI) system in Egypt, prioritizing the challenges and proposing innovative and applicable solutions in order to promote its role to address the society demands. The development plan relies on many pillars:

- Enhancing the performance of ASRT as national think tank and house of expertise, deliberate country problems and propose scientific solutions, strategic studies and technological roadmaps through reformation of ASRT specialized scientific councils (SSC), putting very clear standards for selecting ASRT fellows, allocating a proper fund, creating data bases and digital library
- Monitoring, evaluation, and benchmarking Egyptian research institutions through establishing Egyptian STI Observatory (ESTIO)
- Internationalization and Branding of ASRT as National Academy through establishing new partnerships and activating existing ones.
- Inaugurating new bylaws, funding mechanisms and initiatives to support and complete the cycle of innovation, holding public and private partnership, using social innovation and developing local manufacturing , all of these have been done through ASRT new programs: JESOR, Intilac, Support of Graduation Projects, Knowledge and Technology alliances (KTA) and Research Networks
- Raising the awareness and promotion of scientific culture & thinking, addressing science to society by: Co-producing TV program and series like Cairo innovates, and Al Azhar series.
- Initiating Children university, and Innovators League
- Developing rural areas, changing the policy of ASRT regional research and development centers into technological incubators and embassies for knowledge
- Encouraging participation of women and youth in STI and scientific leadership through Scientists for next generation (SNG) and Egyptian Young Academy of Science (EYAS)
- Renovation, maintenance and changing ASRT to green building (Solar Energy and green roofs), Establishing conference & training centre, and Cloud and Supercomputing Central core facilities centre

Finally, it gives me great pleasure to welcome all WISWB participants wishing for them successful meeting and enjoyable stay.

Prof. Dr. Mahmoud Sakr
President of ASRT

Prof. Dr. Mahmoud M. Sakr

President of the Academy of Scientific Research and Technology (ASRT) since April 2014. He is working actively on restructuring of ASRT with great focus on science, technology and innovation (STI) indicators and policies, benchmarking of national research institutions, empowering of young researchers, science and society, establishment of national research networks, innovation clusters, knowledge and technological alliances (PPP), establishment of technological incubators, technology transfer and localization, and deepening of local manufacturing. He supervised the preparation and application of several technological roadmaps and strategic studies, and deeply involved in preparation of Egypt STI strategy 2030. Sakr had several National Positions such as Acting President of ASRT (Sept. – April, 2014) and Vice President of the Academy (Dec. 2009 – Jun. 2012), Executive Director of Science and Technology Development Fund (June 2012 - March 2014). During his tenure as ED STDF, he succeeded to establish joint fund with south Korea, Jordan, UK and Russia and make radical changes in STDF funding mechanisms through establishment of several programs, namely Incubation, National Challenges, Short Term Fellowship, Center of Scientific Excellences, Demand Driven Fund and Target Calls. In addition to being Head of Genetic Engineering & Biotechnology Division (Equivalent to Faculty Dean) of the National Research Center (Nov 2008-Dec 2009), Sakr was the Co-founder & Director of Center of Excellence for Advanced Sciences (Nobel project) in the National Research Center (April 2006- Dec 2009), he was also the Founder & Head of two research groups at National Research Center namely, Plant Molecular Genetics and Plant transformation research Groups. Recently he launched a national program named Wealth of Egypt. The aim of the program is the collect, characterize, preserve and protect national plant genetic resources using up to date technology (DNA Barcoding). He had several International Scientific Positions as he was the Secretary General of Arab Biotechnology Association, Federation of Arab Scientific Research Councils (FASRC) since 2009, Editor-in-Chief, Journal of Genetic Engineering and Biotechnology (Elsevier) since 2010, Editor-in-Chief, Journal of Biotechnology Research since 2009, Coordinator of Inter-Islamic Network of Genetic Engineering & Biotechnology (COMSTECH), Coordinator of Agricultural Biotechnology Network, COMSATS (2008-2011), took an active part of the Regional executive committee of Middle East Science Fund (2008-2011) of Jordan, member of ESCWA Science and Technology Center BOD and member of BOD of Arab German Young Academy (AGYA) since its establishment. Sakr is also member in the Board of Trustees (BOT) of Egypt-Japan University (E-Just), Zewail City and Technology, Innovation and Entrepreneurship Center (TIEC), and member of several universities and research centers councils and supreme council of universities. He is a member of International committee for the selection of E-JUST president & Zewail City CEO. He received the State prize for scientific encouragement in Advanced Biotechnology (1999), National Research Center prize for scientific Encouragement in Biology (1998), and National Research Center prize for scientific Excellence in Biotechnology (2009). Prof. Sakr was born on 4 April 1965, got his PhD in Plant Biotechnology in 1995, professorship in plant biotechnology in 2006. He had more than 100 publications, two books and two chapters in books.



Foreword

The number of girls studying sciences and women scientists in some disciplines, countries and regions may exceed or equal the number of men scientists. That aspect is not necessarily express at remarkable progress in the societal principles towards gender issues but sometimes it is due to the economic and/or political situation inside countries specifically the developing ones where lower incomes for scientists are expected compared to the other careers as industry. Therefore, because of this situation, it is necessary to encourage not only studying science amongst girls but also excellence and leadership to fulfill the tasks asked from them and done by the men scientists. That process will benefit the whole academic system. Thus, the term of women in science is not only specific for female scientists but also extends to male scientists because successful women scientists may be encouraged by men at any stage of their lives whether as family member (e.g. father, husband, etc) or colleague. On that way, highlighting and understanding the problems facing women scientists in different disciplines in addition to increasing their qualifications will enable them to cope with the concept of excellence. Additionally, drawing attention of the policy makers to their extra commitments as family administrators will be focus point. Simply, it is not a problem of man or woman but it is a matter of organization and mutual understanding. Also, girls studying sciences and women scientists in some cases need to be encouraged by success stories or role models. Additionally, there is increasing demand for active share from women scientists than before. Accordingly, the women in science conference (WISWB) will be suitable for discussions on all levels between men and women scientists in different disciplines to enhance communication and collaborations between both sides to solve the mutual problems related to gender issues whether on national, regional or international levels in new way of reforming the relations between men and women scientists to be more integrated and cooperative relation which will be useful for the whole scientific career and that will be accomplished and supported by sharing best practices and success stories on different age/ career levels. Briefly, new relation between male and female scientists will be formulated on the bases of cooperation and integration to solve the permanent problems in favor of more involvement of women scientists in the development plans. In this context, I would say “It is not a matter of women or men scientists, but it is a matter of increasing cooperation between both sides for the sake of sustainable development” So, It is of my pleasure to welcome all participants and attendees of WISWB whether from men or women scientists hoping for them successful and fruitful meeting. Also, I would like to thank all men scientists starting with the president of ASRT (Prof. Dr. Mahmoud Sakr) who supported WISWB and including all speakers who were eager to participate in WISWB to make its success a reality.

Dr. Amal Amin
Chair of WISWB

Dr. Amal Amin

The first Egyptian young scientist who attended Summer DAVOS 2009-China based on the initiative of IAP to empower the young scientists worldwide, and hence she was one of the few active founders of Global young academy (GYA) where she attended and co-organized the founding workshop of GYA in Berlin at 2010 and hence was the one –based on the initiative of IAP-who wrote for the first time to ASRT to establish the Egyptian young academy of sciences (EYAS) where the government responded to IAP initiative and launched the initiative of EYAS earlier. Therefore, Dr. Amal is a co-founder of the Egyptian Young Academy of Science EYAS. Dr. Amal has served as the executive committee member of (GYA) for the following three years directly after founding of GYA (2010-2013). She is the group leader of women in science and member in the selection committee of GYA. She was the contact person for EYAS during the preparation of the fact finding mission of GYA to Egypt to help in launching (EYAS). Dr. Amal is associate professor at the polymers & pigments department and leader of the nanostructured polymers research group at the centre of excellence at National Research Center in Egypt. She earned her B.Sc. at the Chemistry Department of Ain Shams University in Cairo and her M.Sc. in Organic Chemistry at the Faculty of Science of Cairo University. With a DAAD scholarship at the Inorganic Chemistry Department II of Ulm University in Germany, she earned her Ph.D. in Polymer Technology & Catalysis. Since then, she has occupied different positions. Research stays brought her to France, USA and again to Germany for several times. She supervised and headed several international, national projects, postgraduate students and has several activities. She organized and attended numerous national and international events and carried out two memorandums of understanding between Egypt, Georgia and MTU-USA. She is founder and president of the Egyptian Society of Advanced Materials and Nanotechnology. She is the founder and coordinator of the Arab Materials Science and Nanotechnology Network. She was also selected as TWAS Young Affiliate in 2010 till 2014. Additionally, she is a member of the Arab-German Young Scientists Forum (2011). She has lots of scientific publications in highly ranked journals. She is a member in many scientific organizations and acts as reviewer and referee in the field of nanotechnology, polymers and nanocomposites for different international journals and organizations. She got several national and international awards. Recently, she has been selected in the task force and cofounder for establishment of Islamic young academy (IWAYS). She is a member of committee for developing Global Civics courses in the Arab region. She has several activities related to science education, simplified science and science communication where she attended the international science communication workshop in Korea in June-2014 and co-organized several science days with EYAS along Egypt governorates to enhance public science literacy. She was selected in November 2015 to attend world science forum in Hungary and in July 2016 to attend science diplomacy course by AAAS-TWAS. In September 2016, Dr. Amal represented GYA in 2nd INGSA conference on science and policy making in Brussels, Belgium. Recently, Dr. Amal has attended AAAS annual meeting in Boston sharing in Alemate mentorship program. Dr. Amal is the chair of the conference of women in science without borders.



Brief Summary on the Organizing partners & Sponsors

(1) Organizing Partners



Egyptian Academy of Scientific Research and Technology (ASRT)

(ASRT) is a non-profit organization, established in September 1971 by the presidential Decree No 2405 as the national authority responsible for science & technology in Egypt.

ASRT is the Egyptian house of expertise. It brings together outstanding Egyptian scientists and experts from universities, research institutions, private sector, NGOs, policymakers and prominent Egyptian scientists in Diaspora to deliberate country problems, propose and carry out scientific studies and future strategic basic plans to tackle these problems. ASRT adopts a comprehensive plan for developing Egyptian STI to support relevant national ministries and research institutions in creating an integrated system of scientific research together for increasing the number of qualified scientists in Egypt, and giving science a leading role in the country's development and knowledge based economy. ASRT is playing important role in raising the awareness and promotion of scientific culture & thinking, addressing science to society by co-producing TV program and series like Cairo innovates, and Al Azhar series. Initiating Children University, and Innovators League, also ASRT promotes and encourages female and youth participation in S&T and scientific leadership through programs like Scientists for next generation (SNG) and Egyptian Young Academy of Science (EYAS)

ASRT participates in assessing and improving the STI by Monitoring, evaluation, and benchmarking Egyptian research institutions through establishing Egyptian STI Observatory (ESTIO)

ASRT supports the Innovation Cycle by inaugurating new bylaws, funding mechanisms and initiatives holding public and private partnership, using social innovation and developing local manufacturing, all of these have been done through ASRT new programs: Brain Circulations (JESOR), Technological Incubator (INTLIAC), Support of Graduation Projects, Knowledge and Technology alliances (KTA) and Research Networks

Realizing the importance of internationalization in STI, ASRT as National Academy is establishing, supporting and managing National and International Scientific Research Networks, joint R&D labs and centers (China-Egypt Joint Lab of Renewable Energy, MATS, etc.) and engaged in many international organizations and partnerships. For more information please visit ASRT website at www.asrt.sci.eg



Egyptian young academy of sciences (EYAS)

On 18 September 2014, the Egyptian Young Academy of Sciences (EYAS) was officially launched under the auspices of the Egyptian Academy of Scientific Research and Technology. EYAS aims at empowering Egyptian young scientists in science and technology and encouraging them to play a vital role in planning and management of the national science, technology and innovation strategy. AS one of the STI bodies in Egypt, EYAS mission is revolving around creation of an enabling and encouraging environment for young scientists in Egypt's STI system as the main pillar of a knowledge-based economy. EYAS focuses on activities of major concern for young scientists, specifically issues at the science-society interface such as scientific communication, education and public policy. The Academy supports career development for young scientists. The academy promotes networking of young scientists to maximize the benefits from the available research capacities. It provides a platform for Egyptian young scientists to get in contact with the international STI communities through participation in conferences, forums, dialogues, workshops and /or collaboration with other young academies worldwide. EYAS encourages interdisciplinary research teams among its members. The interest of these research teams lies at the interface between science / humanities and society. It aims to result in a stronger interest in cross disciplinary themes. EYAS qualifies young researchers to lead the scientific research in their organizations and actively participate in the formulation of national STI strategies, foresights and roadmaps. The academy provides needed institutional framework for young scientists to share in the development of science policy in Egypt. EYAS promotes the value of science, innovation, invention and scientific thinking and culture in the society and among youth. The academy boosts the enthusiasm of youth to foster their talents and encourages them to move up along their careers in science and technology. It ultimately supports youth to improve the quality of life in their society through science and technology.

Scientists of Next Generation, SNG

Academy of Scientific Research and Technology (ASRT) offers grants for a new generation of graduates to a master's degree, in order to bridge the gap between scientific research and the requirements of the national labor market, which requires a high degree of skill in the performance, to get good opportunities for cooperation with leading scientists and participate in research projects in scientific fields of national interest.

It will help ensure high quality performance of young Egyptian researchers, who should be trained and equipped to be 21-century professional researchers, where in international countries their status as employees is desired. More and more adequately skilled researchers will be needed in Egypt in order to fulfill the targeted increase of investment in research.

Main Goal

The overall objective of the program is to strengthen capabilities of Early-Stage Researchers at all thematic areas of Science and Technology.

Specific Objectives

- Prepare young researchers to lead scientific research in their organizations.
- Utmost use of resources.
- Advance researcher's knowledge and skills on new scientific technologies, which can be used to improve economy.
- Foster ties between researchers and outside community and industry through combined training workshops to know how science and technology research can solve our industrial problems and improve products.
- Enhance researcher's networking at national, regional and international levels.
- Provide participants with the body of knowledge required for self-assessment and continuous improvement of their performance.

Dr. Merit Rostom

Dr. Merit currently works as a Supervisor of the scientific Grants and Support Office, Academy of Scientific Research & Technology. Board Member of Engineering & Technology Company, CIPT and board member of the International Trainers. She got her Master and PhD in Biochemistry with excellence and Diploma in Biotechnology (excellence with honor) .She published some international publications in Biochemistry and Biotechnology. She actively attended number of international conferences. She is responsible for some special human development programs, Coordinator of ASRT/BA Fellowship Program and Manager of SNG Program. She is following up all technical processes, Monitoring and make Impact Assessment. Through SNG, She is empowering young researchers and working closely with research fellows and external contacts to Advance researcher's knowledge and skills according to new scientific technologies. This Program helps young researchers to lead scientific research in their organizations and participate in research projects in scientific fields of national interests according to Egypt STI strategy 2030. She is Director of Quality and consultant for Quality for ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2015 Accredited and certified from SGS. She has got Quality management diploma and Quality management in higher education from American Institute for Management Development. In addition, she has got International Professional Trainer certification from Management Development Institute, Missouri State University and Diploma in Leadership and Management from American Academy of Science and Technology. She has experience in Training and has got advanced diploma in Human Resources. Dr. Merit got more than thirty courses in soft, professional and software skills. She trained more than two thousand faculty members and post graduate students at governmental universities. She is representative of Egypt in the Arab Scientific Research Councils and the General Secretariat of the Association for Scientific Centers of Human Resources Development in the Arab World. She was granted the Faculty prize for scientific encouragement, Alumni Award of Cairo University and received prize for Excellence from Cairo University, Egypt. She is Member of the National Council for Women.





List of scientific Committee

- Prof. Dr. Mohamed Farag-Professor at Faculty of Pharmacy-Cairo University
- Prof. Dr. Amal Amin-National Research Center-Cairo-Egypt
- Prof. Dr. Bahaa El-Dien M. El-Gendy-Faculty of Science-Benha University, Egypt
- Prof. Dr. Mahmoud Elsabahy-Faculty of Pharmacy-Assiut University, Egypt
- Prof. Dr. Mohamed Salama-Faculty of medicine-Mansura University, Egypt
- Prof. Dr. Rabab Elsherif- Faculty of science, Cairo University, Egypt.
- Prof. Dr. Wageh Sobhy Darwish-Faculty of Veterinary Medicine, Zagazig University, Egypt
- Prof. Dr. Sameh Sorrow, Head of biochemistry and molecular biology department, Helwan University, Egypt.
- Prof. Dr. Ahmed Radwan, Nile University, Egypt
- Prof. Dr. Gina Elfeky- Pharmacy program leader-Faculty of Pharmacy-MSA University.
- Prof. Dr. Nour El-Gendy-Prof. of Petroleum and Environmental Biotechnology, Head Manager of Petroleum Biotechnology Lab-Egyptian Petroleum Research Institute, Egypt
- Prof. Dr. Abu Elnasr Sobeih, Faculty of Tourism, Helwan University, Egypt.
- Dr. Merit Rostom- Supervisor of the scientific Grants and Support Office, SNG Manager, Director of Quality, Coordinator of ASRT/BA Fellowship Program, (designer of WISWB).
- Dr. Ahmed Ibrahim Labena-Researcher at Petroleum biotechnology laboratory-Egyptian petroleum research institute

List of Organizing Committee

- Prof. Dr. Amal Amin-National Research Center-Cairo-Egypt
- Prof. Dr. Bahaa El-Dien M. El-Gendy-Faculty of Science-Benha University
- Dr. Merit Rostom- Supervisor of the scientific Grants and Support Office, SNG Manager, Director of Quality, Coordinator of ASRT/BA Fellowship Program, (designer of WISWB).
- Prof. Dr. Ahmed Radwan-Faculty of Engineering-Nile University
- Prof. Dr. Magda ebeid-Faculty of engineering-Ain Shams University, Egypt.
- Prof. Dr. Marianne Azer-Faculty of engineering-Nile University, Egypt.
- Prof. Dr. Nour El-Gendy-Prof. of Petroleum and Environmental Biotechnology, Egyptian Petroleum Research Institute, Egypt.
- Mr. Magdy Shendy Head of the Central Directorate for Financial Affairs.
- Mrs. Yasmin Samir-Coordinator of EYAS, ASRT.
- Mrs. Khoulod Salah - Public relations, ASRT.
- Mr. Amr Kenwy – Supervisor of In-House Printing Unit at ASRT
- Mrs. Sherin – Supervisor of Media at ASRT
- Miss Samar – Coordination Social Media at ASRT
- Mohamed Raslan – Ass. Researcher (SNG Fellow).

Brief Summary on the Organizing partners & Sponsors

(2) Sponsors

Platinum

Wellcome Trust- UK

Wellcome exists to improve health for everyone by helping great ideas to thrive. Wellcome is a global charitable foundation, both politically and financially independent. It supports scientists and a researcher, takes on big problems, fuels imaginations, and sparks debate. Wellcome remains true to the vision and values of its founder, Sir Henry Wellcome, a medical entrepreneur, collector and philanthropist. Wellcome funding supports over 14,000 people in more than 70 countries. In the next five years, Wellcome aims to spend up to £5 billion helping thousands of curious, passionate people all over the world explore ideas in science, population health, medical innovation, the humanities and social sciences and public engagement.

Find out more at wellcome.ac.uk



Elsevier

Elsevier is a world-leading provider of scientific, technical and medical information products and services. The company works in partnership with the global science and health communities to publish more than 3500 journals, including The Lancet and Cell, and 40,000 book titles, including major reference works from Mosby and Saunders. Elsevier's online solutions include Science Direct, Scopus, SciVal, Reaxys, Clinical Key and Mosby's Suite, which enhance the productivity of science and health professionals, helping research and health care institutions deliver better outcomes more cost-effectively.

A global business headquartered in Amsterdam, Elsevier employs 7,000 people worldwide. The company is part of Reed Elsevier Group PLC, a world leading provider of professional information solutions in the Science, Medical, Legal and Risk and Business sectors, which is jointly owned by Reed Elsevier PLC and Reed Elsevier NV. The ticker symbols are REN (Euronext Amsterdam), REL (London Stock Exchange), RUK and ENL (New York Stock Exchange).



Golden

European Commission

EU-Egypt Research and Innovation Cooperation

The European Union has a longstanding presence in Egypt in the fields of Research and Innovation (R&I), where the cooperation is governed by the EU-Egypt Science and Technology Cooperation Agreement, signed in 2005. International cooperation in research and innovation is essential in the quest for better science, better application of knowledge, and better socio-economic conditions for humanity. Over the past years European and Egyptians scientists have been increasingly working together in collaborative projects through the various EU programs including the Seventh Framework Program (FP7), the Research, Development and Innovation (RDI) Program.



In the past three years, cooperation continued under the new EU program, Horizon 2020. H2020 is the largest and most open research and innovation program in the world with close to 80 billion EUR of funding over seven years (2014-2020). To date, Egypt has participated in 226 proposals submitted under Horizon 2020, and 24 projects are currently running with participation of 26 Egyptian entities that include universities, research centers but also SMEs, and public bodies.

For further information about EU-Egypt R&I cooperation, please visit:

<http://ec.europa.eu/research/iscp/index.cfm?pg=egypt>

https://eeas.europa.eu/delegations/egypt/1156/egypt-and-eu_en#Science+and+technology

For further information about H2020:

Website: <https://ec.europa.eu/programmes/horizon2020/>

Participante Portal: <http://ec.europa.eu/research/participants/portal/desktop/en/home.html>

For information about Egypt Cooperation with EU Member States, please visit:

Cooperation between Egypt and EU Member States (2015)

For any inquiry, please email us on: [Delegation-Egypt-Innovation@ eeac.europa.eu](mailto:Delegation-Egypt-Innovation@eeac.europa.eu)

Silver

Misr Elkhir

Misr Elkhir is nonprofit organization which was founded and announced with decree no.555 in 2007. Misr elkhir is aiming at developing and empowering the Egyptian society by strong sharing in several vital fields such as health, education, scientific research and other social aspects.



Bronz

The International Council for Science (ICSU)

The International Council for Science (ICSU), established in 1931, is a non-governmental organization with a global composition of National scientific bodies (122 Members, representing 142 countries) and International Scientific Unions (31 Members). The headquarter of ICSU is in Paris, France, and to cater for the developing regions of the globe, it has established three Regional Offices: (i) Africa, which is based in Pretoria, South Africa; (ii) Asia and Pacific based in Kuala Lumpur, Malaysia; and (iii) Latin America and the Caribbean that is housed in San Salvador, El Salvador. The Mission of ICSU is to strengthen international science for the benefit of society through: i) mobilizing the knowledge and resources of the international science community to identify and address major issues of importance to science and society; ii) facilitating interaction amongst scientists across all disciplines, countries and regions; iii) promoting the participation of all scientists in the international scientific endeavor; and iv) providing independent, authoritative advice to stimulate constructive dialogue between the scientific community and governments, civil society, and the private sector. ICSU's long-term vision is for a world where science is used for the benefit of all, excellence in science is valued and scientific knowledge is effectively linked to policy making. To achieve this vision, ICSU identified three key priority areas on which its strategic activities are focussed. These are: international research collaboration; science for policy; and the universality of science. ICSU's dual membership of National Scientific Members and International Scientific Unions as well as its presence in the developing regions of the globe (through its Regional Offices) allows it to address major, international, interdisciplinary issues as well as reach out and stimulate dialogue between the main stakeholders in science, engineering, technology at regional and global levels.



TYAN

TWAS- young affiliates network

Since 2007, in recognizing the best young scientists from the developing world, TWAS have appointed 241 individuals as TWAS Young Affiliates. Recently, at the 27th TWAS Annual General Meeting in Kigali, less than 10 years since the selection of the first TWAS Young Affiliates, Young Affiliates and alumnus representing the 5 regional offices have come together to establish the TWAS Young Affiliate Network (TYAN). TYAN unites the voice of the young scientists, and serves as a platform for international collaboration particularly to address challenges that are faced by developing countries. The formation of TYAN could not have come at a better time, where cross-border, multidisciplinary collaborations are particularly critical in ensuring that the sustainable development goals are met systematically. The formation of TYAN will enable us to maximize the impact of the creativity and intellectual skills of these young affiliates in making an impact on issues that are most relevant to the developing world and those that are important overall for humanity. TYAN is pleased to partner with the Egyptian Young Academy to host the 1st International Conference on Women in Science in the historical city of Cairo. It is our hope that these partnerships and meetings will result in international collaborations and mutually beneficial cross border collaborations. For more information on TYAN, and to join us please visit: <http://twas.org/network/young-affiliates>



Global young academy (GYA)

The Global Young Academy (GYA) is an important voice of young scientists around the world. To realize its vision, the members of GYA develop, connect, and mobilize new talents from six continents. Moreover, the academy empowers young researchers to lead international, interdisciplinary, and intergenerational dialogue with the goal to make global decision making evidence-based and inclusive. The GYA provides a rallying point for outstanding young scientists from around the world to come together to address topics of global importance. As of 2014, the GYA has reached its full capacity with 200 members, leading young scientists (defined as an average age of 35 years and at the beginning of their independent academic career). 2016 GYA has in addition to its 200 members 134 alumni. Altogether from 70 countries from all continents are represented. Members are selected for the excellence of their science and their commitment to service and are serving five-year term. The vibrancy of the GYA results from the energy of its members who are passionate about the role of science in creating a better world. The GYA is governed by an Executive Committee that reflects the diversity of its membership and is supported by a Senior Advisory Board composed of outstanding senior scientists and science managers, respectively.



L'ORÉAL EGYPT

برنامج لوريال – يونسكو من أجل المرأة في العلم
L'Oreal-UNESCO “For Women in Science” Program
Since 1998

2530

باحثات حائزات على التقدير في أكثر من 112 دولة
Women scientists recognized
in more than 112 countries

92

باحثات مكرمات لتميزهم في العلوم بما فيه باحثتان حائزات على جوائز نوبل
Awards Laureates honored for excellence in science,
including two who went on to win the Nobel Prize

2438

باحثات متميزات حصلن على الزمالات لمتابعة بحوثهم العلمية
Talented young women scientists granted
Fellowships to pursue promising research projects

L'ORÉAL UNESCO FOR WOMEN IN SCIENCE PROGRAM SUPPORTS WOMEN WHO MOVE SCIENCE FORWARD

The L'Oreal-UNESCO For Women in Science initiative began 19 years ago, in the firm belief that the world needs Science and Science needs women, because women in science have the power to change the world. Since 1998, the L'Oreal Foundation and UNESCO have strived to encourage young women to enter the profession and to support them along their career. Each year, the program recognizes 5 accomplished women researchers who have made extraordinary discoveries, and grants fellowships to 236 other scientists. By highlighting the scientific advances that women make possible, the L'Oreal-UNESCO Awards create role models, paving the way for a new generation of women scientists.

A NEW COMMITMENT TO EMPOWER FEMALE SCIENTISTS FROM LEVANT REGION & EGYPT.

Since the inception of the program, the L’Oreal Foundation and UNESCO have awarded 8 Laureates and more than 90 promising talents from the Arab states, bringing to light the high potential of female scientists in the region.

For Women in Science Levant and Egypt regional fellowships, launched in 2014 in partnership with the National Council for Scientific Research in Lebanon, aims at recognizing and honoring female scientists from Lebanon, Jordan, Palestine, Iraq, Syria and Egypt. Five outstanding female postdoctoral researchers are selected each year by a jury, gathering renowned professors from the region, and are granted ≈ 10,000 each, helping them undertake research in their chosen fields.

The Levant and Egypt fellows are a living proof that – despite the obstacles – talent, passion, determination and daring can help change the world.

Egypt & Levant 2017 Rules & Regulations

For more visit www.fwis.fr

The Program honors seven talented young Arab women researchers for the quality of their research works and encourages them to pursue a brilliant career in science in the Levant Countries (Iraq, Jordan, Lebanon, State of Palestine, and Syria) and Egypt.

- **3 fellowships amounting to Ten thousand Euros** (€ 10,000 or equivalent in local Currency) each will be granted to Arab women researchers working in Research Laboratory, Institute, or University in one of the above mentioned countries.
- **4 fellowships amounting to Six thousand Euros** (€ 6,000 or equivalent in local Currency) each will be granted to Arab women pursuing a PhD (Doctoral Degree) in Research Laboratory, Institute, or University in one of the mentioned Countries.

The total amount will be used to cover the travel and accommodation costs related to scientific visits, trainings, specialized courses etc. of minimum two months abroad. This one should occur within maximum one year from the ceremony day.

Abstracts in Alphabetic Order

Track 1

(Medicine-Biology-Pharmacy)

Part I

(Biology)

Dr. Bo Yu, Ph. D.

Dr. Bo Yu obtained his academic training at Shandong University, China. After completion of his PhD thesis in 2006, he moved to Institute of Microbiology, Chinese Academy of Sciences (IMCAS), where he worked as an assistant professor. In 2008, he started his Post-doc research for two years at German Helmholtz Centre for Infection Research and Hamburg University of Technology, both funded by German Alexander von Humboldt Fellowship. From Oct. 2010, Dr. Bo Yu returned to IMCAS and led the research group on Extremophiles and Industrial synthetic biotechnology. From 2014, Dr. Bo Yu served as the deputy director of CAS-TWAS Centre of Excellence for Biotechnology (CoEBio). In 2016, he was promoted to a full professor at CAS key laboratory of microbial physiological and metabolic engineering, IMCAS. His research interests are in biotechnology, especially in the aspect of systems metabolic engineering of strains for production of fine chemicals. Till now, he authored more than 60 scientific (peer reviewed) papers and 10 issued patents in protein engineering, metabolic engineering and fermentation.



Microbial synthesis of high-value plant secondary products: Bio-resource mining and protein engineering

Bo Yu

CAS Key Laboratory of Microbial Physiological and Metabolic Engineering, Institute of Microbiology, Chinese Academy of Sciences, Beijing 100101, China

Plants produce a wide variety of secondary metabolites of high nutraceutical and pharmaceutical importance. Isothiocyanates, which are found abundantly in cruciferous vegetables, are believed to reduce the risk of several types of cancers and cardiovascular diseases. The challenges arising from the structural diversity and complex chemistry of these compounds have raised a strong interest in producing them in high amounts in microbes. In this study, we aimed to synthesize benzyl isothiocyanate in *E. coli* via gene mining, pathway engineering, and protein modification. Two chimeric cytochrome P450 enzymes were constructed and functionally expressed in *E. coli*. The *E. coli* cystathionine β -lyase was used to replace the plant-derived C-S lyase, of which the active form cannot be expressed in *E. coli*. Suitable desulfoglucosinolate: PAPS sulfotransferase from *Arabidopsis thaliana* ecotype Col-0 and myrosinase from *Brevicoryne brassicae* were successfully mined from the database. Biosynthesis of benzyl isothiocyanate by the combined expression of the optimized enzymes *in vitro* was confirmed by GC-MS analysis. This study provided a proof-of-concept for the production of benzyl isothiocyanate by microbially produced enzymes, and importantly, laid the fundament for further metabolic engineering of microbial cells for the production of isothiocyanates.

Dr. Ejidike Peter, Ph.D.

Dr. Peter has completed his PhD from University of Fort Hare, South Africa and presently a postdoctoral candidate at Vaal University of Technology, Faculty of Computer and Applied Sciences. He has published more than 9 papers in reputed journals; others under review, and has been serving as a reviewer to some journals. He is a professional member and member of the South African Chemical Institute (SACI) and International Union of Pure and Applied Chemistry (IUPAC).



In vitro Antioxidant and Anticancer Studies of Heterocyclic Schiff base Ruthenium (III) complexes: Synthesis and Characterization

P. I. Ejidike^{1,2*} P. A. Ajibade,¹ F. Mtunzi²

¹Department of Chemistry, University of Fort Hare, Alice 5700, South Africa.

²Department of Chemistry, Vaal University of Technology Vanderbijlpark, 1900, South Africa.

The strategic design of biologically active molecules is a vigorous task and the variables affecting biological activity are diverse. Metal based antioxidants have gained recent attention for their ability to protect living organisms and cells from damage caused by oxidative stress or scavenge free radicals. In view of the growing interest in the development of new therapeutic agents and DNA probes for disease defence, we present ruthenium(III) complexes of three tetradentate Schiff bases with a N₂O₂ donor atoms set and formulated as: [RuCl(LA)(H₂O)]; [RuCl(LB)(H₂O)]; [RuCl(LC)(H₂O)]. The spectra data showed that the ligands coordinate Ru ion through the azomethine nitrogen and enolic oxygen atoms. Electronic spectral measurements indicated an octahedral geometry for all the complexes. The antioxidant activities of the complexes were investigated through scavenging activity on DPPH and ABTS radicals. The obtained IC₅₀ value of the DPPH activity for the [RuCl(LB)(H₂O)] complex (IC₅₀ = 1.58±0.50 μM) was higher than other Ru(III) compounds. The study revealed that the Ru(III) complexes exhibited strong scavenging activities against DPPH and moderate ABTS radicals. In addition, the anticancer studies of the complexes were also tested against human renal cancer cell (TK10), human melanoma cancer cell (UACC62) and human breast cancer cell (MCF7) using the SRB assay with moderate anticancer activity against the tested cell lines. [RuCl(LB)(H₂O)] chelates exhibited higher bioactivities than [RuCl(LA)(H₂O)] and [RuCl(LC)(H₂O)] complexes. Nevertheless, antioxidant activities of the complexes showed moderate to strong free radical inhibitors for treating pathological damage associated with radical-generation leading to aging, degenerative diseases and cancer.

Dr. Hassan M. E. Azzazy, PhD

Dr. Azzazy is a tenured full professor of Chemistry (2003-present) at the American University in Cairo (AUC). He served as the Chairman of Chemistry Department and Associate Dean for Graduate Studies & Research at the School of Sciences & Engineering, AUC. He is the founder and director of the International Medical Laboratory Scientists training program. Prior to joining AUC, Dr. Azzazy was a postdoctoral fellow and assistant professor at University of Maryland School of Medicine, Baltimore, MD (1995-2002). Dr. Azzazy is a graduate of Alexandria University, Egypt and received his PhD from the School of Biomedical Sciences, University of North Texas Health Science Center, Fort Worth, TX (1994). He holds two board certifications in Clinical Chemistry and Molecular Diagnostics from the American Board of Clinical Chemistry, Washington, DC. He is certified as a Specialist in Chemistry by the Board of Certification, the American Society for Clinical Pathology in Chicago, IL. Dr. Azzazy has over 26 years of experience in biomedical research and he is the founder of Novel Diagnostics and Therapeutics Research group. A core interest of this group is the development of innovative diagnostics for accurate, fast, and affordable detection of biomarkers of infectious agents and cancer. Detection strategies combine the use of nanosensors, chips, smart phones, 3D printers, and/or robotics. He is also interested in drug design, subcellular targeting of drugs using smart biodegradable nanocarriers, and development of biodegradable honey chitosan nanofibers for use as antibacterial wound dressings. Dr. Azzazy authored over 77 scientific publications in international refereed journals, 66 conference presentations, and 25 book chapters. He serves on the editorial boards of Clinical Biochemistry (Elsevier), Clinica Chimica Acta (Elsevier), and Clinical Chemistry Laboratory Medicine (De Gruyter). Dr. Azzazy is the co-founder & CTO of D-Kimia, LLC which develops innovative diagnostic solutions and the founder & CEO of NanoEbers, LLC which focuses on development of biocompatible nanofiber wound dressings. Dr. Azzazy is the recipient of numerous awards including State Prize in Advanced Technological Sciences (ASRT), Excellence in Research Award (AUC), Global Innovator Award (Texas Christian University), and Arab Innovation & Entrepreneurship Award (ASTF, UAE).



Converting BioNanotech Research Data into Medical Products:

The Tales of Two Startups

Hassan M. E. Azzazy

Novel Diagnostics & Therapeutics Research Group; Department of Chemistry, School of Sciences & Engineering, The American University in Cairo, Egypt

Converting research results to marketable products is invaluable to economic growth and competitiveness of nations. Startup firms generate new knowledge, develop and own know-how and patents that could lead to the development of incremental or disruptive innovations. Two startup companies have spun off the American University in Cairo over the past three years based on research data generated at the Novel Diagnostics & Therapeutics Research Group. D-Kimia, LLC (2013) develops innovative diagnostic solutions with a focus on isolation and low cost detection of nucleic acid markers of infectious agents and cancer. Three lines of products are currently under development: a gold nanoparticle assay for colorimetric detection of hepatitis C virus RNA, a fully automated liquid handling system for isolation of high quality nucleic acids from human blood, and low cost real time PCR assay for detection of hepatitis C virus RNA. NanoEbers, LLC (2016) is another startup company which develops wound dressings made of electrospun nanofibers. The fibers are synthesized from biocompatible materials such as honey and chitosan and are loaded with natural antibacterials such as bee venom, propolis, bacteriophages, and medicinal plant extracts. The nanofibers exhibit antibacterial effects similar to commercial products but with no side effects. The company has built the first sophisticated electrospinner in Egypt. A candid discussion of successes and challenges encountered during the development of the two startups will be presented with reference to the entrepreneurial ecosystem in Egypt. The contribution of female researchers, who represent 90% of all researchers, to the activities of the two startups will be highlighted.

Dr. Hayat Sindi

Hayat Sindi is a leading biotechnologist and a champion of science and technology in the Middle East. At a young age, inspired by great scientists and thinkers, Hayat convinced her family to allow her to travel alone to England to pursue her higher education, a rare permission for a young Saudi woman. She went on to earn a degree in pharmacology from King's College London in 1995 and five years later became the first woman from the Gulf to obtain a PhD in biotechnology from Cambridge. Driven by her desire to more closely link science and social impact she co-founded a non-profit organization with a team at Harvard called Diagnostics For All which creates innovative, inexpensive, point-of-care diagnostic devices for people in impoverished regions. These devices require no power, water or trained doctors and have the ability to provide potentially life-saving medical results in minutes. She has invented a machine combining the effects of light and ultra-sound for use in biotechnology. Along with her scientific activities, she participated in numerous events aimed at raising the awareness of science amongst women, particularly in Saudi Arabia and the Muslim World. She is also interested in the problem of brain drain. Further, at the heart of Sindi's innovations was a passion to develop an entrepreneurial ecosystem in the Middle East that would transcend existing gaps between education and opportunity. In 2011 she launched i2, the Institute for imagination and Ingenuity, to encourage innovation among young people specifically male and female scientists, technologists and engineers. Through fellowships, trainings and mentorships, i2 seeks to empower and inspire the next generation of innovators so that they may realize their dreams and ultimately contribute to Saudi Arabia's growing economy. Sindi was one of the first 30 women to be appointed to the Saudi Arabia's highest consultative body, the Shura Council, and is one of 26 global experts selected by United Nations (UN) Secretary General Ban Ki Moon to be a member of the newly constituted UN Scientific Advisory Board which will provide advice to the UN's leadership on science, technology and innovation for sustainable development. Sindi is also a Goodwill Ambassador for Sciences at UNESCO. In 2012, she was named one of Newsweek's "150 Women Who Shake the World". Hayat was named by Forbes number 2 the most powerful Arab women in kingdom of Saudi Arabia. Sept 2014 Hayat Sindi received Clinton Global Citizen Awards "leadership in Civil Society" for her work to encourage innovation and entrepreneurship among young people in the Middle East. Recently Sindi was invited by UN Environment programme to be an Honorary Advisor for the 2015 Eye on Earth Summit. I was selected among the think tank of 50 scholars by Robert Boch academy in Berlin. selected for 2014 and 2015 by educational institution snkag in cooperation with national geographic to write and portray her life story and presents five courses for all the world to stimulate children to science. In 2016 Appointment by the UN secretary Ban Ki-moon in the ten members group to support the technological facilitation mechanism for Sustainable Development. Also in 2016, Dr. Hayat was selected within 15 worldwide experts for planning and development to identify the best techniques possible in science, technology, engineering and mathematics (STEM) education for girls. in 2016 China has established a prize for girls ' and women's education in cooperation with UNESCO, she was chosen from among the international jury for the award, which consists of five members.



Lately, the prime minister of Malaysia was appointed Dr Sindi as a member of his International Advisory Council for Science and Innovation is an initiative to help pay for the transition plans to high-income nation by 2020.

Role of science in the Islamic world

Hayat Sindi

I2 Founder and President, Saudi Arabia

The birth of modern science can be traced back to the Islamic civilization beginning in the 8th century, with combined contributions from Arab, Persian, Indian and the Greek civilizations, producing a backdrop of intellect and energy to create the underpinnings of the modern civilization we see today. The great scholars behind this success story are numerous. We find colorful contributions from astronomers Sind ibn Ali, Ali Qushji, Ahmad Khani, and Ibrahim al-Fazari, the mathematical innovations of Masatoshi Gündüz Ikeda, Ali Qushji Ali, Al-Hajjāj ibn and Yūsuf ibn. Inputs were given for physics and optics branches from the luminary Ibn al-Haytham, for mechanics from the pioneer Abū Rayhān al-Bīrūnī, and for medicine from Ibn Rushd. Also contributions from a father of robotics, Al-Jazari, a father of chemistry Jābir ibn Hayyān and outstanding Earth scientists, Al-Masudi, pioneering historical geography and Al-Kindi providing remarkable insights in environmental science. These Islamic scholars were largely polymaths integrating different domains of science with society to produce the outcomes people wanted. They understood how to integrate science and policy as well at the needs of people, through distilling the best inventions to turn the wheel of life. At its core, science was bringing together the Islamic society to form a triangle of innovation. This had at its three corners, the people who created ideas and concepts, the inventions and products which result, and finally the loop back to benefit the people that started it, making an appealing cycle of benefit. This scientific 'fuel' is so important to the world, as many of these luminaries' ideas that popped out from the Islamic past led to amazing inventions that freed people from the drudgery of life and helped transform our environment for the better. There were inventions to do things for us, as in mechanical inventions, but also inventions that lead to the collection of precise data in order to predict our world, and steer safely. Today the areas of scientific importance relate to sustaining planet earth, and therefore our society. This requires action to produce new ways of working, and powerful policies related to the sustainability development goals. Therefore today, the world is uniting towards a common goal. We are on the path, aiming for health, growing enough food, generating enough clean energy, predicting, and avoiding environmental disasters dealing with temperature rises and potential asteroid collisions, and so on but we mustn't forget the obvious goals as engineering good homes, supporting travel, building relationships and learning. Despite positive outcomes, I still believe there is the loss of our ancestors' strong bond between science and society (known as social innovation). Looking to the future, there are scientific developments that will have a profound impact. New ways of generating clean energy will have multiple impacts, as would understanding the ageing process, which underpins disease. One of the more tangible examples is robotics and artificial intelligence, which could be a vital agent of change, linking science and society. We are at the helm now, and we have the opportunity to shape it to our needs.

If we think it's powerful, it's more powerful than that. Current indications are that it may only be a few decades away, from matching human intelligence and remoulding society. Too easily, we may underestimate it. How can we work together in the east and west, and form the best policies for artificial intelligence to thrive? So far, I don't think automation has been good for us or for our brains but we can now use artificial intelligence to sharpen our brains too. I believe that's important, because we can make better use of knowledge than a robot can, though our striking imagination. So, while I may not be able to predict challenges of our society, what I believe I can predict, is that with virtually everything we do, from sustainability to healthcare, artificial intelligence or other technology born of science, can come together and help us. What we need to do, just as our forefathers would have done, is work out the fit to our communities and our countries. Overall, my recommendation is we encourage the relation between Islamic society and science that began in the 8th century, and engage a potentially stronger bond between Science Technology and Innovation (STI) and our social needs, that has been lacking. Also we must remind ourselves of holistic views of our Islamic scholars, and ensure we always have the 'big picture' in mind. Ultimately with policies for breathtaking science and the connections with our neighbors throughout the world, we will be fit for our future challenges.

Dr. Lamees Hegazy, Ph.D.

Lamees Hegazy is the founder of Avisina Group, Egypt. Lamees earned her doctoral degree in computational biochemistry from University of Florida, USA. She was awarded the certificate of outstanding achievements from University of Florida twice. Dr. Hegazy has extensive experience in computational biochemistry with focus on computer-aided drug design and molecular dynamics simulations. During her course of study, Lamees focused on modeling and discovery of new drug-like inhibitors of asparagine synthetase, a potential target for treating acute lymphoblastic leukemia. In 2015, she started Avisina Group company in Egypt where she offers training and research contract services. She is collaborating with various labs and research institutes and her current interests are studying the structure & dynamics of biological macromolecules and *In Silico* design of new drugs for rampant diseases in Egypt.



In Silico Virtual Screening and Free Energy Calculations for Discovery of Anti-Zika Virus drugs

Lamees Hegazy

Avisina Group, Benha, Egypt

At present there is no approved treatment for Zika virus infection (ZIKV). Developing new drugs for ZIKV is hampered by the lack of crystal structures for target proteins from this virus or any assays that deal with targets or whole cells. In addition, the drug development process is a lengthy and costly process that takes 15 years and cost millions of dollars. Repurposing FDA and EU approved drugs is an efficient approach to expedite the drug discovery process that has led to new active compounds against neglected diseases. In this study, homology modeling was used to build a model for the Zika NS5 protein and identify its binding site. Structure-based virtual screening and binding free energy calculations were followed to screen compounds for their binding to the NS5 protein, determination of the binding energy and ranking of the selected drugs. Several leads among FDA approved drugs with similar interactions to the natural ligand were identified and are promising as anti-Zika inhibitors. This study identifies drugs that could be tested in vitro of ZIKV infection.

Dr. May Talib Flayyih, Ph.D.

Dr. May is a Professor of Microbiology at Department of Biology; College of Science; University of Baghdad. She is also the Representative of the Ministry of Higher Education and Scientific Research at National Bio Risk Management Committee, Iraq.

Dr. Flayyih has attended 22 national and international conferences and 13 workshops. She has published more than 62 papers and right now, she is supervising 9 PhD Students and 26 MSc students were already graduated through 2005-2016.



Evaluation of Virulence factors and Vancomycin- Resistant of Multi-drug Resistant Enterococcus faecalis by Polymerase chain reaction (PCR) technique

May T. Flayyih , Haider S. Kadhem , Sara A. J. Al-Jmor

Department of Biology, College of Science, University of Baghdad. Iraq

Two hundred and fifty-five clinical specimens of urine, blood, teeth root canal, burns and vaginal swabs were obtained. The specimens were cultured on Pfizer selective Enterococcus agar to purify Enterococci isolates. Fifty-two *E. faecalis* isolates were identified and confirmed by VITEK2 system. Evaluation of *E. faecalis* virulence factors were detected phenotypically, the results showed that all isolates (100%) were hemolysin, protease and aggregation substance producer, 30% were a gelatinase producer, and 40.7% were a lipase producer. Biofilm formation was investigated by tissue culture plate method (TCP). The results showed that all *E. faecalis* have the ability to form a strong biofilm. Antibiotics susceptibility test for 52 isolates was done against 11 antibiotics; thirty nine (75%) *E. faecalis* isolates were multi drug resistance and thirty (57.69%) *E. faecalis* isolates were determined as Vancomycin-Resistant. The virulence factor Enterococcal Surface Protein (esp) which is chromosomal was amplified by Polymerase chain reaction (PCR) technique in a monoplex pattern. Results of this investigation showed that 52 (100%) *E. faecalis* isolates gave the amplicon size 933 base pair for the esp gene. The genetic determinants of Vancomycin-Resistant vanA and vanB genes were amplified using PCR techniques in order to identify vancomycin resistant (van+) and sensitive (van-) among (13) *E. faecalis*. The vanA, gene was detected in 11 isolates, which gave amplicon size 550 bp and vanB gene was detected in 4 *E. faecalis* isolates, which gave amplicon size 600 bp. The results revealed that the vanA and vanB amplicons have a genetic variation in their molecular weight during the electrophoresis of PCR product.

Prof. Dr. Nadia Zakhary



Professor of medical biochemistry at national cancer institute (NCI), Cairo University and former minister for scientific research. She was raised up in English mission College (EMC) in Egypt. She got B.Sc. of Biochemistry, Faculty of Science, Ain Shams Univ. with grade: excellent and degree of honor. She obtained her M.Sc. and Ph.D. of medical biochemistry, faculty of medicine, Cairo University. She joined the National Cancer Institute, Cairo University since 1975 as a Demonstrator → Professor → Head of Medical Biochemistry and Molecular Biology department for two successive periods from 2001 to 2007. She joined New York University, Manhattan, U.S.A. at 1999 as a visiting Professor. Dr. Nadia supervised about 60 M.Sc., Ph.D. and M.D., and published 56 papers on different biochemical and oncological topics concerning etiological and protective agents against cancer, tumor markers and molecular changes related to cancer. Dr. Nadia acts as the editorial board member and reviewer for many National and International scientific journals and conferences, and an external audit for scientific programs and projects. Dr. Nadia is teaching courses concerned with Biochemistry, Biotechnology, Cancer Biology and Electron Microscopy for Egyptian courses and joint courses offered between the USA and Egypt. Dr. Nadia is a member in many National and International scientific organizations as

- New York Academy of Sciences.
- Board member of National Council for Women.
- Board member of the National Cancer Institute.
- Board member of Academy of Scientific Research and Technology.
- Board of Trustees of the British University in Egypt.
- Dr. Nadia shared in charitable caravans and public education for important topics like early detection of breast cancer and healthy nutrition. Dr. Nadia offered prize for environmental studies and the award of international scientific publication; as well as; the best staff member in NCI, Cairo University, and many other awards.

Some Ministerial Achievements:

- Application of scientific research to achieve knowledge based economy, on one hand, and increase the budget, on the other hand.
- Interaction of scientific research with crucial needs and problems of the society.
- Collaboration between the ministry of scientific research with other ministries, governors, businessmen, NGO's and other organizations.
- International scientific win / win collaborations between Egypt and other countries all over the world.
- National scientific education for children, youth and Egyptian population in general.
- Increasing the budget of scientific research from different resources.
- Increasing salaries and social stability for those who are working in the scientific field.
- Rank by FORBES on March, 2013 as the first woman in Egypt and the 16th in the Arab world who has a positive influence and impact in the government.
- Selected among the best 909 scientists worldwide.

Application of Molecular Biology for Breast Cancer Diagnosis, Prognosis and Treatment

Prof. Dr. Nadia I. Zakhary, Medical Biochemist

National Cancer Institute, Cairo Univ., Former Minister of Scientific Research,

Member of National Council of Women and Board of Trustees at BUE and ASRT

The presentation will give short notes concerning the following topics:

- The development of cancer and its multistep process: Initiation, promotion and progression.
- Germ line and acquired mutation? And what is meant by familial cancer.
- What are the types of genes involved in carcinogenesis?
- Tumor suppressor genes (good genes e.g. p53 , BRCA 1 and BRCA 2
- Proto-oncogenes (bad genes) e.g. HER-2, Ki67 and EGFR
- Mismatch repair genes.

Application of Molecular Biology in the field of Oncology (Breast Cancer):

- Susceptibility
- Diagnosis
- Prognosis
- Treatment
- Drug Development
- Discoveries never stop:
- More genes can be still discovered (genomics)
- More proteins can be still discovered (proteomics)
- More drugs can be still developed

Dr. Patricia Zancan, Ph.D.

Patricia Zancan is Associate Professor at University of Rio de Janeiro (UFRJ), Brazil. She got her MSc in 2002 and her PhD, in 2005 in Biological Chemistry in the Institute of Medical Biochemistry Leopoldo de Meis, at UFRJ. She served as assistant professor at Department of Pharmaceuticals at Faculty of Pharmacy at UFRJ (2007-2015). In 2015, she was appointed associate professor at Department of Pharmaceutical Biotechnology, Faculty of Pharmacy. In 2008, she established a novel laboratory devoted to the study of signalling in cancer biology aimed to control the development of cancer cells. During her professional career, she has supervised Masters, PhD and post-doctoral fellows at high levels, contributing to the formation of qualified personnel. At administrative level, she acted as the head of the department (2012-2014), re-dimensioning the structure and the aims of the department, promoting its growth almost doubling the number of professors and researchers. Due to these efforts, currently, the Faculty of Pharmacy presents a whole department (Pharmaceutical Biotechnology) devoted to the study of diseases and novel pharmaceutical approaches to control them. Patricia Zancan has authored more than 30 scientific articles in peer-reviewed journals. During 2014-2015, she was in a sabbatical period at Université Laval, Quebec, Canada, where she served as invited professor working in projects related to diabetes molecular triggers. In 2016, she was nominated TWAS Young Affiliate and was elected co-chair of the TWAS Young Affiliates Network (TYAN) Executive Committee.



Tumor biology: targets and drugs.

Patricia ZANCAN

Laboratório de Oncobiologia Molecular (LabOMol), Departamento de Biotecnologia
Farmacêutica (BioTecFar), Faculdade de Farmácia, Centro de Ciências da Saúde, Universidade
Federal do Rio de Janeiro, Rio de Janeiro, Brazil

Among the physiological hallmarks of cancer, altered glucose metabolism is perhaps the most common. Aerobic glycolysis is observed in approximately 90% of human tumors and may be required for new biomass formation. In fact, proliferation of cancer cells is accompanied by activation of glycolysis. Moreover, glycolysis may confer tumor cells with the ability to adapt to new microenvironments or cope with stress during tumor progression and metastasis. The aim of our studies is to investigate potential targets for antitumoral therapy through the evaluation of the unique energetic metabolic profile present in cancer cells. Besides, we evaluate the effects of the novel drugs on the metabolism and physiology of the cancer cell lines. These novel approaches may identify treatments that would be more selective to aggressive tumors with minimal effects over non-tumoral cells.

Dr. Rana Dajani Ph.D.

Dr. Rana is a molecular biologist, University of Iowa, USA; Eisenhower fellow, a Fulbright alumnus twice, an Associate Professor and former Director of the center of studies at the Hashemite University, Jordan, former Yale visiting professor at the Yale stem cell center and visiting Scholar University of Cambridge and visiting professor at the stem cell therapy center. Her lab is the world experts on the genetics of Circassian and Chechan populations in Jordan focusing on diabetes and cancer. Dr. Dajani spearheaded the effort to establish a law for stem cell research ethics in Jordan. She is a strong advocate for the theory of biological evolution and of its compatibility with Islam. As such, she was a speaker at the Templeton-Cambridge Journalism Fellowship symposium at the University of Cambridge and at the British Council ‘belief in dialogue’ conference, McGill University and MIT. Dr. Dajani is a consultant to the higher council for science and technology in Jordan. She has written in *Science* and *Nature* about Science and women in the Arab world. She is on the UN women Jordan advisory council. She has established a network for women mentors and mentees and received the PEER Award for the model Three Circles of Aemat. She was chosen as one of the 20 most influential women scientists in the Islamic world 2014 and 12 among the 100 most powerful women in the Arab world 2015 and 2014 and in the women in science hall of fame 2015 and the King Hussein Cancer Institute for cancer and biotechnology award 2009. In terms of education, she has been appointed a Higher Education Reform Expert by the EU-TEMPUS office, Jordan and an Education expert consultant to the Islamic Development Bank in Saudi Arabia, founder of the center for service learning at the Hashemite University, advocate of teaching using problem based learning, novel reading, drama and social media, speaker at TEDxDeadsea, the World Islamic Economic Forum 2012 and the World Science Forum 2015. On the broader horizon, Dr. Dajani has developed a community-based model and philosophy “We love reading (WLR)” to encourage children to read for pleasure which received the Synergos award for Arab world social innovators 2009, a membership to the Clinton Global Initiative 2010, and a place in the book “Innovation in education”, funded by Qatar foundation 2012, the Library of congress literary award 2013 best practices, WISE Award winner 2014, 50 Most Talented Social Innovators 2015 at the World CSR Congress and the King Hussein Medal of Honor 2014. Openideo top idea for refugee education 2015 and Star Award for education impact 2015. WLR has spread throughout Jordan, the Arab world and internationally reaching 26 countries including Turkey, Mexico, Thailand, Uganda and Azerbaijan. Dr. Dajani in the media: The Lancet, Huffington post, USA Today, Washington post, Al Jazeera, VOA, Chronicles of higher education, the Guardian, The Economist and Reuters. Dr Dajani is married with four children.



Genetic risk factors for diabetes in ethnic populations

Rana Dajani

Hashemite University, Jordan

Diabetes mellitus is one of the most common non-communicable diseases globally. This study seeks to estimate the prevalence of impaired fasting glycemia and type 2 diabetes mellitus in genetically isolated populations in Jordan: the Circassians and Chechans as well as exploring genetic risk factors for diabetes. Data were analyzed from a cross-sectional study that included a random sample of adult Circassians and Chechans. The prevalence of impaired fasting glycemia was 18.5% for Circassians and 14.6% for Chechans. Prevalence of diabetes was 9.6% for Circassians and 10.1% for Chechans. The prevalence of impaired fasting glycemia and diabetes were significantly higher in men, older age groups, married, subjects of lower educational level, past smokers, and subjects with obesity. Low high-density lipoprotein cholesterol was the most common abnormality in the two populations. We found a CNV region in protein tyrosine phosphatase receptor type D (PTPRD) with significant association with T2D. We additionally identified 16 CNV regions associated with T2D which overlapped with gene exons. Of particular interest, a CNV region in the gene AKNA Domain Containing 1 (AKNAD1) surpassed the experiment-wide significance threshold. The homogenous, genetically isolated Circassian and Chechan populations sharing the same environmental influences suggest a role for genetic risk factors for diabetes. They are also likely to benefit from programs encouraging healthy weight and physical activity. This is the first CNV analysis of a complex disease in populations of Jordan.

Dr Rym KEFI, PhD

Dr. Rym is an Associate Professor in Institut Pasteur of Tunis. Team leader in the Laboratory of Biomedical Genomics and Oncogenetics and responsible for the genetic typing core facility. She obtained her Master degree and a PhD at the University of the Mediterranean (Marseille- France). She worked on Mitochondrial DNA diversity in current and prehistoric human populations and on mitochondrial DNA variability of Cave Bear. She joined in 2006 Institut Pasteur de Tunis. She is mainly involved in Research on human genetic disorders, genetic diversity in North Africa and genetic typing in forensic. She co-coordinated a NEPAD/NABnet project on the genetic basis of type II Diabetes in five North African countries and a bilateral Tunisian-Moroccan partnership on Human orphan diseases and mitochondrial DNA diversity in Tunisia and Morocco. Since January 2012, she is a co-PI in MEDIGENE Project (FP7) on “the Genetic and environmental factors of insulin resistance syndrome and its long-term complications in immigrant Mediterranean populations”. She is also a task manager in GENOMEDIKA project (FP7) on “reinforcing IPT capacities in genomic medicine, non communicable diseases and international cooperation”. Since 2016, Rym Kefi is the PI of a projet supported by IPT, on “Epidemiological and genetic study of atypical forms of diabetes in Tunisia: MODY”. Rym KEFI is TWAS young affiliate since 2010, and Global Young Academy member since december 2012. She is an author/ co-author of more than 60 publications.



DNA typing for genetic diseases investigation and human identification: role of women scientists

Rym Kefi

Laboratory of Biomedical Genomics and Oncogenetics, Institut Pasteur de Tunis

Genetic disorders prevalence in Tunisia is relatively high due to consanguinity and endogamy. These disorders are physically and socially disabling and their impact on health care is costly. In our laboratory mainly composed by women scientists, we perform DNA typing for a large spectrum of genetic diseases in order to understand their molecular mechanism and etiology and to introduce their molecular diagnosis in the Tunisian population. Our results revealed the clinical and genetic heterogeneity of these disorders which reflects a rich genetic heritage of the Tunisian population. Our studies have allowed the setting up of rapid and cost effective diagnosis permitting early, even pre-symptomatic diagnosis and preventive intervention. Otherwise, in the frame of our activity in the genetic typing core facility also composed mainly by women scientists, we determine the DNA fingerprints for the resolution of forensic cases such as the identification of human remains in terrorism attacks and illegal immigration. We have developed for the first time in Tunisia a rapid and effective molecular protocol for human body identification using in particular dental DNA. Thus, thanks to the perseverance of Tunisian women scientists we are able to achieve good results and to overcome the socio-economic difficulties characterizing the developing countries.

Dr. Smita C. Pawar, Ph.D.

Dr. Smita was recruited as Assistant Professor in the Department of Genetics, Osmania University in the year 2004 and am a recipient of the prestigious BOYSCAST FELLOWSHIP sponsored by DST, Government of India. I worked as a visiting scientist at University of Nebraska Medical Center, Boys Town National Research Hospital and John Hopkins University, Baltimore, USA. I have served at various administrative positions such as Head of the Department, Academic Coordinator, Chairperson, Board of Studies. Over the years I would like to see cancer as a curable disease and am of opinion that targeting tumor angiogenesis would be very interesting therapeutic approach. Our lab investigates the Molecular mechanisms underlying dysregulated genes in the pathogenesis of cancer. I have two ongoing major research projects funded by SERB and ICMR and have completed two MJR projects. I have published 16 research articles in journals of repute like Scientific Reports- Nature group, Plos One, Protein expression and Purification, Journal of Receptors and Signal Transduction etc and have delivered talks and presented research articles at various international conferences at USA, Australia, Poland, etc and also have organized an “International workshop on Functional Genomics (IWFG) 2015” at the University . I am supervising four research scholars for PhD and one Post-Doctoral research fellow.



Cloning and Evaluation of NC1a6 and its partial peptides (N-ter and C-ter) role in tumor Angiogenesis

Smita C. Pawar, Aravind Setti

Department of Genetics, Osmania University, Hyderabad, India

According to world cancer report 2014, cancer is the leading cause of deaths in the world; Cancer is a multifactorial disease caused by several factors. Progression of many types of solid tumor cancers is associated with massive up-regulation of VEGF that promotes tumor angiogenesis and tumor growth. Tumor angiogenesis is crucial process in tumor progression. Proteolytic fragments of ECM type IV collagen are normally found circulating in the blood of healthy people, and many of these fragments have been characterized for their angioinhibitory and antitumor. The current general classes of angioinhibitors that target VEGF and its receptors are selective but not specific for tumor angiogenesis. In the present study we report a new metabolite derived from $\alpha 6$ chain of type IV collagen $\alpha 6(\text{IV})\text{NC1}$ /hexastatin and its functional receptors that mediate its angioinhibitory signaling. . The hexastatin ($\alpha 6$) and its derived partial peptides at N-terminal (HDPPN) and C-terminal (HDPPC) were cloned in pET22b+ and pLATE31 vectors and their role in tumor angiogenesis inhibitions was elucidated. Here we report that $\alpha 6(\text{IV})\text{NC1}$ and its partial peptide inhibits several cellular processes that are vital to the new blood vessel formation like cell proliferation, migration and tube formation and also it mediates its anti-migratory functions through inhibition of endothelial signal regulating kinase1. $\alpha 6(\text{IV})\text{NC1}$ as an inhibitor of angiogenesis is particularly attractive, since this protein exists in normal circulation, and is relatively non-toxic at therapeutic levels. Another advantage of $\alpha 6(\text{IV})\text{NC1}$ as a neovascular targeting antiangiogenic agent is that it may be useful for treating many different types of solid tumors, whereas conventional tumor-cell targeted agents are useful for particular types of cancer.

Track 1

(Medicine-Biology-Pharmacy)

Part II

Medicine

Dr. Amani Abdelrazag Elfaki

Dr. Amani is Associate Professor at the Department of Anatmoy, Faculty of Medicine, National University, Khartoum, Sudan. Dr. Amani graduated from the Faculty of Basic Medical Sciences at Omdurman Islamic University, Khartoum, Sudan in 2000. She completed her M.Sc. in Human Anatomy at Al Zaiem Al Azhari University, Khartoum/SUDAN in 2003. She successfully finalized her PhD. in Neuroanatomy from Ondokuz Mayıs University, Samsun/TURKEY in 2011 as the first Sudanese women holding a PhD in Neuroanatomy. Recently she achieved her Postdoctoral studies from Maastricht University, Maastricht/ NETHERLAND in the field of Neuroscience. Dr. Elfaki's interests have been fostered by several years of teaching Human Anatomy and Neuroanatomy for undergraduate and postgraduates students of Medicine, Dentistry, Pharmacy, Laboratory, and Physiotherapy inside and outside Sudan. Dr. Elfaki has research experiences in the 1. Progress in the deep brain stimulation for movement disorder. 2. Brain MRI images analysis using automatic segmentation. 3. macroscopic structures estimation using Cavalieri Principle of the Stereological Methods and Microscopic Structures Estimation Using Optical Disector. And she has number of National and International published articles in the area of brain volume and Neurodegenerative disease. Dr. Elfaki is a member of editorial board in the Journal of Experimental and Clinical Medicine. She is a member of the Organization for Women in Science for the Developing World (OWSD). She is a member of the Turkish Society for Stereology. She is a member of the Scientific Organizing committee of the number of national and International Workshops and Conferences.



Recent diagnosis of schizophrenia depending on the abnormality of subcortical structures

Amani Abdelrazag Elfaki¹, Tahir Osman Ali², Mert Nahir³, Ibrahim Erkan⁴, Fikri Ozdemir⁵, Murat Golpinar³, Meltem Acar Gudek³, Bunyamin Sahin³

¹Departments of Anatomy, Faculty of Medicine, National University, Khartoum, Sudan

²Departments of Anatomy, Faculty of Medicine, National Ribat University, Khartoum, Sudan

³Department of Anatomy, Faculty of Medicine, Ondokuz Mayis University, Samsun, Turkey

⁴Department of Biostatistics and Medical Informatics, Faculty of Medicine, Ondokuz Mayis University, Samsun, Turkey

⁵Department of Anatomy, Faculty of Medicine, Hitit University, Corum, Turkey

Objective: This research is dedicated to study the abnormality of pineal gland, thalamus and basal ganglia in schizophrenia at the structural and functional levels. These changes have so far been a major conceptual challenge for researchers. Improvements in imaging analysis techniques enhanced the discovery of subtle differences in subcortical structures and functions in patients with schizophrenia; a clearer picture of abnormality in schizophrenia is most likely to be emerging. **Materials and Methods:** 88 control subjects and 57 chronic patients with schizophrenia were included in the study. Structural magnetic resonance imaging was performed and the DICOM images were evaluated using automatic brain segmentation software (BrainSuite). The volumes of the region of interest were evaluated. **Results:** According to the findings of the present study, the volume of the pineal gland showed significant differences between patients and control ($47.78 \pm 20.85 \text{mm}^3$ and $63.57 \pm 26.44 \text{mm}^3$, respectively). Also, the volume of the right and left thalamus showed significant differences between patients ($5575.87 \pm 546.91 \text{mm}^3$ and $5808.24 \pm 630.10 \text{mm}^3$) and control ($6166.27 \pm 538.85 \text{mm}^3$ and $6449.45 \pm 601.12 \text{mm}^3$), respectively. For the basal ganglia only the volume of the right and left globus pallidus showed significant differences between patients ($1460.29 \pm 181.08 \text{mm}^3$ and $1425.91 \pm 180.86 \text{mm}^3$) and control ($1495.39 \pm 171.62 \text{mm}^3$ and $1461.53 \pm 165.96 \text{mm}^3$), respectively. **Conclusions:** The findings of the current study indicate that there is significant reduction in the pineal gland, thalamus and globus pallidus in patients with schizophrenia. The present findings suggest that the symptoms of schizophrenia may be induced by the abnormal activity of these reduced areas, which may exert a role in the development and prognosis of the disorder.

Dr. Amani Abdel Fattah

Dr. Amani is a young ambitious forensic doctor who has received her Master degree about Domestic violence at Forensic & Clinical Toxicology Department at faculty of Medicine in Cairo University at 2012. She also received her M.D Degree about Toxic effects of gibberellic acid (one of the most commonly used plant growth regulators). She worked as supervisor of student session of Summer School Domestic Violence Conference for 6 years & has worked with students from different universities in addition to Kasr Al Aini University such as Ain Shams university, Al Azhar University for Girls, Faculty of science and Faculty of Pharmacy of Cairo university, 6 October university and Misr University for science & Technology. Summer School Domestic Violence Conference was held at Kasr Al Aini University as a cooperation between DAAD & Forensic & Clinical Toxicology Department of Faculty of Medicine. She was chosen by her Malaysian students for two successive years to be honored for her efforts with them in the academic work. Dr .Amani works in the field of Domestic violence awareness in order to high lighten this dramatic problem & trying to help the survivors. In addition, she supports the women in all fields & works as a coordinator of Anti-harrasment Unit of Cairo university that is governed by Prof. Dr. Gaber Nassar who is the president of Cairo University to ensure safe university for all students & workers. The anti-harrasment unit aims at encouraging female students to speak out & to report the harassment in order to punish the harasser & encourage the women to take their rights.



Discrimination against Egyptian women in certain professional & social fields

***Amani Abdel Fattah, **Islam Mostafa El Sayed**

*Forensic & Clinical Toxicology, Faculty of Medicine, Cairo University, Egypt

**Forensic & Clinical Toxicology, Faculty of Medicine, ElAzhar University, Egypt

Traditional gender roles in Egypt are prevalent and clearly defined. These roles are largely associated with traditional eastern family structures, wherein women's roles are closely tied to the domestic sphere and men's roles tied to the public sphere. Gender roles are based on assumed biological differences between the sexes and can lead to dramatically different life experiences as well as opportunities and outcomes for individuals. However, when looking at a number of indicators, women often find themselves disadvantaged relative to men. There are many forms of discrimination against Egyptian women such as harassment and sexual violence, intimate partner violence, Female genital mutilation as well as forms of gender-based disparities in areas of reproductive health, economic functioning, and overall empowerment. It is our role as forensic female doctors to spotlight the issue of gender discrimination against women in some medical & social fields & encourage the women equality in all civil rights to make the world a better place not only for women but for the whole family.

Dr. Fatimah S. Alhamlan, PhD

Dr. Fatima is a scientist & assistant Professor, Department of Infection and Immunity, King Faisal Specialist Hospital & Research Center, Alfaisal University, Riyadh, Saudi Arabia. Dr. Alhamlan is a Scientist at the Research Centre, King Faisal Specialist Hospital and an Assistant Professor at Alfaisal University. She is also a founder and Vice President of Rofaia Women's Health Organization. Dr. Alhamlan has obtained her Bachelor degree from Taiba University and her graduate studies from the United States majoring in Microbiology, Molecular Biology and Biochemistry. Thereafter, she was awarded a competitive one-year scholarship to join the Global Clinical Scholar Research Training Program (Epidemiology, Clinical Trials, and Biostatistics) offered by Harvard Medical School in the United States. Dr. Alhamlan was recently awarded Sayadati Young Saudi Female Scientist Award in Science and Medicine, 2015. She was also awarded grants to support her research and awareness campaigns. She has published many articles in prestigious journals.



Women in Science, Are we there yet?

Fatimah S. Alhamlan

Alfaisal University, Riyadh, Saudi Arabia

My ceaseless dedication to a career as a research scientist has provided me with many professional successes and an exciting journey. After completing my higher education in the United States, I returned to Saudi Arabia to share this knowledge. Although my focus during that time of study was on science and getting a job, I learned much more. Life is not only about work: Life offers a full package that includes family, community, and work. When I returned to Saudi Arabia, I chose to conduct a research that explores viruses and women's gynecological health, specifically researching human papilloma virus and cervical cancer. However, I soon realized that most Saudi women were wholly unaware of this sexually transmitted virus and its critical link to cervical cancer and thus sought healthcare only in the late stages of cancer, when the survival rate was very low. Therefore, we created a women's health organization, called Rofaida, that provides enlightenment, awareness, knowledge, education, and support for women's health needs in Saudi Arabia. I feel fortunate to have this opportunity to join the 1st International Conference of Women in Science and International Networking to share my professional journey hoping that other girls finding it inspiring.

Dr. Hoda Yousry Abdallah

Dr. Hoda is a lecturer of medical genetics and the coordinator of the molecular biology unit in center of excellence for molecular and cellular medicine in her university. She is also the director of the information technology unit in her faculty and a lead member in the young researcher committee in the Suez Canal University. Although, she is a graduate of medical school, she is also interested in the fields of human development and scientific research. She was a member in many funded projects for scientific research advancement in Egypt; as establishment of center of excellence for molecular and cellular medicine in Suez Canal University, project for studying genetic and epigenetic changes in brain tumors and Kaizen student project. As a part of her volunteer activity, she is the secretary of “Okool Masreya” a non-profit governmental organization targeting to advance scientific research sector in Suez Canal region. She believes that her endeavors in this sector can be beneficial for the whole country welfare in the future. Dr Hoda research interest is in cancer genetics, where her PhD research was on genetic and epigenetic changes in brain tumors and she is intending to continue her research in this area thereafter as it’s one of the most important health priorities in Egypt and worldwide. In 2011, she was awarded a national Prize from “Life makers organization” founded by Dr Amr Khaled, in the sector of scientific research for a project named “Planning for Egypt’s future in scientific research sector”. In 2016, her PhD work was chosen as the best scientific poster in the 3rd young researchers` conference and she was awarded for this accomplishment.





Updates in Cancer Epigenetics

Hoda Y. Abdallah

Department of Histology and Cell Biology (Genetics Unit), Faculty of Medicine, Suez Canal University, Ismailia, Egypt

The recent focus on mechanisms of regulation of gene expression at the transcriptional/translational level indicates one of the most emerging fields in cancer research. Recent research has provided evidence that malignant transformation leading to the development of a cancer results from a complex interplay of both genetic alterations and epigenetic changes affecting various cellular processes, including cell proliferation and invasion, DNA repair, apoptosis, angiogenesis and cell cycle regulation. Epigenetics are defined as heritable alternative states of gene activity that do not result from altered nucleotide sequence. Among the most studied epigenetic changes occurring in cancers are DNA methylation, histone modifications and non-coding RNAs. Identification and characterization of epigenetic alterations in different types of cancers lead to the discovery of novel prognostic and predictive biomarkers. Moreover, the reversible nature of epigenetic modifications kindled strong efforts to develop new therapeutic approaches aiming at epigenetic landmarks of human cancers. In this talk, we will provide an overview on the basic mechanisms of epigenetic control found in human cancer, their clinical significance, and the resulting therapeutic perspectives.

Dr. Kodali Vijayanthimala

Dr. K. Vijayantimala, presently the Director of the Sarojini Naidu Center of Women Studies, Mahatma Gandhi National Institute of Research and Social Action, had been a former member of the Orissa Educational Service (Class D), in which capacity she taught Home Science at the Sambalpur University and in various colleges of Odisha from 1972- 2006 is a distinguished Home Scientist of Odisha. She has had her doctoral degree from Sambalpur University (1986), Odisha and was Post-Doctoral Fellow in Andhra University (1993-1995), Visakhapatnam, Andhra Pradesh. She was trained under the guidance of Professor S.N.Ratha, former Professor and head of the Department of Sociology and Social Anthropology, Sambalpur University, Odisha. Dr. Vijayanthimala after retirement from formal service has been as active as ever in teaching and research. She has published several papers, made presentations at a number of National and International Seminars (USA(1996), China(2010), Malashia (2010), Australia(2011), Taiwan(2013),Kuwait(2013&2016), U.K(2013), Japan(2014) etc.) and handled projects, published/edited 3 books on women and child related issues(Women and Food, Nutritional Status and Education of Tribes of Andhra Pradesh & Child Development in India) . She was an executive committee member of Indian Association of Social science and Health, and life member in several other academic bodies at National and International level.



Diabetes and its control –Role of Diet and exercise

Dr. K. Vijayanthimala

Centre for Women Studies, MGNIRSA, Hyderabad, INDIA

Non communicable diseases (NCD) account for 53% of the total deaths (10.3 million) and by 2030, NCDs are projected to cause up to 67% of all deaths in India. Most common among NCDs are hyper tension and Diabetes Mellitus. In this connection the present paper is an attempt to study Diabetes Mellitus and according to statistics from the International Diabetes Federation (IDF), India has more diabetics than any other nation of the world (presently 62 million). Nutrition can be used as a medicine to control diabetes in very effective way, specific foods and dietary patterns are beneficial in controlling diabetes. The main emphasis of the paper is on diet and exercise. The subjects included are both women and men suffering from diabetes through longitudinal case studies. Diet pattern, exercise and glycosylated haemoglobin levels (HbA1c) are noted. Sample diet which consists of millets, pulses, seeds, green leafy vegetables, other vegetables and fruits are included and compared with diabetic persons who eat regular diet. The patient who is eating sample diet showed a greater improvement in glycaemic control than participants who ate other popular diets .In addition exercise at least minimum of ½ an hour for 5days in a week is necessary. The study concludes that diabetes by and large can be controlled by making simple changes in the diet and by doing exercise every day.

Dr. Laila M. Montaser, MD



Dr. Laila Montaser is professor of clinical pathology and hematology at the school of medicine in Shebin El-Kom, Menoufia. She also serves as the Head, Founder of Clinical Pathology Department, School of Medicine, Menoufia University, Egypt. Prof. Montaser is board certified in Clinical Pathology, Hematology, and Stem Cells & Nanotechnology Research. Prof. Montaser received her undergraduate degree at School of Medicine, Alexandria University in Alexandria, Egypt, and her M.Sc. & MD degrees at School of Medicine, Tanta University, Egypt. Prof. Montaser is a Fellow of the leading association of scientists and engineers in Chemical, Biological and Environmental Engineering (CBEES). She is a senior member of Asian Pacific of Chemical Biology Engineering and Environment Society (APCBEE). She is a member of SPIE (International society advancing an interdisciplinary approach to science & application of light). She is President, Chief Scientist of Stem Cell, Regenerative Medicine, Nanotechnology and Tissue Engineering (SRNT) Group, and member in Egyptian Universities Promotion Committees (EUPC) for Professors of Clinical Pathology. She is the nominator of Council of Menoufia University to TWAS prize in Medical Sciences and nominator of Menoufia Faculty of Medicine to Award of Nano Science Research Excellence. She is a member of several international & national societies, including the International society for optics and photonics (SPIE), International Academy of Arts, Science and Technology (IAAST), World Academy of Scientific, Engineering & Technology (WASET), Nakaa Nanotechnology Network (NNN), Egyptian Society of Hematology (ESH), Egyptian Society of Hematology and research (ESHR), Egyptian Society of Thalassemia (EST), Egyptian Society of Laboratory Medicine (ESLM), Egyptian Society of Experimental Biology (ESEB), Alexandria Society of Allergy (ASA), Egyptian Society of Environmental and health legislation (ESEHL), Egyptian Society of Blood Transfusion (ESBT), & Egyptian Hemato-oncology Group (EHOG). She appointed as an editorial board member/peer reviewer of the International Journal of Bioinformatics and Biomedical Engineering “in Public Science Framework, International Journal of Chemical and Biomolecular Science “in Public Science Framework. She is appointed as a referee for papers submitted for publication in International Journal of Chemical Engineering and Applications (IJCEA), International Journal of Bioscience, Biochemistry and Bioinformatics (IJBBB), Egyptian Journal of Hematology, Menoufia Medical Journal, & the Journal of the Egyptian Society of Parasitology. Prof. Montaser has written numerous abstracts and articles on Clinical Pathology, Hematology, Stem Cells, Regenerative Medicine, Nanotechnology and Tissue Engineering, her research interest. Prof. Montaser Gained 5 Awards:
Golden Nishan of perfect and Certificate of Excellence for the best pupil in Alexandria Governorate from Egyptian Feast of Science in 1957.
Medal of Merit from Egyptian Medical Syndicate in 1986, 1998 and 2002.
The paper titled "Promotion of Islamic Entrepreneurship in Arab world" won the award of one of the best & outstanding papers presented at the 2nd Global Islamic Marketing Conference (GIMC 2012), January 16-18, 2012, Abu Dhabi, UAE.

How Plasma Concentrate and Stem Cells for Stem Cell-based Tissue Engineering Could Contribute to Articular Cartilage Tissue Regeneration

Laila M. Montaser ^{a,b}, Sherin M. Fawzy ^b

^a Department of Clinical Pathology, Faculty of Medicine, Menoufia University, Egypt

^b Stem Cell, Regenerative Medicine, Nanotechnology and Tissue Engineering Group (SRNT),
Faculty of Medicine, Menoufia University, Egypt

Progressive wear and tear on articular cartilage can lead to a progressive cartilage tissue loss, further exposing the bony ends, leaving them without protection. This finally deteriorates into the most common arthritis—osteoarthritis (or degenerative joint disease). Unlike other self-repairing tissues, such as bone, cartilage has a low regenerative capacity. Consequently, once injured, cartilage is much more difficult to self-heal. Although traditional methods like autografts and allografts have been clinically employed to treat articular cartilage lesions, there still exist many shortcomings associated with these therapies. For patients with severe joint damage and osteoarthritis, total joint replacement surgery is needed. However, many complications such as inflammation, infection, and implant loosening frequently occur after joint replacement and may lead to implant failure, necessitating future revision surgery. As a rapidly expanding field, tissue engineering may provide alternative solutions for articular cartilage repair and regeneration through developing biomimetic tissue substitutes. There is a great promise to advance current cartilage therapies toward achieving a consistently successful approach for addressing cartilage afflictions. Tissue engineering may be the best way to reach this objective via the use of promising cell sources such as stem cells, plasma concentrate, novel biologically inspired scaffolds, emerging nanotechnology, chondrogenic factors, and physical stimuli. In this manuscript, emergent approach in the field of articular cartilage tissue regeneration is presented for specific application. In the future, the development of new strategies using plasma concentrate and stem cells with supplementation of culture medium could improve the quality of new formed cartilage.

Dr. Mohamed Salama, PhD

Dr. Salama obtained his Medical Degree in 1999 from Mansoura University, Egypt. There, he began his clinical training and shortly thereafter started his post as clinical toxicologist at Mansoura University Poison Control Center. He received his MSc in Toxicology in 2006, and through a DAAD scholarship his PhD degree in Neurotoxicology in 2011 through collaboration with Philipps University in Marburg, Germany. Upon returning to Egypt he realized that there was a large gap between basic neuroscience research and clinical application. Translational initiatives were totally absent. Either one was a neuroscientist in a closed lab or a neurologist busy with patients. Dr. Salama's passion and dedication to bridge the divide between basic and clinical research and to further the field of translational research is clearly evidenced through his many contributions to this field. He established the first Experimental Neurology Unit in Egypt, resulting in published findings in international journals and invited presentations. His research on strategies that protect nerve cells from dying in Parkinson's disease received recognition, Following his success, many students became interested in experimental neurology and his program has since grown. Continuing to close the gap between basic and clinical neuroscience, he established relationships with clinicians in the neurology field by focusing on translational research projects and by funding from international organizations (DFG, DAAD, IBRO, ISN, MDS, PMDF). In his fourth year of two DAAD funded projects (230,000, 240,000 Euros) Dr. Salama is trying to evaluate the environment-gene interaction in Parkinson's disease. These studies combine basic neurotoxicologists, clinical neurologists, and geneticists in one project. This collaborative research led to establishing the Egyptian Network for Neurodegenerative Disorders (ENND). Dr. Salama was selected as an SOT Global Senior Scholar in 2013 and Translational/ bridging awardee on 2016. He was awarded by Parkinson's and movement disorders foundation (PMDF) for his continuing research in the field of neurodegeneration. Recently he was selected as a member of Egyptian Young Academy of Science (EYAS). Currently, Dr. Salama is the director of the Medical Experimental Research Center (MERC) of Mansoura University. Through different grants from STDF, ASRT, DAAD, and more, MERC is continuing to reshape the future of neuroscience in Egypt.



Environment Gene Interaction in Egyptian Parkinson's Disease Patients

Mohamed Salama

Faculty of Medicine, Mansoura University, Egypt

Parkinson's disease (PD) is the commonest neurodegenerative disorder with motor sequelae. The causes of PD are of complex nature, however, we know that the disease forms are monogenic which accounts for small percentage of the disease (familial form) and the majority of cases (sporadic) which are caused – apparently- through a complex interplay between genetics and environmental exposure. The Egyptian Network for Neurodegenerative Diseases (ENND) has started since 2012 the first project to study the interaction between genetics and environment in Egyptian PD patients. The project is in collaboration with Technical University of Munich, German Center for Neurodegenerative Disorders and Duke University. Through this multi - purposes project we aimed at studying different goals. First, we identified a big environmental problem in Egypt which is “pesticides exposure”. Through studying different brain damage biomarkers, we could prove the possible hazardous effects of pesticides on brains of chronically exposed farmers. The profile of elevated brain biomarkers revealed close similarity with PD patients denoting probable role of pesticides in PD. ENND could study a cohort of 500 sporadic PD patients and their matched controls. All subjects were exposed to detailed questionnaire to identify their exposure to environmental agents like pesticides and similar epidemiological data. Then, blood samples were taken to study different PD risk genes in this population. So far we were able to study over 70 SNPs in different genes. Different data and how we could integrate to serve the main goals of the study will be presented during the IBRO meeting.

Dr. Quarraisha Abdool Karim

Dr. Quarraisha is associate scientific director of centre for the Aids program of research in South Africa (CAPRISA) and an infectious diseases epidemiologist. She is the recipient of several prestigious local and international awards including the 2013 African Union's Kwame Nkrumah Prize for Science and Technology, 2014 TWAS-Lenovo Prize from The World Academy of Sciences (TWAS) "for her exceptional and distinguished contributions to HIV prevention and women's health", and South Africa's highest honour, the Order of Mapungubwe, from the President of South Africa in 2013. Professor Abdool Karim's main research interests are in understanding the evolving HIV epidemic in South Africa; factors influencing acquisition of HIV infection in adolescent girls; and sustainable strategies to introduce HAART in resource-constrained settings. She has over 170 peer reviewed publications and several books and book chapters. She holds Professorships in Clinical Epidemiology at the Mailman School of Public Health, Columbia University, USA and in Public Health at the Nelson R Mandela School of Medicine, University of KwaZulu-Natal in South Africa. Since 1998 she has played a central role in building the science base in southern Africa through the Columbia University - Southern African Fogarty AIDS International Training and Research Programme that has trained over 600 scientists in southern Africa. Professor Abdool Karim is currently chair of the South African National AIDS Council Prevention Technical Task Team, a member of the UNAIDS Scientific Expert Panel and Scientific Advisor to the Executive Director of UNAIDS. Notably she was the Principal Investigator of the landmark CAPRISA 004 tenofovir gel trial which provided proof of concept for Microbicides highlighted by Science as one of the Top 10 scientific breakthroughs in 2010.



Preventing HIV infection in young women in Africa

Quarraisha Abdool Karim

Centre for the Aids program of research in South Africa (CAPRISA)

Despite significant progress on reducing transmission of HIV in infants and anti-retroviral treatment access to those already infected with HIV, we have made little progress on preventing the spread of HIV infection. Approximately 70% of new HIV infections occur in Africa and young women between the ages of 15-24 have up to six times more infection compared to their male peers. This early age of HIV acquisition in young women from men five or more years older than themselves is a key driver of the continued spread of HIV despite high HIV prevalence rates. For those women unable to negotiate available safer sex practices with their male partner there remains a prevention gap. The CAPRISA 004 trial demonstrated for the first time the use of tenofovir for preventing HIV infection (PrEP). Today, daily use of oral tenofovir+emtricitabine tablets is part of available HIV prevention options. Women have a self-initiated option to remain HIV uninfected. However, clinical trial findings to date indicate that the effectiveness of PrEP in women is different from men and in addition to adherence, biological factors notably genital health plays an important role both in terms of HIV acquisition and the potency of PrEP. Novel, long acting, less user dependent products are being evaluated to expand the prevention options including the role of broadly neutralizing antibodies. A vaccine and a cure is key to ending the AIDS epidemic. While science and the biomedical advances provide an opportunity for young women to remain HIV uninfected, the underlying root causes of their vulnerability will require much more politically, economically and socially.

Dr. Wegdan Mohammed Mustafa AHMED

Dr. Wegdan is assistant professor in anatomy department, National University in Sudan. Dr. Wegdan was graduated in 2007 from Omdurman Islamic University, Faculty of Basic Medical Science with grade V. good with Honors then, She got master degree in 2011 from University of Gezira, Faculty of Medicine in Human Anatomy with GPA 3.67; Finally, she got Ph.D. in 2015 in Human Anatomy at Faculty of Graduate Studies & Scientific Research, National Ribat University. She participated in two international conferences which are: Scientific Writing and Stereology Workshop, Ondokuz Mayıs University (Samsun/Turkey) (April/ 2014) and Intensive Hands on Training Stereology Workshop, 2nd Asian and African Stereology congress, 7th International Scientific Writing and Stereology Workshop (Samsun/Turkey) (December/ 2015)



A New Approach for the Quantitative Evaluation of the Frontal Lobe Structures Depending on Age and Sex

Wegdan Ahmed¹, Tahir Osman², Bunyamin Sahin³, Amani Elfaki¹

¹ The National University, ² National Ribat University, ³ Ondokuz Mayıs University, Turkey

Objectives: Grey matter (GM) of the frontal lobe carries out its complex function such as muscle control, speech, decision-making, and self-control; while the white matter (WM) of frontal lobe is a major contributor to higher structural connectivity. This study was conducted to assess the effect of sex and age on GM and WM volumes of the frontal lobe and its gyri.

Material and methods: The present study included 139 healthy Sudanese subjects (80 males and 59 females). Participant's ages were ranging between 20-40 years. MR images were performed. DICOM images of the subjects were analyzed using the automatic segmentation software (BrainSuite). GM and WM volumes of frontal lobe and its gyri obtained automatically.

Result: Males had greater GM and WM volumes of the frontal lobes ($263.82 \pm 31.60 \text{ cm}^3$ and $152.10 \pm 21.95 \text{ cm}^3$, respectively) than females ($234.05 \pm 22.95 \text{ cm}^3$ and $131.80 \pm 18.79 \text{ cm}^3$). Change with age in GM volume has been reported in the frontal lobes, superior frontal gyrus, pars orbitalis, orbitofrontal, and cingulate gyrus ($P < 0.05$). Change with age in WM volumes has been found in the cingulate, precentral, and paracentral gyri ($P < 0.05$).

Conclusion: Sex has prominent effect on GM and WM volume of the frontal lobes and most of frontal lobe gyri, thus sex is a major contributor to GM and WM volume differences between individuals. Age effect GM and WM volume of most frontal lobe gyri, these findings confirm the continuation of maturation of frontal lobe until fourth decade. Assessing effect of sex and age on GM and WM in healthy adult has major importance to distinguish the normal brain from diseased.

Track 1

(Medicine-Biology-Pharmacy)

Part III

Pharmacy

Dr. Alaa Abouelfetouh

Dr. Alaa Abouelfetouh is an Associate Professor of Microbiology at the Faculty of Pharmacy, Alexandria University. She obtained her Master's degree in 2007 and her PhD in 2010 studying the formation and treatment of bacterial biofilms. She spent two years following her graduation as a post doc fellow and lecturer at Alexandria University. She was a BioVision.Nxt fellow in Lyon 2011. In 2012, Dr. Abouelfetouh was awarded a Fulbright scholarship to study the potential effect of protein acetylation on biofilm formation in *E. coli* at Loyola University Chicago. Following her stint as a post doc in USA, she re-joined Alexandria University as an Assistant and then Associate Professor and is currently a young investigator and group leader working on understanding the mechanisms of antibiotic resistance development among the clinical isolates obtained from Egyptian patients as well as the genotypic characteristics, clonal diversity and epidemiology of these isolates. She is currently co-supervising and working on a number of projects aiming to genotypically characterize methicillin resistant *Staphylococcus aureus* and carbapenem resistant *A. baumannii* isolates.



Treating methicillin resistant staphylococcal infections in Alexandria, Egypt with fusidic acid: where we stand and how to go far?

Alaa Abouelfetouh

Faculty of Pharmacy, Alexandria University, Egypt

Over the last decade, staphylococcal isolates became increasingly resistant to methicillin in Alexandria, leaving few treatment options. Fusidic acid (FA) is an alternative with reported success. Data about the prevalence of FA resistance among Egyptian clinical isolates are limited. We used agar dilution to determine FA MIC among 83 methicillin resistant staphylococcal isolates from major Alexandria hospitals in 2011. For laboratory-induction of FA resistance, we passed the strains 10 times in medium containing $\frac{1}{2}$ x MIC of FA. To study FA resistance mechanisms, we used PCR to screen for fusB and fusC, coding for FA resistance. Time kill assays were used to assess the effectiveness of FA combinations for treating resistant infections. Twenty five isolates (30.12%) were resistant to FA (MIC = 3.1 - 1000 $\mu\text{g}/\text{mL}$). Ten susceptible strains (MIC ≤ 0.4 $\mu\text{g}/\text{mL}$) were laboratory-induced for FA resistance and the resultant MICs increased 4-32 fold. fusB and fusC were detected in 32 and 36% of the resistant strains, respectively. A conjugation experiment between FA-susceptible and resistant isolates containing fusB resulted in a conjugation rate 17-25%. One highly resistant isolate, S502 (MIC = 1000 $\mu\text{g}/\text{mL}$), possessed fusB and fusC. Combining subinhibitory concentrations of FA with rifampin or gentamicin was synergistic against S502, decreasing survivors count by an average of four logs relative to FA alone. The rate of FA resistance among the isolates was moderate. Exposure to FA alone is deleterious to treatment, due to resistance development. We suggest the combination with gentamicin or rifampicin to preserve the effectiveness of FA.

Prof. Ebtahal El-Demerdash

Prof. Ebtahal El-Demerdash is a professor and head of pharmacology & toxicology department at faculty of pharmacy, Ain Shams University. She has over 55 peer review articles in the field of life sciences published in international ISI-rated journals since 2000. Her research focused on investigating liver fibrosis and carcinogenesis Accordingly, Prof. El-Demerdash won an International joint project (Egypt-South Africa) to further explore new antifibrotic drugs in particular in case of hepatitis C (HCV) infection. In 2010, Prof. El-Demerdash won the Encouragement State Prize in Medicine afforded by the Egyptian Academy of Scientific Research & Technology. And in 2011, she was named Northern Region winner Life Science, Technology and Innovation from the prestigious African Union Scientific Awards Program, the African Union Kwame Nkrumah Scientific Award. In 2013, two of her publications won the prizes of Misr El-Khair for International Publishing.



Successful story of joint research between Ain Shams University (Egypt) and Pertoria University (South Africa)

Ebtahal El-Demerdash

pharmacology & toxicology department at faculty of pharmacy, Ain Shams University

Liver fibrosis is the excessive accumulation of extracellular matrix (ECM) proteins including collagen leading to cirrhosis with high risk of liver failure and hepatocellular carcinoma (HCC), which often requires liver transplantation. Hepatic fibrosis was historically thought to be an irreversible process however, that traditional view is obsolete and it is now evident that the development of liver fibrosis is a dynamic and potentially bidirectional process prior to the establishment of advanced architectural changes to the liver. It is well known that iron overload may lead to hepatotoxicity, fibrosis and HCC. A common finding among HCV patients is iron overload, which is one of mechanisms by which the virus causes oxidative stress that may contribute to fibrosis and carcinogenesis in the liver. Clinical data reported that excess iron deposits are found in the liver samples from about 20% of HCV-positive patients, however, the mechanisms mediating deregulation of iron metabolism are not fully elucidated. In addition, hepatic iron is treasured as a strong negative predictor of treatment response. Accordingly, a team of Egyptian researchers from Ain Shams University and South African researchers from the Prertoria University collaborated through an international project between the Ministry of Scientific Research (Egyptian side) and the National Organization for Scientific Research (South Africa). We investigated the potential antifibrotic effects of different iron chelators at different doses in immunogenic model of liver fibrosis and the underlying molecular mechanisms. These studies open a new scenario for the clinical usefulness of iron chelators in treatment of liver fibrosis in HCV patients and other medical conditions in the future.

Dr. Maria Augusta Arruda

Dr. Maria Augusta Arruda has got a BSc in Biosciences (major in Pharmacology; 2002) and a PhD in Biosciences (major in Pharmacology; 2005), awarded by the State University of Rio de Janeiro (UERJ). Shortly after being granted her PhD, she was appointed Visiting Professor of Pharmacology at UERJ (2006-2011), where she researched the role of the NADPH oxidase system in health and disease, particularly in pathological states associated with haemolytic episodes. In 2008, Maria joined Fiocruz, the Research arm of the Brazilian Ministry of Health in order to set up a Drug Discovery Unit at Farmanguinhos, the Pharmaceutical Laboratory of the Ministry of Health. During her career, Maria has accumulated a number of national and international prizes and awards, among them the prestigious L'Oreal/UNESCO/Brazilian Academy of Sciences Women in Science Award. She is the editor (Pharmacology) for Revista Fitos, the Official Journal of the Brazilian Federal Policy for Medicinal Plants (Fiocruz Press). Maria is a firm believer in the motto "The world needs science. Science needs women", and has recently been more intensely involved in Science Diplomacy and Science Communication initiatives, envisaging supporting genuine scientific collaborations, particularly in the developing world.



Transatlantic collaboration in Drug Discovery: Soft Power in a Hard Science World

Maria Augusta Arruda

University of Nottingham, UK

Despite a number of multilateral initiatives, and comprising the most fast-growing pharmaceutical market, the Drug Discovery and Development landscape are still incipient in the developing world. The Brazilian Pharmaceutical Market is the sixth largest worldwide, and the second only to China among the emerging economies, hosting most of the Pharmaceutical giants. However, the Drug Discovery-orientated research performed in Brazil is still in its infancy, being mostly committed to incremental, rather than radical innovation. This scenario has dampened the discovery of new drugs; particularly of molecules targeting neglected tropical diseases or derived from the Brazilian biodiversity. On the other hand, the Brazilian Life Sciences landscape has flourished during the last two decades, with an impressive growth in the number of publications, patents and PhDs, particularly in the areas of Pharmacology, Biochemistry, Physiology and Medicinal Chemistry, leading to worldwide recognition. The Brazilian Federal Agency for Support and Evaluation of Graduate Education (CAPES) has led this development and offered unprecedented support to postgraduate education and research for the last 15 years, with internationalization at the forefront of its agenda. Leveraging Drug Discovery in Brazil in order to bring to an end the regional historical deficit in this area is the aim of the innovative collaboration between CAPES and the University of Nottingham's Cell Signaling and Medicinal Chemistry Research Groups, formalized in the groundbreaking CAPES-University of Nottingham Programme in Drug Discovery. We will be able to discuss this Science Diplomacy exercise that culminated in this success case, and how to transpose this achievement to other Developing Nations.

Dr. Mahmoud Elsabahy

Dr. Elsabahy is the Director of the Assiut International Center of Nanomedicine at Alrajhy Liver Hospital, Deputy Director of the Drug Research Center, and Associate Professor at the Department of Pharmaceutics, Faculty of Pharmacy, Assiut University, Egypt. He is also the Assistant Director of the Laboratory for Synthetic-Biologic Interactions at Texas A&M University (Texas, USA). He finished his M.Sc. and Ph.D. degrees from the Faculty of Pharmacy, University of Montreal “Pharmaceutical Nanotechnology” (Montreal, Quebec, Canada). He contributed to ca. 45 publications, all in international top-profile peer-reviewed journals and book chapters and US patents. Research interests include the rational design of Nanomedicine for various biomedical applications, for which he has received several national and international prestigious awards. Recently, in 2016, he has been awarded the "National Egyptian Incentive Award". He is the peer reviewer of several international journals, and he was also the Guest Editor of a Special Issue on Nanomedicine for the Journal of Current Drug Delivery.



Towards Successful Development of Pharmaceutical Industry in Egypt

Mahmoud Elsabahy

Department of Pharmaceutics, Faculty of Pharmacy, Assiut University, Egypt

Development of pharmaceuticals, in particular new therapeutics and diagnostics, is poorly developed in Egypt. There are several hurdles towards the advancement in this crucial sector. Contribution to this sector can significantly improve the national economy. In this talk, we will provide insight into the challenges and opportunities in this area and the impact of scientific research and regulatory agencies on the industrial sector in Egypt. In particular, we will provide some successful examples for pharmaceutical products that could be a platform for the development of pharmaceutical industry in Egypt.

Dr. Mohamed A. Farag, Ph.D.



Dr. Mohamed is Professor at Pharmacognosy department, faculty of pharmacy at Cairo University, Egypt. He is Alexander von Humboldt fellow. He is specialized in metabolomics, natural products chemistry, and plant biochemistry. Mohamed A. Farag completed his PhD at Texas Tech University, USA, in 2003. In 2009–2010, he held the Alexander von Humboldt fellowship at the Leibniz Institute for Plant Biochemistry, Germany. Dr Farag now works full time as a professor at the Pharmacognosy Department within the Faculty of Pharmacy, Cairo University where his research work focuses primarily around applying innovative biochemical technologies (metabolomics) to help answer complex biological questions in medicine, herbal drugs analysis and agriculture. Dr. Farag has been recognized with several awards, including Abd el Hameed Shoman award (2016), Egypt Higher State Incentive Award (2012), Cairo University Incentive Award (2009), TWAS award in science diplomacy (2014). For his highly cited publications of an H index of 22, Dr. Farag was selected as a top researcher in the field of plant biology in Africa by the American society of plant biology, USA.

"Metabolomics gateway for milestone discoveries in the post genomic era"

Mohamed A. Farag

Pharmacognosy department, faculty of pharmacy at Cairo University, Egypt

The ability to sequence whole plant and human genomes has taught us that our knowledge with respect to gene function is rather limited. Functional genomics analyses include investigations at the level of gene expression (transcriptomics), protein translation (proteomics) and more recently the metabolite network (metabolomics). Metabolomics is the study of global metabolite profiles in a system (cell, tissue, or organism) under a given set of conditions. The analysis of the metabolome is particularly challenging due to the diverse chemical nature of metabolites in a cell. This presentation provides an overview of metabolomics and discusses its complementary role within system biology. It highlights how metabolome analyses are being conducted using different spectroscopic techniques NMR and MS, and how the highly complex data generated are analyzed. Specific examples will then be presented to illustrate how metabolomics can lead to valuable information relative to natural products biosynthesis, herbal medicines quality control analysis and disease prognosis i.e. biomarkers discovery.

Dr. Shamsun Nahar Khan

Dr. Khan is currently chairperson and an Associate Professor at the department of pharmacy, East West University, Dhaka, Bangladesh. She is extensively involved in the contemporary education system in Bangladesh and basic scientific skill development program. Dr. Shamsun Nahar Khan has recently completed her postdoctoral research project at Harvard University, USA (Department of Molecular and Cellular Biology). Dr. Khan's project is involved with molecular basis of the pathogenesis of HIV-1 (human immunodeficiency virus), Dr. Khan's project involved in the three dimensional structure of the HIV-1 Tat protein in complex with host 7SK RNA (small nuclear RNA) by NMR (Nuclear Magnetic Resonance). The structure of the Tat protein is critical for drug discovery needed to combat the ongoing AIDS epidemic. Dr. Shamsun Nahar Khan has been honored by the Honorable Prime Minister of Bangladesh by "Gold Medal Award" for her scientific contribution to the national and internal level. Dr. Khan is the first woman scientist has been awarded the first "Atta-ur-Rahman Prize" in Chemistry, from TWAS (World Academy of Sciences) for her work cutting-edge research on the borders of chemistry and biology. Showing an uncommon enthusiasm for both chemistry and biology, Dr. Khan carried out a variety of interdisciplinary investigations, including: pharmacology, hematology, histopathology, anticancer studies; homology modeling; microbiology and phytochemical investigation. She eventually focused her efforts on the identification of enzymes associated with different clinical conditions and a kinetic study of enzyme inhibition.



Excitement in Chemical and Biological Sciences: Drug Discovery and Development

Shamsun Nahar Khan

Department of pharmacy, East West University, Dhaka, Bangladesh

The recent trends in Drug Discovery and Development are very dynamic, multidisciplinary and versatile. The chemical and biological sciences are orchestrated in such a fashion as if their presence is in the interface of each other. At this 21st century we are still in the emergent need of highly effective medicines to treat different diseases. Among these diseases HIV, diabetes and cancer is still now in the demand of the new medicines. At this level we focused on a couple of projects with the multidisciplinary approaches to understand biological systems at the molecular level and using these mechanistic insights to expand the “drug discovery” in new directions. One of the exciting project on α -Glucosidase enzyme inhibitors (AGIs) will be focused in this presentation. α -Glucosidase enzyme inhibitors (AGIs) are one of the approaches to control the blood sugar levels for type-2 diabetes. Diabetes mellitus is occurred due to the deficiency in production of insulin by the pancreas. α -Glucosidase is a membrane bound enzyme at the epithelium of the small intestine that catalyzes the cleavage of glucose from disaccharide. α -Glucosidase enzyme inhibitors act by suppressing the digestion process of dietary carbohydrates. AGIs are given with meals and they function by slowing the breakdown of the complex sugars into glucose. This cause a delay in glucose absorption and lower blood sugar levels, following meals. The AGIs may be used alone or in combination with other medications for diabetes. As an outcome of this study, several classes of natural compounds such as terpenoids, flavonoids, iridoids, phloroglucinols, anthranols, physalins, and acridone alkaloids were identified as new inhibitors of the enzyme. A detail kinetic profiles and 3DQSAR studies of these new alpha glucosidase inhibitors will be presented in the talk. Structural biology is one of the important fields of the drug discovery and development to explore the structures of the targeted biomolecules to understand the binding affinity of different small molecules and protein molecules. Another interesting project was on the structure of 7sk small nuclear RNA. In the talk, a brief presentation of the structure of the 7sk small nuclear RNA and its pivotal role in the regulation of the HIV-1 pathogenesis will be reflected.

Track 2

Materials & Engineering & Energy

Dr.Ahmed Abd El-Moneim, Ph.D.

Prof. Abd El-Moneim is a professor of materials Science and engineering at Egypt-Japan University of Science and Technology. He obtained his Ph.D. in Materials Science and Engineering from Institute of Materials Research, Faculty of engineering, Tohoku University, Japan, 1998. Received several fellowships at; i) IMR-Tohoku University, Japan; ii) IFW-Technical University, Dresden, Germany; iii) TIT-Sendai, Japan; iv) visiting scholar to MSE and Micromechanical Engineering Departments, Kyoto University, Kyoto, Japan. His research is focused on the following themes; i) Corrosion and corrosion protection of metallic structures; ii) Synthesis, characterization and application of nanomaterials-based on graphene and CNTs for liquid and hydrogen fuel production, ultra-supercapacitors, batteries, capacitive deionization, and QDSSCs; iii) Fabrication of thermo-electric, strain gauge and gas sensors devices via MEMs technology. He has 4 international patents, 75 International journal publications and 35 conference proceedings. Supervising/supervised 9 M. Sc. and 14 Ph.D. students. PI of 3 grants from the industry, 5 research grants from the STDF in collaboration with NSF and JSPS. He is currently a consultant for International Worley Parsons, Energy and Resources and member in the editorial board of African Corrosion Journal and Journal of Energy and Power Engineering. He received several recognized national and international awards. He is also founding member in many scientific societies and NGO that contribute to public services and national awareness of science and technology.



Planar and Vertically Aligned Graphene for Future Energy Storage Application

Ahmed Abdel-Moniem

Department of Materials Science and Engineering, Egypt-Japan University of Science and
Technology, New Borg El-Arab, Alexandria, 21934, Egypt

The rapidly growing interest for flexible energy storage systems has tempted researchers to develop new materials that can store large amount of energy. Graphene-based materials have been the subject of broad exploration from the perspective of energy storage because of its unique ability to trap charges coupled with its favorable electronic conductivity, high specific surface area, in addition to the outstanding intrinsic double-layer capacitance combined with excellent mechanical flexibility and environmental stability. Many synthesis constraints still limit the fabrication of graphene film on flexible polymeric substrates with adequate electrical conductivity, and almost few publications have been reported so far. This work is related to explore new methods to produce flexible graphene-based electrodes that can be used in flexible super-capacitors applications based on two approaches. First, a simple, inexpensive technique that does not require additional processing or sophisticated operations while producing a high quality of the horizontally-oriented graphene sheets is developed using a commercially available high powered CO₂ laser system. A controlled laser power is used to reduce and pattern the dried graphene oxide (GO) film dispersed over a flexible PET (Polyethylene terephthalate) substrate. Furthermore, the fabricated flexible graphene film was examined either directly as an electrode of interdigitated double layer capacitors or matrix for the deposition of a nanostructured pseudo-capacitive material such as MnO₂. Second, a developed two-step transfer technique is successfully used to transfer the vertically-oriented graphene film (also, called Carbon Nanowalls (CNWs)) to a flexible Indium Tin Oxide - Polyethylene Naphthalate (ITO-PEN) plastic substrate for the first time. The success of the transfer technique was confirmed by comparing the structural and morphological changes of CNWs transferred to ITO-PEN substrate to the as-grown CNWs deposited on SiO₂/Si substrate. Also, the electrochemical capacitive performance of both films was studied. Although the as-grown CNWs have shown higher areal capacitance value, it suffers from lower stability and higher internal resistance, if compared to the TCNWs counterparts. A thin amorphous MnO₂ film was deposited on the transferred carbon nanowalls (TCNWs) to study the effect of the anodically deposited pseudo material on the capacitive behaviour of the electrode. The feasibility of the produced electrodes was confirmed by fabricating flexible supercapacitor cells with different configurations and architectures. The LRGO film is examined for integration in interdigitated in-plane and sandwich structure solid state supercapacitor device units using gel electrolyte. Interestingly, the interdigitated in-plane design (I-PS) shows higher capacitance when opposed to the sandwich structure. Furthermore, the more the sub-electrodes per unit area in the planner architecture, the more the power and energy that can be extracted from the devices.

Dr. Ahmed G. Radwan, PhD



Ahmed G. Radwan, PhD, IEEE senior Member: received the B.S. degree (honors) in Electronics Engineering, and the M.S. and Ph.D. degrees in Engineering Mathematics from Cairo University, Egypt, in 1997, 2002, and 2006 respectively. His research interests cover fractional-order systems with applications, modeling of physical phenomena, nonlinear circuit analysis, and chaotic systems with encryption applications. He is an Associate Professor at the Engineering Mathematics and Physics Department, and Director of Technical Center for Career Development (TCCD), Faculty of Engineering, Cairo University, Egypt. During the last two years, Dr. Radwan was selected to be the Director of Nanoelectronics Integrated Systems Center (NISC), Nile University, Egypt www.nisc.nu.edu.eg. Dr. Radwan was a visiting Professor in Computational Electromagnetic Lab (CEL), Electrical and Computer Engineering department (ECE), McMaster University, Canada in the interval [2008 – 2009]. Dr. Radwan was selected to be a part of the first foundation team to join KAUST in the interval [2009 – 2011]. He received Abdul Hameed Shoman Award for Arab Researchers in the Applied Sciences (Information and Data Security) – 2015, State achievements award for research in Mathematical Sciences – 2012, Cairo University achievements award for research in Engineering Sciences – 2013, Best Researcher Awards in all fields - Nile University in 2015 & 2016, and Physical Sciences award in 2013 for the international publishing competition by Misr El-Khair institution. Dr Radwan has more than 154 papers, h-index 23, and more than 1400 citations based on Scopus database. During the last five years, he was on the top list of researchers (based on the number of indexed-Journals/year) in Faculty of Engineering, Cairo university and among the top 12 researchers in all fields inside Cairo University. His rank is 5 and 17 among all faculty members in faculty of Engineering, and Cairo University (all faculties) respectively based on the website of general scientific research department [http://www.gsrđ.cu.edu.eg/IPACU2016_10\(2\).pdf](http://www.gsrđ.cu.edu.eg/IPACU2016_10(2).pdf). He is the Co-inventor of six US patents, author/Co-author of Six international books in the best prestigious publishers such as Elsevier and Springer as well as seven chapters in international books (Springer and IET). He Supervised 10 PhD. and 12 M.Sc. students in different research topics. He received many research grants as Principle Investigator (PI), CO-PI, or Consultant from different national/international organizations as well as Lead/Guest Editors in different special issues for many indexed-international journals. He was the Technical Program Co-chair of the IEEE International Conference in Microelectronics (ICM2016), organized several special sessions in many international conferences, and Invited speaker in different countries during the last five years. He was selected in 2014 to be among the first scientific council of Egyptian Young Academy of Sciences (EYAS) as a part of the Academy of Scientific Research & Technology ASRT to empower and encourage Egyptian young scientists in science and technology. Also, he was selected to be among the 50 Egyptian Professors from inside and outside Egypt to establish the first scientific council of the Egyptian Center for the Advancement of Science, Technology, and Innovation (ECASTI) which is a non-government society <http://www.ecasti.org/the-scientific-council-2/members/>. He was selected to be the Counselor of the IEEE Nile University Student Branch (NUSB) in the interval from Oct. 2014- up-till 2016, where many activities have been introduced to the NU community. In addition, he is the founder of the series of “NU Undergraduate Research Forum” where junior students present their projects in a scientific way with oral and poster presentations.

Recently in Nov. 2016, he was invited to present two invited lectures in the COST/IEEE-CASS FRACTAL: Seasonal Training School in Fractional-Order Systems in Brno, Czech Republic <http://fractal.utko.feec.vutbr.cz/index.php/program/> where six professors were invited from all around the world in this field. This event was sponsored by IEEE-CAS and highlighted in the CASS-news-letters <http://cassnewsletter.org/Volume10-Issue6/chapters-news.html> . Based on Dr. Radwan's participation in the Training School, Dr. Radwan has been invited to serve as MC Observer of E-COST (**European Cooperation in Science and Technology**) <http://www.cost.eu>

On the Recent Simple Image Encryption Systems

Ahmed G. Radwan

Engineering mathematics and physics department, Faculty of Engineering, Cairo University,
Egypt.

Nanoelectronics Integrated Systems Center (NISC), Nile University, Egypt

Information encryption has become an essential in our life due to the huge amount of personal-data we have or receive every day through different sources such as: Internet, Mobile, WhatsApp, messages, photos, etc. Recently, image encryption has been an active research area because of the demand for securing digital images over the internet. A typical image encryption scheme consists of two main substitution and permutation phases to accomplish Shannon's confusion and diffusion properties. This talk will summarize the fundamentals of image encryption, types, and the most important components to realize a simple encryption system. Chaotic systems are considered the conventional engines to design and implement Pseudo Random Number Generators (PRNG) required in the encryption process. A simple discussion about the chaotic systems will be introduced in both discrete and continuous cases. Moreover, recent techniques based on fractals and horse-movement chess as well as the system encryption key will be investigated with some examples. To assess the encryption quality the most international evaluation techniques should be discussed such as: the correlation coefficients between pixels, differential attack measures, Mean Square Error (MSE), entropy, sensitivity analyses and the 15 standard tests of the National Institute of Standards and Technology (NIST) SP-800-22 statistical suite.

Dr. Ahmed Saad Goma Khalil

Dr. Ahmed Saad Goma Khalil is the founder and the first director of Center for Environmental and Smart Technology (CEST) at Fayoum University. Dr. Khalil has been awarded the PhD degree (Physics) in 2008 from Max Planck Institute in Germany. He was received his B. Sc and M. Sc from Cairo University in 1999 and 2003 respectively. Dr. Khalil was a Postdoctoral associate (2008-2010) at the University of Duisburg-Essen, Germany and a visiting scientist (2010-2011) at IBM Research labs in Zurich, Switzerland. His scientific achievements during his PhD and Postdoc appointments have been published in high ranked journals such as Advanced Materials, Journal of American Chemical Society, Journal of Materials Chemistry, Desalination and Journal of Membrane Science. Dr. Khalil has research experience in water desalination, printed electronics and solar energy. Over the last 5 years, Dr. Khalil has succeeded to attract more than 5 Million Euro for his research and teaching activities at Fayoum University. These activities have been done in close collaboration with more than 50 partners from USA, Europe, Asia and the Arab world. Since 2016, Dr. Khalil is the elected member of the Arab German Academy of Science and Humanities (AGYA) in Germany.



High Performance and Stimuli-responsive Patterned Water Desalination Membranes

Dr. Ahmed S. G. Khalil

Center for Environmental and Smart Technology, Fayoum University, Egypt

Polyamide thin-film composite (PA-TFC) membranes used for water desalination have been remarkably developed over the last decades [1]. There have been many strategies proposed for improving the membrane performance as well as operation lifetime. The introduction of the “super-switching” concept of PA membranes is considered as a new and interesting trend. The “super-switching” properties can be specifically adapted to water desalination membranes via consolidating two different phenomena; “surface micro-patterning” and “double stimuli-responsive”. Here, we present a novel surface micro-patterning approach as promising platform towards novel PA-TFC membranes of superior performance [2,3]. Micro-patterned PA-TFC membranes are successfully fabricated using two microfabrication methods, combined processes of vapor- and non-solvent-induced phase separation micro-molding (PS μ M), as well as microimprinting lithography (MIL), followed by a systematic adjustment of the interfacial polymerization conditions on the patterned support membranes. The patterned PA-TFC membranes exhibit superior water permeability, \sim 2–2.4 times compared to flat PA-TFC membranes, without sacrificing the separation selectivity. A detailed concentration polarization analysis using different membrane orientations, with patterned grooves “parallel” and “perpendicular” to the direction of feed flow, is also carried out. The results show the merits of implementing the micro-patterned TFC membranes in promoting the separation performance, especially at high feed concentrations; “parallel” orientation is always favorable. Furthermore, detailed experiments have been performed towards the fabrication of “super-switching” desalination membranes by coating the micro-patterned PA-TFC membranes with poly(N-isopropylacrylamide) homopolymer and its copolymers with poly(acrylic acid) using carbodimide coupling. The results reveal the ability of the surface-modified micro-patterned membranes to switch between “super-hydrophilicity” and “super-hydrophobicity” upon changing pH or temperature or combination of both. Currently, the fouling resistance of the newly developed membranes is analyzed to highlight the impacts of external stimuli (heating and cross-flow rate) on particle adhesion and cake-layer formation. The new “super-switching” PA-TFC membranes are implied to be promising candidates for sustainable water desalination technology.

[1] A.F. Ismail, M. Padaki, N. Hilal, T. Matsuura, W.J. Lau, *Desalination* 356 (2015) 140-148.

[2] I.M.A. ElSherbiny, **A.S.G. Khalil**, M. Ulbricht, *J. Memb. Sci.* 529 (2017) 11–22.

[3] I.M.A. ElSherbiny, R. Ghannam, **A.S.G. Khalil**, M. Ulbricht, *J. Memb. Sci.* 493 (2015) 782-793.

Dr. Bahaa El-Dien M. El-Gendy

Dr. El-Gendy is an Associate Professor of Bio-Organic Chemistry at Benha University, Egypt. Dr. El-Gendy received his B.Sc. and M.Sc. in chemistry from Benha University and completed his Ph.D. with Prof. Alan R. Katritzky at University of Florida (USA). He then joined the Scripps Research Institute (USA) as a research associate at the department of Molecular Therapeutics. The main focus of Dr. El-Gendy's research group is drug discovery and organic synthesis. He designs and synthesizes novel small molecule modulators of nuclear hormone receptors and kinases for the therapeutic treatment of cancer and fatty liver diseases. Recently, he was involved in the development of the first known liver-selective LXR inverse agonist that can reverse the effects of fatty liver disease. Moreover, he designed and developed a synthetic LXR inverse-agonist (SR9243) that effectively inhibited the growth of a wide range of tumor cell lines without affecting non-tumorigenic cell viability. Dr. El-Gendy is the author of more than 25 articles, some of which appears in highly ranked journals such as Nature Communications and Cancer Cell.



Awards

- Benha University Prize for Scientific Excellence, Benha University, 2016.
- The Egyptian State Prize for Encouragement in Chemical Sciences, the Academy of Scientific Research and Technology of Egypt, 2015. [This prize is the highest honor for scientists under the age of 45 and it has been announced on May of 2016]
- The Best Scientific Publication Award, Benha University, 2015.
- Benha University Prize for Scientific Excellence, Benha University, 2015.
- Elected in September 2015 as the first Co-Chair of the Egyptian Young Academy of Sciences (EYAS).
- Elected as a Young Affiliate of The World Academy of Sciences (TWAS) (2015-2019) (Selected as one of only 5 affiliates in the Arab region)

Starving Cancer Cells to Death

Bahaa El-Dien M. El-Gendy

Chemistry Department, Faculty of Science, Benha University, Benha 13518, Egypt

The idea of starving cancer cells to death was presented in the early 20th century by German biochemist Otto Warburg but was undermined for decades. Cancer cells need to grow fast and they are very vicious in consuming energy. Unlike most research approaches that try to target genetic mutations to treat cancer, we target the energy pathways that cancer cells use to grow. Liver X receptors (LXRs) play paramount role in regulating different metabolic functions such as cholesterol metabolism, lipogenesis, carbohydrates metabolism, and energy metabolism. Activating LXRs in lymphocytes decreased proliferation by reducing the intracellular cholesterol level necessary for lymphocytes to synthesize its cellular membrane during proliferation. Similarly, the activation of LXRs decreases cholesterol level and hence promotes tumor cell death in glioblastomas. Consequently, regulating LXRs can help in finding cures for cancer if it can shut off its preferred energy sources. We designed a synthetic small molecule LXR inverse agonist (SR9243) that induces recruitment of corepressors to LXR resulting in suppression of expression of LXR target genes. Alteration in these genes led to reduced cancer cell viability and induced apoptotic cell death (SR9243 ED₅₀~20 to 50 nM). Interestingly, SR9243 did not induce cell death in non-tumorigenic cell lines. SR9243 also displayed activity in vivo and inhibited the growth of several types of tumors in mouse models. In brief, SR9243 cuts off cancer cells' energy supply by suppressing abnormal glucose consumption and preventing cancer cells from producing their own fat.

Dr. Chong Kok-Keong

Prof. Dr. Chong Kok-Keong received B.Sc. (Hons) first class degree majoring in Physics from University of Malaya in 1998 and Ph.D. (Optical Engineering) degree from Universiti Teknologi Malaysia in 2002. He is Professor in Universiti Tunku Abdul Rahman teaching the subjects of Research Methods in Science & Engineering for Master and Ph.D. programs, Solar Cell Technology, Renewable Energy and Optoelectronic. For research achievement, he has been working in the field of solar energy for about 15 years and his research interest including Concentrating Solar Power, High Concentrator Photovoltaic System, Solar Cell Technology, Photovoltaic System, Non-Imaging Focusing Technology and Solar Thermal System. To date, he has published more than 70 journal and conference papers with h-index = 15 & total citations of 832 as well as three patents were filed in Malaysia, China and US. Up to today, he has been principal investigator and project leader for seven external and two internal research grants with total amount of RM 3.33 Million, including the largest research grant with total amount of RM 1.988 Million from Ministry of Energy, Water and Green Technology. For the recognition to his work, he has been honored to receive JCI Ten Young Outstanding Malaysian (TOYM) 2013 Award, Fulbright Award as Visiting Scholar to Princeton University, Associate Fellow of ASEAN Academy of Engineering & Technology 2013, Global Young Academy 2014, Young Affiliate Fellow for The World Academy of Sciences (TWAS) 2011 and Young Science Network-Academy of Science Malaysia 2012 as well as UTAR Research Excellence Award 2010 and UTAR Innovation Excellence Award 2012, 2014. For the community services, he is appointed as member of Working Group on Solar Photovoltaic System (WG/E/8-1), SIRIM, Accreditation Committee Member of Malaysian Qualification Agency (MQA), and reviewers in world renowned journals such as Progress in Photovoltaic, Solar Energy, Energy Conversion and Management, Journal of Solar Energy Engineering, Optics Express, Applied Optics, Sensors etc. For editorial services, he is member of editorial board in 11 international journals including The Scientific World Journal –ISI indexed journal (Hindawi Publishing Corporation), Frontiers in Energy Research: Solar Energy (Frontiers: a Swiss-based open access publisher part of the Nature Publishing Group family) etc.



Research and development of solar energy technologies in developing countries

Kok-Keong Chong

Lee Kong Chian Faculty of engineering and science, University of Tunku Abdul Rahman,
Malaysia

In the world today, fossil fuels are the major sources of energy which when burned for power generation releases greenhouse gases i.e. carbon dioxide, carbon monoxide etc. These gases can cause air pollution and create global warming effect, which are very harmful to living things and the environment. There is an abundance of solar irradiance on earth, which is free for us to harness and to convert to useful electrical or thermal power. As developing countries, different strategies should be adopted in research and development of solar energy technologies by considering various constraints and availability of resources. In Malaysia, we have learned to start the research and development of solar energy technologies based on the available funding, technical supports and facilities available. For this purpose, cost-effective solar concentrator using non-imaging focusing methods have been developed to harness high concentration solar irradiance for the application in solar thermal energy, material processing, active daylighting, concentrator photovoltaic etc. Furthermore, a detailed analysis on local solar spectrum is very crucial for the material research in photovoltaic technology. The variation between AM1.5 standard spectrum and annual average local irradiance can be very significant from location to location especially for dye sensitized solar cell, organic solar cell etc. Therefore, the performance studies for different types of solar cells were carried out by tailoring the bandgaps towards local solar irradiance. To reduce the dependency on fossil fuels, innovative and creative ideas are important to face the current challenges in the research and development of solar energy technologies.

Dr. Ehab Abdel-Rahman

Dr. Ehab Abdel-Rahman holds the rank of full professor within the Department of Physics at the American University in Cairo (AUC). He has over 25 years experience in higher education, six of which have been spent as a senior administrator. He has been a passionate educator and he continues to be an active teacher/scholar in his department. Dr. Abdel-Rahman served as a Department Chair, Associate Dean for Graduate Studies and Research, and Vice Provost for Research prior to his appointment as the Vice Provost of AUC. Recently, Dr. Abdel-Rahman has been appointed as the Interim Provost of AUC. As a student, Abdel-Rahman completed with distinction, his Bachelor of Science in Physics at Helwan University, Egypt in 1988. After serving in the army for almost two years, Abdel-Rahman went back to the university to study for his Masters degree. In 1993, Abdel-Rahman finished his Master's degree in Physics where he developed a methodology to detect anomaly in materials (including cancer in bones) using low dose of Gamma Rays. In 1995, Dr. Abdel-Rahman moved to Salt Lake City, Utah to study for his PhD, which he successfully completed in 2000. His PhD thesis addressed the development and testing thin films of quasicrystals. He continued to work at University of Utah as a Research Postdoctoral Fellow and Research Assistant Professor. In 2003, he moved back to Egypt to work at Helwan University as an Assistant Professor of Physics. There he taught many undergraduate and graduate courses, developed low cost freshmen physics laboratories, and established a research group in thermoacoustics. He joined AUC in fall 2006 as an Assistant Professor of Physics. Dr. Abdel-Rahman has a very active research group in thermoacoustics and photonics. Dr. Abdel-Rahman developed a high efficiency, innovative and simple power block for concentrated solar power. He also developed a unique design for self-tuned smart window for energy conservation. He has a distinguished 17-year career in thermoacoustics, solar energy materials, and photonics research. He has published more than 90 technical papers and reports and holds five U.S. patents. He served as Egypt's energy expert in Egypt's research collaboration with the EU team from 2007 to 2009. Professor Abdel-Rahman is the founder of four technology transfer offices in four Egyptian Universities. He authored and managed several EU and international projects. He is also the recipient of AUC Excellence in Teaching Award (2009) and AUC President's Distinguished Services Award, among many other awards and recognitions.



Thermoacoustic Engines and Refrigerators

Ehab Abdel-Rahman

American University in Cairo (AUC), Egypt

The interaction of heat and sound has been a subject of interest to acousticians since 1816, when Laplace corrected Newton's first theoretical calculation of the speed of sound in air.ii Newton assumed that the acoustic expansions and compressions of the gas occurred isothermally, without any associated variations in the temperature of the gas. Laplace included the effects of the changes in gas temperature that accompany the adiabatic expansions and compressions of the sound wave and derived the correct result for the adiabatic sound speed that was 18% faster than Newton's isothermal result. These thermal effects, which accompany sound waves, are essential to the operation of thermoacoustic engines and refrigerators. This talk will describe progress in the development of engines and refrigerators that use high-amplitude sound waves in air or an inert gas to produce electrical power or to provide useful cooling, thus potentially reducing global warming by elimination of non-CO₂ climate forcers. Instead of chemical refrigerants, thermoacoustic refrigeration systems use inert gases that have no harmful environmental effects.

Dr. Eslam Soliman

Dr. Eslam Soliman is a lecturer at Civil Engineering Department, Faculty of Engineering, Assiut University, Assiut since January 2013. He earned his B.Sc. in Civil Engineering in 2003 from Assiut University, Egypt. He moved to USA in 2005 to earn M.Sc. in 2008 and Ph.D. in 2011 in Civil Engineering from Lawrence Technological University, Southfield, Michigan and the University of New Mexico, Albuquerque, New Mexico respectively. Dr. Soliman was appointed as a postdoctoral research fellow multiple times at the University of New Mexico in the past four years. Dr. Soliman have published many articles in peer-reviewed journals and international conferences in the area of polymer nanocomposites, advanced structural composite materials, and precast/prestressed concrete bridges. He is also a technical reviewer for several international journals for known academic publishers including Elsevier, Sage, and Springer. He has taught wide spectrum of undergraduate and graduate courses related to mechanics, materials, and structural design at Assiut University and University of New Mexico. Dr. Soliman was also involved in consulting several structural Engineering projects in USA, Egypt, Saudi Arabia, and United Arab Emirates. He is a member of the Egyptian Syndicate of Engineers, American Society of Civil Engineering (ASCE), American Concrete Institute (ACI), Society of Experimental Mechanics (SEM), and American Institute of Aeronautics and Astronautics (AIAA). He was also inducted to several prestigious honor societies such as Phi Kappa Phi and Sigma Xi.



Development of CNTs Polymer Nanocomposites for Sustainable Infrastructures

Eslam M. Soliman¹, Usama F. Kandil², Mahmoud M. Reda Taha³

¹Lecturer, Department of Civil Engineering, Assiut University, Assiut, 71515, Egypt

²Associate Professor, Egyptian Petroleum Research Institute, Cairo, 11727, Egypt

³Professor and Chair, Department of Civil Engineering, University of New Mexico, Albuquerque, NM 87131, USA

The last three decades observed a rapid growth in the use of Fiber Reinforced Polymer (FRP) composite materials in the construction industry due to its superior physical and mechanical properties and flexibility in design. Structural applications of FRP composites include (1) pultruded composite sections for off-shore structures, (2) external strengthening and rehabilitation of reinforced concrete (RC) structures, and (3) internal rebars for RC and prestressed concrete structures. However, several drawbacks have been observed with the use of FRP material such as its relatively low ductility/strain capacity and low bond strength, which limit the durability of the respective concrete infrastructures. On the other hand, carbon nanotubes (CNTs) were introduced as extraordinary nano-additives that can alter the thermal, electrical, and mechanical properties of polymer nanocomposites. We discuss the role of CNTs polymer nanocomposites in improving the creep, fatigue, and bond performance of structural composite materials. Experiments showed that the addition of little amount of CNTs (e.g. 1.0%-1.5% by wt. of epoxy matrix) can reduce the creep deformations at the FRP-concrete interface by almost 50% and increase the ductility of the FRP lap splices by 1,100%. In addition, CNTs can improve the fatigue life of glass fiber reinforced polymer (GFRP) composites considerably. Such improvements in the mechanical response of FRP materials with the addition of CNTs demonstrate the effective use of nanomaterials in construction industry and can be considered an important step towards the design of sustainable infrastructures.

Dr. Khulood Abid Saleh

She works at Chemistry Department, College of Science, Baghdad University. She has 52 Published paper in corrosion & Corrosion Inhibition of metal and in Environmental Protection, She is a supervisor for 10 postgraduate students. She participated at more than five international conferences and workshops.



Economical method to improve the corrosion resistance of metal substrates

Khulood Abid Saleh

Chemistry Department, College of Science, Baghdad University, Iraq

Thin films of silicon carbide were grown on three types of alloys (C.S1045, C.S1137, Al 5083) substrates using DC glow discharge sputtering technique, work pieces were placed in the sputtering unit, which operated with the D.C. bias voltage 2500 V at room temperature. Sputtering unit used in this study, consists of power supply, a gas mixing device and a stainless steel vacuum chamber. The sputtering was performed in a pure argon. Second application nitriding based plasma is an economical method to improve the corrosion resistance of the three above alloys. The morphological analysis was carried out using atomic force microscopy (AFM). Work pieces were placed in the nitriding unit, which operated with the D.C. bias voltage 600V at room temperature. Nitriding unit used in this study consists of power supply, a gas mixing device and a stainless steel vacuum chamber. Plasma nitriding was performed in a pure argon firstly to etching work pieces from the oxide and other solvents which used to clean the work pieces, secondly, mixture from (20% argon & 80% nitrogen) were used to performed plasma nitriding. Nitriding cycle was carried out by evacuation of the chamber and then followed by initialization of the glow. The experiments for corrosion testing were performed in a classical three-electrode electrochemical cell. All alloys with (0.5 mm) thickness and (2.5) Cm in diameter was used as the working electrode, platinum electrode as a counter electrode and silver-silver chloride electrode as a reference electrode.

Dr. Mary Ajimegoh Awotunde

Mary is a lecturer in the department of Mechanical Engineering at the University of Benin, Edo State, Nigeria. She had a brief career in the banking industry and her switch into academia was a natural fit as she is passionate about teaching. She obtained her BSc from the Obafemi Awolowo University, Ile-Ife where she graduated as the best female student of her department. She obtained her MEng from the University of Benin and graduated with distinction. She is presently on her PhD at the University of Benin and is also involved in a research on exploring cheap sustainable nanotechnology routes for drinking water treatment. Mary also has a passion for female students in her department and works closely with them to ensure their success.



Pre-strain Effects on Fracture Behaviour of Steel used for Car Manufacture

M. A. Awotunde^{a,*} and B. Onyekpe^b

^aDepartment of Mechanical Engineering, University of Benin, Edo State, Nigeria

^bDepartment of Mechanical Engineering, University of Benin, Edo State, Nigeria

A lot of engineering materials fail in service as a result of varied responses of the materials to the stress they are subjected to. These varied responses give rise to the nucleation of cavities or voids in the steel matrix indicating an on-set of ductile failure. This paper investigates the effect of these cavities generated as a result of pre-strain on the fracture morphology of a 0.35% C steel. The samples were spheroidized and machined to tensile specimens and then pre-strained to 0.1, 0.15 and 0.2 respectively while some were left unpre-strained (control). The pre-strained samples and control were then tested to fracture. Progressive loss in ductility due to the pre-strain caused a transition in fracture morphology from ductile to quasi-cleavage as observed in the Scanning Electron Fractographs. This indicates a mixed (ductile and brittle) fracture mode and also denotes a more premature failure mode as compared to the unprestrained (control) steels.

Dr. Muhammad Akhyar Farrukh, Ph.D



Dr. Muhammad Akhyar Farrukh is the founding director of Nano-Chemistry Laboratory, GC University Lahore, Lahore-Pakistan. He is an Associate Professor and Principal Investigator of many projects.

Dr. Muhammad Akhyar Farrukh completed B.Sc. (Hons.) in Chemistry and M.Sc. in Physical Chemistry with first class with first positions in both examinations. He has been duly awarded THREE GOLD MEDALS for his outstanding academic performance in the M.Sc. final Chemistry examination of the University of Karachi and was declared as best student of the whole Faculty of Science. He earned Ph.D. in the field of Chemistry in 2003, first postdoctoral research (catalysis) in 2007 in Brazil on a fellowship awarded by the Academy of Sciences for the Developing World (TWAS), Italy and CNPq, Brazil and second postdoctoral research (nanomaterials) in 2010 in Malaysia awarded by University Sains Malaysia (USM) and TWAS. He has received other Awards/Shields/Scholarships on his excellent academic record. He started his career as Full Time Cooperative Teacher at the Department of Chemistry, University of Karachi (2000 to 2004). He served as Senior Scientific Officer for Pakistan Council of Scientific and Industrial Research from 2004 to 2005 then Pakistan Council for Science and Technology. Also, he served as Senior Research Officer/Project Director/Head RES Ministry of Science and Technology, Islamabad from 2005 to 2008. He has been associated with GC University Lahore as Assistant Professor of Chemistry from 2008 to 2014 and Associate Professor of Chemistry since November 2014. He also served as Registrar, GC University Lahore from 2013 to 2016. He was selected by UNESCO and participated as a “Representative of Pakistan” in the first Assembly of the World Association of Young Scientists (WAYS) in Morocco in 2004. He has been awarded “Young Chemist Award” by IUPAC in Italy in 2007 and selected as “Young Scientist” by TWAS in Egypt and IAP in Germany in 2010. He was selected as “Young Scientist” by IAP/World Economic Forum to participate in the annual meeting of new champions 2010 in China. He was selected as “Young Researcher” in 2013 by the Council for Lindau Nobel Laureate Meetings for the 63rd Lindau Nobel Laureate meeting. He has been awarded IUPAC-2015 Award for Chemists as an outstanding chemist from developing countries. He received Gold Medal for Best Performance by Minister for Higher Education, Punjab in 2016. He also participated in many international conferences/trainings sponsored by UNESCO, IUPAC, TWAS, WAYS, UNU, IAP, PSF, AKB Stiftung, INS, IFA and HEC etc. He is a member of 14 international professional bodies. He has published 89 papers in international/national reputed journals (IF=87.178, Citations=577, h-index=13), published/edited 20 books, issued/filed 07 US patents, presented 47 papers in international/national conferences and gave 23 plenary/invited lectures in 24 countries around the globe, he is on the editorial board/managing editors of 17 journals and referee of 37 journals up to November 2016. He has also been approved by the Higher Education Commission as a Ph.D. supervisor in 2004 and selected as “Productive Scientists of Pakistan” by PCST, Government of Pakistan since 2005. He received Research Productivity Awards for the year 2012-2013 and 2013-2014 (Category B), 2015-2016 (Category A and placed at number 26 from all over Pakistan, at number 1 in Lahore and 2 in Punjab in Chemistry) by the Pakistan Council for Science and Technology, Ministry of Science and Technology and won 13 Research Grants amounting to Rs. 21,243,671/- in the area of nanotechnology.

Nanotechnology: A New Paradigm for Integrating Scientists across disciplines towards sustainable development

M. A. Farrukh

Nano-Chemistry Laboratory, GC University Lahore, Lahore 54000, Pakistan

It can be expected that the societies to be economically prosperous, socially sensitive and environmentally responsible with Sustainable Development having perspectives of; 1. Socio-cultural, 2. Environmental, and 3. Economic. The differences in the scientific and technological infrastructure and in the popularization of science and technology in the women and men are the most important causes of differential social and economical levels. Nanomaterials are emerging with large applications across all disciplines of knowledge. Nanotechnology is a multi-disciplinary science that has its roots in field of Chemistry, Physics, Biology, Materials, and Engineering; and integrating scientists across globe to achieve sustainable development goals. Synthesis of quaternary rare earth-transition metal oxides nanomaterials were synthesized via the sonication, hydrothermal, conventional and deposition-precipitation methods under aqueous and non-aqueous conditions. Nanomaterials were characterized by HRTEM, FESEM, EDX, TGA, XRD, FTIR, and PSA. The same were used for their applications in agricultural, pharmaceutical and chemical industries as; Slow release nitrogenous fertilizers are required because of having minimum nutrient loss due to leaching. Zinc aluminium silicate nanoparticles occluded with urea were synthesized. Its application as slow released nitrogen fertilizers was determined by observing its release for one month. Nano-antibiotics (Chloramphenicol etc.) having lesser adverse effects and greater efficacy at the targeted site are needed to be developed. Biodegradable and biocompatible polymer was used in combination with iron, which contributes its magnetic characteristics to the nanomaterials. The nanoparticles produced could be used as carriers for releasing at the targeted site. The influence of surfactants and solvents on the activities of nanomaterials for their applications in waste water treatment (nanofiltration system), forensics and chemical industries was studied.

Dr. Nageh Allam, Ph.D.

Nageh Allam has obtained his Ph.D. in Materials Engineering from The Pennsylvania State University and did his Postdoctoral studies at both Georgia Institute of Technology and Massachusetts Institute of Technology (MIT). He is currently the Director of the Energy Materials Laboratory at the American University in Cairo. He has published more than 100 papers in reputed journals and has been serving as an editorial board member of a number of journals. He is the recipient of the 2015 Showman Foundation Award, 2015 TWAS Young Scientist Award, 2013 recipient of the Egypt State Award in advanced technological sciences, Ford Foundation international graduate fellowship and RAK-CAM postdoctoral fellowship.



Earth-Abundant Nanostructured Materials for Efficient Solar Energy Conversion

N. K. Allam

Energy Materials Laboratory (EML), School of Sciences and Engineering, The American University in Cairo, New Cairo 11835, Egypt

If solar energy is to become a practical alternative to fossil fuels, we must have efficient ways to convert photons into electricity, fuel, and heat. To this end, direct solar energy conversion to storable fuels offers a promising route toward less reliance on fossil fuels. The development of a successful solar-fuel-generation technology would require the invention of new photoactive materials that accomplish the combined tasks of light harvesting, charge separation, and compartmentalized chemical transformations. One of the most critical issues is the development of a suitable semiconductor photoanode with high efficiency and long-term durability in aqueous environments. In addition, the lack of effective oxidation and reduction catalysts is among the most serious obstacles preventing the development of an efficient and scalable artificial fuel generator. In this regard, nanoscience can make a difference. This talk will cover the assembly and development of new semiconductor nano-architectures as well as interface control for the purpose of solar energy conversion in general and direct solar-to-chemical energy conversion in particular.

Dr. OJOKOH Bolanle Adefowoke

OJOKOH Bolanle Adefowoke holds B.Sc, M.Tech and Ph.D degrees in Computer Science. She started her career in teaching and research as a Graduate Assistant in the Industrial Mathematics and Computer Science Department of the Federal University of Technology, Akure (FUTA), Nigeria in March, 1999. In February, 2004 she was appointed as an Assistant Lecturer in the Computer Science Department of the same University. She rose to the post of Lecturer I in October, 2010. She is currently a Senior Lecturer in the same department. She was a visiting Ph.D and Postdoctoral researcher in the School of Electronic Engineering & Computer Science Peking University, Beijing, China in 2009 and 2010. She was the best graduating student in the Faculty of Science of Ondo State University, Ado-Ekiti, Nigeria in 1997/98 session. She is a member of some professional bodies such as Nigeria Computer Society (NCS), International Network of Women Engineers and Scientists (INWES), Organization of Women in Science for the Developing World (OWSD), Computer Professionals Registration Council of Nigeria (CPN) and Association of Computing Machinery (ACM). She is an Editorial Board Member of Oriental Journal of Computer Science and Technology. She has taught several Computer Science courses at undergraduate and postgraduate levels. These include Introduction to Computing, Compiler Construction, Web Programming, Computer Systems Architecture, Systems Analysis and Design among others. She has supervised and mentored several undergraduate students of Computer Science, who carried out research in related areas to her research interests. She has mentored up to ten Masters theses to completion and is currently supervising some Masters and Ph.D students. Her current research interests include Question Answering, Information Retrieval, Filtering and Extraction, Recommender Systems, and Gender issues in Science and Information Technology. She has participated in some funded projects by the National High Technology Research and Development, the Ministry of Education of China, TWAS Research Grant for Individual Scientists and TETFUND Nigeria. She has also collaborated with some researchers within and outside her institution from Nigeria, China and United States. She has attended some International Conferences, Schools and Workshops in Nigeria, Italy, China, Finland, Argentina, United States, Kuwait and Rwanda. She has published up to fifty publications in reputable journals and conferences. She was awarded TWAS Young Affiliate in July 2013 and is currently and an Executive Board Member of the TWAS Young Affiliate Network (TYAN). She was the Scientific Chair for the 2nd International OWSD Conference held in FUTA, Nigeria in November, 2015. She was also a member of the Program Committee of the Joint Conference of Digital Libraries held in Newark, New Jersey, USA in 2016 and a current for the same conference for 2017. She is happily married with three children.



A Trigram Hidden Markov Model for Metadata Extraction from heterogeneous references

Bolanle Ojokoh^a, Ming Zhang^b, Jian Tang^b

^aDepartment of Computer Science, Federal University of Technology, P.M.B.704 Akure, Nigeria

^bSchool of Electronic Engineering and Computer Science, Peking University, Beijing 100871, PR
China

The dramatic growth of digital libraries in recent years has not only simplified access to existing information sources, but has also made the task of finding, extracting and aggregating relevant information difficult. In the bibliographic research community, several researches are being conducted on citation analysis, grouping and social networks creation for subsequent mining. A prerequisite to such tasks is accurate reference metadata extraction process. Automatic reference extraction is particularly difficult because of the problems of inconsistent formatting, semantically overloaded punctuations and field separators, and existence of many dramatically different reference styles. The objective of this work was to explore an efficient and accurate extraction of metadata such as author, title and institution from heterogeneous references, using hidden Markov models (HMMs). The major contributions of the research were the (i) development of a trigram, full second order hidden Markov model with more priority to words emitted in transitions to the same state, with a corresponding new Viterbi algorithm (ii) introduction of a new smoothing technique for transition probabilities and (iii) proposal of a modification of back-off shrinkage technique for emission probabilities. The effect of the size of dataset on the training procedure was also measured. Comparisons were made with other related works and the model was evaluated with three different datasets. The results showed overall accuracy, precision, recall and F1 measure of over 95% suggesting that the method outperforms other related methods in the task of metadata extraction from references.

Dr. Rabab M.A. El-Sherif

Dr. Rabab received her M.Sc. and Ph.D. degrees from University of Cairo in 2000 and 2004, respectively in Physical Chemistry. Currently, she is associate professor of physical chemistry at Faculty of Science, Cairo University. She served as a chemistry professor at MIU University for two years 2009-2010. She has made research contributions in corrosion in industry, solar energy application and bio-implant modifications by 30 international published papers in famous international scientific journals. Dr. Rabab attended 35 international conferences and workshops worldwide. She supervised 7 Theses of Master and Ph.D. She got many awards, Misr El-Kheer publication award Dec. 2011 and Prof. Venice Gouda award in 2009 for science and innovation in technology, First Award for Distinguished Scientific Researches Offered MFK Foundation and BUE Sept. 2014 and Cairo University Scientific Publication Awards (2007, 2008, 2009, 2010, and 2011). She conducted two projects as PI, one in cooperation with Italy (Venezia Technology institute, Venice-Italy) and ENI Company, the other with Cairo University in renewable Energy. She is a board member of Egyptian corrosion society and a Moderator for the ESIS (European Structural Integrity Society) “social network for corrosion and life prediction in industry in the Middle East) since Oct. 2008 till now. Dr. Rabab is a Co-Chair of the Egyptian Young Academy of Sciences (EYAS, 2014 till now) and ambassador of Egypt in NEF (Next Einstein Forum, 2016).



Electrochemical and biological behaviors of porous titania (TiO₂) in simulated body fluids for implantation in human bodies

Rabab M. El-Sherif

Faculty of Science, Cairo University, Egypt

Titanium and titanium-based alloys are widely used in biological applications. This is due to the spontaneous formation of a stable passive film on the metallic surface which protects it from further interaction with the environments. The passive film on Ti and its alloys is responsible for the good biocompatibility of these materials. The presence of passive film on Ti allows excellent corrosion resistance in physiological solutions and plays the important role for the favorable tissue response to Ti implants, which are very useful in bone surgeries and dental applications. The nature and structure of the passive film, especially its physicochemical properties, are depending on the formation conditions of these films. Recently, porous TiO₂ films with controlled nanostructures were prepared reproducibly and conveniently by potentiostatic anodic polarization of commercially pure titanium in hydrogen peroxide (H₂O₂) containing sulfuric acid (H₂SO₄) solutions.

Dr. Radwa A. El-Salamony

Radwa A. El-Salamony received the BSc degree in chemistry from the faculty of science, Ain Shams University, Egypt, in 1998. She got the MSc. and Ph.D. degrees in physical chemistry on "Reforming of Natural Gas by Carbon dioxide to Produce Synthesis Gas" and "Photocatalytic Degradation of Organic Pollutants Containing Various Functionalities in Aqueous Solution Using Transition Metal Oxides as Photo-catalysts" from Ain Shams University, Egypt, in 2005 and 2010, respectively. In 2000, she joined the Egyptian petroleum research institute (EPRI) as a chemist, a research associate in 2007 and a researcher in 2011. Since December 2015, she has been appointed as associate professor. Her area of interest is the Preparation and Characterization of Nano-catalysts and Application in Photo-catalysis and Energy Production. Also, she is interested in modification of many catalytic composite systems based on agricultural wastes like RSA or SCB in removal of dye, phenol compounds and heavy metals from wastewater, preparation and utilization of ceria based catalysts for hydrogen production through steam reforming of ethanol and preparation of nanofluid for cooling. She is a member in STDF projects "Development of Novel Catalysts and Membrane Reactors for the Dry Reforming of Natural Gas Using Carbon Dioxide" and "Hydrogen production by steam reforming of bio-ethanol over nano-Ceria catalysts prepared by spray freezing method". She is a member in training committee in EPRI since 2014, a member in Arab Union for sustainable development and the environment. She usually Write scientific articles in e-journal (Journal of Petroleum and Environmental Sciences), which published by EPRI. She has a Mini Master in Human Resources and Development. She is a member in the Association of Egyptian American scholar for the year 2016/2017. She acts as a reviewer in many international journals like Energy Sources, Part A: Recovery, Utilization, and Environmental Effects (Taylor and Francis publisher), Chem Comm (RSC publisher), PCCP (RSC), RSC Advance, Arabian Journal of Chemistry (Elsevier publisher), Asian Journal of Applied Sciences (AJAS), International Journal of Environmental Monitoring and Protection (Open Science publisher).



Mesoporous Waste Extracted SiO₂-Al₂O₃ Supported Ni and Ni-H₃PW₁₂O₄₀ Catalyst for Photodegradation of Methyl Orange Dye under UV irradiation

Radwa A.Elsalamony*, Nasser H.Shalaby , Ahmed M.A. El Naggar

Egyptian Petroleum Research Institute, 1 Ahmed El-Zomor St., Nasr City, 11727, Cairo, Egypt

Considering the positive potential value of wastes rather than of being unwanted materials, this research work is orientated alongside with this concept towards the production of waste based catalyst. Mesoporous SiO₂-Al₂O₃ was prepared from both rice husk (source for silica) and waste aluminum foils using isophthalic acid as a textural modifier. X-ray diffraction and BET surface analyses of the as-prepared alumina-silicate have demonstrated an amorphous structure with an average pore radius of 5.4 nm. FT-IR spectrum reveals the existence of SiO₂-Al₂O₃ interaction. In order to produce an efficient photocatalyst, Ni nanoparticles were subsequently loaded onto the aluminosilicate surface by reduction of NiCl₂ using hydrazine. Another catalyst namely; Ni-H₃PW₁₂O₄₀/ aluminosilicate, with strong Brønsted acid sites was also prepared by impregnating the support into an aqueous solution of H₃PW₁₂O₄₀. The TEM images of the as-prepared materials show that the aluminosilicate particles are slab-like and the loading of Ni and H₃O₄₀PW₁₂ has conserved the morphology of the mesoporous support due to the metal-metal interaction. The prepared catalysts were then employed in purification of water throughout photocatalytic degradation of methylorange (MO) dye. The maximum MO adsorption over the surface of prepared materials was first determined in absence of UV radiation (dark). The photoactivity of the three materials under the effect of UV irradiation was then detected. The Ni/ aluminosilicate catalyst exhibits the highest rate of MO removal among the employed materials. A maximum removal % of 86 was obtained after irradiation time of 180 min using a dose of the catalyst equal to 3 gm/L.

Dr Razika ZAIR TALA-IGHIL

Dr Razika received her PhD in materials physics from University M'hamed Bougara of Boumerdes UMBB in 2007 and the academic accreditation in 2013 from the same university. She is an associate Professor at the Institute of Electrical & Electronic Engineering IGEE and head of the research team "advanced materials" at research unit of materials, process and environment URMPE. Before being a Teacher-Researcher at the university, she was permanent researcher in Algiers at UDTS (Silicon Technology Development Unit) from 2000 to 2009. Her research is based mainly on materials for solar cells such as silicon, transparent conducting oxides TCO (tin oxide, zinc oxide), screen printed metallic contact, TLM technique in addition to the study of materials for photocatalysis and environmental cleaning. The main orientation of her research team is the use and development of nanomaterials. She authored more than 40 publications and 60 international communications. She has a patent in solar cell fabrication with tin oxide. She is supervising many postgraduate students. Dr. Razika is reviewer in many journals as Solar Energy Materials & Solar Cells, Journal of Renewable and Sustainable Energy and Materials Research Express. In addition to her research and teaching activities, she is the president of the Scientific Council at the Institute of Electrical & Electronic Engineering IGEE and member of the University Administration Council.



Nanotechnology for clean Environment and Renewable Energy

TALA-IGHIL Razika

University of M'hamed Bougara Boumerdes

Nanotechnology represents the future of the Human life development. Especially when it focuses to preserve its environment by using clean energies such as photovoltaics and treating wastes by photocatalysis. This is the main aim of our research in advanced materials at URMPE research Unit (Boumerdes University) in Algeria. This research was subject of many publications in Ceramics International, Thin solid films, Applied Surface Science and also in book chapters Nanomaterials in solar cells (Nano-Electrochemistry Handbook by Springer), another one published by Royal Chemical Society. Many investigations have been made to synthesize high quality photovoltaic absorbents such as CZTS and CIS with spray pyrolysis technique, a low cost deposition method with can be easily translated to an industrial process. On the other side, nanostructured materials for catalysis were successfully obtained by dip coating and sol gel technique. We focused essentially on ZnO and TiO₂ doped and undoped. Very interesting properties were obtained.

Dr. Salma Al Kindy

Prof. Salma Al Kindy is the Dean of the College of Science, and a Professor of Analytical Chemistry. She started her academic career in 1989 at SQU where she became the first female Professor in the university's history, and the first Omani national with a doctorate to join the Department of Chemistry. Prof. Al-Kindy was awarded a Matsumae International Fellowship by the Matsumae International Foundation in 1996, where she spent time at the Department of Bio-Analytical Chemistry in Tokyo University, Japan working on developing methods for the analysis of enantiomeric drugs. Prof. Salma's research interest has been in developing analytical protocols for the monitoring of analytes in complex matrices. She focuses her research on the development of analytical methodology and instrumentation for drug analysis in pharmaceutical and biological matrices, monitoring of organic pollutants and toxic metal ions in water using luminescence techniques in combination with HPLC, and flow systems such as, FIA and SIA and in developing sensitive and selective method for the essay of pharmaceutical components using microfluidic systems and the analysis of essential oil from lesser known Omani plants using GC and GC-MS. Currently, she is developing methods to remove hazardous chemical byproducts from waste water using Green Chemistry approach. In April 2010, Prof Al-Kindy became the first Omani national elected as a member of the prestigious World Academy of Science. (TWAS). Prof. Al-Kindy was Oman's recipient of the United States Department of State's award for outstanding female scientist in 2013 and has been inducted into the State Department's Middle East and North Africa (Mena) Women in Science Hall of Fame. She was recently awarded a fellowship of Royal society of Chemistry (FRSC). In 2014, Prof Al-Kindy was awarded a Medal by TWAS (The World Academy of Science for sustainable development) for her contribution to Science and she delivered a medal lecture during the TWAS General Meeting in Muscat last October. Furthermore, Prof. Al-Kindy has published more than 80 scientific papers in reputable scientific journals and has contributed to many international scientific conferences and seminars.



Miniaturized Green analytical systems and nanostructured materials for environmental remediation

Salma M. Z. Al-Kindy,* Rengaraj Selvaraj, Haider AL-Lawati, Fakhry O. Suliman and El-Said Ibrahim El-Shafey

Department of Chemistry, College of Science, Sultan Qaboos University

Green chemistry includes any scientific approach that tends to reduce the environmental impact of unfriendly industrial, household, or medical activities on human and ecological health. Green” method for water and wastewater treatment uses advanced oxidation nanotechnologies (AONs). AON with semiconductor photocatalysis is “Green” technology for the degradation of organic pollutants into eco-friendly end products. Recently, our research group have developed some visible light active nanostructured materials for the treatment of water and wastewater. Another venue of our “Green chemistry” approach is the use of microfluidics as an environmental friendly analytical technique for the reduction of cost and minimization of chemical waste on the environment. These microfluidic systems are coupled to chemiluminescence (CL) detection using various chips designs, to study the effect of reagent mixing and mechanism. This in turn allowed development of appropriate “greener” analytical systems characterized by low consumption of reagents and lower production of waste while achieving similar or even better performance characteristics to large scale techniques. Currently, we are actively involved in developing advanced chemical detectors based on microfluidics and CL for coupling with μ -HPLC systems to reduce the consumption of chemical reagents and solvents assumed in routine analysis. In this work, we will report on some of our interests on green chemistry approach using green nanotechnology for the treatment of toxic pollutants, use of carbonaceous adsorbent from date palm leaflets and the use of microfluidics devices for environmental monitoring.

Dr. Sonali Das

Qualification: PhD – Statistics (University of Connecticut)

Current affiliations:

Primary: Principal Researcher (Statistics), Advanced Mathematical Modelling Competence Area, CSIR Modelling and Digital Science, Pretoria, South Africa.

Secondary: Visiting Associate Professor, School of Statistics and Actuarial Science, University of the Witwatersrand, Johannesburg, South Africa; & Research Associate, Department of Statistics, Nelson Mandela Metropolitan University, Port Elizabeth, South Africa.

Prof Das has been working as statistician in a large number of trans-disciplinary researches, including in health research, with local and international collaborators. She has published widely with an H-score of 10, and over 180 citations, and presented at numerous local and international conferences. She regularly supervises post-graduate students and organizes technical workshops. Prof Das is the CSIR-Node Leader for the South African Centre of Excellence in Mathematical and Statistical Sciences. Prof Das is invited as panel member of the South African National Research Foundation routinely. She looks for this opportunity to share her experiences in working as a statistician in inter-disciplinary teams, and also learn from others' success stories.



Quantifying human gait measurements using novel statistical approach

Sonali Das, CSIR Modelling and Digital Sciences, Pretoria 0001, South Africa.

Bhaswati Ganguli (University of Calcutta, India), Quinette Louw (Stellenbosch University, South Africa), John Cockroft (Stellenbosch University, South Africa), Sugata Sen Roy (University of Calcutta, India)

Human gait measurements generally comprise of anthropometric data, spatio-temporal movement data and functional data from markers located on joints. Given a specific disorder of interest, physiotherapists are interested in extracting as much information from the data they gather. Extraction and analysis of gait patterns can involve looking at the data in a number of ways to identify what differentiates normal gait from a non-normal gait. In this presentation, our focus is on quantifying 'normal' gait measurements using the novel statistical approach of functional data analysis. This work is in collaboration with physiotherapists from Stellenbosch University and the University of Calcutta.

Prof. Tarek M. Madkour

Prof. Tarek Madkour is an award-winning chemistry professor, a Fulbrighter and a pioneer in the research area of nanoporous membranes and the computational modeling of polymers. He obtained his Ph.D. from University of Cincinnati, OHIO, USA under the supervision of Prof. James E. Mark, a distinguished research professor. Madkour was awarded the Fulbright Research Scholar award in 1996 supported by both the esteemed Fulbright organization and the United States Air Force. He has been awarded the Showman Award in chemistry from Jordan in recognition for pioneering the research of computational modeling and simulation in the area of polymer chemistry in the Middle East. He was also awarded the polymer society of Japan award and the State of Egypt award in Chemistry. Madkour has successfully secured research fellowships such as the US peace fellowship, University of Cincinnati, OHIO, USA research scholarship and a supreme council research fellowship from the catholic university of Leuven, Belgium. He has over 65 peer-reviewed publications in major international journals such as Journal of Membrane Science, Macromolecules, Polymer and European Polymer Journal. After concluding his Fulbright research collaboration in the US, Madkour accepted a senior research scientist position at ICI-Europe, a leading British chemical industry, to establish the molecular modeling and simulation research facility in its research and development center in Belgium. In 2001, Madkour moved back to academia as a visiting professor of physical chemistry of polymers at the catholic university of Leuven and in 2002, joined the United Arab Emirates University as the chairman of the department of chemistry and associate professor of physical chemistry of polymers. In 2005, Madkour was recruited by the American university in Washington, D.C. as a member of the founding team of AU new campus in West Africa and in 2009, Madkour worked as the Director of Academic planning on a collaborative EU-Turkish project to establish a new Turkish University modeled as a university for the 21st century. In 2010, Madkour accepted a position at Taibah University, Al-Madinah Al-Munawarah, KSA prior to joining the American University in Cairo as a professor of physical chemistry of polymers at the department of chemistry in 2011. Madkour is a member in several scientific societies and is currently a consultant for the European Commission for the chemical sector and educational development.



Development of biodegradable nanoporous polymeric membranes for removal of suspended micro-contaminants from industrial wastewater

Tarek M. Madkour

Professor of Polymer Chemistry, Department of Chemistry, The American University in Cairo,
Egypt

Industrial activities contribute to the loss of precious water resources and to polluting fresh water supplies. In this work, nanoporous biodegradable polymeric membranes were synthesized for use in micro- and ultrafiltration. The biodegradability of these membranes ensures the complete dissipation of these materials after disposal whereas its nanoporosity ensures the removal of all suspended nano- and microparticles from the wastewater at low or no pressures. Blends of poly(lactic acid) (PLA) with polyester-based polyurethane (PU) or cellulose acetate (CA) of various blend compositions were tested and evaluated as the polymeric matrix for these membranes. FTIR indicated the presence of hydrogen bonding between the various polymeric chains, which acted as to stabilize the polymeric blends. TGA confirmed the greater thermal stability of PLA/PU blends. Stress-strain measurements showed that PLA/PU 20/80 blend had the most improved mechanical response of the materials. Porogen nanocrystals were then added to the polymeric matrix to induce nano and micropores within the films. SEM of all developed membranes of varying porogen content showed even distribution of the pore size within the polymeric matrix. While BET porosity parameters showed an increase with the addition of more porogen, further increase resulted in a decline in these parameters with a maximum at 15% porogen content. N₂ isotherms indicated that the large pore surface area and volume are associated with the smaller pores and thus allowing these membranes to filter out nano- and microparticles at low or no pressures as confirmed with the filtration of an Aspirin suspended solution.

Tarek Y. Elrasasi, Ph.D.

Tarek Y. Elrasasi received his Ph.D in Shape Memory Alloys (smart material) from Department of Solid State Physics, Debrecen University, Hungary, 2012. He graduated from the Faculty of Science, Benha University in 1997 with a B.Sc. in physics. His M.Sc. was in wood-polymer composite, from Faculty of Science, Benha University 2003. His recent research interests are: shape memory materials; Smart materials; mechanical and thermal properties of the materials; nano-polymers composites; renewable energy. He has several publications and book chapter on shape memory alloys and renewable energy.



Smart Materials and the Revolution of the Human Consciousness

T. Y. Elrasasi

Department of Physics, Faculty of science, Benha University, Egypt

The amazing properties of the advanced materials nowadays are attracting the attention of material science scientists. Biomaterials, nano-scaled and smart materials are the most interesting, because of their wonderful properties and numerous applications. Smart materials can be defined as the materials that receive, transmit, or process a stimulus and respond by producing a useful effect that may include a signal that the materials are acting upon it. There are many types of smart materials, such as piezoelectric; magnetostrictive; thermoelectric, electro-chromic, thermo-chromic, hydro-chromic; shape memory materials, etc. Wide range of sensors can be created depending on the smart materials; these sensors are designed to help us figuring out our surroundings. By programming our brains to communicate with our surroundings through these smart sensors, what will be the limits of our consciousness?

Dr. Tabassum Mumtaz, Ph.D.

Dr. Tabassum Mumtaz received her Bachelor and Master's Degree in Botany from Dhaka University in 1999 and 2002, respectively. She studied waste-polyethylene associated bacteria in her MS thesis. In August 2002, she joined Bangladesh Council of Scientific and Industrial Research (BCSIR), as a post-graduate research fellow. At the same time, she registered for MPhil program in Dhaka University. Her MPhil thesis project was about the environmental degradation of LD-PE films in soil. She joined her current workplace-'BAEC'- as a Scientific Officer in August 2003. In the same year, she was awarded a full scholarship from Organization for Women in Science for the Developing World (OWSD), a close partner of TWAS for pursuing PhD. After two years of working in BAEC and completion of MPhil degree, in Dec 2005 she started her PhD at University Putra Malaysia, Malaysia. Her PhD was on the Production of poly (3-hydroxybutyrate-co-3-hydroxyvalerate) which is a biodegradable plastic of microbial origin using *Comamonas* sp. EB172, an acid tolerant bacteria from organic acids derived from anaerobic treatment of palm oil mill effluent. The study particularly focused on organic acids extraction as well as bioreactor based production of bioplastics PHBV by optimizing fermentation conditions (nutritional and environmental parameters) for an in-depth understanding of the process in both lab and pilot scale. Besides, she also took part in research projects like biohydrogen production from POME and food waste. She also took part in University's exhibition on Design, Research and Innovation (PRPI) in July, 2010 and was awarded with a Gold medal for presentation on 'Pilot scale recovery of organic acids from treated palm oil mill effluent'. She was granted a 'Special Graduate Research Fellowship' by UPM in Jan-Dec 2010. She obtained PhD degree in Environmental Biotechnology on 10 March 2011. Her research interests are bioconversion of waste/biomass (Biopolymer, biohydrogen), biodegradation, bio-remediation & fermentation technology. Until now, she has 27 publications in both impact factor and cited journals. Out of which, 6 journal papers from her PhD alone; 10 as first author, 8 as corresponding author with h index 7, Scopus Author ID no. 25647862300. She co-authored a Review paper published in 'Journal of Environmental Management, 130(2013):375-385, Elsevier publishers, Impact factor 3.057' which hit 500 over downloads in Researchgate. She has acted as a reviewer of several scientific journals, e.g. Journal of Valorization, International Journal of Food Research etc. She is also one of the contributors of "Encyclopedia of Flora and Fauna of Bangladesh, Vol 2 Cyanobacteria, Bacteria and Fungi" 2007 for description of some *Bacillus* spp and *Planococcus* sp. She is the author of a book entitled 'Changes in the properties of LD-PE during biodegradation in soil' under LAP LAMBERT Academic Publishing in 2014, ISBN 978-3-8484-0258-8. She has attended several conferences on agriculture, environmental, energy related issues, biotechnology and bio-based polymers and presented papers and posters in several international conferences. Her latest involvement with National University of Malaysia (University Kebangsaan Malaysia) as postdoctoral researcher was on the UKM-YSD project entitled "Sustainable Development Zero Waste Technology for Palm Oil Industry". She worked on the anaerobic biohydrogen production at mesophilic and thermophilic conditions by sludge consortia for one year. She also took active part in organizing an International Conference – ABBS 2014 in Melacca, Malaysia as a publication committee member and organizing committee member. At present,



Dr Mumtaz is holding a position of Principal Scientific officer at BAEC and actively working on projects viz. microbial conversion of agro-waste into citric acid, animal feed, PHAs etc. She continues supervising MS students under Environmental Science Department of Jahangirnagar University. She is keen to pursue her research career as a scientist with a freedom to design, develop and deliver research program in the field of Environmental Science.

Biodegradable Plastic Research Initiatives in Bangladesh: Primary Isolation and Screening of Polyhydroxybutyrate (PHB) Producing Bacteria from Compost Samples

T. Mumtaz,^{1*} K. Fahmida,² R. D. Rakhi,² A. N. M. Fakhruddin,² and M. R. Khan³

¹Microbiology and Industrial Irradiation Division, Institute of Food and Radiation Biology,
Atomic Energy Research Establishment, Savar, Dhaka, Bangladesh

²Department of Environmental Sciences, Jahangirnagar University, Dhaka, Bangladesh

³Laboratory of Microbiology, Department of Botany, University of Dhaka, Bangladesh

Poly- β -hydroxybutyrate (PHB) is the simplest member of polyhydroxyalkanoates (PHAs) that are biodegradable polyesters, biologically produced by a wide variety of bacteria as an intracellular storage material of carbon and energy. Compost is one of the richest sources of microorganisms; therefore, an attempt was made to isolate poly- β -hydroxybutyrate producing bacteria from compost samples. Out of six compost samples, bioslurry showed the highest mesophilic bacterial count of 3.75×10^9 cfu/g. Number of PHB producer and accumulators in different compost samples were in the order of Bioslurry > Cow dung > Cotton seed > Tobacco dust. A total of 48 mesophilic bacteria were isolated by growing samples on nutrient agar medium at pH 7.0 and a temperature of 37°C. All isolates were purified and screened for PHB production using lipophilic stains such as Nile red, Sudan black B and fluorescent dye e.g., acridine orange. 16 out of 48 isolates exhibited PHB production ability after screening by plate assay. PHB granule formation was also visualized under fluorescent microscope. Based on morphological, cultural and biochemical characteristics, all isolates were affiliated to four genera viz. Bacillus, Micrococcus, Veillonella and Pseudomonas. Batch fermentation in shake flask was carried out using glucose, sucrose, starch, methanol or glycerol as carbon source. Substrate utilization pattern in this experiment was in the order of glucose > sucrose > starch > methanol > glycerol. Among 16 bacterial isolates, S3e was the most efficient PHB producing strain and produced around 83.22% PHB from sucrose at 48hr. This is the first report on PHB (bioplastic) producing local isolates from Bangladesh.

Dr Usama F.M. Kandil



After obtaining his BS degree in Chemistry from Cairo University in 1988 with honors; Dr Kandil has been employed as a research assistant at the Egyptian Petroleum Research Institute (EPRI) in 1988 where he continued graduate study with connection to Cairo University, and obtained MS degree in Polymer Science in 1997. Then, he was promoted to an assistant researcher at EPRI (1997-2001). In 2001, he was awarded a scholarship from the Egyptian Government to pursue a graduate study in the United State. In fall of 2001, he enrolled in the Polymer Science Program of the Material Science and Engineering Department at the Pennsylvania State University (PSU) and was received another MS degree in 2004 followed by receiving his PhD in Material Science and Engineering at PSU in August 2005. He is a member of the American Chemical Society, Division of the Polymer Chemistry and the Division of Polymer Materials. In 2008, he started a successful international collaboration between EPRI and UNM when he was awarded a junior post-doctor researcher grant to visit the University of New Mexico (UNM) to participate in nanocomposite research. This six month visit, January to June 2010, was funded by STDF Junior Scientist Program. During this visit, the research team at UNM along with Dr Kandil acquired all equipment and materials necessary to synthesize polyolefin rubber nanoparticles and successfully produced nanocomposites. Following this visit and through this collaboration; Dr. Kandil was successfully awarded a couple of funded projects: US-Egypt (STDF/NSF), Center of Scientific Excellence (STDF-CSE) and Sustainable Development of Sinai (STDF-SDS) funding programs and successfully established the Center of Scientific Excellence of Polymer Nanocomposites (PNC) in 2013. He has lots of scientific publications in highly ranked journals. He also obtained two US-Patents and one Egyptian Patent and he has one chapter in a book: Carbon Fibers, Edited by Jonathan Phillips, Edition 2015 - Chapter 1: "Improved Strength and Toughness of Carbon Woven Fabric Composites with Functionalized MWCNTs". Recently, Dr Kandil and his research team have done a workshop in his Center (PNC) at EPRI in 7-8/12/2016; titled: "Next Generation of Polymer Nanocomposites for Sustainable Development in Egypt". In addition and parallel to the above activities, Dr Usama Kandil is working as a member of "Metallic Surface Protection Center (MSPC)", Egyptian Petroleum Research Institute (EPRI), Cairo, Egypt since 1990. He has been assigned to lead a group of inspection engineers in the field of Metallic Surface Protection (onshore & offshore pipeline coating and installation in addition to several painting projects) as a part of Egyptian Petroleum Research Institute (EPRI) programs for petroleum development; EPRI onshore and offshore inspection and quality assurance. Through that period, he has been involved in the field of coating and painting inspection (QA/QC) and specifications establishment with several petroleum projects for several companies including: Petroleum Pipeline Company, Gasco, NOSPCO, Petrobels, Rasheed, and others. Backed with more than twenty years of experience in this area, his duties in the surface protection center (SPC) focused on: inspection of three layers PE and PP coating systems, field joints, inspection of single and dual layer FBE systems, developments of foam system insulations for petroleum pipelines. In addition, his duties also included developments, evaluation of new coating materials, internal lining, and protection of other petroleum projects from corrosion according to ASTM, SIS, DIN, etc. standards.

Nanoparticles Toughened Epoxy for Energy Absorbing Composites

Hamdy M. Naguib¹, Rasha A. El-Ghazawy¹, Neviene O. Shaker¹, Usama F. Kandil¹, and Mahmoud Reda Taha²

¹ Polymer Nanocomposites Center, Egyptian Petroleum Research Institute, Nasr City, Cairo, Egypt.

² Department of Civil Engineering, University of New Mexico, Albuquerque, NM, USA

Structural composite laminates, including high performance fiber (glass, carbon, aramid and hybrid) impregnated in polymer matrices (e.g. epoxy, polyester), are being considered as alternative structural composites for their superior strength/weight ratio. However, composites have premature failure due to the lack of plasticity and limited energy absorption. It is well realized that shear strength of composites is governed by its polymer matrix. Therefore, this research introduced a new generation of epoxy polymer nanocomposites with enhanced energy absorption. This has been performed by altering the microstructure of the polymer matrix through the incorporation of a balanced mix of reactive rubber nanoparticles (RRNP) and organically modified nanoclay (Cloisite-30B) into epoxy matrix with the aim of obtaining improved material with higher toughness without compromising the other desired mechanical properties. Epoxy hybrids nanocomposites containing RRNP, Cloisite-30B and RRNP/Cloisite-30B mixture were synthesized and characterized to compare the different properties which normally result from the use of single filler and hence aiming to improve toughness/stiffness balance. The microstructural change will convert the polymer matrix to a new nanocomposite that when used with reinforcing fibers will produce a multi-scale FRP composite with enhanced energy absorption. The new multi-scale FRP will enable expanding the use of FRP in applications typically governed by the limited toughness/energy absorption and fracture toughness of current FRP composites when subjected to high strain rate loading.

Dr Yehia Abdel-Aziz

Qualifications: Prof. Yehia Abdel-Aziz has received his doctoral degree in orbital Mechanics (2002) from the Faculty of Physics, Adam Mickiewicz University, Poland. He received his MSc. in Attitude Dynamics and Control of spacecraft (1998) from Mansoura University, Egypt. In February 2015 he has got the academic ranking full professor of Space Flight Dynamics and Control at Space Research Laboratory, NRIAG, Egypt.



Function: Prof. Abdel-Aziz is the Head of Space Research Laboratory at NRIAG, Egypt since March 2016. He is the Founder of the Spacecraft Charging Laboratory at NRIAG, Egypt. He was the Secretary General of the National Egyptian Committee of Space Research for COSPAR in the period of February 2005 - 2014. Professor Abdel-Aziz has more than 35 scientific research papers published in prestigious international journal covering such diverse topics as Attitude dynamics and control of spacecraft, orbital mechanics, Formation Flying satellites, Space Debris and Ground test for spacecraft charging and Discharging, in addition the interaction of spacecraft with space environments. Research works and publications: Prof. Abdel-Aziz is a collaborative researcher, which is leading three different teams working in the fields of orbital Mechanics, attitude control, and Spacecraft charging. He is response about the international collaboration between NRIAG and KIT, Japan in the field of Spacecraft Charging. Abdel-Aziz recently has done the scientific agreement between NRIAG and KIAM, Moscow, Russian in the field of optical observation and orbital determination of space debris. Abdel-Aziz has visited many international Institutes such as Space Technology Center at ESA in the period 31 March up to 25 May 2016. He was a Visiting Scholar for few months at Laboratory of Spacecraft Environment Interaction Engineering, Kyushu Institute of Technology (KIT), Japan; UNESP, Brazil; and CETP, Paris- France. Community Service: Prof. Abdel-Aziz's has many activities in community and the environment service such organizing international and national conference and workshops, and designing the syllabuses for many universities in the field of Space science and Technology. His other community service activities include promoting awareness about the importance of space Environments for designing artificial satellite, in addition he is a consultant for important places.

Spacecraft Environments interactions Engineering

Yehia A. Abdel-Aziz

National Research Institute of Astronomy and Geophysics, 11421-Helwan, Cairo, Egypt.

Spacecraft charging is a naturally occurring phenomenon in the space plasma environment, which in most cases is undesirable due to the deleterious effect on on-board electronics. Based on the fundamental physical principle that a moving charged particle experiences the Lorentz force in a magnetic field, one can deduce that an electrostatically charged spacecraft in Earth orbit is subjected to the Lorentz force in the Earth's magnetic field. Early studies of spacecraft charging conclude that the natural spacecraft charging level may reach to about 10^{-8} C/kg and the induced Lorentz force with such charging level is insufficient to perturb the orbit and attitude of satellite significantly. The concept of Lorentz-augmented orbits is analogous to the motion of charged dust grains in planetary magnetic fields, After the launch of artificial satellites, the phenomenon of spacecraft surface charging was discovered and found to be omnipresent, and therefore the motion of electrically charged artificial satellites affected by the Lorentz force. However, much research relating to charged spacecraft are conducted by space-plasma physicists, and the primary purpose of their research is to attenuate the hazardous electromagnetic radiation effect caused by surface charging. Contrary to previous studies that concentrate on passive mitigation of the charge, a new concept of active application of the charge of spacecraft has been proposed by Peck in recent years. Such conception spacecraft is referred to as Lorentz spacecraft, an artificially charged space vehicle that intentionally generates net charge on its surface to induce Lorentz force via interaction with the planetary magnetic field. If the charging level is several orders of magnitude larger than natural charging level or even higher, the induced Lorentz force could be utilized as propellantless electromagnetic propulsion for orbital maneuvers and attitude control. In this work, we will focus on the spacecraft - environments interaction engineering, in particular with surface's materials and satellite subsystem.

Track 3

Sustainable development & Gender issues

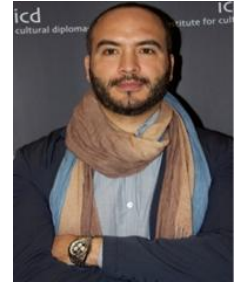
Dr. Abdalla Alnajjar

Dr. Abdalla Alnajjar is an Arab Emirati Business magnate, Entrepreneur and Innovator. He is best known for his "Arab Science & Technology Foundation" (ASTF); the first state of the art Foundation in the Arab world which has under his leadership successfully identified and supported outstanding RDI and business activities throughout the Arab Region and beyond. His achievements created values and generated massive popularity for himself; he successfully, for three consecutive years, is named as one of the "Most Influential Arabs in the World" for past three years. Dr. Abdalla, as an entrepreneurial minded person is always enthusiastic towards new challenges, developments, inventions and innovations. His dream of changing Arabs Culture through Science & Technology, he shaped the way for Arab intellectuals to develop and use their resources by transforming their knowledge into business. Apart from ASTF he, also, put foundation for companies specialized in developing new technologies and innovative products. Some of portfolios of his success establishments are Aashab Bio Industries, Arab Biotechnology Company, Rawafid for Project Managements, and AccuVis Bio. These companies has achieved substantial growth in past and is continually expanding internationally. The stories behind Dr. Abdalla success and achievement won't come true without clear vision, strong belief to succeed and the dedications that he himself and his tirelessness team showed for over 30 years of continuous successes initiatives and Business creation, design & implementations. Since the Youth are the backbones of every nation's development, Dr. Abdalla continuous efforts for New Ideas and Innovations led to launch competitions like "Best Technological Business Plans" and "Investing in Technology Forum" that extracts, support & matches techno-preneurs with investors. His management & guidance's was not limited for ASTF and his directly owned ventures, but it give unbound support, trainings and mentorship to Arab established companies. And he believes that the Region would not accelerate as fast as needed if not cooperated with the countries that have gone far with technological advancements. That's why he invested time and resources in 97 startups throughout the Middle East. Currently, Dr. Abdalla holds key positions in various companies and management advisory committees. He is the President of ASTF and the Vice President of the Licensing Executives Society – Arab Countries (LES-AC), besides being on the board of many other companies and initiatives. Dr. Abdalla holds a PhD degree (1992) from Durham University, UK, in Applied Physics.



Dr. Abdeslam Badre

Dr. Badre is associate professor at Mohammed V University of Rabat. Dr. Badre is a social scientist, with a strong research interest in gender, migration; economic transformation; and youth education and policy development, especially in the context of MENA region. After completing his PhD in the field of Media and Women Studies, Badre completed a Carnegie postdoctoral fellowship in the area of Urban Management and Monarchical Regimes' Legitimacy in the Arab Region, at the University of North Carolina-Chapel Hill-USA in 2014. Badre has been a visiting researcher and teacher at various international universities, such as Alfred University (New York: 2006-2007); Monterey Institute for International Studies (California: 2010); Aalborg University (Denmark: 2011); The Institute for Cultural Diplomacy (Berlin: 2012-2013); The University of Babe Bolyai (Romania: 2013-2014), the University of North Carolina at Chapel Hill (2014). Currently he is an independent regional consultant in higher education policies. In addition to his research career, Badre is also a passionate public speaker, presenting regularly in regional and international conferences. He is a member of Fulbright Association; the American Political Science Association; The International Political Science Association; Institute for Cultural Diplomacy Forum; Moroccan Association of Education; Global Young Academy; Next Einstein Forum & Africa Science Leadership Program.



Gender in Science: Remaining Challenges from Education to Profession Transition in MENA Region”

Abdeslam Badre, Ph.D

Mohammed V University of Rabat, Morocco

Like her sisters in the West, the Arab female scientist has made discernible successes in science, especially, Science and Engineering (S&E); however, her achievement has yet to be completely translated into the S&E workforce. 2016 Data from the National Academies of Science, Engineering and Medicine, highlight the increasing number of degrees earned by women in science and engineering, especially in the Middle East North Africa Region (MENA), but when all the S&E disciplines are aggregated, it is easy to overlook both the advances in education attainment women have made in the life sciences, as well as the continuing challenges women face in some of the physical sciences and engineering fields. The present paper sheds lights on the current professional situation of Arab female scientists in the Middle East North African (MENA) region. The paper argues that women in science in the MENA region, on the one hand, have been and are being heard and seen through their: a) outstanding contributions and innovative outputs in applied sciences (STEM) and beyond; b) participation in various international scientific gatherings; c) winning of a number of internationally recognized honors and prizes; and d) securing substantial amounts of research external funding establishing transnational collaborations for launching scientific undertakings. Arab female scientists in the region still suffer inequality in terms of involvement in science-based professions, decision-making and power-sharing positions, which is why although the number of Arab female enrolments and graduations in post-graduate science education have increased during the current decade, many of these scientists do not make their career paths into science profession and industries, because once there, most of them are faced up with a public sphere.

Dr. Ahlam Farhan

Ahlam M. Farhan got a Bachelor in Science in 1985 from Department of Chemistry, College of Science, University of Baghdad, Iraq. After that, she proceeded with the higher study and was crowned by getting M.Sc. degree from the same college in 1989, and finally Ph.D. degree in Physical Chemistry in 2000. Furthermore, she accomplished sabbatical in Cardiff University, UK in 2012. Her Scientific Promotions underwent through several stages starting with Assistance Instructor in 1991, Instructor in 1995, Assistant Professor in 2001, and finally Professor in 2006. She has assumed various positions during her scientific career, Rapporteur of Graduate, Rapporteur of Higher Graduate, Manager of Scientific Promotions, Dean Assistance of Scientific Affairs, and nowadays, Acting Dean of College of Science for Women, University of Baghdad since 2013. She has taught various subjects and courses during academic tenure for the different classes, Analytical Chemistry, Physical Chemistry, Quantum Chemistry, Surface Chemistry, Corrosion Chemistry as well as Kinetic of Polymer, etc. She has been awarded many awards and certificates of appreciation on different occasions. She published more than 50 papers in various branches of her specialization. She has supervised more than 20 M.Sc. students and 8 Ph.D. students, as well as, she attended and participated in different workshops, training courses as a trainer and a trainee.



My Challenging Story as Iraqi Woman Researcher

Ahlam Mohammed Farhan

College of Science for Women, University of Baghdad, Iraq

Firstly, as a commencing for this story, I got B.Sc. degree in 1985. M.Sc. degree in 1989 and Ph.D. degree in 2000 from College of Science, University of Baghdad, Iraq; after then; I accomplished sabbatical in Cardiff University UK in 2012. I would like to illustrate significant challenges that are facing researchers during publications and communications against the world; because of the blockade imposed on Iraq as well as the war that have been passed upon Iraq that led to the outage with the outside world. Furthermore, these reasons yield to the lack of resources and the missing in necessary apparatus that can lift up scientific research level. However, as significant changes after 2003, there has been a gradual openness with the world wide countries represented by their universities to enhance the outcome of our graduate students in both under and post graduates, this form of scientific cooperation is satisfied by delegating them across different academic specializations that contributed in advancing the scientific knowledge. Secondly, the total number of dissertations and theses that supervised in different fields was about 20 MSc and 8 PhD respectively. Furthermore, I have published more than 50 papers in different fields .

Dr. Charon Duermeijer, PhD

Dr. Charon Duermeijer is a senior director, academic customer engagement and research Solutions, Elsevier Amsterdam. Dr. Charon joined the Elsevier Publishing group in 2000. Since then she has had various roles within Publishing. In her most recent Publishing role as Publishing Director, she was responsible for the global strategic direction and development of the Physics journal business unit with 13 global FTE reports and >80 journals. She currently holds the position of Senior Director Academic Customer Engagement where she is responsible for Outreach and Networking with key Academic stakeholders around the world to understand their needs and ambitions and explore how Elsevier can help achieve those ambitions. Before joining Elsevier, she has worked for Springer-Nature. In 1999, she finished her PhD in Geophysics at the Utrecht University in the Netherlands. Earlier she worked as a Geologist for Goldfields of South Africa. She has a strong interest in science communication and a passion for education and knowledge sharing. In 2015, she was a volunteer for “Publishers Without Borders” in Tanzania (2015) supporting Tanzania to become a nation where science and scientific publishing are embedded in the universities and research institutions.



Addressing Gender in Scientific Publishing

Charon Duermeijer

Snr Director Academic Customer Engagement, Elsevier, Netherlands

As a leading scientific information solutions provider, Elsevier has a responsibility to apply a gender lens to our core business. We strive to serve as an industry leader by helping to establish best gender practices in editorial policies, board recruitment and researcher capacity building around the world. We strongly feel that as Publishers we have a responsibility to produce the most robust research possible in the most equitable and inclusive way for both men and women from all nations around the globe. In this talk, we will discuss the various global initiatives Elsevier is undertaking around the topic of gender and inclusivity.

Dr Daniel Nyanganyura

Dr Daniel Nyanganyura, Zimbabwean, Ag. Regional Director for the International Council for Science (ICSU) Regional Office for Africa (ROA) since June 2016 and Programme Specialist in Physics, Mathematics and Engineering Sciences since August 2008. He holds a Doctorate in Atmospheric Physics (2007), MSc in Agricultural Meteorology (1999), and BSc 4th Year Honour in Physics (1997) from the University of Zimbabwe, and a Licentiate Degree in Education in the Specialty of Physics and Astronomy from Enrique Jose Varona Higher Pedagogical Institute, Havana, Cuba (1991).

He was an air pollutants research scientist at the Max Planck Institute for Chemistry in Mainz, Germany (August 2007 - July 2008); a Physics lecturer (2001 - 2007); and Physics teaching assistant (2000) at the University of Zimbabwe; A-Level Physics and Computer Science Teacher (1991 - 1998). At ICSU ROA, he coordinates scientific programs/activities related to Global Environmental Change (including Climate Change and Adaptation), and to Sustainable Energy. He is a member of American Geophysical Union; European Geophysical Union; the Air Pollution Information Network for Africa; and International Society for Agricultural Meteorology.



Perspectives and Challenges of Women in Science in Africa – The role of ICSU and its Regional Office for Africa

Daniel Nyanganyura^a and Richard L. K. Glover^a

^aICSU Regional Office for Africa, P O Box 13252, Hatfield 0083, Pretoria, South Africa

Despite the critical role women have been playing in the field of science, the number of African women who enter science programs in higher education institutions is always less than that of men. A comparatively fewer of those who manage to enroll finish and get retained in the different fields of research. This phenomenon is a result of combination of socio-cultural factors (at the early stages of life) that incline more often than not, in favor of the ‘boy child’ over the ‘girl child’. Institutional policies, educational and work environment conditions are often not female-friendly, and contribute to the under-representation of women in science. The International Council for Science (ICSU) has research grants, like the Leading Integrated Research for Agenda 2030 in Africa (LIRA2030), that seek to increase the production of high quality, integrated (inter- and transdisciplinary), solutions-oriented research on global sustainability by early career scientists (especially women) in Africa. ICSU also sources and avails funding for scientists (especially early career researchers) to attend international events and present their works as well as interact with renowned scientists from Africa and other parts of the globe. The ICSU Regional Office for Africa (ICSU ROA) is working with and supportive of all initiatives/programs in Africa that seek to promote women’s participation in science as well as mainstreaming of women in all programs in science, engineering, technology and innovation. Through its series of book publications, ICSU ROA brings to the open the work of scientists on the continent and promotes women researchers to showcase their contributions to find lasting solutions to societal challenges in the region.

Dr. Evelyn Namubiru-Mwaura



Evelyn Namubiru-Mwaura has over fifteen years of experience in International Development, Strategic Governance, Policy Analysis and Natural Resources Management through appointments with African Academy of Sciences(AAS), AGRA, the World Bank, LANDESA, UNREDD, UNDP-GEF, International Forestry Resources and Institutions (IFRI) and Makerere University. Currently, she is a Strategy and Policy Manager at AAS where provides strategic leadership in the development and delivery of AESA’s scientific agenda for Africa. Evelyn holds a Joint PhD in Public Policy from Indiana University in the US and a Masters in Environmental Management and Development from the Australian National University. Her research interests include global development policy issues especially those related to climate change, land, agriculture and other natural resources governance. Evelyn has led several projects focusing on Gender, Youth, Agriculture, Climate Change, Science Technology and Innovation, Strategy, governance and Land and Property Rights primarily in Africa. Her publications address a variety of topics, including Gender, Science Technology and Innovation, Agriculture, Land tenure and Climate change, Youth, Rural women and Land, Decentralization, and Community Forest Management. She has won several other awards including the Elinor Ostrom-Johan Skytte Fellowship, the International Foundation for Science award for field research, the Compton Foundation Peace & Security Fellowship and the Australian Sponsored Training Scholarship. In 2016, Evelyn was a finalist in the Agricultural sector in the CEO Global’s Africa's Most Influential Women in Business and Government Awards. She is the current Vice President of the African Association of Agricultural Economists (AAAE) and Chairperson of the External Advisory Board; Feed the Future Innovation Lab for Small-Scale Irrigation (ILSSI).

About the African Academy of Sciences:

The African Academy of Sciences (AAS) is a Pan African organization with a triple mandate to recognize scientific excellence, provide advisory and think-tank functions, and to implement major Science, Technology & Innovation (STI) programs on the continent. It is an Academy of all Sciences founded in 1985 and which has honored more than 300 scientific leaders and achievers. It is currently implementing programs in 6 priority STI areas. Over the years, AAS has built a strong leadership brand, has a strategic partnership with the African Union, and a framework agreement of collaboration with the African Union’s technical arm, New Partnership for African Development, NEPAD.

Reducing the Gender Gap: Women in Science in Africa

Evelyn Namubiru-Mwaura, PhD

African Academy of Sciences

Women scientists have a critical role to play in Africa's development and yet persisting gender inequality limits them from achieving their potential and effectively contributing to development challenges. Worldwide, statistics show that women pursuing careers in science are only 28%, and just 30% of professionals in the sciences in Sub-Saharan Africa. While actions have been taken across the continent to promote women's participation and leadership in science, a lot more needs to be done. The presentation will highlight key challenges involved in bringing about equality for women in science on the African Continent. In addition, it will highlight AAS' experiences in improving women in Sciences. The presentation will end by proposing various policy recommendations for addressing barriers to women's involvement in Science.

Dr Ghada M. Amer

Ghada Amer, Professor of Electrical Engineer, is the Vice President the Arab Science and Technology Foundation (ASTF). She holds few more positions within her profession, like the Head of Electrical Engineering Department at Benha University, Manager of Innovation and Technology office, Ministry of Higher Education and Scientific Research- Egypt and the CEO of the Global Awqaf Research Center (GARC). Also because she believe on the important of R&D and innovation for her community (not only in Egypt, but in all Arab countries), she create an entity for research and training called Accu-Training, and another entity called ASTF Innovation Lab, to create the Ecosystem for innovation and entrepreneurship among arab countries. She was named in Jan 2014 as one of “Top 20 Influential Muslim Women Scientist in the World”, by an international committee residing on Muslim-Science, as an emerging champion “power woman”. And named as the "Personality of the Year" , from Muslim Science magazine, United Kingdom 2015, Also she ranked the first place for the 50 most prominent leader in entrepreneurship of the Arab woman in 2014 issued by the Sayidaty magazine, and in 2016 she named one of the “the 500 Most Influential Muslims in 2016”, in the filed of science and technology, by The Royal Islamic Strategic Studies Centre. Born in Manama, Bahrain, a Chess Champion, 1986-1990 in Kuwait., she led many student activities and was awarded "Best Leader for Student Activity Award", 2006 at Benha University. She was named as a best leader on 2002 by the Egyptian national “Institute for Leadership Development”. She received her training on Control and Instrumentation in Electrical Engineering (B.Sc. 1995), Electrical Power Engineering (M.Sc., 1999) and PhD. degree in Electrical Power Engineering from faculty of engineering, Cairo University, 2002. She served as a lecturer (1996 till present), a head of department (2007-2010 and 2013 till present) and an S&T Advisor (2008-2010). On her academic career, she served as member of scientific committees, chairman and editor of many regional and international scientific conferences. Besides, she is an editor of two international journals on her field of specialty. She received "Best Research Paper Award" at CATAEE Conference, Jordan, 2004. She is an active member of the main committee of the Egyptian Engineering Syndicate. Her present research interests are the protection system, power system, high voltage engineering, effect of EMF of high voltage transmission lines, and biomedical engineering. Internationally, Ghada is active on scientific collaboration. She became a member of Third World Organization for Women in Science TWOWS 2008, and a member of the organizing committee (2011) for “Arab-American Frontiers of Science, Engineering and Medicine” symposium that is organized by the Kuwait Institute for Scientific Research (KISR) and the US National Academies. She, actively, participates in many collaborative programs. Ghada Amer is active advocate for socio-economic development that is based on RDI within her country and the region. She worked since 2009 as a volunteer with the Arab Science and Technology Foundation (ASTF) and later joined as the volunteer Manager for Women Programs. For her active participation, she was elected as a member of the Board of Directors (2011) thin the VP of the Foundation (2012 till present). Within her involvement with the ASTF, she developed and led more than 20 projects and programs to support scientific development and entrepreneurship. She during the past three years (by fundraising) was able to bring nearly \$ 2 million, to support the research, development and innovation, and to support entrepreneurship



activity to create jobs and to support the Arab community, for that she help to established 74 start-up from innovative ideas from the region

From the bench to the market; identify the Opportunity from the Challenge

Prof. Abdalla Alnajjar

Prof. Ghada Amer

ASTF

Innovation is now considered a main driver of economic growth. Technical progress combined with innovation is deemed necessary for the enhancement of economic productivity. It is a core factor and essential for national economies to work in the competitive world around us. The performance of the economy is determined by components of innovation; growth, productivity and sustainable development. In common phrasing, the term innovation refers to the introduction of a new idea, method, device or services. From a management perspective, innovation is a “change that creates a new dimension of performance”. And, from an institutional perspective, innovation is “the successful exploitation of new ideas”. Developed countries have tried to develop some policies, regulations and programs in order to promote Innovation and Entrepreneurship to encourage young people to start business. Governments are continually supporting Entrepreneurship and business startups. Furthermore, Youth receive much support from a range of government agencies, non-governmental organizations, private-sector initiatives, and educational institutions. However, entrepreneurs still are facing many challenges to realize their ideas and make their business grow and sustain. Despite that, one million people start business, about 860,000 people (more than 80%) do fail. This is a very high failure rates in doing business. In this workshop we will explain the relation between inventions and entrepreneurship to creat winning innovation. Few case studies will be presented. The attendees will be given hand-on plans to transform their ideas/research to products, and how they can identify opportunities from within challenges.

Dr. Hamdy Atef, PhD

Dr. Hamdy is an emeritus Professor in Water Resources Management, CIHEAM/Mediterranean Agronomic Institute, Bari-Italy.

Qualifications: PhD in Soils and Water Science (1972), Ain Shams University. Diploma on "The use of isotopes and radiation in agriculture ITAL, Wageningen, The Netherlands. (1970). Diploma on "Irrigation Sciences", CIHEAM/IAMBari, Italy, academic year 1978-1979.

Years of professional experience: 40, 1972-1977 : Lecturer, Land and Water Resources Dept, Cairo, Egypt. 1977-1980 : Assistant Professor, Atomic Energy Authority, Soil & Water Research Dept., Nuclear Research Center, Cairo, Egypt. 1980-2006, Director of Research, CIHEAM/Mediterranean Agronomic Institute Bari-Italy. 2006: Emeritus professor, CIHEAM/Mediterranean Agronomic Institute Bari-Italy.

Field of Specialization:

Soil and water science (Irrigation); International expert in the field of Water resources management and Use of Non-conventional Water Resources with more than 35 years of professional experiences especially in: Coordinating the research program of MAI-B in the field of Non-conventional Water Resources Practices and Management. Supervisor of more than 100 Master thesis works and Doctorates in the field of Irrigation and water resources management. Coordinating and Participating in different EU-Projects realized in cooperation with different scientific Institution and Organization in the Mediterranean region: EU DGI: CIHEAM "REGIONAL ACTION PROGRAM (RAP): WATER RESOURCES MANAGEMENT AND WATER SAVING IN IRRIGATED AGRICULTURE (WASIA PROJECT). Coordinator EU: GEWA-MED and INGEDI Program on mainstreaming gender in water resources management in the Mediterranean. Membership of professional bodies: IWRA, ICID: Member of Working Group on Capacity Building, Training and Education (WG-CBTE). The governors board of AWC, WWC, and GWP-MED. Scientific production: No. 180 publications in scientific journals and proceedings of international conferences; Editor of No. 16 proceedings of advanced short courses, No. 33 proceedings of international conferences, workshops and seminars and No. 18 books.



Science and technology for development: closing the gender gap

Hamdy Atef

CIHEAM/Mediterranean Agronomic Institute, Bari-Italy

Science and technology has a profound effect on the research for feasible pathways towards development strategies. However, their impact on societies has not been uniformly beneficial. This is to be the result that the policies and plans for the use of science and technology for development are gender insensitive and do not respond to the needs and aspirations of both men and women equitably. Currently there is a large imbalance in the participation of women in science and technology compared with that of men. Women are still under-represented in top research managerial position as well as in science and technology and innovation policy making. The gender insensitivity of the use of science and technology in development planning is well documented and is illustrated by several examples all over the world. Nowadays, achieving gender equality and women's empowerment in science and technology is one of the primary challenges for the developing world. Many efforts have been made by governments, universities, academic societies and women scientific organizations, but we are still far away in closing the gender gap in science and technology. It is within the global perspective of science and technology on sustainable development strategies, the search of gender equity acquires its full meaning and potential. In this paper we shall present and discuss the different approaches that could be used to achieve gender equity in order to avoid gender discrimination operates in different dimensions of science and technology beside describing some innovative actions and tools those to revert gender imbalance.

Dr. Heba Gaber



Dr. Heba is currently the research and innovation regional officer at the European Union Delegation to Egypt. She oversees the conception, elaboration and implementation of relevant EU-MED Region research and innovation cooperation agreements, strategies, and programmes. She has more than 10 years of international operational and academic experience across multiple sectors. The first part of Heba's career was in Chemonics Egypt, a leading consulting firm that provides engineering and environmental management services. Heba led several consulting contracts spanning multiple sectors. At the University of Waterloo in Canada, Heba worked as a research associate for four years. During her Doctoral studies, Heba has worked with world-renowned experts on research topics that include: developing organization capabilities & competences, strategic orientation of organizations, international entrepreneurship, and technology transfer. In particular, she focused on the role of a firm's strategic orientation in the creation of innovation capabilities at SMEs. As a senior consultant, Heba joined Innovety (2010-2012) a non-traditional consulting firm, where she provided consulting services in the areas of innovation management and entrepreneurship. Heba holds a Chemical Engineering Degree from Cairo University (1999), a Masters in Local Economic Development from the University of Waterloo in Canada (2006), and a PhD in Management Sciences from the University of Waterloo with a concentration in Management of Technology and International Entrepreneurship (2013).

Support for women in science- EU experience

Heba Gaber

European Union Delegation to Egypt

The talk will give a brief overview on the EU approach to promoting Gender Equality in its Research and Innovation Programs. It will shed light on the practical guidance on the effective application of the new gender equality provisions in Horizon 2020. This entails integrating gender equality issues at each stage of the research cycle: from programming through implementation, monitoring and program evaluation.

Ms. Jana El Baba

Ms. Jana El Baba is Program Specialist for Social and Human Sciences at the United Nations Educational, Scientific and Cultural Organization (UNESCO) – Cairo Office. She is currently involved in programs promoting inclusive development in the Arab region, notably for youth and women. She has previously worked at the United Nations Economic and Social Commission for Western Asia (ESCWA) where she was involved in Arab regional preparations for the 2030 Agenda for Sustainable Development and the Rio+20 conference, as well as environment and food security projects. During her work at ESCWA, Ms. El-Baba contributed to a number of United Nations publications, the most recent being the Arab Sustainable Development Report 2015. She holds two Master degrees, one in engineering from the American university of Beirut and a second in sustainable development and natural resources management from the University of London.



Role of UNESCO in promoting women in science

Jana El Baba

UNESCO-Cairo, Egypt

Over more than two decades, UNESCO has pioneered efforts to promote women in science in various world regions. Many programs have been implemented starting with the flagship L'Oréal-UNESCO for Women in Science partnership, and including the Global Partnership for Girls' and Women's Education, the SAGA (STEM and Gender Advancement) project, as well as the UNESCO UNITWIN Networks in Gender, Science and Technology and many others. The presentation will highlight the main pillars of action that have been adopted through these programs, and reflect critically on their contribution to the Arab region. To conclude, elements of a future agenda for promoting women in science in the Arab region will be suggested for discussion.

Ms. Nageen Ainuddin

Ms. Nageen Ainuddin is currently working as the Director of Pakistan Scientific & Technological Information Center (PASTIC) in Islamabad, Pakistan and is an information Scientist by profession. However, by qualification she is a scientist as her basic degree is master's in Zoology from the University of the Punjab, Pakistan. Being associated with the national S&T information dissemination agency, she possesses vast and versatile experience of more than 30 years, in several areas related to Science & Technology. But her main areas of interest are international cooperation in science, Women in STEM, Science Policy, Information Literacy, Environmental Information, Quality Management Systems, R&D projects appraisal & monitoring, etc. Since last 22 years she has been actively involved in issues and research related to women with reference to science, technology and sustainable development. She has undertaken a couple of international projects for Commonwealth Science Council and United Nations University and authored reports & monographs on "Girls Science Education in Pakistan" and "Re-visiting Women's Participation in Science & Technology". She is a full member of the Organization of Women Scientists in the Developing World (OWSD) since 1993. She is also a member of the International Network of Women, Engineers & Scientists (INWES), and during 2011 to 2014 she was also a member of the Board of Directors of INWES. Apart from OWSD and INWES, she is a member/fellow of PAP/NPO, WESTIP, Zoological Society of Pakistan, Asian Bioethics Association, Islamabad Professionals Women Club, etc. Achievements and honors include award of international fellowships by TWAS and WIPO. She was twice appointed Short Term Consultant by WHO. She has 16 national and 8 international papers to her credit which were either published or presented in national and international conferences on diverse topics. She has several international publications.



Gender Gap in STEM- Pakistan as case study

Nageen Ainuddin

PASTIC, Pakistan

The gender gap in science and technology is a burning issue and although situation has improved over the years, women are still highly under-represented in STEM fields. In the Global Gender Gap Report 2016, Pakistan ranks at 143 position out of 144 countries, and they are almost half the population (48.5%). This paper presents the gender and science scenario in Pakistan portraying the picture of Pakistani women in STEM in both the educational and professional levels, displayed through graphs such as Gross Enrollment Ratio in Primary, Secondary & Tertiary Education as well as employment, organization types and S&T Manpower by Occupation; Research Productivity Allowances, etc. Reports of UNESCO, World Economic Forum, Human Development Report, Gender Gap Report and some government organizations show that despite efforts by governments to provide education to girls in Science & Technology disciplines, the enrollment levels are low resulting in lesser women in scientific and engineering careers. Even girls obtaining higher education are not well represented in scientific careers. This low representation of women decision-making and management positions in the sciences has important consequences for women as well as overall development of the country. Major barriers for low female participation rate include inadequate recognition of their contribution, problems in mobility, ignorance about opportunities and societal perception of women as lower status dependents.

Dr. Saadiyah Ahmed Dhahir

Dr. Saadiyah got her B.Sc in 1991, M.Sc in 1999 and Ph.D. in 2007. Dr. Saadiyah was the head of the department of chemistry from 2012-2015. She was selected as visitor in the International Visitor Leadership Program (18 November- 6 December 2013), United States, Bureau of Educational and Cultural Affairs, "Developing Science, Technology, Engineering, Mathematics (STEM) Curricula for Women Educators". Currently, she is a member of the faculty and head of the analytical chemistry branch. She has more than 50 papers in various scientific fields. She is a member in many scientific organizations and acts as reviewer and referee in the field of environmental chemistry analysis as well as photo degradation and solar radiation. She got several awards from Baghdad University and the Ministry of Higher Education. She participated in many scientific workshops and events.



The challenges and difficulties faced by the researchers in Iraq

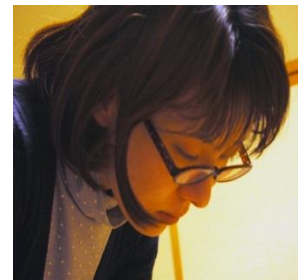
Saadiyah Ahmed Dhahir

University of Baghdad, college science for women, chemistry department, Iraq

Scientific research suffered in Iraqi universities after the lean years of the unjust blockade and ensuing war conditions many difficulties compared with their counterparts in neighboring and regional countries, despite the fact that our universities with huge numbers of scientists who have an important role in the founding of this university. Many of them have departed for scientific research in previous periods of lack of financial disciplines and scientific instruments and equipment and resources office and references as well as a breakdown in communication with scientists abroad and the lack of scientific relations at universities and educational institutions, and not to attend scientific conferences, which led to the emigration of Scientifics. As the current realities, the security problems and instability has become the largest in determining the movement of scientific research and restrained. I am one of Iraqi women researchers who have faced these difficulties during the 1999 master's and doctoral studies in 2007. But in spite of all these strong conditions I was able to end my studies and publish my research in international journals and participate many of international conferences. Also I complete the many research within the area of specialization in the field of processing and estimating some pollutant such as Pesticides, dyes, heavy metals, also in the field to find alternative spectral ways to estimate the Pharmaceuticals and compare these methods with literature.

Dr.Sachiko Hirata-Mogi

Dr.Sachiko Hirata-Mogi received the B.A. in Psychological Science, M.A. in Psychology from Kwansai-Gakuin University, Hyogo, Japan and Ph.D. degree from Kobe University, Hyogo, Japan, in 2007, 2009, and 2012, respectively. She worked as the Research Fellow of the Japan Society for the Promotion from 2011-2013, as technical staff in the National Institute of Advanced Industrial Science and Technology (AIST) from 2013-2014, as postdoctoral fellow in Meiji University from 2014-2016. Now she works as a member of IdeaLab Inc., Tokyo, Japan, which aims to utilize the knowledge of psychological science for the benefit of society. She also teaches psychology of learning and language in Meiji-Gakuin University and Senshu University. Her main areas of research interest are the cognitive mechanism for formation of sound symbolism from the aspect of experimental psychology, and role of mimetics (onomatopoeia) in verbal communications. Dr. Hirata-Mogi is a member of the Japanese Psychological Association, the Japanese Society of Cognitive Psychology, and the Japanese Cognitive Science Society. She is also the special appointed collaboration member of Young Academy of Japan, in Science Council of Japan.



Analysis of language as a typical national characteristic feature: Japan as case study

Sachiko Hirata-Mogi

Idea Lab. Inc., Tokyo, Japan

In this talk, I introduce two studies focused on Japanese language and aim to make contribution to other scientific fields or languages researches. First one is about analysis of Japanese large-scale linguistic data. Japanese mimetic words are believed that they are particularly frequent in some areas. To examine this folk dialectology, we investigated the frequency of mimetic word in the Minutes of the Diet as a corpus of spoken Japanese. The results revealed that particular morphological type of mimetic words showed a regional variation in frequency. It was suggested that different types of mimetic words have different functions. We hope that this application of quantitative approach to the linguistic big-data will offer a possible use of data science in new research fields. Second one is about characteristic written characters. Figural symbolism is a phenomenon which people get impressions from the written characters. However, the difference between sound symbolism and figural symbolism were not well considered because of the lack of type of written characters in other languages. We examined the figural symbolism of Japanese characters, Hiragana and Katakana. Based on the psychological experimental paradigm, we conducted an experiment to demonstrate the compatibility between Japanese written characters and two types of word balloons. As results, partly compatibility of two types of stimuli was observed as figural symbolism. The generality of this phenomenon should be carefully discussed, however, the property of figural symbolism will be broadly applicable for the ergonomics, marketing, advertisement, arts, risk management for human errors.

Dr Sharifah Maimunah Syed Zin FASc

Dato' Dr Sharifah is Director of the International Science, Technology and Innovation Centre for South-South Cooperation (ISTIC) under the auspices of UNESCO and former Permanent Delegate of Malaysia to UNESCO. She spent most of her career in education and was involved in studies and programmes in science education at the national Ministry of Education. For the last six years after joining ISTIC, she was responsible for the capacity building programmes for science educators as well for women in Science, Technology and Innovation for developing countries. She is also a fellow of the Academy of Sciences Malaysia.



Elevating STI Women up the Executive Ladder

(Advancing STI women in executive positions)

Sharifah Maimunah Syed Zin FASc

ISTIC-Malaysia

There has been considerable progress in women's participation in education and in the workforce. The number of women doing science and technology courses in higher education have also improved. In some countries many women have also acquired influential positions through government commitments in providing enabling environments in organizations to enable women to move up the career ladder. However this encouraging movement is not pervasive. In many STI based organizations, very few women are in the top management. Reasons for these phenomena are well documented but there must also be new ways of thinking. Whilst policies in promoting and empowering women are important, women themselves must have the right outlook towards mobility within the organizations. Training programs focusing on women's development will promote their potential as decision makers. In particular women at middle level management must be encouraged to acquire the necessary skills in leadership and management and be able to portray their capability to occupy senior positions and of influence. They must also be encouraged to stay to enable optimal use of their experience. They must enhance their visibility within the organizations.

Dr. T. Sarah Kamala

Dr. T. Sarah Kamala, Professor from Department of Extension Education and Communication Management, Professor at Jayashankar Telangana State Agricultural University which is formerly Acharya NG Ranga Agricultural University, Hyderabad, India. She has put 30 years of experience in Teaching, Research, Extension and Training in various capacities. First one to introduced Professional 4 Year Degree Program for BSc Home Science Graduates in Journalism and Mass Communication in 2006-07 under 3rd Deans Committee Recommendations, as Head of the department in the Department of Extension, College of Home Science, Hyderabad from 2007-08 onwards. First one to introduced Professional 4 Year Degree Programme for BSc Home Science Graduates with specialization “ Information technology and Communication Management and First one to Start Masters MSc Program in the Extension Department with specialization Journalism and Mass Communications and Information Technology and Communication Management, from the academic year 2008-09. As an Extension and Gender specialist, she is the first Woman trainer who designed and executed Gender based training modules for Government of India and State Government with UNICEF funding and trained more than 10,000 first woman entrants into the political arena, empowering Elected Women Representatives and another 30,000 men who were elected for the first time for the Local Self Governance (Panchayat Raj), at the grassroots' level leaderships from 1995-1998. She is also a trainer for stakeholders of South Asia Poverty Alleviation Program piloted for SAARC countries from 1993-97 designing a unique program interfacing officials and Non- officials, elected representative both elected and defeated members of the respective constituencies. She has pioneered in empowering the disadvantaged communities to overcome all social, economic, cultural and psychological barriers through self-managed organizations of poor women Self Help Groups working as State Project Manager in World Bank Project-SERP from 2000-2006 and still continuing with measures to strengthen their collectives. Conducted more than 120 International, National and State level trainings to various clientele. One of the trained Grassroots' Elected representative ,Ms. Fatima Bee, a traditional Muslim woman President of Village Panchayath, took UN Award in 1998, from the President of United States of America , which she acknowledged it that it is due to training. Dr. Sarah has started 11 Tribal village Libraries for the remote hilly terrains tribal habitats that has never seen a newspaper even in this modern ICT era with Centre for Innovation & Voluntary Action, UK. Also established Information Corners for Health and Knowledge Promotion, and initiated Reading Clubs both for Literates and illiterates sustaining traditional tribal cultural activities. She also revived 44 Government defunct Village Libraries and trained them with innovative methodologies to attract villagers and restored their salaries on par with other government librarians. Promoted alternative livelihoods to farmwomen and SHGs Recognizing her service, She was nominated by Government of India and DFID, UK , for PAMORD Program (Planning and Management of Rural Development) at IRRI, Philippines in 1996 and 5 other countries . She has participated in Roundtable Discussions with Honorable First Lady of United States of America (USA) H.E Ms. Laura Bush, during the visit of his excellency President Mr. W George Bush to the University in 2006. Dr. Sarah was given charge as Liaison Officer from the University during the H.E. President Mr. W. George Bush's visit.



Accompanied Honbl. World Bank President, during His Visit to the State in 2005-06 and arranged meetings with SHG members who came out of Absolute Poverty. Instrumental in arranging MOU between the University and Government Viz. Department of Women Welfare and Child development, Disability Welfare, Women's Finance Corporation and other line departments for strengthening women farmers and SHGs. She is consultant to many national and International NGOs, UN organizations. First one to start Vocational Courses for School dropout adolescent girls and boys in 'Audio video Recording and Editing', with University Certificate Courses with the government funding. Received Ellen E.H. Award for "Proficiency & Excellence in Home Science," and Best Trainer State Award for Janmabhoomi & Prajalavaddaku palana.

Women and the Sustainable Development Goals (SDGs)- The Role of Self Help Groups (SGHs)

T. Sarah Kamala

ALL India Coordinated Research Project on Home Science,

Post Graduate Research Centre, Jayashankar Telangana State Agricultural University,

Hyderabad-Telangana State-India

She is the provider, farmer, teacher, doctor, entrepreneur, minister, leader, mother — contributing every day to her household, society and the economy. Women and girls make up more than half the world's population — and they are on the frontlines — often more deeply impacted than men and boys by poverty, climate change, food insecurity, lack of healthcare, and global economic crises. Their contributions and leadership are central to finding a solution. With the new global 2030 roadmap and Sustainable Development Goals (SDGs) approved by UN Member States on 25 September 2015, we take a look at how women a can change the proposed SDGs, as well as how poor women Self Help Groups can — and will — be key to achieving each of these goals. This research study clearly demonstrated that the dynamic factors contributing their empowerment status through Self Help Groups with their Socio-psychological Empowerment, Economic Empowerment and Legal and Political empowerment help them to overcome poverty. It is an important institution for improving life of poor women on various social components. A total of 4858 Members, 1341 Office Bearers, data was analyzed to draw the conclusions from the pioneering states who have piloted the SAARC countries Declaration 1995 to alleviate poverty in all its form through empowering women. Women participation in Self Help Groups have obviously created tremendous impact upon the life pattern and style of poor women and have empowered them at various levels not only as individuals but also as members of the family, members of the community and the society as whole. They come together for the purpose of solving their common problems through self-help and mutual help. The more attractive scheme with less effort is "Self Help Group" (SHGs). It is a tool to remove poverty and improve the women entrepreneurship and financial support in India creating a road map for the Sustainable Development Goals.

Dr. TONNANG ZEFACK Edouard Henri

Dr. Tonnang obtained a Bachelor and Master degree in physics before undertaking further master level studies in computing engineering with specialization in data mining and complex systems. He completed postgraduate studies with a PhD in applied mathematics in Agriculture/ Entomology. Henri's research activities aim at developing, applying and exploring new computation methods for decision support in the context of agronomy, integrated pest management practices and interventions, vector borne diseases control, climate change and variability impact assessments. He utilizes models that link mathematical, biological and physical principles for assessing present situations and predicting the future as well as testing the models with experimental data. Henri is a member of several internal alumni associations; DAAD, ACCFP, BAIRI, ARPPIS and START; a senior Fellow of the Volkswagen Foundation and an active member of the (GYA) Global Young Academy, working with the Open Science (OS) group as the leader of the Global Access to Research Software (GARS). He is an advocate of open source data and publications; and currently works for the International Maize and Wheat Improvement Centre (CIMMYT) as a Geospatial/ Data scientist. Henri has contributed on the development of a number of open source tools such as the Insect Life Cycle Modeling (ILCYM) software and the Maize Variety Selector app and guide on the configuration of open access Geospatial database/ repository for agronomy data. Eight years after the completion of his PhD, Henri has successfully mentored 2 postdoctoral fellows, supervised until completion 4 PhD, 6 MSc and 1 BSc students and has authored over 40 scientific publications. In the recent past, Henri began developing interest in learning how to translate results from scientific investigations for application in policy formulation. He is an advocate of the fact that research should be used to shape policy making, create wealth, and therefore contribute to economic development while addressing societal issues. This desire has stimulated him to learn how to use the Integrated Valuation of Environmental Service and Trade-off (InVEST) modeling platform for decision-making and apply system thinking for solving problems with holistic approaches. A latest Henri's venture is to champion the establishment of an Africa Virtual Network of members of Academies to stimulate the shift from Capacity Building to Competence Development through appropriate mentorship and supervision.



Inter/ Trans/ Multi/ - disciplinary Research to Improve Health and Food Security: shifting from Capacity Building to Competence Development in Africa.

TONNANG ZEFACK Edouard Henri

Geo-spatial/ Data scientist - International Maize and Improvement Centre (CIMMYT)

This paper's goal is to define the concept of Inter/ Trans/ Multi/ - disciplinary research and place it in the context of health and food security in Africa using the author personal experience. The paper shows how engagement to Inter/ Trans/ Multi/ - disciplinary research by African scientists can enhance Science, Technology & Innovation (STI) and drive the continent towards an improve health and food security and knowledge-based economy. A number of well-established African wide Capacity Building programmes, which emerged due to the reduced number of Africans in the global community scientists are presented. Emphasis is place on that fact that while aiming to reaching a critical mass of scientists in Africa, we should continuously promote excellence in training and research; and build, nurture and sustain communities of scholars/ scientists able to lead world-class research that advances development in the region and beyond. Although these training networks show some level of visibility and awareness of the value of research, the continent still need to focus on producing quality research outputs including peer-reviewed publications, technologies, innovations, patents, and distinctive bodies of knowledge. Propositions aiming to reposition African scientists as thought-leaders, agents of change, and sources of solutions to current and future development challenges in the world are given with the objective of the continent to shift from simple capacity building to real competence development.

Dr. Tyseer Aboulnasr

Dr. Tyseer Aboulnasr is a visiting professor at Nile University Cairo, Egypt. She recently retired from University of British Columbia Vancouver. Dr Aboulnasr received the Bachelor of Engineering degree from Cairo University, Egypt, M.Sc. and Ph. D. degrees from Queen's University, Kingston, Canada; all in Electrical Engineering. She was Dean of the Faculty of Applied University of British Columbia 2008-2011 and Dean of the Faculty of Engineering at the University of Ottawa 1998-2004. Dr. Aboulnasr received the Ottawa-Carleton YWCA Women of Distinction Award (Education) in 1999 and was elected Fellow of the Engineering Institute of Canada in 2002 and Fellow of the Canadian Academy of Engineering in 2003. She was named as one of the 100 most influential people in Ottawa, Canada's capital, in 2001 and of the 100 most influential women in British Columbia in 2010. She received her highest honour in 2005 when she was named as a 2004 recipient of the Order of Ontario. In 2012, she received the Queen's diamond Jubilee Award and was recognized as the ASME Egypt Woman of the Year. She is currently focused on creating the necessary environment and supporting initiatives by government, universities and NGOs to realign research and innovation in Egypt to address society's challenges and improve people's lives.



The what, why, who and how of Innovation

T. Aboulnasr

Nile University

The ultimate goal of scientific research is to improve the quality of our life in the short, medium or long term. For scientific research to achieve this ultimate goal, it must turn into action that adds value or in other words, it must take the final step into innovation. Innovation is now accepted as the driver of competitiveness and of sustainable economic development. This talk will address innovation: what it is, why we need it, who is or can be innovative and how an individual, an institution and a nation become innovative. We will address the issue from the perspective of the individual researcher as well as the perspective of the research department, division or institution leader. What constitutes innovation? What are the drivers of innovation? What are the social and institutional barriers to innovation? Does all innovation have to be dramatic and disruptive? Can regular people be innovative? How do you get regular people to think innovatively? What do I have to do as a young researcher? What do I do as a team leader? How can a research institution create a culture that values and drives innovation? What should Egypt do to institutionalize innovation? All these questions will be addressed with specific focus on the Egyptian context. The presentation will be followed by a workshop to apply the principles discussed and will aim to help each participant develop their own road map to a new way of managing challenges.

Dr. Vijaya khader

Prof. (Mrs.) Vijaya Khader, Former Dean, Acharya N.G.Agricultural University has been actively engaged in nutrition research and teaching for over thirty six years. She worked as First Principal at College of Home Science, Bapatla and also at college of Home Science, Hyderabad. Headed the Department of Foods and Nutrition, PGRC, Rajender Nagar as the Director, Center of Advanced Studies in the field of Foods and Nutrition, which is the only one in the country. Instrumental in starting Inter-faculty P.G. Program in Food Science and Technology and worked as a Program Director. Completed 22 independent research projects funded by National & Inter National Organizations, such as DBT, ICAR, Govt. of India, WORLD BANK, FAO etc. to improve the nutritional status & the economic empowerment of rural, tribal, farm, and fisher women. Member State Council for Foods & Nutrition. Written 4 university level text books receiving Royalty. Patented two equipments namely Low Cost Ice Cream Freezer (to make use of small quantity of milk at village level) And Multi Purpose Fresh Fish Vending and Display Table (To reduce the drudgery & Hygienic handling of Fish), licensed the Technology to a women entrepreneur twice. Also worked as Dean P.G Studies, Director of Extension and Dean of Student affairs. Visited four universities in U.S.A.; Four universities in U.K.; Seoul; Malaysia; Singapore; Egypt; Netherlands; Italy (to study the agriculture and extension activities for the benefit of formers. Presented project proposal on establishment of Gender Resource Centre for sustainable livelihood.) ; Beijing; Kunming; Shanghai; Australia, Bangladesh and Taiwan .Received State Best Teacher Award; Appreciation Certificate from ICAR; Women of the year; Fellow of Association of Food Scientists and Technologists, FAO Fellow; Eminent Women Scientist Award by the International Network of Women Engineering & Scientists (INWISE) & Women in Science and Engineering (WISE) India for contribution in the area of Science & Technology; Out Standing Women Professional Award by Federation of Indian Chambers of Commerce and Industry (FICCI) and 3rd Dr. Rajammal P. Devdas Memorial award for major Research work on Socio Economic Empowerment of Rural, Farm, Fisher and Tribal Women. She served as Member Board of Management of A.N.G.R.A.U. highest body of the University. She was Involved in developing recent portal on Rice in Human Nutrition. She highlighted the work on fisher women through the global website, <http://genderaquafish.org>, run by the Asian Fisheries Society. At present Principal Investigator for ICT enabled Higher Education at National level on production of course ware –e-Content for Food Technology at P.G. level funded by National Mission for Education & Ministry of Human Resource Development, Govt. of India. Chair Person of the Task Force Committee on Biotechnology based programs for Women, Department of Biotechnology, and Govt. of India. Member of OWSD (NO: 3502) & Member World Fish Centre on Gender (Malaysia).



INTERVENTION OF VIABLE TECHNOLOGIES FOR FOOD, HEALTH, LIVELIHOOD AND NUTRITION SECURITY

Vijaya khader

Acharya N.G.Agricultural University, India

Intervention of technologies improved the food & nutritional status of the population. Promotion of malt based small scale food industry not only provides opportunity for rural women to develop entrepreneurship and employment, but also provides food and nutritional security. Several technologies such as value addition to fish & prawn products, artificial pearl culture, processing of salted fish, helped the self help group women of Andhra Pradesh, Karnataka, Kerala and Tamil Nadu to improve their economic status. Received two patents & licensed the technology which helped the women to reduce drudgery and also preserve the fresh fish for a longer time. Product development can be taken as income generating activity in the rural areas by the illiterate women. Products can be included in supplementary feeding programs in order to improve the nutritional status of the vulnerable groups of the population. The horse gram which is commonly used for cattle feed can be diversified for human consumption with less investment. Mothers as well as Anganwadi workers preferred amylase rich supplementary foods which reduced Grade III and grade IV malnutrition in Pre- school children significantly. The spawn multiplication can be done by women as a co-operative venture and mushroom cultivation can be undertaken at household level as an income-generating activity. Introducing red palm oil is beneficial to overcome vitamin A deficiency. The supplementary income of women has a positive impact on the socioeconomic status of the family. This impact is particularly felt on the food and nutrient intake of the family contributing towards food & Nutrition security.

Track 4

Food Technology – Agriculture - Veterinary Medicine

Dr. A. Sabitha Rani, Ph. D

Dr. A. Sabitha Rani is currently working as Head of department of Botany, Osmania University, College for Women (OUCW), Koti, Hyderabad. She joined as Assistant Professor in department of Botany in the year 2007. She obtained her Ph.D from Centre for Plant Molecular Biology (CPMB), Dept. of Genetics, Osmania University. Prior to join in Osmania University service, she worked in Indian Institute of Chemical Technology (IICT), Hyderabad from 2001 to 2007. She has meritorious academic record with distinction of bagging 2 gold medals for securing 1st rank in M.Sc. Botany and highest marks among all women candidates of the university. She was awarded with Young Scientist and Women Scientist Projects from Department of Science and Technology (DST), New Delhi. She conducted three National Seminars and one National Workshop in the area of Plant Biotechnology. She is the member of various academic bodies like Indian Women Scientists Association, Indian Botanical Society, Tissue culture Association of India, Society for In-vitro Biology (International) and Organization for Women in Science for the Developing World (OWSD). She is also elected as an Associate Member of AP Academy of Sciences in 2012. She published 42 research papers in National and International Journals and contributed many book chapters. She presented around 40 research papers in National and International conferences. She also presented her research work in International conferences in various countries like Charleston, USA; Beijing, China; Dhaka, Bangladesh; Seattle, USA; Kuwait; Colombo, Srilanka and Dallas, USA. She has undergone various trainings in the area of plant biotechnology to update the research developments. Two students have been awarded Ph.D under her guidance and presently six students are working for the Ph.D program. Her research interests are mainly on medicinal plants i.e. Tissue Culture studies, Isolation and Bio-evaluation, chemical and molecular characterization of medicinal plant products.



Plant Tissue Culture Technology for the Improvement of Medicinal Plants

A. Sabitha Rani

Department of Botany, University College for Women, Koti, Hyderabad- Telangana State, India

Higher plants are the sources of many chemicals with impressive biological activities like anti-microbial, anti-diabetic, antioxidant, anticancer and insecticidal properties. Today, there is a growing interest in natural products because of their safety, efficacy and environment friendly nature. Due to high demand for herbal drugs, many medicinal plants have been indiscriminately over exploited, resulting in short supply, high price, forced substitution of raw materials and also endangerment of many valuable plant species. In the recent years, plant cell and tissue culture has emerged as a powerful tool for large-scale multiplication of many plant species. Plant cells are biosynthetically totipotent, with each cell retaining all the genetic information, thus capable of producing complete plants in-vitro conditions. The Plant tissue culture involves the production of secondary metabolites from callus cultures and through the hairy root production by genetic transformation with *Agrobacterium*. In the present study, we will describe the standardization of in-vitro regeneration protocols for various medicinal plants like *Embelia ribes* & *Stevia rebaudiana*, secondary metabolite production through callus cultures in *Costus pictus* and hairy roots in *Spilanthus acmella*. The details of various explants used, concentrations of growth regulators employed, frequency of callusing and plant regeneration will be discussed. The tissue culture studies play a significant role in conservation, large-scale propagation and production of secondary metabolites from important medicinal plants.

Dr. Amal Saber Owis, Ph.D



Prof. Dr. Amal is the first Egyptian young scientist women at ARC, who awarded National state Encouragement Award in Agricultural science “June 2006”, Heliopolis Academy Innovation Award, Theme" Organic Agriculture" December 2008 and Agriculture Research center Award, Theme “Excellence scientific Award for the best scientific research for Cotton Research Institute” 2013 and International Award from the Academy of Science for the Developing World (TWAS) and COMSTECH, Italy, 2009. Also Dr. Amal Owis is the first Egyptian young scientist women at ARC working as Deputy Director for Researches, Cotton Research Institute, Agricultural Research Center from 2008 to 2013 and after that worked as Director of Cotton Research Institute, Agricultural Research until 2014. She earned her Ph.D in Agric. Biochemistry, Faculty of Agriculture, Cairo University (2001). M. S.C in Agric. Biochemistry, Faculty of Agriculture, Cairo University (1996) and B. Sc in Agric. Biochemistry with Final Grad Very Good With Honor, Faculty of Agriculture, Cairo University (1992). Dr. Amal is a professor at Cotton Chemistry Department, Cotton Research Institute, Agricultural Research Center. She completed a postdoctoral fellowship at biological Engineering dep., Dalhousie University, Halifax, Nova Scotia, Canada. Dr. Amal has served as the executive committee member of International Cotton Researchers Association (ICRA). She is a member of Inter-regional Network on Cotton in Asia and North Africa (INCANA), World Association of Industrial and Technological Research Organizations (WAITRO), Scientific Society for The Egyptian Cotton Champions, Association of Research Members of Agricultural Research Center, and the Society for women in science in developing countries (SWSDC –Eg). Dr. Amal have 22 years experiences in the field of plant biochemical technology, byproduct utilization and wastewater treatment. She published more than 23 Reviewed articles at national and international scientific Journals, 5 publications at national and international scientific Conferences, workshop and symposium, 4 books national and international and 2 patents. Also she has a long record (11 years) in management of small and medium research projects ranging from 0.25-1 million EL. ASMMO was the team builder and daily leader of the Plant biochemical technology and byproduct utilization group during her 19 years employment at ARC, CRI with finally Ph.D’s, MSc, BSc and technicians. Recently, she has been Principal investigator for international and national funded project i.e. FP7-KBBE-2012-6 project “Processing of biowaste for sustainable products in developing countries”, seventh framework program, EU, she is also Principal investigator for the project “recycling of the cotton stalk to bio-compost” Agriculture research Center, Egypt. She is principal investigator for the project of “Study the efficiency and effectiveness of Egyptian women in rural development “Women Economic Empowerment project” Funded by WAITRO & ISESCO. On the other hand, Dr. Amal attained International training such as "organization development in management" in cooperation with Northern Illinois University, College of Business (USA) & National Management Institute (Egypt).

Improvement of the efficiency and effectiveness of Egyptian women in rural economic development (Women Economic Empowerment)

Amal Saber Owis

Agricultural Research Center

Our study aimed to enhance programs and technologies for ARC in order to improve living conditions for poor rural women and increase their contribution and participation by developing economic activities for sustainable development and enhancing their skills in agricultural technology areas. The project was held to transfer new technologies to build small businesses or create new jobs in which we can alleviate poverty among rural women in these governorates by training 60 selected rural women who were trained from each site, and then the most successful new technologies were transferred to the local community at:

- El- Behera governorate, Kom Hamada center for five villages (Mohamed Refat, El bregat, Abdel maniam Ryid, Demasheke, and Aalqam village) and addition to regions Nubaria center.
- Qena governorate, Qous for five villages (Naga El Salam, ELshaarany, gargarous, El khrnakaa and El-makrabai).

Dr. Eqbal M. A. Dauqan, Ph.D

Eqbal M. A. Dauqan is an assistant professor who received her Bachelor in Biological Chemistry from department of Chemistry, Faculty of Sciences, Taiz University, Taiz, Yemen in 2002. In 2008, she was awarded the Master of Organic Chemistry by Taiz University. In December 2008, she was given a scholarship by the Organization for Women in Science for the Developing World (OWSD), Italy to continue her education in Malaysia. Dr. Eqbal received her Ph. D. in Biochemistry from the School of Bioscience and Biotechnology, Faculty of Science and Technology (FST), Universiti Kebangsaan Malaysia (UKM), Malaysia in 2012. Her thesis project was awarded as an excellent thesis. She was appointed as a Post-doctoral fellow at the School of Chemical Sciences and Food Technology, FST, UKM from July, 2012 to July 2013. In July, 2013 she was appointed the Senior lecturer at Department of Medical Laboratory Sciences, Faculty of Medical Sciences, Al-Saeed University - Taiz, Yemen. Dr. Eqbal was the Head of the Medical Laboratory Sciences Department and Head of Therapeutic Nutrition Department -Faculty of Medical Sciences Al-Saeed University - Taiz, Yemen. In addition, she is the president of Yemeni Association for Science and Technology for Development, Taiz city branch. She is a member of the Organization for Women in Science for the Developing World (OWSD), Italy. Her main research interest is Biochemistry and Food science. She has published more than 26 papers in journals and proceedings. In 2012, she had published a chapter in antioxidants enzymes book and in 2013, she had published book in fruits mentioned in Holy Qura'n: Their importance to health. She had been selected as one of five winners of the 2014 Elsevier Foundation Award for early career women Scientists in the developing countries (Chemical Sciences). On 3/5/2014, she received the Yemeni capital of culture shield & honorary certificate from the Governor of Taiz City. On 14/4/2014, Dr. Eqbal received the Al Saeed University excellence shield and certificate for 2014. She had been selected as one winner of the Alhaj Hail Saeed Ana'am award for Science and Technology in Yemen for 2014. On 18/3/2015, she organized the 1st Healthy Nutrition Exhibition in Yemen. Currently, Dr. Eqbal had been selected to be a visiting scholar in UKM, Malaysia sponsored by IIE_SRF (USA).



Red Palm Oil and other Vegetable Oils for Human Health

Eqbal M. A. Dauqan^{1*}, Aminah Abdullah^{1,2}

¹School of Chemical Sciences and Food Technology, Faculty of Science and Technology,

University Kebangsaan Malaysia.

²Universiti Islam Malaysia, Malaysia

Fats and oils are very important in the human diet due to the high contents of essential fatty acids, which are necessary for the appropriate development of human tissues. Antioxidant compounds play an important role in our body due to favorable effects on human health. Consumption of food containing phytochemical with potential antioxidant properties can reduce the risk of human disease. Vegetable oils contain natural antioxidants. Chain breaking antioxidants are highly reactive with free radicals and form stable compounds that do not contribute to the oxidation chain reaction. Red palm oil is the oil obtained before refining and the characteristic color of RPO is due to the abundance of carotenoids (500 – 700 mg /L) in the crude oil. Red palm oil is unique as compared to other dietary fats in that palm oil contains the highest known concentrations of natural antioxidants, particularly provitamins A carotenes and vitamin E. Red palm oil is healthy because it contains carotenoids and a special form of vitamin E. Red palm oil contains vitamin E tocotrienols, which acts as a super-antioxidant and the carotenoids in red palm oil also act as antioxidants. Thus the highlight of this paper was to review the red palm olein and other vegetable oils for human health

Dr. Fatma Hamada, Ph.D

Dr. Fatma Abd-Allah Mohamed Hamada Currently works as an Assistant Professor at Faculty of Science, Hail University, Saudi Arabia. She was graduated from the Faculty of Science, South Valley University, Aswan branch, 1996. In 1998, she worked as a demonstrator at Aswan branch, Faculty of Science, South Valley University. Her postgraduate study was concerned with flora and taxonomy, biodiversity, ecology and conservation. She got her Ph.D. in Botany, 2013, from the Faculty of Science, Aswan University. She is a member of many Scientific Societies.



Plants as a part of ethno-biology tradition of the Southern and the Southern-east Egyptian tribes

Fatma Hamada^{1,3}, Rim Hamdy²

¹Botany department, Faculty of Science, Aswan University.

²Botany and Microbiology Department, Faculty of Science, Cairo University.

³Biology Department, Faculty of Science, Hail University, Kingdom of Saudi Arabia

Tribal community in the southern and eastern southern part of Egypt is an important part of the Egyptian community, and has its own culture. They have their own health care practices and knowledge. Plants compose an essential part in their medicinal treatment and is considered as a part of their own culture and become one of the Egyptian ethno-botanical traditions. In this study recording for ethno-botanical uses of plants for four tribes of the Southern Egyptian tribes were discussed, showing how surrounding environment and the geographical position affecting this knowledge.

Dr. Hend K. Sorour, Ph.D



She is a researcher, internal auditor and deputy of head unite of Bacteriology at Reference Laboratory for Veterinary Quality Control on Poultry Production (RLQP) in Animal Health Research Institute (AHRI), has been working in AHRI since 2002. She had her B.C. degree in 2001, Diploma degree in 2003, Master degree in 2007 and PhD degree in 2012 in Poultry Diseases, Faculty of Veterinary Medicine, Cairo University. She has experiences in food safety, HACCP system, diagnosis and control of poultry disease including knowledge in bio security in poultry farms and application of bio-safety in lab. Work. She participated in HACCP based inspection system course in Malaysia (2010) and the 7th Hafez International Symposium on turkey Production, Berlin, 30th may-1 June 2013, Germany. She was awarded several certificates as Biosafety certificate, advanced method in diagnosis of poultry disease (PCR) certificate, TOT certificate, ISO IEC 17025 certificate and communication skills for researchers' certificate. She was awarded certificate of honor from Poultry department, Faculty of Veterinary Medicine, Cairo University. She is a member in different associations such as The Egyptian Biosafety Association (EGBSA), the Egyptian Veterinary Association, the Veterinary Association for Poultry diseases, the Scientific Association of Animal Health Research Institute (SAAHRI) and American Society of Microbiology (ASM). Dr Hend K. Sorour is an author and co-author for many manuscripts including; Prevalence of turkey chlamydiosis in Egypt; Incidence of chlamydiosis in pigeon, Isolation and phenotypic characterization of intra cytoplasmic inclusion bodies of chlamydia organism from wild birds; Bacteriological studies on native and imported apparently healthy one day old chicks; Bacterial, molecular studies on food poisoning pathogens isolated from chicken meat products; Prevalence of some bacterial pathogens in wild birds; Incidence of salmonella in poultry and poultry by products; Comparative study between conventional, molecular methods for detection of listeria monocytogenes in rabbits from Egyptian farms; Gallibacterium anatis infection in chickens and ducks and imported poultry as bacterial reservoir.

Fighting important zoonotic disease for sustainable development

Hend K. Sorour *, Youssef Ibrahim Youssef **, Sahar Ahmed Zou elfakar**, Khalid Madian Ahmed** and Soad A. Nasef *

*Reference Laboratory of Quality Control on Poultry Production, Egypt

** Faculty of Veterinary Medicine, Cairo University, Egypt

Back ground

Avian chlamydiosis is very important zoonotic disease, which caused by *Chlamydothila psittaci* and it is world wide spread disease which infects most avian species. This infection resulted in economic losses in poultry industry. Safety precautions should be applied during deal with infected bird, because it causes human illness or death to individuals who in contact with infected birds.

Objective

Accurate and rapid diagnosis of *Chlamydothila psittaci* infection in ducks.

Overview on content

Rapid diagnosis of *Chlamydothila psittaci* through replacement of the isolation on embryonated chicken egg for 7-10 days to isolation on cell culture using of tracheal, oropharyngeal and fecal swab samples for diagnosis.

Methodology

Two-hundred samples from each of tracheal, oropharyngeal and fecal swab samples were collected from different duck farms. These samples were examined for isolation of *Chlamydothila psittaci* using either inoculation on cell culture or embryonated chicken egg.

Results

Chlamydothila psittaci was isolated through inoculation on cell culture technique with an incidence of 20/200(10%). Same isolation percentage was achieved through inoculation on embryonated chicken egg for 7 days.

Outcomes

Faster isolation technique of *Chlamydothila psittaci* through inoculation on cell culture, led to an early diagnosis and early treatment for prevention and control of the disease.

Dr. Mai Allam

Dr. Mai is vice head of the research group 'Biotechnology and Genetic Resources', Center of excellences for advanced sciences, National Research Centre and she is a member of Technical Support, Monitoring and Impact Assessment Office (TSMIA), Academy of Scientific Research and Technology, Egypt. Dr. Allam has finished her PhD in Plant Genomics and Genetics at Leibniz-Institute for Plant Genetics and Crop Plant Research (IPK), Gatersleben, Germany in collaboration with Martin Luther Halle-Wittenberg University, Germany (Full PhD fellowship funded by DAAD and Ministry of Scientific Research). She worked for four years in the Federal Ex-situ Genebank in Germany, the biggest genebank in Europe, and she studied the genetic bases behind the seed longevity in oilseed rape (*Brassica napus*). She is leader of research project which focused to study the wheat genome for detecting the associated loci or genes responsible for tolerance of some abiotic stresses. She is co-principle investigator of project aiming to establish new techniques to improve the efficiency of the in vitro production of flax through some nanotechnology procedures. In Addition, she is research member of other projects aiming for bar-coding characterization of endemic medicinal plants in Egypt, molecular characterization of anti-fungal medicinal plants. She was an active member in number of national and international research projects aiming to produce some transgenic plants such as date palm, barley and canola. Additionally, she established in vitro propagation systems for number of highly important medicinal plants by tissue culture technique. She used a number of biochemical and molecular marker to characterize plants in DNA level. She is a supervisor for two PhD and two master students. Through fourteen years in research field, Dr. Allam was highly specialized in the following techniques: Seed germination and evaluation, artificial ageing and seedling evaluation, classical QTL mapping using softwares QTL cartographer, PlabQTL and Genestat, Genome Wide Association Mapping using softwares Tassel and Genestat, Phenotypic data analysis using softwares Sigma plot, SPSS and PLABSTAT, Genotypic data analysis using softwares Structure (for population structure), Tassel (for PCA and Kinship analysis), Phylip and SplitsTree4 (for drawing phylogenetic tree), Tissue culture of wheat, Rice, Barley, Tomato, Potato, Canola and Several medicinal plants, Agrobacterium mediated-transformation in tomato, rice, potato and canola, Biolistic mediated transformation of Barley, Date palm and Canola, Basic techniques of molecular biology, DNA manipulation, PCR, DNA fingerprinting using DNA barcoding; SSR; AFLP; ISSR; RAPD, protein and isozymes, southern, northern and western hybridization and molecular cloning. Dr. Allam published 10 international publications in field of plant genetics and biotechnology. She actively attended number of international conferences with 12 oral presentations and 10 posters as well as she was from organization committee of more than 10 international conferences. She has travelled in number of short fellowships to Pavia University, Italy (2006-2007), ICGEB institute in New Delhi, India (2008-2009), Centre of Biotechnology in Sfax, Tunisia (2008-2009).



Genome Wide Association Mapping in Oil and Cereal Crops under Different Environmental Conditions

Mai Allam^{1,2}, Doaa Hassan¹, Radwa Yousif¹, Andreas Börner² and Mahmoud Saker¹

¹National Research Centre, Cairo, Egypt. ²Leibniz Institute of Plant Genetics and Crop Plant Research (IPK) Gatersleben, 06466, Germany.

Association mapping analysis is an approach established to link markers with the complex traits depending on linkage disequilibrium (LD) decay of natural diverse populations. The LD is the non-random association of alleles of two or more polymorphic loci. It is calculated using the genetic distance between loci and the number of generations in the population since it is originated. This methodology allows the application of highly accurate mapping by employing the ancient occurred recombination among population lines. Association studies aim to analyse candidate genes in particular loci which are directly linked to the trait of interest. Genome-wide association study (GWAS) was used to investigate the association panel ASSYST (215 individuals, genotyped with 4001 bi-allelic 6K SNP markers). Common positions were detected in 14 positions across the whole genome. Time to reach 50% of germination (T50) and normal seedling's root length (RL) recorded the highly significant MTA among twelve tested traits. Gene ontology and annotation analysis of MTAs physical positions displayed highly significant genes associated with T50, which were involved in seed development and cell wall thickness. In present work, we examine 500 Egyptian/worldwide wheat collections (The seed materials provided from National Genebank, Egypt and Federal Ex-situ Genebank in Gatersleben, Germany) under drought and salinity stresses as well as under natural and experimental ageing condition. This abundant wheat collections of wild relatives and landraces will be investigated under Egyptian conditions using GWAS to produce high resolution reference map for breeders.

Dr. Motha Satyavani

Dr. Motha Satyavani has completed her Ph.D. from Osmania University. She is working as a Technical Officer at NCLAS, NIN, Hyderabad, India and has 28 years' experience in breeding management of laboratory animals. She also Underwent GLP training in IIBAT (International Institute of Biotechnology and Toxicology), Chennai, Tamilnadu, India. Dr. M. Satyavani has major involvement in establishing WNIN Obese rat model. She has published 8 papers to her credit in peer reviewed International Journals. She also attended several National and International conferences. Currently, she is the Principal Investigator for two intramural projects and Co-investigator in two more projects. She is further serving as a Treasurer of Indian Women Scientists Association (IWSA).



The spontaneous tumour development in Sprague Dawley/NIN hairless mutant rat

M. SatyaVani, P. Uday Kumar, R. Ravindar Naik, P. Suresh

National Centre for Laboratory Animal Sciences,

National Institute of Nutrition, Hyderabad, India

Spontaneous mutations in rodents are valuable experimental models to study human disorders in biomedical research. Nude mutant rats are widely used in immunology, percutaneous drug absorption, wound healing, skin pharmacology and experimental carcinogenesis. Hypotrichosis (hairless) mutation was observed for the first time in SD rat colony at National Centre for Laboratory Animal Sciences, NIN, India. The parents identified were isolated and further propagation was carried out by selective breeding. The data on morphological features in each generation have been recorded. At present, the mutant is in 9th generation. Studies have been conducted to evaluate the new SD/NIN hairless mutant rat for biochemical, immunological and molecular characterization as well as histopathological evaluation. Ninety days old (12males and 12females) animals both homozygous and heterozygous taken were housed using standard experimental conditions and observed for changes in ageing. Four females and two males developed spontaneous tumors. However, the dimensions as well as the weight were recorded and evaluated for histopathological analysis. The results of the histopathological evaluation showed that most of the tumors were fibro - adenomas with predominant fibrous tissue which may progress to malignancy, if left untreated. The incidence of tumors was more in females than in males. As these mutant rats are hairless, depilation (time consuming) is not required and therefore, the tumors can easily be identified. Based on the above features it is presumed that mutant model may be used to study carcinogenesis and tumor therapy in future.

Dr. Mona Aly Abdel Halim Abdel Rahman, Ph.D

Dr. Mona is a researcher in Bacteriology unit and deputy of quality manger in Reference Laboratory for quality control on poultry production, Animal Health Research Institute, Dokki, Giza, Egypt. She earned her B.V. Sc. from Cairo University, May, 2004 (good grade). She earned her M. V. Sc., in Bacteriology, Faculty of Vet. Med., Cairo University, 2007 (isolation, identification and characterization of salmonellae from laying farms). She earned her Ph. D. in Bacteriology, Faculty of Vet. Med., Cairo University 2012 (characterization of Salmonella Typhimurium isolated from poultry). She had a Diploma in Materials Science and Nanotechnology from Faculty of Post-graduate Studies for Advanced Sciences, Beni-Seuf University (2015). She attended WHO global Salmonella surveillance level IV international training course, EMRO, Cairo (25-29/3) 2007. She attended several workshops and conferences including Biosafety and Biosecurity workshop. Also, she attended and completed Laboratory Quality Management System Internal auditor (based on ISO/IEC 17025:2005) in 22-23 Feb. 2016. She was approved by IRCA to attend GMP, HACCP, and ISO22000 in Vetbook organization, in march 2016. She was successfully passed an assessment in HABC level 4 award in food safety management for manufacturing (QCF) and Collaborative Research and funding workshop–STDF with British council (15-17 Nov.,2016). She is a member in American Society of Microbiology, Nakaa nanotechnology network and Egyptian poultry diseases association.



Detection of some of virulence genes in Salmonella Kentucky isolated from poultry

Mona Aly Abdel Halim Abdel Rahman

Reference laboratory for quality control on poultry production –Animal Health Research
Institute- Dokki-Giza- Egypt.

Salmonella Kentucky has an increasing worldwide spread among human and animals, which poses a great problem. Twenty-six Salmonella Kentucky strains isolated from different samples from field cases between 2011 and 2016 from twenty-two chicken and four quails. In the present work, we study the genetic diversity through screening of 11 virulence genes (*invA*, *avrA*, *ssaQ*, *mgtC*, *siiD*, *sopB*, *gipA*, *sodC1*, *sopE1*, *spvC*, and *bcfC*) by PCR. The *invA* was detected in 100% of the Salmonella strains; but 88.4% of strains harbored *SopB*, *avrA*, *bcfC* and *ssaQ*, *mgtC* (80.7%) , *sopE* and *sodC* (19.2%), *Siid* (11.5%), *spvc* (3.8%), while *gipA* was not expressed in any examined sample. These results show the presence of virulence genes in Salmonella Kentucky with a potential of poultry and public health hazard.

Dr. Rasha Sabry Tawfik



Dr. Rasha is a researcher in Plant Biotechnology Department at National Research Center since 2014. She is member of Plant Molecular Genetics and Plant transformation Groups, Center of Excellence for Advanced Science and Genetic Engineering & Biotechnology Division, National Research Center, since March, 2006 till now. She received Egyptian Syndicate of Scientific Professions` prize for Excellence in Bachelor of Science 2004, master grant from Tanta University, Faculty of Science, Plant Department, Genetics Division (2005) and National Research Center prize for the Best PhD. thesis in the Field of Agriculture Science and Animal Production (2014). She participated in several International Research Projects like, Production of transgenic potato resistant to black scarf and stem canker. Project no. W.N. 102 (2006-2009), Development of reference genetic fingerprints, preservation of germplasm and biotechnology-based production of pharmaceutically bioactive substances of some threatened Egyptian medicinal plants (2011-2013) and Development of a system for commercial production and genetic improvement of some date palm cultivars in New Valley (2010 -2013). Additionally, she participated in some National projects like, Molecular characterization and isolation of pest resistance genes in Egyptian barley, funded by the national strategy for genetic engineering and biotechnology, ASRT (2004-2008), Isolation and cloning of pest resistance genes in barley, (2007-2009), funded by USA-Egypt partnership program, in collaboration with Kansas State University (KSU) (2007-2009), Genetic improvement of nutritional quality and drought and salt tolerance of North Africa barley germplasm, funded by NEPAD (2008-2010), and Enhancing income resources to reduce poverty in the upper Egypt using sericulture activity and proper utilization of silk and sericin produced thereof (2014-2017). She taught practical courses of Plant Physiology, Plant Morphology, Plant Systematics, Algae Uses, Algae Physiology, Applied Bacteriology, Virology, Applied Fungi, Yeasts, Plant Anatomy and Genetics in Plant Division, Faculty of Science at Tanta University in two years (2005-2007). Also, she taught Practical courses of Biotechnology and industrial application I, II (BioT407, BioT408, BioT 413) in two years (2009-2011) in New Program Biotechnology/ Biomolecular, Chemistry program, Faculty of Science, Cairo University. Dr. Rasha got her B.Sc. in Microbiology in 2004 (Very good with Honor), master degree in 2009 and PhD in 2014 in Plant Biotechnology from Faculty of Science, Tanta University. She had three publications, Effect of drought stress on somatic embryogenesis, biochemical and genetic makeup of flax, Journal of Biotechnology Research, Vol. no. 9, 17-32, 2009; Improvement of Flax Drought Tolerance Using Gene Transfer, Plant Tissue Cult. & Biotech. 26(2): 197-207, 2016; Molecular Genetic Analysis of Some North African Barley Germplasm, Acta agriculturae Slovenica, (Revised 15 January 2017).

Improvement of Drought Tolerance in Flax (*Linum usitatissimum* L.) Using Gene Transfer

Rasha S. Tawfik¹, Sammour, R.H.² and Mahmoud M. Saker¹

¹Plant Biotechnology Department, National Research Centre, Dokki, Egypt.

²Botany Dept., Faculty of Science, Tanta University, Egypt

The abiotic stresses such as drought continue to be major setbacks to the production of oil crops in Egypt such as flax. Moreover, Flax plays an important role in Egyptian national economy owing to export beside local industry. Flax (*Linum usitatissimum* L.), a dicotyledonous plant from the family Linaceae, is an important crop that is widely used all over the world as a source of natural fibers and industrial oil. Therefore, increasing food, fiber and oil production in stressful environments is achieved through producing of transgenic plants which are tolerant to drought stress. So the main goal of this study was the producing of transgenic flax cell lines which were tolerant to drought stress. Firstly, optimization of flax, Blanka cultivar regeneration system was obtained by studying different explant types, (hypocotyl, epicotyl and root) and different carbon sources like fructose, glucose, maltose and sucrose. The hypocotyl explant was found to be the best explant among all tested explants, giving healthy and rapidly growing callus proliferation with shoot embryos. Also, the highest somatic embryogenic induction and highest number of somatic embryos were obtained in 4% maltose medium so maltose at 4% proved to be better choice for somatic embryogenesis of *Linum usitatissimum*. Secondly, Genetic transformation systems were applied using DREB2A gene, as specific gene for drought stress tolerance. In biolistic transformation; hypocotyl segments were bombarded with DREB2A and GFP genes at particle flight distance of 9 cm and rupture disc pressure of 1300 psi. The expression of the gene was observed under blue light microscope after 24 and 48 h. In *Agrobacterium* mediated transformation, the hypocotyl segments were inoculated overnight with *Agrobacterium* culture at five optical density OD₆₀₀ i.e. 0.2, 0.4, 0.6, 0.8 and 1 for 30 min with occasional stirring. Later, the explants were transferred to a selection regeneration medium supplemented with 50 mg dm⁻³ Hygromycin and 300 mg dm⁻³ cefotaxime and subcultured every two weeks on a new selection medium. Molecular analysis confirmed the expression of the target DREB2A gene in flax genome.

Dr. Reem Mohamed Reda, Ph.D

Reem Mohamed Reda joined the Faculty of Veterinary Medicine; Zagazig University from which she received B.V.Sc. Degree in 2004. She got a master degree. of Bacteriology, 2011 from Faculty of Veterinary Medicine, Zagazig University. She got Ph.D. in Bacteriology, 2015 from Faculty of Veterinary Medicine, Benha University. She works at Reference Laboratory for Veterinary Quality Control on Poultry Production at serology unite from 2007 until now. She is authorized in HI test and ELISA test. She had training in TOT during 2015, training in communication skills for researchers in 2016 and recognition of attending 52 weeks for applied biosafety training workshop during 2016.



Experimental infection of boiler chicks with Salmonella Enteritidis

¹Reem M. Reda, ²Ahmed M. Ammar and ¹Soad A. Nasef

¹Reference Laboratory for Veterinary Quality Control on Poultry Production, Dokki- Giza

²Bacteriology, Immunology and Mycology Department, Faculty of Veterinary Medicine, Zagazig University.

Prevalence of Salmonella among broilers farms was investigated in this study that covers different provinces in Egypt through examination of 1200 various samples as paper lining box, internal organs of chicks. ISO 6579 was used for isolation and identification of Salmonella. An experiment was designed to assess the ability of oral infection of Salmonella Enteritidis (SE) to interfere with intestinal colonization of chicks. In the present study 20 broiler chicks (one day old) infected orally with 0.2 ml broth culture 1.8×10^8 CUF of SE and 10 chicks is kept as control. At the end of the experiment (4 weeks) all infected chicks had post mortem examination. The incidence of SE re-isolation was 70%, 50%, 100% in cecum, liver and litter respectively. Immunological response to infected group was determined by evaluating antibody titers in serum by ELISA after 4 weeks. In addition, amplification of 488 bp fragment specific for the sefA gene of SE was recorded by PCR. The PCR is more sensitive and rapid for detection of Salmonella isolates than ELISA but cannot be replaced by culture technique.

Dr. Shalini S. Arya, Ph.D



Current areas of interest:

Food Technology: Cereal Chemistry and Processing – Process and Product Development, Indian Traditional Foods - Chemistry, Technology and product development, Nutraceuticals – Chemistry, Technology and Product Development, Cereal legume health products - low glycemic index foods, gluten free formulations, Traditional foods, Product and Technology development, utilization of food waste. Food Biotechnology: Downstream processing of biomolecules, probiotics, prebiotics, fermented Indian foods development and characterization

Significance of current work to improving public health in India:

Dr Shalini Arya works in the area of Indian traditional foods, in particular cereal based staple foods such as chapatti, phulka, thepla, khakhara, thalipeeth, naan and kulcha. Her work is focused on various aspects such as product development and standardisation, nutritional improvement and characterisation, chemistry and technology, staling, extension of shelf life using various technologies (MAP, oxygen scavenger, chemical, freezing etc) for these products, all of which would have far reaching significance in improving public health in India and that too based on the resources that are locally available and food staples that are regularly consumed by the locals. Her work on chapatti was recognised during many international and national conferences and was awarded with first prize under cereal category. She has also developed an interest on utilisation of food industry waste into value added products, bioactive peptides from underutilised plant seeds, development of low glycemic index foods, functional food products from peanuts and quality improvement of gluten free flat bread. India unfortunately becoming capital country for diabetes and cardiovascular affected population and thus developing cost effective product technologies is very necessary. Dr Shalini and her research group have developed Indian traditional food products having low glycaemic index using low cost and locally available ingredients. She has published more than 50 research publications in international journals of high repute. In addition to this, Dr. Shalini has been helping multinational food industries for developing traditional food product technologies for e.g. chapatti, paratha, bhaji, instant food mixes. She has helped industries for developing low glycaemic index formulation, high soluble fiber paratha premixes, high protein atta premix and other healthy low cost nutritious premixes. Dr. Shalini Arya is an active member of international and national professional organizations such as TWAS, TWOWS, AFST, IFT and ILSI. She has received international and national awards from these organisations (Young scientist award, Malaspina International scholar award).

Nutritional evaluation of probiotic functional multigrain Beverage

Shalini S. Arya¹

¹Food Engineering and Technology Department, Institute of Chemical Technology, NM Parekh Marg, Matunga, Mumbai- 400 019, India

Fermentation is a desired process for biochemical modification of food done by microorganisms and their enzymes. Fermentation of cereal grains helps in improvement of the shelf life, texture, taste and aroma, nutritional value and digestibility of grains products and significantly lowers the antinutrients present in the cereal products. The content of nutrients (protein, fat, ash, carbohydrate, calcium, iron) and anti-nutritional components (trypsin inhibitor, phytic acid and tannin) were determined in control (unfermented) and fermented single grain based probiotic beverages and multigrain probiotic beverage while in vitro bioavailability of calcium and iron, in vitro protein digestibility, glycemic index and crude fiber were determined in control and fermented multigrain probiotic beverage. Fermentation caused significant ($P < 0.05$) increase in protein, in vitro iron and calcium bioavailability and in vitro protein digestibility contents of all the beverages while significant decrease was observed in fat, crude fiber, carbohydrate, glycemic index. On fermentation phytic acid, trypsin inhibitor and tannin were reduced significantly in all the beverages. Catalase test, carbohydrate fermentation test and gram staining were done in order to confirm the probiotic strain. No effervescence, conversion of yellow colored carbohydrate containing media into red color and gram-positive rod shaped bacilli indicated that the isolated bacteria could be identified as *Lactobacillus plantarum*. The shelf life of the fermented multigrain probiotic beverage was monitored over a period of 28 days. The shelf life of the product was 24 days, based on microbiological count, pH and titrable acidity.

Dr. Vidushi Neergheen-Bhujun, Ph.D

Dr Vidushi Neergheen-Bhujun is a senior lecturer in the Department of Health Sciences and ANDI Centre for Biomedical and Biomaterials Research at the Faculty of Science of the University of Mauritius. She graduated with a PhD in Biosciences in 2008. Vidushi has research interest centered on the cancer chemopreventive effects of bioactive extracts derived from food and medicinal plants indigenous to Mauritius. This emerging field of cancer prevention, through natural agents, is promising though the targeted mechanisms of these agents need to be understood further. Vidushi is determined to finding locally optimized solutions for the prevention and management of cancer, a problem, which is escalating in Mauritius and on the African continent. She has demonstrated a strong capacity to target communication to a wide range of audiences and has achieved research excellence in her field with more than 30 peer reviewed papers, 10 chapters in books, 2 peer reviewed conference proceedings and 30 conference abstracts and posters. Moreover, to substantiate her belief and engagement in scientific networking and knowledge sharing, she is an active member of the Global Young Academy, a Next Einstein Forum ambassador and a fellow of the African Science Leadership Program. In addition, she is the secretary of the Society for Free Radical Research-Africa, a member of the Society for Medicinal Plant and Natural Product Research and a Fellow of the American College of Nutrition.





Can non-communicable diseases be prevented: Role of functional foods

Vidushi S Neerghen-Bhujun

Department of Health Sciences and ANDI Centre of Excellence for Biomedical and Biomaterials
Research, Faculty of Science, University of Mauritius, Reduit, Republic of Mauritius

The dietary nature of a number of food plants and edible fungi have attracted significant interest at validating their ethnomedicinal uses, as well as promoting their use as functional food, to mitigate chronic human diseases. Creating a scientifically valid distinction between food and medicine is a challenge, given the plethora of minerals and vitamins they harbor that ensure the normal physiological system of the body and the bioactive compounds that reduce disease risks and promote wellness. Research in proteomics, nutrigenomics and metabolomics contribute to identify the biological basis through which food components promote health and wellness. Thus functional food, defined as foods and food components that provide health benefit beyond basic nutrition, is part of the new self-care paradigm since it can co-exist with traditional medical systems for prevention and treatment of diseases. Oxidative stress and high inflammation have been reported as the underlying pathophysiological hallmarks of a number of non-communicable diseases and attenuating the inflammatory state and increasing the antioxidant status constitute key targets in managing the latter. This is particularly important in malignant cells as well as in the tumour microenvironment where the non-malignant cells have a dynamic and often tumor-promoting function at all stages of carcinogenesis.

This presentation will discuss the scientific relevance and potentials of Pleurotus mushrooms, pomegranate and noni as functional foods, based on their polyphenolic richness, which has shown potent antioxidant and anti-inflammatory capacities, both in-vitro and in-vivo. The data suggests that these functional foods fit into a continuum that ranges from health maintenance or promotion to disease treatment.

Dr.Zakaria Fouad Fawzy

Zakaria Fouad Fawzy is the first Egyptian researcher attended of the talented young scientist program in China. He got an opportunity for more than two international projects in Egypt as a principal investigator about Climate Changes Issues in China and Egypt. Dr Zakaria is professor in the Agriculture and Biological Division, National Research centre since 2013. Also, he is Assessor in the Egyptian Accreditation Council. Dr Zakaria is Former President of the Youth Scientific Research Association. He was attended many scholarships and fellowships such as , scholarship “ PostDoctor “ in china from 2011 to 2012 and fellowship “ Talented Young Scientists Program” in China from 2014 to 2015. He created about four Memorandum of Understanding “MoU” and Memorandum of Agreement “MoA” between National Research Centre and other international scientific organization such as – Institute of Geographic Sciences and Natural Resources Research- Chinese Academy of Sciences and Beijing Institute of Technology- Ministry of Science and Technology – China. He is a member in many scientific organizations and acts as reviewer and referee as well as board member in the field of organic agriculture and climate changes issues for different national and international journals and organizations. Also, Dr. Zakaria won many awards and he was attend a huge number of conferences, training and workshops in Egypt and other many countries in worldwide as well as he was published five scientific books and more than 45 scientific research paper. Dr. Zakaria contributed significantly to the expansion of knowledge of organic agriculture and climate changes issues through public lectures on scientific research centers and various Egyptian and Chinese universities, and because he is principal investigator of some international and national projects he contributed significantly in helping to learn organic agriculture and climate changes and using smart climate agriculture as a new trend in the field of agriculture. He work a Progress Patent invention entitled “A new natural compound to increase productivity and immunity of horticultural and field crops ” - Application No. 2077/2015 - Advanced side - Academy of Scientific Research and Technology - Patent office.



Empowering Women through Climate Smart Agriculture System in Egypt and China

Zakaria Fouad Fawzy * and Li Yunsheng **

*Agriculture and Biological Research Division - National Research Centre – Egypt

**Institute of Geographical Sciences and Natural Resources Research – Chinese Academy of
Science – China

Climate Smart Agriculture is a production system which or largely excludes the use of synthetically compounded fertilizers, pesticides, growth regulators and livestock feed additives. To the maximum extent feasible, Climate Smart Agriculture systems rely on crop rotations, crop residues, animal manures, and good agriculture practices. Climate Smart Agriculture is a highly knowledge-based technique for manipulating complex agro-ecosystems, for breeding locally adjusted seeds and livestock, and for producing on-farm fertilizers and inexpensive nature-derived pesticides. Such knowledge is a crucial ‘reservoir of adaptations. In particular: “Within agriculture, Climate Smart Agriculture holds an especially favorable position, since it realizes mitigation and sequestration of carbon dioxide in an efficient way. Climate Smart Agriculture production has great mitigation and adaptation potential, particularly with regard to soil organic matter fixation, soil fertility and water-holding capacity, increasing yields in areas with medium to low-input agriculture and in agro-forestry, and by enhancing farmers’ adaptive capacity. Paying farmers for carbon sequestration may be considered a win-win situation as (a) carbon dioxide is removed from the atmosphere (mitigation); (b) higher organic matter levels in soil enhance their resilience (adaptation), and (c) improved soil organic matter levels lead to better crop yield (production). Agriculture is both affected by climate change but also contributes to it. As a sector, agriculture must therefore both adapt to changes and offer options for mitigation, i.e., reducing greenhouse gas emissions and storing carbon. Women are not just partners of development. They are the untapped or under-utilized allies and agents of change. They can contribute to mitigate climate change if they have adequate access to information, training, awareness raising and technology. It is also imperative that we prepare women in planning, response and recovery measures for climate disasters. Actually, a woman is building strong networks and partnerships at community, national and regional level to this end. Our flagship programs on climate change, including climate-resilient agriculture is a case in point. To conclude, Climate Smart Agriculture is a productive agro-ecosystem which might be very resilient and adaptive to climate change scenarios.

Track 5

Environment

Dr. Maha Abdallah

Dr. Maha Abdallah is a professor at the Marine Pollution department and a leader of the heavy metals group at the National Institute of Oceanography & Fisheries, Mediterranean Sea Branch, Egypt. She has earned her B.Sc. at the Chemistry Department, Faculty of Science, Alexandria University, Egypt. She has got her M.Sc. in Environmental Studies at the Institute of Higher Studies and Research, Alexandria University, Egypt. She has earned her Ph.D. in Marine Chemistry at the General Oceanography Department, Faculty of Science, Alexandria University, Egypt. Since then, she was a lecturer in Marine Pollution at the Marine Environment Department. She has supervised and headed several national projects, postgraduate students and has several activities. She has attended numerous national and international conferences, training courses and workshops and she is a member of several international and national scientific societies as Asia-Pacific Chemical, Biological & Environmental Engineering Society (APCBES), a member of Arab Science and Technology Foundation (ASTF), a member in the Intergovernmental Oceanographic Sub-Commission for Africa and Adjacent Island States (IOC-AFRICA) and a member in the Third World Organization for Women in Science (TWOWS), also she is a member of Integrated Biogeochemistry and Ecosystem Research (IMBER) and in the Surface Ocean lower Atmosphere Study (SOLAS) Networks. She has more than 40 of scientific publications in highly ranked journals. She is a member in many scientific organizations and acts as a reviewer and a referee in the field of Environmental chemistry and marine pollution for different international journals and organizations. In addition, she arbitrates many international projects in the field of marine science and also represented Egypt in many international scientific events.



Lake Maryout is a Substantiation for Environmental Destruction

Maha Ahmed Mohamed Abdallah

National Institute of Oceanography and Fisheries, Marine Pollution Lab, Alexandria, Egypt.

Lake Maryout is one of four Delta shallow (brackish water) lakes or lagoons and one of the most productive Lake in Egypt. This lake is showing a vital importance as it is the main source of the common and favorite fish (Tilapia species) for most of Alexandrine people. It is also a good nesting ground for many migrating birds and is a place for creation, entertainment and different water sports such as line fishing. Lake Maryout was subjected to relatively more studies in comparison to the other Egyptian lakes, due to the influence of the acute pollution on its environment, which attracts the attention of the investigators, as well as its location very near to the specialized laboratories in Alexandria. Alexandria's Lake Maryout has become a poster for an environmental destruction. The Olympic Athletic City and piers of a new bridge as well as the city's new hypermarket (Alexandria's new Carrefour) were built on land that until two years ago was a part of Lake Maryout. Engineers have drained a part of the Lake to create the land. Yet despite the loss of rare wetland in a country of mostly desert, local residents' don't seem too concerned. Once a vast, fertile body of brackish waters teeming with aquatic and bird life, Lake Maryout is now just a shadow of its former self.

Now, Lake Maryout is little more than a smelly receptacle for Alexandria's sewage and industrial waste. Pollution assaults the lake from all sides. Factories spill and dump illegally their toxic chemicals, primary treated and untreated wastewater (Fig.1).

Fig.1. Garbage tumbles off the city's dump into the murky water.



Dr. Mimi Haryani Hassim

Dr. Mimi Hassim is a senior lecturer of chemical engineering at the Universiti Teknologi Malaysia (UTM), Skudai, Malaysia. She is a Chartered Engineer at the Institution of Chemical Engineers UK (IChemE). She has received her B.Eng. degree from the Universiti Teknologi Malaysia, her M.Sc. degree from Loughborough University, UK and her doctoral degree from Aalto University School of Science and Technology, Finland. She is an established and world pioneer researcher working on inherent occupational health studies of chemical processes. She has published more than 65 indexed papers and made a lot of presentations in various conferences. She has received the best paper award in two important congresses. She has been chosen to represent the Malaysian Industrial Hygiene Association (MIHA), to present her work, in the 31st Annual Conference & Exhibition organized by The Australian Institute of Occupational Hygienists. She has received a full sponsorship by the AUN/SEED-Net to represent UTM in the 1st Regional Conference on Natural Disaster (RCND) in Jogjakarta. She was invited as keynote speaker in the Symposium on Process Safety at Safety Centre, IIT Gandhinagar. Dr. Mimi also acts as international scientific committees for several international conferences including International Conference on Safety and Symposium on Process Safety 2014 in India, International Conference on Safety & Environment in Process & Power Industry (CISAP) in Italy and International Conference on Chemical & Process Engineering (ICheaP) in Italy. She is the subject editor for the Process Safety and Environmental Protection, guest editor for the Process Safety and Environmental Protection (Special Issue for PSE Asia 2013) and Jurnal Teknologi (Special Issue for CONCEPT 2013) as well as technical English editor for The Journal of Sustainable Development of Energy, Water and Environment Systems (JSDEWES). She is selected as the member of the Global Young Academy and a General Secretary of the Malaysian Young Scientist Network as well as the Islamic Development Bank Malaysian Alumni Association.



Innovative Approaches to Estimate Fugitive Emission Rates and Occupational Air Concentrations during the Chemical Process Design Phase

Mimi H. Hassim

Universiti Teknologi Malaysia, Department of Chemical Engineering, Malaysia.

EU directives, such as the IPPC require inclusion of safety, environmental and health analyses in the process design as a part of their strategies towards achieving a sustainable process development. In petrochemical and organic chemical industries, which handle mostly volatile compounds, the most significant contributor to atmospheric releases is fugitive emissions from piping fittings and components. Fugitive emissions are not only a concern to economy and environment, but also a major source of background exposure to workers that may lead to various diseases including cancer. Each year more people die from occupational diseases than being killed in industrial accidents. Therefore, the estimation of occupational air concentration due to fugitive emission needs to be estimated early when developing a new process. Operating plants regularly measure the release and concentration levels through a plant-monitoring program. However, for processes, which are still 'on paper', predictive estimation methods are needed. Therefore in this work, new user-friendly methods for quantifying fugitive emission rate and occupational air concentration are presented. Three methods are proposed for early design stages based on data available from simple piping flow diagrams (PFDs), detailed PFDs or piping and instrumentation diagrams (PIDs). The method becomes more comprehensive as it progresses from simple PFDs to PIDs since more process data is available later including plot plan, coordinates of the emission sources and local wind speed. Users however, can choose which method that can be used depending on the process information available in hand. The methods are demonstrated on a real industrial case study of benzene production in Borealis Polymers Of plant at Porvoo, Finland.

Dr. Naglaa Farag Elsayed Soliman



Dr. Naglaa Farag Elsayed Soliman is working as a staff member of Water Pollution and Marine Environment Lab., Accredited lab by EGAC in compliance of ISO/IEC17025:2005, Institute of Graduate Studies and Research (IGSR), Alexandria University. She has obtained her B.Sc. in Chemistry and Oceanography, 1997, Faculty of Science, Alexandria University, Egypt. She has gained M.Sc. in Environmental Studies, 2008 and her Ph.D. in Environmental Science, 2012, Institute of Graduate Studies and Research (IGSR), Alexandria University, Egypt. She has experience in toxicology and risk assessment span over 10 years, and includes academic research, food safety and Environmental risk assessment. She is serving as a reviewer for several journals. She has also authored some articles/ books in the field of environment and marine geochemistry. Based on this research and training she has participated in many research projects such as the project for monitoring of the Egyptian Mediterranean Coast from El-Salloum to Rafah, through the Egyptian Environmental Affairs Agency (EEAA), the preparation for the Report on Baseline Budget Estimation of Mediterranean Coast of Egypt, 2013 through the Egyptian Environmental Affairs Agency (EEAA) and the project of Development of Water Pollution and Marine Environment Lab. (WPMEL) towards Accreditation, Institute of Graduate Studies and Research, Alexandria University, preparing for the Integrated Meeting of the correspondence Groups on Monitoring, UNEP, Athens, Greece, 30 March till 1st April, 2015, Participated in research project sponsored by the IDRC-Canada for establishing Alexandria Research Center for Adaptation to Climate Change from 2016. Dr. Naglaa was awarded several scholarships from several prestigious organizations for training and attending many important conferences.

Potential impacts of climate change on the Egyptian Red Sea Environment and related economic activities

Naglaa F. Soliman

Department of Environmental Studies, Institute of Graduate studies and Research, Alexandria University, Egypt.

Egyptian coasts extend over 3,500 kilometers, with two-third of this distance running along the Red Sea and the coasts of the Sinai Peninsula. The Red Sea is recognized as one of the world's most unique coastal and marine environments. It is an important repository of marine biodiversity, largely through its complex systems of coral reefs, interspersed with mangroves, seagrass beds and other spectacular and diverse coastal habitats. Furthermore, much of the revenue from tourism in Egypt is derived from the Red Sea region. On the other hand, there is increasing evidence that our planet is warming, and this warming is altering terrestrial and aquatic ecosystems. In recent years, aquatic ecosystems are suffering several impacts such as loss of habitat forming species (e.g. coral reefs, seagrasses), decline in the productivity of the oceans, or changes in the geographic distribution of marine organism. It is predicted that climate change will lead additional pressures on coastal ecosystems due to variations in water biogeochemical and physico-chemical parameters (e.g. pH, salinity) leading to an aquatic ecosystem degradation. Obviously, serious environmental problems are likely to rise in association with potential impacts of the expected climate change in the marine and coastal areas of the Red Sea. We should be proactive and start addressing the need for adaptive and mitigative measures. This review aims firstly to assess the vulnerability of the tourism industry to climate change. Secondly, to monitor the coral reefs in the face of climate change. At the same time, to recommend possible mitigation measurements in order to ensure sustainability of this economically important marine environment.

Dr. Nova Ahmed

Dr. Nova Ahmed is an associate professor at the School of Engineering & Physical Sciences-North South University, Bangladesh. She has completed her Ph.D. at the Georgia Institute of Technology, USA and has come back to serve her country on 2011. She has a broad research interest in many directions where the research can make direct impacts on betterment of the society! Her research focus is on Internet of things, Sensor based Systems, Distributed Systems, Human Computer Interaction (HCI), and Feminist HCI. She is actively involved in encouraging women and children in STEM disciplines at a local level as well as a national level where is work with Mathematics Olympiad Team, National Science Congress Team, National Girls Programming Contest Team directly at a national level.



Research Project and Success Stories: Shonabondhu, A Solution to handle Flash Flood

Nova Ahmed

North South University, Dhaka, Bangladesh.

The project of interest focuses on an environmental problem using locally available and low cost technology solution. I have single handedly initiated a project named Shonabondhu (Golden Friend in Bengali) which has other interested participants joining the team later on. This project aims to focus on the common problem of Bangladesh dealing with Flash Flood. Flash flood refers to a phenomenon where water level raises rapidly within a short period of time. It is caused by a sudden incident of heavy rainfall. Flash flood occurs in low-laying lands where the water level rises rapidly and requires immediate actions to support the people in the flood affected areas. Moreover, Flash flood is a major problem in many countries such as India, China, Nepal, Malaysia, Philippines and many other countries. The current water monitoring system is primitive and manual where the water level is periodically checked by people, using an installed water level measurement stick. The person in charge makes a phone call to the central office which is logged by an office for a three hour interval. Often water level rises are not recorded as it rises up during the night, when water level is not measured. Recently, there has been some installations to the measuring stick in the water along with few sensor installations on strategic points and important rivers (e.g, recently installed bridges like Bangabandhu Bridge). Many of these deployed sensors are extremely expensive which is not scalable considering the developing country context of Bangladesh. In the presence of imminent water level rise, often there is the sound of azan to alert people (a public call for prayer). As it is evident, the measuring system and alert generation system – none of them use any kind of technology which could easily be strengthened by a technology solution based approach. We have worked on the Flash Flood problem since 2012 and have modified the system based on environmental challenges, available resources and low cost considerations which we share in our research work. Our system Shonabondhu (Golden friend, in Bengali) is a middleware system that used a cloud infrastructure, long term learning decisions at server levels and uses (Internet of Things) IoT devices enabled with sensors that have path abstraction to communicate among sensor modules and decision making capability to locally disseminate warning messages. The entire system is developed based on low cost IoT infrastructure.

Prof. Dr. Oum Kalthoum Ben Hassine

Dr. Oum Kalthoum is University Full Professor in Biology and holder of a State Doctorate of Science (Doctorat d'Etat ès Sciences) with a Specialty in Marine Biology and Oceanography, a Diploma of Advanced Studies in Marine Biology and Oceanography, a License in Natural Sciences and a Scientific Baccalaureate. She is a member of a large number of prestigious scientific Organizations. Dr. Oum Kalthoum is an author or co-author for more than 250 scientific publications and she delivered more than 300 presentations at national, regional and international conferences. She had 20 research projects..

Major achievements : Founder and coordinator of several Research Diplomas and masters degrees, Founder and Director of Research Units "Biology, Ecology and Parasitology of Aquatic Organisms" & "Integrative Biology and Evolutive and Functional Ecology of Aquatic Environments", Supervisor of several dozen of research Diplomas (PhD thesis, masters, DAS, .etc...). Founder and first President of Tunisian association "Women and Sciences" Awards and Distinctions: Awarded Rammal Medal 2015 by EuroScience in 2016, «Emeritus Honor Diploma» of European Academy of Sciences, Arts and Letters (2013); 12 prizes awarded to supervised research works (5 national and 7 international); Holder of Order of Merit in Education and Sciences, in 2000 and 2008 ; Holder of Certificate of Appreciation for exceptional voluntary service (GEF, UN), in 2001.



Biological variables in fishes for monitoring lagoon pollution

Ibtissem Louiz ^{a,b,*}, Mossadok Ben-Attia ^b, Oum Kalthoum Ben-Hassine ^{a*}

^aUniversité de Tunis-El-Manar, Faculté des Sciences de Tunis, UR11ES08 Biologie Intégrative et Écologie Évolutive et Fonctionnelle des Milieux Aquatiques, 2092 El Manar, Tunisie

^b Université de Carthage, Faculté des Sciences de Bizerte, UR Laboratoire de Biosurveillance de l'Environnement, 7021 Zarzouna, Tunisie.

To evaluate the effect of anthropogenic pollution on fish Biology in Bizerta lagoon, one of the largest Tunisian lagoons that subjected to various anthropogenic and industrial pressures, we have chosen a biological model represented by *Gobius niger*, a fish species with the characteristics of biotic index as it is benthic, sedentary, carnivorous predator and whose life is relatively long. *G. niger* (Linnaeus, 1758), was collected from 6 stations differently impacted and in one reference station. The vertebral morphology, the gonadosomatic index (GSI) and gonad histology of mature black goby (*Gobius niger*) were studied. Five types of vertebral anomalies were observed. Moreover, their incidence was about 21.3%, which is considered as high values comparatively to those obtained in recent works carried out on the gobies. The strong correlation of fish skeletal deformities with pollution was noted. In both sexes, we have detected the presence of an overall weaker GSI in Bizerta lagoon than in control fish. These GSI alterations were accompanied by histopathological changes. In females, a higher incidence of oocyte lesions (atretic oocytes, cytoplasmic retraction and karyoplasmic clumping) was found in stations located near agricultural activity zones. Histological observation of the testes revealed, as well, many abnormalities: germ cells syncytium, vacuolated germ cells, melanomacrophage center and increase of gaps in the interstitium between lobules were detected with a high prevalence in stations influenced by industrial and/or urban activities. Therefore, the high levels of morphological and gonad histopathology recorded raise concerns about the long term health of fish populations in this lagoon.

Prof. Dr.Suzan Kholeif

Prof. Suzan Kholeif is Prof. of Marine Environment, National Institute of Oceanography and Fisheries, head of the Oceanography Standing Committee for professors' promotions ICZM & Marine Environment Consultant, member of Scientific Committee at National Council for Women. She is an oceanographer, marine geologist and ecologists. She had her Ph.D. in Marine Geology from Cairo University in 1999. Since 1994, she has worked as a Marine Geologist researcher, a professor and a consultant at National Institute of Oceanography and Fisheries (NIOF), Alexandria, Egypt. She has published (author & holds) a strong track record of publications which include assessment of coastal waters, shore protection, climate and sea level changes as well as Environment Impact Assessment (EIA). She has gained skills in developing and managing both managerial and scientific technical tasks, as she has demonstrated through her work experience in the role of Director of Scientific Documentation and Media Unit at NIOF and head of marine geology Lab, Director of National Institute of Oceanography and Fisheries Alexandria Branch and member of scientific Committee at National Council for Women, as well as across several national and international projects as FP6 and FP7 in the field of marine environment, Climate changes, Management of Fisheries and Aquaculture and integrated coastal zone management. She also has acquired a solid reputation as an expert in marine environment, both at national and international level (e.g. EU bodies, SME companies, international environment protection organizations... etc.), especially in the water resources monitoring and planning in Mediterranean countries (particularly in Egypt and North Africa countries) in the last 10 years, by developing guidelines for sustainable use and innovation methodology for management of wild resources, focusing on ecological cycles of the aquatic resources in the Mediterranean. She has built up a solid reputation as a consultant in marine environment, climate change, pollution monitoring and ICZM, both at international and national level.



The Role of Women in Water Resources Management and Sustainable Development

Suzan Kholeif

Marine Environment & ICZM consultant.

The importance of women for water and water for women was handling in the many of international conventions and formal meetings (e.g. Dublin and Rio Conferences in 1992, UN, 1995). As stated in UN agenda 21, there is a close relationship between water and women's lives. A greater number of UN programs was focused on women & water and their contribution to the environmental protection. The fact that women are the first category of the community that will be affected by water deterioration makes them at the forefront to encourage a more rational attitude towards limitation of fresh water and sustainable development of water resources and energy consumption. In developing countries, women are the main users of water, thus their life is particularly concerned with water availability and domestic contexts. Women traditionally play a major role in managing and maintaining communal water supply. In those countries men are traditionally given greater access to technology, engineering, training than women, although women's better understanding of natural variations of water availability, this knowledge is still despised or simply ignored by policy-makers and engineers who are still usually men. As well as, women are rarely involved in the political and legal processes of making strategic decisions regarding water resources management at a level beyond the local one. Improving the role of women in the development of science and technology and enhancing women's access to lead an appropriate role in establishing a strategy for creating an efficient system of science and technology will induce significant contributions to national economy. 'More women in the world of science means more science in the world' (UNIFEM, 2001).

Prof. Nour Sh. El-Gendy

Nour Sh El-Gendy is a Professor in Petroleum and Environmental Biotechnology and a head manager of Petroleum Biotechnology Lab., Egyptian Petroleum Research Institute (EPRI). She is the vice coordinator of the Scientific Research Committee, National Council for Women (NCW) of Egypt. She has authored six books in the fields of biofuels, nano-biotechnology, petroleum refinery and biotechnology and about hundred twenty five research papers in the fields of oil pollution, bioremediation, biosorption, biofuels, microbial-corrosion, green chemistry, wastewater treatment, biodesulfurization, biodenitrogenation and nano-biotechnology and its applications in petroleum industry and biofuels. Moreover, she in an editor in twenty five international journals and a reviewer for fifty international journals, supervised twenty five MSc and Ph.D. thesis. She participated in thirty five international workshops and training courses, and fifty international conferences. A member in many international associations concerned with petroleum, biotechnology and environmental health and sciences.



Applications of Different Agro-Industrial Wastes in Petroleum Biotechnology

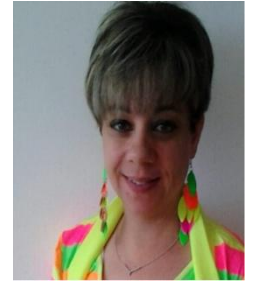
Nour Sh. El-Gendy

Egyptian Petroleum Research Institute (EPRI), Cairo, Egypt.

Millions tons of agro-industrial wastes are produced annually all over the world. These wastes are not economically reused thus create air, soil and water pollution. This pollution has a negative impact on human health, tourism, economy and environment. My abstract will briefly summarize how these wastes can be successfully reused to solve pollution, waste management, energy problems, for example; Bioremediation of different oil polluted environments and our successful effort in real field case studies, Bio-upgrading of petroleum and its fractions throughout the application of biodesulfurization, biodenitrogenation, Biosorption and wastewater treatment, Recycling of different kinds of agro-industrial wastes to produce valuable products e.g. nano-materials, biosurfactants, biocides, catalysts in biodiesel production, corrosion inhibitors, green-catalyst with high photo-catalytic degradation properties, Production of different valuable industrial products from algae, which would have many applications in industries of food, cosmetics, pharmaceuticals, food supplements, animal feed, Production of different kinds of biofuels as complementary and/or alternative to petro-fuels, Biodiesel from waste cooking oil and micro-algae and Bioethanol from macro-algae, different lingo-cellulosic wastes and sugarcane and sugar beet molasses.

Dr. Sherine Ahmed El Baradei

Dr. El Baradei is an assistant Professor at Construction Engineering Department, American University in Cairo (AUC). She has received her Ph.D. in civil engineering (specialization in hydraulics and irrigation engineering) from Cairo University in 2005. She has obtained her M.Sc. in environmental engineering at AUC. Her specialization is hydraulics, water systems design, water quality, water quality modeling and environmental and sanitary engineering. She has published a book by a German publisher, many research papers in her field of specialization in international refereed journals, and international refereed conferences. El Baradei served as an internal examiner and a moderator for many M.Sc. and Ph.D. examination committee and supervised as a single advisor for M.Sc. thesis in environmental engineering. She worked as an irrigation network designer, and a waste water network designer in consultant offices in Cairo. She is handling editor for two international refereed journals. She is a member of WHO is SHE organization in Egypt and WHO is WHO organization of higher education in the world. She is also a member in the German Egyptian Water Cluster under the umbrella of the German Science Center. She is an evaluator at the DAAD for the Ph.D. and M.Sc. proposals submitted for fund. Dr. El Baradei is in excellent command of German, English and Arabic.



Global Warming and Its Effects on Water Quality of the Nile River in Egypt

Sherine Ahmed El Baradei

According to the 2014 Human Development Report, the impact of climate change and global warming will become progressively serious, with the last three decades being successively warmer at the Earth's surface than any preceding decade since 1850. For Egypt, the threat of global warming lies not only in rising sea levels, which is dangerous to coastal cities, but also in low levels of dissolved oxygen concentrations (DO) in the Nile River, which leads to deterioration of water quality- that will affect the health of mankind, and a disruption in fish production and agricultural productivity. Also it affects the locations of water treatment plants. While dissolved oxygen is essential for fauna and flora, its concentration decreases in warmer water, which has drastically adverse effects on life in rivers. This study investigates the effect of global warming on rivers' water quality. Effect of global warming, during the past 23 years, on DO critical concentrations in the Nile River in Egypt is investigated through two monitoring stations: Luxor (upstream the River) and Alexandria (downstream the River). Two scenarios are investigated; namely critical DO in summer and critical DO in winter. The study used air temperatures over the last 23 years to predict river water temperatures and hence DO. It was found that values of DO concentrations decreased over the 23 years due to global warming effects by the following percentages: Luxor 3.8% in winter and 4.0% in summer; Alexandria 1.4% in winter and 5.4% in summer. So it is concluded that global warming has a negative effect on DO in the Nile River.

Dr. Sherien Elagroudy

Sherien Elagroudy, is an Associate Professor in Environmental Engineering at Ain Shams University, Egypt and a founding director of the first Solid Waste Management Center of Excellence in Egypt. In her Ph.D. studies at Ryerson University, Sherien has modeled the settlement of bioreactor landfills then she has built a field-scale prototype of the novel landfill in Cairo. Her new bioreactor avoided methane emissions into air and leaching of wastewater into Cairo's water supply. She has continued her researches in novel solid waste treatment systems that could mitigate the environmental impact of waste through a post-doctoral research at Yale University, USA. Since then, Sherien has spent more than 16 years in research and practical projects to design and implement real-world solid waste management strategies, supervising both post-graduate students and junior engineers to train the next generation of academic and industrial leaders in the her interested field. The impact of Sherien's work has also been recognized in awarding her the Next Einstein Forum Fellow in 2016, the L'Oreal UNESCO Fellowship for Women in Science in 2013 and has also been honored as young scientist at the World Economic Forum in China in 2013. She was named a fellow of the Global Young Academy as well as a steering committee member of Egypt Young Academy of Science. Consistent with Sherien's passion to do more academic work, she has long been a solid waste expert at Chemonics, Egypt. She led the team at Chemonics in setting the solid waste management strategy for several countries. Sherien has published several journal papers and book chapters. She is currently engaged in several research grants of more than \$3.5M in the fields of solid waste management, biochemical waste treatment technologies and waste to energy.



Municipal Solid Waste Management and Green Economy

Sherien Elagroudy

Currently, the world generates about 1.3 billion tons of municipal solid waste (MSW) per year. This quantity is expected to increase to 2.2 billion tons by 2025. Improper solid waste management contributes to air pollution, surface and groundwater contamination and public health challenges. MSW management is commonly the largest single budget item for communities, and this sector is often one of the largest employers as well. Thus, it is imperative to move towards a green economy in the solid waste sector by prioritizing waste avoidance, minimization and promoting the “Three Rs” (Reuse, Recycle, and Recover). In addition, moving this important sector towards responsible stewardship that will further contribute to the main targets of the Sustainable Development Goals (SDGs). This study provides a global snapshot of today’s MSW management practices. In addition to providing details of the current situation, credible estimates are made for the potential state of SWM in 2025. This study describes the specifics of SWM in an economic context, focusing on: (1) countries with advanced economies, especially G8 countries, (2) countries in transition and with emerging economies (BRICS) and (3) countries with developing economies. This aims to motivating and assisting governments and businesses in making a transition to a green economy in the waste sector. Beyond appraising the current state of solid waste management, this study ultimately proposes alternative policies and remedial action to achieve a green economy in SWM. This study has been generously funded by The Inter Academy Partnership (IAP), the Global Young Academy (GYA) and the German National Academy of Sciences Leopoldina.