INTERNATIONAL SOCIETY ON TOXINOLOGY NEWSLETTER

January 2011

UPCOMING MEETINGS

Asia-Pacific Section IST
The next meeting of the Asia-Pacific Section of the IST will be in Vladivostock, Russia, in September 4-8, 2011, at the Conference Hall of the Primorsky Region Administration (details to be posted later). Organising Committee Chairmen are; Prof. Eugene Grishin and Prof. Valentin Stonik..

European Section IST
September 11-15, 2011, Valencia, Spain. A web site detailing the Congress is now online at http://istmeetingvlc2011.ibv.csic.es/. Further information is found later in this Newsletter. For details contact catedrasg@cac.es

IST World Congress
Hawaii, July 8-13, 2012, details pending. This Congress will combine with the US Venom Week meeting.

4th Venoms to Drugs Conference
May 15-20, 2011, Heron Island, Australia. The web site is www.venomstodrugs.com. More information in this Newsletter.

XXXI International Congress of the European Association of Poisons Centres and Clinical Toxicologists
24-27 May 2011, Dubrovnik, Croatia, at the Valamar Lacroma Resort Hotel

Plus see later in this newsletter for other meetings scheduled in the next few months.

FROM THE IST EXECUTIVE

The last IST Newsletter was sent out in December 2010, so why another one so soon? Firstly, because some IST members have expressed concern about the tragic fire in Brazil at Instituto Butantan and the urgent need for global support to assist Brazilian toxinology to move forward after such a loss. Several letters to the Brazilian toxinology journal have recently been published, that explain how important this issue is. I am therefore republishing these letters from JVATiTD, with permission of the Editor, Dr. Benedito Barraviera, so that all IST members may become aware of the importance of these events.

The Brazilian Society of Toxinology is involved in recovery from the aftermath of the fire and the IST expresses it's support for the efforts of our Brazilian toxinology colleagues.

However, other events and notices have also come to my attention in the last few weeks, which also warrant an early edition of the Newsletter, to let members know about upcoming meetings of interest.

Further, there has been most positive news from the Indian subcontinent, with a successful toxinology meeting in Kolkata in December, which also saw the formation of an Indian Society of Toxinology and a South Asian Snakebite Initiative group formed (see later in this Newsletter re the latter).

Lastly, I wish all members a Happy New Year for 2011.

Julian White, Secretary/Treasurer, IST

CONTENTS

MEMBERSHIP ANNOUNCEMENTS

The IST Membership Database has been updated, a process that will be ongoing. Please let the IST Secretary know if you change any of your contact details (email, phone, address etc). It is hoped that the Membership Database can be made available to all IST members via the IST website, with password protection for access.

Because of file size, the Newsletter may be too big for some member's email accounts and so it may be more practical to post the Newsletter on the IST website and just email members advising it is ready to download, via a link.

Last Newsletter I raised the issue of access to email addresses by non IST members. Members may prefer to keep email addresses more secure, using the new membership online database, once this is operational, rather than list addresses in the publicly accessible Newsletter. As IST Secretary, I will take direction from the membership on this issue and will not include members email addresses in the Newsletter until and unless it is clear that is what most members want. So far, though, IST members have not told me what they want regarding this matter.

Julian White
Secretary/Treasurer IST

IST STUDENT MEMBERS - THIS IS FOR YOU - ACTION PLEASE!
An announcement for the formation of a Special Interest Group for Student Toxinologists

Students have been an important and valued part of IST since the inception of the Society in 1962. To emphasize the importance of the role of students in the IST, the creation of a Special Interest Group for Student Toxinologists has been proposed.

The aims of the Special Interest Group for Student Toxinologists would include: to increase opportunities for students to network with possible collaborators and employers; to work with the Executive and Council, IST to ensure students are included and supported in future decisions of the IST; and to train students to become contributing members to the IST and other professional societies.

A number of student members have expressed interest in being a part of such a network, but we continue to encourage other students to become involved. Any students interested in participating in such a network should contact the following by email (please send your email to the Secretary, IST, with cc to the President, IST and to student member Maggie Gentz):
julian.white@adelaide.edu.au
antgopal@nus.edu.sg
m.gentz@uq.edu.au

THE FUTURE OF THE IST NEWSLETTER

The IST Newsletter needs input from IST members to make it a more effective communication tool within the Society. The move to electronic format may open up opportunities for new sections. For instance, it might be possible to have annotated bibliographies of recent toxinology publications from other journals, or reports of other meetings with toxinology content. Available toxinology-related jobs and student postings could be listed. There are doubtless many other possibilities members may think of.

So I ask all IST members to consider what they want from the Newsletter and let me know by email. I also want to hear from IST members prepared to contribute regular sections to the Newsletter. To be vibrant and relevant the Newsletter must become more than just a brief report on IST business by myself and our President, but that requires your input.

Julian White
Secretary/Treasurer IST
julian.white@adelaide.edu.au

MESSAGE FROM THE PRESIDENT (I.S.T)

Dear Friends,

We have just finished the holiday season and beginning of the New Year 2011 and also according to the Zodiac it is a year of the "Golden Rabbit" which will bring a lot of prosperity to the world.

We had two successful meetings in toxinology; one was in Kolkata and the other in Egypt and both were well attended. In the Kolkata meeting, a National Society on Toxinology India (NSTI) was inaugurated and a South Asian Snake Bite initiative was mooted (see report in news letter).

IST Supports these initiatives as well as encourages these groupings to be part of IST. Together we can work better and achieve much more.

We also had some bad news about the loss of the valuable collection in Institute Butantan, Brazil due to fire. All toxinologists around the world feel the pain of losing this historic collection. While we stand together with our Brazilian colleagues and share their desperation, we also look into the possibility about how we can rebuild these resources.

In this aspect we are publishing/reprinting some of the articles which were published on this problem. Please let us have your views on this matter.

We are very much interested in getting the students of toxinology involved with IST and Julian has been corresponding with some of them. We need more inputs from them as well as from their supervisors and laboratory heads who have many students under their care, on how to get them engaged in IST.

Thanks

With best wishes,

Gopal

Email: antgopal@nus.edu.sg

IST Nomenclature Committee

At the last IST World Congress held in Recife, Brazil in March 2009, a symposium devoted to the topic of toxin nomenclature received significant interest from IST members. The IST Council subsequently decided to form a nomenclature committee to examine the issue of toxin naming standards and recommend possible solutions. The mandate of this committee is to propose a nomenclature system, with interim reports to IST Council and a "final" report to be delivered at the IST World Congress in 2012. If you have any comments or suggestions on toxin nomenclature, could you please send them to a member of the nomenclature committee, which is currently comprised of the following members:

Dr Gerardo Corzo, Mexico (Email: corzo@ibt.unam.mx)
Dr Florence Jungo, Switzerland (Email: Florence.Jungo@isb-sib.ch)
Dr Evanguedes Kalapothakis, Brazil (Email: ekalapo@icb.ufmg.br)
Prof. Glenn King, Australia (Chairman; Email: glenn.king@imb.uq.edu.au)
Prof. Manjunatha Kini, Singapore (Email: dbskinim@nus.edu.sg)
Prof. Graham Nicholson, Australia (Email: graham.nicholson@uts.edu.au)
Prof. Toto Olivera, USA (Email: olivera@biology.utah.edu)
Prof. Jan Tytgat, Belgium (Email: jan.tytgat@pharm.kuleuven.be)

ArachnoServer spider toxin database

ArachnoServer is a manually curated database that provides detailed information about proteinaceous toxins from spiders. Key features of ArachnoServer include a new molecular target ontology designed especially for venom toxins, the most up-to-date taxonomic information available, and a powerful advanced search interface. Toxin information can be browsed through dynamic trees, and each toxin has a dedicated page summarising all available information about its sequence, structure, and biological activity. ArachnoServer currently manages 567 protein sequences, 334 nucleic acid sequences, and 51 protein structures. ArachnoServer is available online at www.arachnoserver.org.

Letter to the Editor

The Journal of Venomous Animals and Toxins including Tropical Diseases
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Destruction of the collection of reptiles and arthropods at Butantan Institute: a view from the United Kingdom

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PAIN, SYMPATHY AND ANGUISH

Zoologists and toxinologists throughout the world are still reeling from the appalling news of the devastating fire in Butantan, which broke out on 15 May. Accumulated over a century, a collection of some 85,000 snakes and 450,000 spiders and scorpions, including many type specimens and unique examples of now-extinct species had been lost in a preservative-fuelled inferno, together with the records, notes and literature of the researchers. Amongst many other functions, this collection had proved enormously valuable in the study of animals that are the source of scientifically fascinating venoms and, indirectly, in the production of curative antivenoms. The catastrophe has not only generated enormous sympathy and sense of loss but also great anguish. These sentiments are strongly reflected, albeit in different proportions and with different degrees of optimism for the future, in the letters from two distinguished Brazilian scientists, Professors Oswaldo Sant'Anna and Maria Elena de Lima published in the last number of JVATiTD (1, 2). A number of important issues come to mind. How could such a tragedy have happened? What can be salvaged of the studies and careers of the affected staff? How can the vitality of this internationally renowned facility be restored?

RECRIMINATIONS

In the aftermath of the tragedy, certain senior Brazilian figures made comments that were both unsympathetic and unedifying. Their responses signified institutional jealousy and a naïve or even malicious disregard for the importance of the zoological tradition in Butantan, prompted perhaps by guilt. While blame cannot yet be specifically targeted, it is clear that responsibility for one of the world's most significant collections of venomous animals had been neglected and betrayed by those in high authority. Housing the precious jewel was a vulnerable and poorly maintained building that had become a fire trap.

The internal politics of Butantan are impenetrable mysteries to foreigners, even those whose love of the place drives them to seek understanding. We would certainly not presume to diagnose the underlying causes of this venerable institution's current malaise, but Butantan is no stranger to controversy, allegation, denunciation and violent rhetoric. Two historical examples are enshrined in the tendentious books by Afrânio do Amaral, *Serpentes em Crise: à Luz de uma Legítima Defesa no "Caso do Butantan"* (3), and by Eduardo Vaz, *Hidra de Lerna: Lenda e Realidade* (4). However, while there is a time and a purpose for forensic analysis, a more enlightened and uplifting approach is restoration and renewal. But should Butantan's collections be replaced?

THE IMPORTANCE OF NATURAL HISTORY REFERENCE COLLECTIONS

To some, including many who should know better, natural history collections may appear to be an antiquated concept that must surely be replaced by newer and better molecular tools. In reality, nothing could be further from the truth: voucher specimens deposited in collections provide the conceptual bridge between any new data, be they molecular, toxinological, physiological or pharmacological, and the living animal in its natural environment. They remain an indispensible tool for recognizing and describing biodiversity, including that of medically important venomous animals.

WHAT HAS BEEN LOST?

The arachnological and herpetological collections of Butantan Institute, so tragically lost on 15 May 2010, represented the most comprehensive and famous collections of arachnids and snakes in the Neotropics. Together with a group of dedicated taxon specialists, they represented an unparalleled resource for research into the biodiversity of these medically and toxinologically important organisms. To those who, like the present authors, have had the immense privilege of conducting research in the collection, the loss is heartbreaking. To those Butantan researchers who have built their entire lives around the collection, the pain is beyond words. However, the fire that consumed these collections destroyed more than a research tool and many years of work by the scientists based in those departments. It also destroyed our last window on a lost world, on the environments and ecosystems existing throughout Brazil in the earlier parts of the 20th century, such as the "Araucaria" moist forests of southern Brazil and much of the Mata Atlântica, both now more than 90% replaced by man-made agricultural landscapes. Collections accumulated over many decades allow us to trace the changes in fauna and flora occurring as a result of human activity, and allow us to analyze and understand what has been destroyed. That opportunity for research is now lost forever.

The fire also consumed an important part of Brazil's scientific heritage and history: the collections incorporated the specimens collected over the course of more than a century by some of Brazil's most eminent and best-known zoologists and biologists, like Afrânio do Amaral, Alphonse Hoge, Wolfgang Bücherl and of course Vital Brazil himself. Never again will anyone be able to experience the sense of awe that comes from seeing the jars containing original specimens collected by these pioneers on the shelves of the collection, and indeed of being able to derive genuinely useful scientific data from this material many decades after it was collected – another grievous loss to science.

A CONTINUING ROLE FOR BUTANTAN'S ZOOLOGICAL COLLECTIONS

However, the present of today will be the past of tomorrow: habitat alterations continue to alter the landscapes and ecosystems of South America at a rapid rate. If we wish to understand and describe the effects of coming change, renewed collecting activity is essential. Continuing habitat depredations, such as the Amazonian river dams planned under the Growth Acceleration Program, may provide opportunities for new collections, thus providing a baseline for assessing the effects of change on the ecosystems of the Amazon and elsewhere. Rebuilding collection-based research at Butantan is an essential part of this task: while Vital Brazil's specimens are wasted for eternity, together with the silent witnesses of long-disappeared habitats in Brazil, there are many other components of Brazil's rich biodiversity and natural heritage that remain to be documented, described and understood before they too disappear. Natural history collections will play a key role in contributing to our understanding. No institute is better placed to continue to play a pivotal role than Butantan: its rich history and talented researchers place it at the forefront of Brazilian biodiversity research, and its contribution to the documentation of South American biodiversity can and must enter a new era, with a new focus on describing the present to inform the future. The rebuilding of the biological collections at Butantan must be given the highest priority and full support by all responsible parties.

"VITALIS BRAZILIS" INITIATIVE OF THE BRAZILIAN SOCIETY OF TOXINOLOGY (SOCIEDADE BRASILEIRA DE TOXINOLOGIA – SBTX)

In her encouraging and optimistic letter, Professor de Lima proposes the establishment of a group aimed at relaunching and replacing the collection (http://www.sbtx.org.br/noticia.php?id=25). Provision of an appropriate building seems to be relatively easy, but the problem is to restock, update and restructure the collection both with specimens and with related data. The SBTx, one of the world's most active and energetic national toxinological societies, is an appropriate agency to galvanise this plan, particularly if the overarching international organization, the International Society on Toxinology, is involved to broaden the scope of the appeal. Contacts with pharmaceutical companies and other sympathetic industrial connections both in Brazil and worldwide may also be productive.

CONCLUSION

Butantan's collection was a precious and unique resource from which mankind has benefited, including the authors of this letter. The conflagration was reminiscent of the destruction of the great library of ancient Alexandria two millennia ago, similarly depriving later generations of irreplaceable intellectual resources. It was heart breaking to see the news video clips of blackened shelves, shattered glass and our dear friends fighting to save their living arthropods. However, in the spirit of its founder and his heritage, the collection must rise again. Replacing the irreplaceable will be a very challenging and demanding project, but it may in time ensure that Butantan, that green and pleasant "oasis" in the midst of São Paulo, can resume its full role in zoology and conservation.

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CONFLICTS OF INTEREST

There is no conflict.

CORRESPONDENCE TO

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Letter to the Editor

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The fire consumed... a treasure!

Sant'Anna OA (1))

(1) Coordinator of the National Institute of Science and Technology on Toxins and Scientific Researcher, Butantan Institute, São Paulo, São Paulo State, Brazil.

Dear Sir,

In June of 1897, in the luggage of Doctor Vital Brazil, who was moving from Botucatu city to São Paulo city (Brazil), I can imagine clothes, tools and some furniture. Also with him were his wife, Maria da Conceição, and two daughters, three-year-old Vitalina and one-year-old Alvarina. And, incredible as it may seem, there were also some specimens of rattlesnakes and jararaca snakes, animals that he had studied with the attitude of a biologist and that would mark his scientific career by taking part of the creation of a globally renowned unique institution, the Butantan Institute.

Until May 15th, these pioneering animals were preserved with many others in the Snake Collection of Butantan Institute, to where they were initially sent by the São Paulo rural population, then by people from the entire country and, afterward, even by foreign communities. The animals were also gathered by researchers for over a century and the collection became an international reference. Vital Brazil´s vision and ideals comprised principles rarely respected in public institutions and universities: science, education, culture and production of goods for the society were nurtured and consolidated over the years at the Butantan Institute.

Now, instead of looking for culprits, it is necessary to rethink the future, revitalize the existing physical structures, restore the architecture of the historical complex, support the affected departments, improve the salaries of the administrative staff and technical assistants, shake up the routine and definitively shift the focus to essential points, instead of merely starting new buildings and other restructuring projects. Just to illustrate the level of excellence of Butantan Institute´s researchers, in 2007, of the ten articles published in Brazil that were most cited internationally in the field of biomedicine, five were produced by researchers of the Butantan Institute. Any current production of vaccines and excellent antivenoms is due to such highly qualified researchers who are capable of producing outstanding science. The main funding agencies including CNPq, FAPESP and FINEP have constantly given substantial support to relevant scientific or technological projects of Butantan.

And the institute became part of people´s lives because Brazilian society, unlike many temporary heads of state, has always recognized the relevance of researchers' works and the importance of the antivenoms produced by Butantan, which save lives and relieve suffering. In 1897, and long afterwards, nothing was known about DNA or genetic code, while the French school of Louis Pasteur and the German school of Robert Koch led the experimentation in science, Darwin and Wallace were little read and Brazil was taking its first steps in the areas of immunology, bacteriology and parasitology. Among us, Adolfo Lutz, Vital Brazil and Carlos Chagas were innovating. By the way, the Snake Collection was, since the

beginning, innovative and from the 1990s on, it started to contribute decisively to studies on biodiversity and biological evolution through the techniques of molecular biology, which opened up a wide range of options for phylogeny, the study of the natural history of these reptiles. A unique treasure that was incomparable anywhere else on the planet! Unfortunately, mere common sense cannot apprehend what the fire consumed. This sad careless country, whose past matters little or not at all, therefore, has an uncertain, insipid, odorless… unhealthy future!

And the fire extinguished not only a collection, but also research projects (entirely or partially), such as the project of the National Institute of Science and Technology on Toxins, supported by CNPq and FAPESP, and also the works of students supervised by researchers from Butantan and other institutions of education and research.

Today, we wander according to the will of non-governmental organizations and organizations of civil society for public interests and, more than ever, we are subject to the immediate interests of the business elite, politicians and money bosses; between publicity and velocity, people live by appearances, inauguration of construction works and vanity. Mentally unemployed persons (most of the economically employed) barely know that the telegraph or the most modern cell phones are nothing but variations on the same theme, and their true relevance derives from the idea, this one extraordinary, of long-distance communication. We are citizens guided by stock exchange speculators and, worse, by mind speculators. Corrupts and venal persons propose the construction of new buildings while old ones are considered garbage, poorly preserved and inadequately maintained such as the buildings of the Butantan Institute complex (the main building is dying)… Because only the new is attractive, the inauguration is worthwhile; restructuring is instigated regardless of the history of the individual or the institution. In education and science, the valuing of teachers and researchers is only political rhetoric.

After 42 years of studying, working and teaching in post-graduation courses at USP, UNICAMP and UNIFESP, this reality has become clearer than ever: how power exudes rot! What small-minded people are in this world! Do they propose innovations? As I have recently exposed at a meeting in FIESP, ***INNOVATION IS A HISTORY TOLD IN THE FUTURE***. The fire destroyed one of these rare histories that will not generate new histories told in the future…

The misery is intellectual and the poverty will be endless.

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CONFLICTS OF INTEREST

There is no conflict.

CORRESPONDENCE TO

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Letter to the Editor

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"Vitalis Brazilis", burning embers, beyond the ashes, at the Butantan Institute

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(1) President of the Brazilian Society of Toxinology; Laboratory of Venoms and Animal Toxins, Department of Biochemistry and Immunology, Institute of Biological Sciences, Federal University of Minas Gerais, Belo Horizonte, Minas Gerais State, Brazil.

Dear Editor,

The fire at the Butantan Institute (IBU – Instituto Butantan) represent a profound shock to the Brazilian Society of Toxinology (SBTx – Sociedade Brasileira de Toxinologia), and has affected its origins, its history, its patrimony and its living soul – the toxinologists.

Hitherto, nothing similar has been registered in the last twenty-two years of the existence of this society, founded by a group of toxinologists that inherited from Vital Brazil an innate interest in this area, in which the actors – poisonous animals, plants and microorganisms – integrate the vast Brazilian biodiversity. Among these first toxinologists was Vital Brazil's son, Dr. Osvaldo Vital Brazil, who, besides being one of the founders of SBTx, was its first president, which allowed him to maintain the pioneering work of his father. For this reason, we may believe that SBTx bears the signature and the genuine inheritance from Vital Brazil Mineiro da Campanha, one of the founders of toxinology in Brazil. On the Butantan farm, Vital Brazil (the father) started his studies on snake poisoning, creating tools and new treatments, advising the population, preserving the first collected specimens of poisonous animals, encouraging people and promoting methods to collect these animals, a process that frequently caused accidents. In a few minutes, a great part of this collection, which has been increased, maintained and preserved for more than a century, became ashes.

There has been indignation, lamentation and protests that were broadcasted last May, right after the fire. SBTx accompanied and took part in this movement. But above all, this society invites its associates to never forget this shock, to repudiate the lack of care/responsibility towards our patrimony (by the government or by some individuals), but without passing judgment on anyone.

We should remember, however, that Vital Brazil never gave up when he faced countless challenges in a time of no resources, little knowledge and great problems involving plagues and accidents with poisonous animals. We should remember that "Vitalis Brazilis", a burning ember, still remains, despite the transformation of the ruined collection into ashes! Butantan Institute, with its various research groups and its staff of competent researchers, certainly keeps the indestructible "flame" of Vital Brazil.

This is an invitation for reconstruction. A lot was lost, but can we reconstruct it? Agencies such as CAPES, CNPq and state foundations for research support will certainly assist in meeting this demand. SBTx reaffirms the necessity of prioritizing the recovery of this patrimony that belongs to Brazilian science with concrete initiatives of public and private investments, which will guarantee the continuity of studies in the fire-affected areas at IBU.

This society hereby launches the campaign: "Vitalis Brazilis" – IBU Fellows for the restructuring of its collection.

The tangible suggestion involves the organization of regional groups that would be committed to sending specimens of poisonous animals from their respective regions to the Butantan Institute, in an effort to recompose a new scientific collection. SBTx is ready to help in this process, together with the IBU Fellows. The meetings of the society could be a forum for a periodical report on this reconstruction and on the participation of its associates in this job! The challenge is launched.

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CONFLICTS OF INTEREST
There is no conflict.

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GLOBAL SNAKEBITE INITIATIVE NEWS

Report from Dr. David Williams

I would like to take the time to bring IST members up to date with some of the developments regarding the Global Snakebite Initiative. In particular:

GSI Small Grants Scheme

The Global Snakebite Initiative announced its first round of the "GSI Small Grants Scheme" in November 2011. CSL Limited, Australia's antivenom manufacturer very kindly, and very generously, donated USD$10,000 to the Global Snakebite Initiative in order to enable us to launch this Scheme, which will offer a number of small project grants to applicants from developing nations. The GSI Small Grants Scheme is a programme designed to stimulate young researchers and clinicians in developing nations to become actively involved in snake bite prevention, treatment, rehabilitation and both epidemiological and clinical research. The scheme will initially provide five annual awards of USD$2,000 to candidates whose project proposals are ranked highest among all of the applications received. Recipients of awards will be mentored throughout the duration of their projects by volunteer advisors affiliated with the Global Snake Bite Initiative, and will be required to publish either a research paper or a report about their project. I hope that you will all welcome this exciting first project by the Global Snakebite Initiative. We will need your support and assistance to make this a successful grant scheme. Volunteers with specific expertise in areas relating to the chosen projects will be needed to mentor grant recipients throughout their work, to offer, encouragement, advice and the guidance needed to help ensure successful outcomes from their efforts. Applications for the first round close on 31 January 2011, and the successful grantees will be notified at the end of March. These grants will hopefully continue through annual rounds, and as the GSI obtains more supporters and sponsors, we hope to increase the size of the grants to enable much larger projects to be considered.

Establishment of a Legal Entity

For some time now we have been examining options for taking the concept of a Global Snakebite Initiative (GSI) and turning it into a legally recognised Entity that would be able to obtain funding, and to undertake projects. The key consideration was that the form which GSI takes must be transparent, accountable and subject to lawful external governance. Secondary to this is the need to register GSI as an approved charitable institution for fund-raising purposes.

Since GSI has no current administrative funding we contacted a number of legal firms about the possibility of engaging their services on a pro bono basis. We were ultimately successful in being offered the services of Norton Rose Australia, who are part of the international Norton Rose Group (http://www.nortonrose.com), head-quartered in London, UK. The firm has a solid track record of corporate giving and social responsibility activities. Norton Rose has the largest international legal practice in Australia, but more importantly they operate in every continent in the world, and thus are strategically positioned to be of enormous assistance to GSI as it groups from an idea into a flourishing organisation. Our arrangement with Norton Rose provides GSI with free legal services, excluding third party disbursements, such as fee payments to the Australian Securities & Investments Commission (ASIC) or Australian Taxation Office (ATO). The costs of any likely disbursements are advised to us in advance, but from the details we have been given to date, immediate costs are expected to be less than A$500.00.

We have asked Norton Rose for professional assistance or advice with regard to:

1. Establishment of the GSI as an approved charitable institution under Australian Law in the first instance;

2. Communicating with the ATO in relation to pre□approval for registration as an Income Tax Exempt Charity (ITEC) and a Deductible Gift Recipient (DGR). The ITEC scheme enables an entity to operate free from the requirement to pay Income Tax, while the DGR scheme enable eligible organisations to be registered to receive tax deductible donations from members of the public;

3. Communicating with the Australian Minister for Foreign Affairs regarding approval from the Minister to participate in the Overseas Aid Gift Deduction Scheme (OAGDS). This AusAID administered scheme gives eligible organisations the ability to offer tax deductions to organisations who donate funds to be used for projects in eligible countries.

4. Any other pertinent issues that need to be addressed in order to operate as a charitable institution under State and Federal Laws of Australia, and any administrative legal tasks that require attention as a result.

Their recommendation has been that the Global Snakebite Initiative should be incorporated under Australian Law as a public company limited by guarantee. They consider the particular advantages of this model to be:

a). Well established and transparent principles of corporate governance;
b). Clearly defined responsibilities for directors;
c). Full access to financial records for members;
d). Legislative requirements to appoint an independent auditor and to file audited accounts with the corporate watchdog, the Australian Securities & Investment Commission (ASIC).

A copy of their letter, and a detailed summary of the features of this form of incorporation structure are available on request. Please email me at david.williams@unimelb.edu.au

Although the GSI will be incorporating initially in Australia, the organisation will be international with regard to its purpose, aims and objectives. One of the benefits of engaging Norton Rose as our legal representatives is that through them we will in the future have the ability to establish GSI branches in a range of jurisdictions, such as the USA, Europe, UK, India, Africa, Latin America, South Asia and so on. Having this option available is important to achieving our aims in the long term, but at present, we do not have the capacity to do so. We do however believe that the legislative framework for the administration of charitable institutions is very strong in Australia, with significant transparency and robust safe□guards as a result of scrutiny from ASIC, the ATO and AusAID. Under the proposed structure the activities of the GSI will be subject to strict reporting and accounting standards, including annual audits by independent auditors. As a fledgling organisation we believe these attributes of the governing environment are crucial to establishing strong managerial and financial credibility.

The next steps in this process of incorporation will be to agree upon a Constitution based on a draft which Norton Rose are in the process of preparing. This document will be forwarded to us once Norton Rose receive preapproval advice from the ATO regarding our interest in ITEC and DGR registration. This will give us the opportunity to frame the Constitution with consideration to any special requirements that that ATO may bring to our attention. This will help us to avoid any difficulty later with the actual processing of these approvals and the subsequent request for OAGDS approval to the Minister for Foreign Affairs.

Through the process of incorporation, the Global Snakebite Initiative will become a legally recognised organisation in its own right. Public companies limited by guarantee do not issue shares, and hence do not have shareholders. The company will instead have members who under the Constitution will have a range of rights and responsibilities according to the type of membership. Members have a liability to the company that it limited to the value of a nominal guarantee (this could be as little as one dollar). Members may also contribute a subscription or fee for membership (see below)

as a means of providing capital to enable the company to meet expenses and undertake specific projects. Under the structure proposed by Norton Rose, the Constitution of the GSI will set out the basis for membership of the organisation. Ideally we want the widest possible membership base, spanning scientific, medical, business, government, political and special interest groups. We believe that this is fundamental since snake bite is not just a medical problem, but a much more complex social, political and humanitarian issue. There has been some informal discussion regarding membership categories, and we propose to consider a membership schedule that recognises:

1. Organisations and associations, such as the IST or other professional bodies;
2. Commercial organisations and industry partners;
3. Institutions, such as Universities or Colleges;
4. Individuals;
5. Regional Working Groups, such as a collective of individuals from Africa, Australia or Asia who cooperate as a sub-committee of the GSI to focus on a particular area;
6. Specialist Groups, such as a collective of individuals from the Emergency Medicine community.

Our aim once the organisation is established will be to seek to appoint professional volunteer directors to help manage its affairs, and to succeed in attracting funding from a variety of sources. To this end, we are currently looking at a number of high profile public companies in Australia, who, under their own corporate giving frameworks, encourage their executives to donate time to managing charitable organisations such as the GSI will become, and our ultimate aim would be to see the GSI operated by a Board comprised of a majority of professional company directors from wide business backgrounds, supported by a small administration staff, and a number of scientific, medical and technical advisory committees made up of relevant experts from among our own ranks. Members of the GSI may also nominate for positions on the Board at a General Meeting. Where a member is an organisation, such as the International Society on Toxinology (IST) for example, we would anticipate that the Head of the organisation would be able to nominate a representative to stand for election on the Board. Professional management is a key feature of all successful enterprises of this type, and we think that it is crucial that the need to attract this sort of expert leadership be recognised from the outset. Regardless of who sits on the Board now or in the future, these directors will be answerable to the membership of the GSI organisation, and will also be accountable under Australian Corporations Law, and a range of other Statutes.

During the period from initial incorporation and until such time as an inaugural General Meeting can be convened this year, it will be necessary for the three directors positions and that of company secretary to be filled on a transitional basis. The following people have consented to act as public officers in a transitional capacity:

1. Dr Nick Brown
2. Dr Simon Jensen
3. Professor David Warrell
4. Mr David Williams

A further update on the process of incorporation and registration as Income Tax Exempt Charity (ITEC) and a Deductible Gift Recipient (DGR) will be made in a future edition of the IST newsletter.

Regional Working Groups

We have also considered the value of establishing Regional Working Groups to work in collaboration with the GSI management, but with considerable autonomy to develop regional projects, undertake regional advocacy and act as regional representatives of GSI. We hope that these Groups can be at the forefront of actual service delivery by GSI. We would welcome expressions of interest in forming such groups from members in Africa, SE Asia and Latin America in particular.

To this end, a group of our colleagues from South Asia have met recently in India, and have established a South Asian GSI Working Group, which will specifically look at a range of snakebite issues relevant to India, Sri Lanka, Nepal, Bangladesh, Pakistan and neighbouring countries. The group will be affiliated to both the Global Snakebite Initiative and to the newly formed the National Society on Toxinology of India. Professor R. Manjunatha Kini has taken on the role of acting moderator of this group, who aims are to address issues such as:

1. Snakebite prevention through community education
2. The need to improve snakebite epidemiology through better reporting and surveillance
3. The improvement of snakebite management, including first aid issues, diagnostics and treatment protocol
4. Development of highly potent antivenoms and improvements in safety and specificity
5. Snakebite-related disability and the need for rehabilitation

This is an exciting and very positive step forward. That this group is wholly comprised of local experts is extremely encouraging, since local 'ownership' and advocacy are critical to the success of undertakings such as this. We wish this group the very best, as they develop strategies that are relevant to their region and move to achieve a number of goals. Anyone who is interested in assisting in this project within the South Asian region, should contact Professor Kini by email for more information: dbskinim@nus.edu.sg

Development of a GSI Business Model

In order to be successful, GSI must operate under clearly defined business principles. The organisation must be able to generate income (from donations, grants, bequeaths, etc), and that income must be expertly managed and applied to realistic projects that have excellent prospects for success, such that their success will encourage further income generation. GSI must also be collaborative and work to build partnerships with other organisations who share common interests, or common goals. This is the only way in which GSI can move from being an abstract concept to a functional and sustainable vehicle that can help to produce tangible benefits for the world's snake bite victims.

Once the incorporation of the GSI is effected, the next task that we will address will be the development of a credible business model and operating plan. We propose to embark on this activity with the assistance of law firm, Norton Rose, and a pro bono accounting firm (negotiations are proceeding in this regard). The purpose will be to develop a detailed proposal for how the GSI will go about raising the funds to enable it to carry out projects in various parts of the world. We have over the last 12 months assembled a number of ideas for specific GSI projects, including:

a). The development, publication and distribution of standard protocols for conducting both hospital-based and community oriented epidemiological assessments of the burden of snake bite;
b). The development, publication and distribution of evidence-based position statements on appropriate, safe, snake bite first aid for various regions of the world;
c). The development, publication and distribution of regional pocket-sized Guideline booklets on the management of snake bite, along with wall charts, posters and other clinical practice materials for web-based distribution;
d). The development of a new Pan-Asian Polyvalent Antivenom in collaboration with a number of antivenom producers who would pool surplus production capacity to produce the product according to a strict manufacturing and QC protocol using carefully validated venom mixtures produced from snakes from the target nations, and standardised in a central laboratory.

As part of the business planning process, various projects will be assessed and costed before a decision is reached on whether they can be recommended or not. This process will involve considerable consultation, and with regard to some of these concepts, we have already started that process

with some of you. Ideally what we would propose is to involve as many people as possible in this process of developing project proposals. Once the process begins in earnest, we will need to have considerable input from all of you in order to develop the most rational and practical pathway to achieving some of these projects.

As we start to get the GSI up and running over the coming months, we will be in much more regular contact, and we will be calling on as many of you as possible to assist us in developing components of a business model and operational plan for GSI. Once the GSI is established as a legal entity, we will need people to involve themselves in committees to provide advice and support. So far, GSI has had a slow start, we hope to change that over the next 6 months or so. We also hope that through the structure of the GSI we will be able to maximise the participation of people living and working in the developing world, especially some of you, and your colleagues.

David Williams

GSI Coordinator

South Asian Snakebite Initiative (SASI)

Report from Prof. Kini

Formation of a working group:

Using the venue of the AMPTOX-2010 conference, a group of venom researchers, clinicians and herpetologists convened to form a Working Group on snakebite in South Asia, affiliated to the Global Snakebite Initiative of the WHO and endorsed by the International Society of Toxinology and the newly formed the National Society on Toxinology of India.

List of Members present:

R. M. Kini
Romulus Whitaker
T. V. Gowda
Joseph K. Joseph
Robin Doley
D. Velmurugan
A. Gomes
D. P. Punde
B. S. Vishwanath
Samir Whitaker
Jaideep Menon
Ashish Mukherjee
V. V. Pillay
Gerry Martin

Purpose and Objectives:

The SASI Working Group has, with inputs from international colleagues, identified what it considers the key subjects and actions that need to be taken in order to mitigate the problem of unacceptably high snakebite mortality and morbidity in the region. Some of the specific goals are:

Snakebite prevention: Community education
Snakebite epidemiology: Reporting and surveillance
Snakebite treatment protocols: First aid training; diagnostics; treatment protocols
Development of a highly potent antivenoms: Geographic variations; improvement of quality of an-

tivenoms
Disability and rehabilitation support

In order to move forward efficiently and effectively, a Working group is set-up.

Suggestions for Further Discussions and Actions

Education- Use of existing systems in schools and colleges, FM Radio, Documentary Films with UGC, Antivenom producers and other sources of support.

Action on Antivenom- Titers and cleanliness improvement, awareness decimation, distribution mechanisms.

Inclusion of Central and State Health and Forestry (Wildlife) authorities in ongoing action plans.

Information needed on current production, distribution and usage of antivenom.

Identify sources of venom other than the Irula Co-operative.

Identify clinicians around the region who will collaborate on snakebite data collection.

Global Snakebite Initiative
2011 SMALL GRANTS SCHEME APPLICATION FORM

Background

The Global Snakebite Initiative (GSI) was founded in 2008 at the 1st Global Issues in Clinical Toxinology Conference held at the University of Melbourne in Australia. The aim of the GSI is to improve the prevention and treatment of snakebite envenoming in countries around the world through a variety of programmes and projects.

The GSI Small Grants Scheme is designed to stimulate young researchers and clinicians in developing nations to become actively involved in snake bite prevention, treatment, rehabilitation and both epidemiological and clinical research. The scheme provides five annual awards of USD$2000 to candidates whose project proposals are ranked highest among all of the applications received.

Recipients of awards will be mentored throughout the duration of their projects by volunteer advisors affiliated with the Global Snakebite Initiative, and will be required to publish either a research paper or a report about their project.

Scheme Guidelines & Selection Process

Eligibility: Only applicants who are legal residents of countries listed by the International Monetary Fund (IMF) as Emerging or Developing Economies are eligible to apply (Appendix 1). Preference will be given to early career clinicians, research scientists, public health promoters and biologists.

Strategic Focus: Grants will be offered to support projects which involve any of the following themes:

- Basic epidemiological or clinical research
- Snake bite prevention projects
- Snake bite-related public health promotion activities or community awareness projects
- Primary first aid training and education
- Clinical training in snake bite treatment and/or seminars or conferences about snake bite
- Injury rehabilitation for snake bite patients

Grants: Five (5) grants of USD$2,000 will be offered for projects commencing in 2011.
Duration of funding: Grants are offered for projects with a duration of up to twelve (12) calendar months that will commence on 1st July 2011.

Restrictions: Funding may not be used for the payment of institutional administrative fees or overheads, or for the payment of staff salaries or student stipends. Funding must be for a project that will be carried out in the applicant's country of residence. All applications must be made through either an institution (University, College, Research Institute, Government body, etc) or a recognised non-governmental organisation. Funds will not be paid to individuals without a sponsor organisation.

Ethics: All research involving animals must have the approval of the applicant's institutional Animal Ethics Committee. Research involving human subjects must have the approval of the relevant institutional or national Human Ethics Committee.

Permits and Licenses: Where any other permit, license or approval is required, the applicant must provide proof of this prior to the commencement of the project.

Applications: Applications must be made in writing on this application form, and should not contain more than four (4) additional A4-sized pages of information. Applications must be signed and dated by both the applicant and current Supervisor. Applications are to be received in full no later than 5 pm on 31 January 2011 (Australian Eastern Daylight Savings Time).

Selection Process: Applications will be checked for completeness, and only complete proposals will then each be sent to two reviewers who will assess and rank them according to:

- Originality and scientific/educational/clinical merit based on the results of the peer review process, with respect to the applicant's demonstrated understanding of the problem, their approach to solving it, and the quality of the proposed response (whether it be a research project, a training initiative, or education-based solution).
- Potential benefits to the applicant's community that may result from successful achievement of the stated objectives and outcomes. The likelihood of a successful outcome will be assessed against the quality and relevance of the project, and the qualifications, references and previous track record of the applicant. Early career researchers will not be prejudiced by this approach if they can demonstrate a strong potential for success through production of a high quality project application, superior referee reports, and support from their institution.
- Projects that build capacity in the applicant's country of residence will be considered favourably. Applications should clearly define the contribution to capacity building that the award of a grant will make.

Notification: All applicants will receive a formal decision regarding their application, and a copy of the reviewer reports and selection findings no later than 15 March, 2011.
Unsuccessful applicants are encouraged to use this feedback to enable them to prepare improved applications to submit to a future funding round of the scheme. Successful applicants and their institutions will be required to sign an acceptance agreement prior to the release of funding.

Disbursement: Grant funding will be disbursed in two (2) instalments, subject to completion of a progress report six (6) months after commencement.

Mentoring: The successful awardees will be mentored by a GSI nominated scientist or clinician with expertise in the field of work being undertaken. Recipients will be expected to maintain regular contact with mentors, and to discuss both their progress reports and final reports with the mentor during preparation. Mentors in turn will use their best efforts to advise recipients throughout the duration of the project, and to monitor progress towards successful completion.

Reporting: Recipients will be required to submit two reports. The first of these will be due no more than six (6) months after commencement and will need to demonstrate satisfactory progress towards completion of project aims and objectives in order to enable release of the balance of project funds. A final report will then be required not more than three (3) months after completion of the project.
Recipients will be encouraged to prepare a manuscript reporting their work in collaboration with their mentor and their host institution supervisors, and to submit this for publication in an appropriate peer-reviewed journal. Administering organisations will be required to submit an acquittal of funds at 6 months, and at completion of the project.

In addition recipients will be encouraged to contribute information, images, video clips and diagrams so that their project can be reported via the GSI website, or in other GSI publications.
Scheme funding: This Scheme is funded by a very generous donation from CSL Limited.

Address for Lodgement of Applications: Applications may be lodged by post or by email:

GSI 2011 Small Grants Scheme,
Australian Venom Research Unit,
Department of Pharmacology,
University of Melbourne,
Parkville, Victoria, 3010. Australia.

Email: david.williams@unimelb.edu.au

Global Snakebite Initiative
2011 SMALL GRANTS SCHEME APPLICATION FORM

Please complete this form carefully, and provide details in each section. Incomplete applications may be rejected. You may attach up to four (4) additional A4-sized pages of information. Please also attach a one (1) page CV for each applicant to the proposal.

Name of Institution/Organisation:

Mailing Address:

Telephone:
Facsimile:
Email address:
Name of Organisational Representative:
Position:
Signature: Date:
Email Address:
Project Title

Name of Primary Applicant:
Position:
Address for Correspondence:

Telephone:
Facsimile:
Email Address:
Signature Date:
Co-applicants:
(List names & email addresses please)

Project Summary: (Briefly describe your project and what you hope it will achieve)

Please indicate which of the following focus areas apply to this project: (You can select more than one)

- Basic epidemiological or clinical research
- Snake bite prevention projects
- Public health promotion or community awareness
- Clinical training and/or seminars or conferences
- Primary first aid training and education
- Injury rehabilitation for snake bite patients
- Other: (Please specify)

Location of Project: (Country, State, Province, City, Village, etc)

Introduction: (Please explain the background or context which gives rise to the project)

What is the aim of the project?

What are the objectives?

How will the project be carried out: (What methods will be used?)

How will the project data, results or outcomes be analysed and interpreted?

Please list the key milestones of the project:

How will this project contribute to improving either the prevention of snake bites, or the treatment and rehabilitation of snake bite patients?:

What is the budget for this project? (Show amounts in US dollars please)

1. Equipment: $
2. Operating costs (i.e.: consumables, printing costs, fieldwork, etc):$
3. Travel (airfares, accommodation, car hire, etc): $
4. Other costs: $

Total Budget (US dollars): $

Explanation of budget items: (Please provide details of equipment to be purchased, consumables and other items to be purchased, travel to be undertake, and specify what other items are budgeted for)

List details of any other grants you have received for this project:

- Does this project involve research with animals? YES NO
- Does this project involve research with human subjects? YES NO
- Have you already applied for appropriate ethics approval? YES NO
- (You must provide evidence that you have ethics approval in writing prior to the release of any funding and the commencement of your project. If you already have approval, please attach a copy to this application)
- Does this project require permits or licenses? YES NO
- (If permits or licenses are required, you must provide copies to us prior to the release of any funding and the commencement of your project. If you already have these permits or licenses, please attach a copy to this application)

List the names and contact details of two (2) referees: (Referees should not be employed by the same organisation as the applicant)

Name of First Referee:
Position:
Address for Correspondence:

Telephone:
Facsimile:
Email Address:

Name of Second Referee:
Position:
Address for Correspondence:

Telephone:
Facsimile:
Email Address:

NOTES

- You may attach up to four (4) additional A4-sized pages of information if space is insufficient.
- You may list up to 10 relevant literature references relating to this type of project. These references should have been discussed in your Introduction as part of the project background.
- Ensure that you attach a brief one (1) curriculum vitae for each applicant to the proposal.
- Ensure that your budget is calculated in United States Dollars (USD$) and not the local currency of your country.
- Have you explained the budget concisely and completely?
- Have you attached any ethics approvals or permits/licenses that have already been obtained?
- Has your institutional or organisational representative signed and dated this application?
- Did you sign and date this application?

Appendix 1: IMF listing of Emerging and Developing Economies1

Afghanistan, Islamic Republic of
Albania
Algeria
Angola
Antigua and Barbuda
Argentina
Armenia
Azerbaijan
Bahamas, The
Bahrain
Bangladesh
Barbados
Belarus
Belize
Benin
Bhutan
Bolivia
Bosnia and Herzegovina
Botswana
Brazil
Brunei Darussalam
Bulgaria
Burkina Faso
Burundi
Cambodia
Cameroon
Cape Verde
Central African Republic
Chad
Chile
China
Colombia
Comoros
Congo, Democratic Republic of
Congo, Republic of
Costa Rica
Côte d'Ivoire
Croatia
Djibouti
Dominica
Dominican Republic
Ecuador
Egypt
El Salvador
Equatorial Guinea
Eritrea
Estonia
Ethiopia
Fiji
Gabon
Gambia, The
Georgia
Ghana
Grenada
Guatemala
Guinea
Guinea-Bissau
Guyana
Haiti
Honduras
Hungary
India
Indonesia
Iran, Islamic Republic of
Iraq
Jamaica
Jordan
Kazakhstan
Kenya
Kiribati
Kosovo
Kuwait
Kyrgyz Republic
Lao People's DemRep
Latvia
Lebanon
Lesotho
Liberia
Libya
Lithuania
Macedonia
Madagascar
Malawi
Malaysia
Maldives
Mali
Mauritania
Mauritius
Mexico
Moldova
Mongolia
Montenegro
Morocco
Mozambique
Myanmar
Namibia
Nepal
Nicaragua
Niger
Nigeria
Oman
Pakistan
Panama
Papua New Guinea
Paraguay
Peru
Philippines
Poland
Qatar
Romania
Russia
Rwanda
Samoa
São Tomé and Príncipe
Saudi Arabia
Senegal
Serbia
Seychelles
Sierra Leone
Solomon Islands
South Africa
Sri Lanka
St. Kitts and Nevis
St. Lucia
St. Vincent and the Grenadines
Sudan
Suriname
Swaziland
Syrian Arab Republic
Tajikistan
Tanzania
Thailand
Timor-Leste
Togo
Tonga
Trinidad and Tobago
Tunisia
Turkey
Turkmenistan
Uganda
Ukraine
United Arab Emirates
Uruguay
Uzbekistan
Vanuatu
Venezuela
Vietnam
Yemen, Republic of
Zambia
Zimbabwe

Save the Date

Dear Doctor/Colleague

We are delighted to inform you that, Department of Medicine, Rangpur Medical College, Toxicology Society of Bangladesh (TSB) and Bangladesh Association for Advancement of Tropical Medicine (BAATM) are jointly organizing “1st National Conference on Poisoning and Snake Bite” to be held on 27th and 28th March, 2011 at Rangpur, Bangladesh. A few Scientific and Social programmes have been chalked out. Speakers from different parts of the country and abroad will participate in the conference.

Since their inception, TSB and BAATM have organized scientific seminars, social programmes and advocacy meetings. Now for the first time these two established organizations have joined hands with Department of Medicine, Rangpur Medical College in organizing the1st National conference on Poisoning and snake bite. TSB and BAATM have been trying continuously and effortlessly to improve the practice regarding tropical diseases and toxicological and snake bite care of this region by establishing link between related specialists of home and abroad and general practitioners. We hope the conference will be an important from for discussing the current practice and problems in this field. We will be encouraged if you kindly attend this conference and contribute lo improve the health status of this region.

We are looking forward to welcome you on the conference day.

NEW MEETING LISTING

Marine and Freshwater Toxins Analysis
Second Joint Symposium and AOAC Task Force Meeting
Baiona, Spain May 1-5, 2011

With great pleasure the University of Vigo, Spain, and AOAC International's Marine and Freshwater Toxins Task Force invite you to join us for *Marine and Freshwater Toxins Analysis: 2nd Joint Symposium and AOAC Task Force Meeting*, on May 1-5, 2011

Symposium Chairs: Dra. Ana Gago-Martinez and Dr. James Hungerford

The symposium will address new developments, method validation efforts, and method implementation in the analysis of marine and freshwater toxins, as a joint meeting with the AOAC Task Force on Marine and Freshwater Toxins. A variety of methods needs, for detecting saxitoxins, domoic acids, okadaic acids, azaspiracids, other seafood toxins and the cyanobacterial toxins will be addressed in presentations and focused discussions. New methods have been recently validated, approved by regulatory stakeholders, and training has been organized. In spite of this progress many methods needs remain and so other presentations and discussions will address special needs of the community ranging from emerging toxins to the ongoing replacement of mouse bioassays with modern and fully validated chemical methods.

Principle sponsor is the University of Vigo, Spain, home to the Department of Analytical and Food Chemistry.

The conference venue is the Talaso Atlantico, a high quality hotel with very impressive conference facilities located near Baiona and Vigo in the Galicia region of northwestern Spain. In addition to being the largest European producer of mussels, shellfish-rich Galicia is also a very beautiful and historic area.

In addition to the keynote talks, many contributed papers, both oral and in posters will allow additional opportunities to learn of and discuss state-of-the art detection methods.

The joint Symposium and Task Force meetings (program is in preparation) will also offer unique opportunities to presenters and attendees:

- **Observe or participate in the activities of focused discussion groups in specific toxin areas.** Focused discussion groups have proven to be the most effective means of developing methodology needs and validation strategies. Symposium presenters and attendees are welcome to attend.
- **Participate in a forum with international members of the seafood industry, their associations, and also regulatory agencies.** These stakeholders, who are the ultimate users and/or benefactors of the analytical methodology, will also find that the symposium and Task Force can be used to express their needs.
- **Participate in the Marine and Freshwater Toxins Task Force. Contribute to this new international group that fosters the development and validation of powerful and practical methods for toxin analysis, and greater availability of toxin standards.**

Dates and Contacts:

- ***Deadline for Abstract submission*:** 1 March 2011 (Abstract guidelines forthcoming).
- ***Submit Abstracts to:*** biotoxins.meeting@uvigo.es
- ***Notification of acceptance:*** 1 April 2011
- ***Deadline for Presenters Registration:*** 17 April 2008
- ***Registration fees:***

	Before 1 March, 2011	After 1 March, 2011
AOAC members	350 €	450 €
Non AOAC members	450 €	550 €
Students	350 €	450 €

- **Accommodations**: Please Contact to comercial@talasoatlantico.com indicating "AOAC Symposium". Rooms at the meeting site, the hotel Talaso Atlantico, are available at special rates of 76 Euros (single) or 98 Euros (double) before 1 March, 2011. Please make your registration as soon as possible.

For more information please contact: biotoxins.meeting@uvigo.es

10th International Symposium on Protein Structure Function Relationship
Feb. 11-14, 2011, Karachi
&
Workshop on Characterization of Proteins
Feb. 15-21, 2011, Karachi

Organized by

HEJ Research Institute of Chemistry
International Center for Chemical and Biological Sciences
University of Karachi
Karachi 75270,
Pakistan

Invitation

The organizing committee cordially invites you to participate in a four day International symposium on "Protein Structure Function Relationship" (Feb. 11-14, 2011) and workshop on "Characterization of Proteins" (Feb. 15-21, 2011) to be held in Karachi. The symposium and workshop are organized by H.E.J. Research Institute of Chemistry, International Center for Chemical and Biological Sciences and sponsored by National and International agencies.

Organizing Committee

Patrons

Pirzada Qasim Raza Siddiqui
Vice Chancellor
University of Karachi

Prof. Atta-ur-Rahman, N.I., H.I., S.I., T.I.
H.E.J. Research Institute of Chemistry
ICCBS, University of Karachi

Chairperson

Prof. M. Iqbal Choudhary, H.I., S.I; T.I.
Director
H.E.J. Research Institute of Chemistry
International Center for Chemical and Biological Sciences
University of Karachi

Organizing Secretary

Prof. Atiya Abbasi
H.E.J. Research Institute of Chemistry
International Center for Chemical and Biological Sciences
University of Karachi

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Prof. Shaheen Faizi, S.I.
Dr. Abdul Jabbar
Prof. Abdul Malik, S.I.
Prof. B.S. Siddiqui,S.I.,T.I.
Dr. Shaiq Ali T.I.
Dr. Sabira Begum, P.P
Dr. Abdul Hameed
Dr. Shamsa Kanwal
Dr. Raza Shah
Dr. Shabana U. Simjee

NEW MEETING LISTING

Dr. Sammer Yousuf
Ms. Fozia Anwar
Ms. Shumaila Samad
Dr. Naheed Zafar
Mr. Hassan Bin Asif
Mr. Mehtab Alam
Mr. Khawja Ali Hassan

Karachi and its Surroundings

Karachi, with a population of more than eighteen million, is Pakistan's largest city. Situated on the shores of Arabian Sea, it is also the country's premier port handling billions of tons of cargo every year. Originally a fisherman's village, Karachi, has many attractions that can suit the taste of almost every individual today for e.g. beaches, bazaars, museums, art galleries.

The most outstanding monument in Karachi is the mausoleum of Quaid-e-Azam, Mohammad Ali Jinnah. It is built with modern concepts of planning and design entirely of white marbles. The magnificent huge crystal chandelier, gifted by the People's Republic of China, as well as the sprawling gardens provides a very impressive look to the last resting place of the Father of the Nation.

The city of Karachi also offers some very important sites in the neighborhood like Thatta, Makli Hills, Banbhore, Chaukundi Tombs, Keenjhar Lake etc. which are worth seeing.

NEW MEETING LISTING

General Information

Accommodation

The International Center for Chemical and Biological Sciences has a very well maintained guest house where participants can stay comfortable. The venue of the symposium is at walking distance from the guest house

Foreign currency

Registration fees at the symposium desk can be paid in cash or through cheque. Currency conversion to Pakistani rupees will be available at the counter of all five star hotels and at commercial banks open during the week (Monday to Saturday). Current exchange rate against US$ 1 = Pak Rupees 86.0.

Objectives of the Symposium

The main purpose of the symposium is to provide a platform for exchange of information, ideas and concepts. This will not only stimulate further research but will also provide an opportunity for collaboration to the scientists of Third world countries with the developed world.

Scientific Program

The symposium program will include
Plenary lectures
Invited lectures
Oral presentations
Poster Sessions

Proceedings of the symposium will be published. All participants are requested to submit their manuscripts at the time of presentation.

Language

The official language of the symposium is English.

Call for Abstracts

Participants interested in presenting their work are required to submit an abstract (not exceeding 300 words) in camera ready form by 20th January 2011.

Objectives of the Workshop

The workshop is aimed at providing hand-on experience to researchers for using state-of-the-art

techniques. This will not only stimulate further research but will also provide an opportunity for collaboration to young scientists of Third world countries with the developed world.
The workshop will be limited to 25 participants and will be on a first come first served basis.

Correspondence Address:

Professor Atiya Abbasi
Organizing Secretary
HEJ Research Institute of Chemistry,
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E-mail: atiya786@super.net.pk

NEXT IST WORLD CONGRESS - HAWAII 2012

A local Hawaii organising executive has been formed to develop a plan for the next IST World Congress. All IST members should work together to support Dr. Carl-Wilhelm Vogel, Dr. Angel Yanagihara and Dr. Marilyn Dunlap and their colleagues in ensuring Hawaii can host a successful Congress in 2012. In an exciting development, it now appears likely that this Congress will combine with US Venom Week VI. Venom Week, organised by Dr. Steve Seifert, University of New Mexico, attracts a clinician and herpetologist audience, predominantly from the US, but with increasing attendees from other nations. Combining the IST Congress with Venom Week will hopefully produce an even more vibrant and well attended meeting, to the benefit of all. The IST Council are working with our Hawaiian colleagues and Dr. Seifert to determine the best time in 2012 to hold the Congress; July and September are months which have been considered, and dates have now been set as July 8th to 13th, 2012. We will be striving to ensure the Congress is affordable, including less expensive accommodation for student members. Several possible venues and hotels are being examined in an effort to deliver a great Congress at a good price. Because Hawaii is part of the US, members from some countries not covered by the US Visa-waiver program will need to organise visas well in advance. More on this as plans develop.

Organising an IST World Congress is not easy and requires a great deal of effort by local IST members. This work, on behalf of all of us, deserves to be valued by the membership and we should all see what we can do to assist the local organisers. It is particularly important to gain an idea of likely attendance to allow budget planning. Therefore, once plans are further advanced, we will ask all members to indicate if they definitely intend to attend the meeting, or will definitely not be coming. Once a Scientific Organising Committee is established for the Congress, input from members on possible meeting content will be sought.

For the present, members should communicate re the Congress via the Secretary IST (julian.white@adelaide.edu.au) and President (antgopal@nus.edu.sg).

INTERNATIONAL SOCIETY ON TOXINOLOGY

9th IST ASIA PACIFIC MEETING ON ANIMAL, PLANT AND MICROBIAL TOXINS

September 4–8, 2011 Vladivostok, Russia

9th IST Asia Pacific Meeting on Animal, Plant and Microbial Toxins
Institute of Bioorganic Chemistry, Russian Academy of Sciences
16/10 Miklukho-Maklaya Street, 117997 GSP Moscow, Russia
Phone: (++7-495) 330-7310
E-mail: AP-IST@ibch.ru, ap.ist.2011@gmail.com *Web:* www.ap-ist.org

Welcome to Vladivostok!

On behalf of the International Society on Toxinology (IST) we are pleased to announce the 9th IST Asia Pacific Meeting on Animal, Plant and Microbial Toxins in Vladivostok, Russia on September 4–8, 2011.

The Congress Program will focus on the following main topics:
Toxin Structure and Mode of Action
Proteomics and Genomics
Bioactive Substance from the Sea (Marine Toxins)
Drug Development
Clinical Toxinology
Toxins Miscellaneous

Some prominent scientists in the field of toxinology have already confirmed their willingness to join us in Vladivostok as invited speakers and to contribute to the Congress Program:

Geoffry Isbister	School of Medicine and Public Health, The University of Newcastle, Australia
R Manjunatha Kini	Protein Science Laboratory, Department of Biological Sciences, National University of Singapore
Songping Liang	College of Life Sciences, Hunan Normal University, Changsha, Hunan, China
Hideyuki Nakagawa	University of Tokushima, Department of Life Sciences, Tokushima-City, Japan
David J. Newman	Natural Products Branch, National Cancer Institute, Frederick, USA
Baldomero M. Olivera	Department of Biology, University of Utah, Salt Lake City, USA

For full information on the 9th IST Asia Pacific Meeting on Animal, Plant and Microbial Toxins please visit our Web site www.ap-ist.org .

The Meeting will be hosted by Vladivostok, the largest city of the Russian Far East and, of course, one of the most interesting and remarkable cities of Russia. Lying on the border between the mountains and the taiga, this area was home for Amur tigers for centuries. Even now you might encounter tigers in the woods near Vladivostok.

Nowadays, Vladivostok is among the ten most prospective cities of the world, as determined by the special UNESCO Commission. What could be even of more interest for the potential attendees of our Congress, Vladivostok has become a centre of marine biotechnology and biological research in Russia.

Welcome to Vladivostok – a city where the morning of Russia begins! If you happen to see this city once, you will remember it forever.

Important Dates

November 15, 2010	Abstract Submission opens
November 15, 2010	Early Registration opens
May 25, 2011	Deadline for Early Registration
June 25, 2011	Deadline for Abstract submission
August 1, 2011	Pre-registration Deadline
September 3, 2011	Onsite Registration opens

Eugene GRISHIN
Russian Academy of Sciences, Moscow
Valentin STONIK
Far-Eastern Branch of the Russian Academy of Sciences, Vladivostok

CONGRESS SECRETARIAT
9th IST Asia Pacific Meeting on Animal, Plant and Microbial Toxins
Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry
16/10 Miklukho-Maklaya Street, 117997 Moscow, Russia
E-mail: AP-IST@ibch.ru, ap.ist.2011@gmail.com
Web site: www.ap-ist.org

VLCIST2011

VALENCIA INTERNATIONAL SOCIETY ON TOXINOLOGY 2011

17th EUROPEAN CONGRESS of the Society of Toxinology

Museo de las Ciencias Príncipe Felipe, Valencia (Spain), **September 11-15, 2011**

The topic of the congress is: "Animal, plant and microbial toxins-From basic to translational venomics. Besides discussing the latest developments in this discipline, the major objective of the meeting is to facilitate contacts between groups of basic and clinical research, molecular biology and proteomics technologies, which may help creating synergies to develop new strategies to alleviate the serious problems caused by envenoming by animal, plant and microbe toxins.

Local Organizing Committee

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Libia Sanz, IBV
Paula Juárez, IBV
Vicente Felipo, CIPF
Enrique Pérez-Paya, IBV, CIPF
Marc Martí-Renom, CIPF
Ana Conesa, CIPF
Andrés Moya, UV
Ismael Mingarro, UV

Secretariat

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GENERALITAT VALENCIANA · CIUDAD DE LAS ARTES Y LAS CIENCIAS · FUNDACIÓN

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Dipartimento di Scienze Biomediche, Università di Padova, Padova, Italy

Jean-Marc Sabatier
ERT 62 "Ingénierie des protéines" Université de la Méditerranée - Ambrilia Biopharma Inc., France

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Bryan Fry
Australian Venom Research Unit, Department of Pharmacology, School of Medicine, University of Melbourne, Parkville, Victoria, Australia

Julian White
Women's & Children's Hospital, North Adelaide SA 5006, Australia

I S T

VLC 2011

17th Congress of the European Section of the International Society on Toxinology

INTERNATIONAL SOCIETY ON TOXINOLOGY

Museo de las Ciencias "Príncipe Felipe"
Valencia (Spain), September 11-15, 2011

CÁTEDRA SANTIAGO GRISOLÍA

The 17th Meeting of the European Section of the International Society on Toxinology (IST) will take place in Valencia September 11-15, 2011. The venue will be the Auditorium Santiago Grisolía at the Science Museum Príncipe Felipe, one of the buildings of the City of Arts and Sciences of Valencia (Spain).

The topic of the congress is: "Animal, plant and microbial toxins-From basic to translational venomics". Besides discussing the latest developments in this discipline, the major objective of the meeting is to facilitate contacts between groups of basic and clinical research, molecular biology and proteomics technologies, which may help creating synergies to develop new strategies to alleviate the serious problems caused by envenoming by animal, plant and microbe toxins. Issues to be discussed at the meeting's oral and poster sessions include:

- Evolutionary aspects of venoms. Understanding biology and pathology
- Systems biology approach to study venoms and the envenomation process
- Managment of envenomation:
  Problematic associated with hosting exotic venomous animals in non-natural environment (zoos, private collections, etc.)
  Improving antidotes through combination of technologies
  Translational venomics
- Structural biology approach to establish structure-function correlations of toxins
- Toxins as tools
- The CONCO project
- Arthropod and hymenopteran venoms
- Bacterial toxins
- Taxonomy

The program includes the following sessions:

Opening Lecture
Evolutionary aspects of venomous animals and their venoms
Toxins as tools
Snakebite envenoming: clinical and therapeutic aspects
Structure, function and evolution of venom PLA2 molecules- In memoriam of Prof. F. Gubensek
Venomics
Bacterial toxins
Arthropod venoms
Closing Lecture

City of Valencia

Of historical interest yet cosmopolitan, Valencia has grown and adapted to the times, conserving its rich heritage while becoming a leading economic and financial centre in presentday Spain. Bathed in Mediterranean sun, giving warmth and that special kind of light that the Valencian realist/impressionist painter Joaquín Sorolla (1863-1923) immortalized on canvas, it is by no means strange that the poet in the Cantar del Mio Cid spoke of the "luminous city of Valencia". You'll be pleasantly surprised by the City itself and the warm, inviting character of its inhabitants. We hope that you will be able to discover Valencia for yourself and enjoy the extensive range of activities that await you.

WEB SITE: http://istmeetingvlc2011.ibv.csic.es/

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4th Venoms to Drugs Conference

15-20 May 2011

Heron Island, Queensland, Australia

Dear Colleague,

We are pleased to announce the details of the fourth **Venoms to Drugs** conference to be held on Heron Island, Queensland, May 15–20, 2011. A stimulating program has been arranged including sessions on New Pharmacologies, Ion Channel Therapeutics, Structure-Activity Relationships, New Discovery Technologies, New Targets, Peptides & Peptidomimetic Drugs, and Venom Proteomics and Transcriptomics.

Heron Island, the venue for the conference, is a pristine coral cay on the Great Barrier Reef. Snorkeling, diving, tennis, reef walks, fishing and a day spa are just some of the activities that can be enjoyed on the island. The meeting is structured to ensure ample time is provided to take advantage of this stunning location.

A range of accommodation from budget to luxury is available and may be viewed on the island's website (www.heronisland.com).

You can register and book accommodation for the conference at the conference website (www.venomstodrugs.com). Program updates will be made on a regular basis and please contact Thea Monks (t.monks@uq.edu.au) for further information. We look forward to welcoming you to Heron Island in 2011.

Best Regards

Paul Alewood, Richard Lewis & Glenn King
(Organising Committee)

TOXICOLOGY MEETINGS 2010

EAPCCT
European Association of Poisons Centres and Clinical Toxicologists

XXXI International Congress of the European Association of Poisons Centres and Clinical Toxicologists

24-27 May 2011, Dubrovnik, Croatia, at the Valamar Lacroma Resort Hotel

1. General Information
2. Submitting Abstracts
3. Posters
4. Registration
5. Venue and Accommodation
6. Deadlines
7. Information
8. Congress Stands
9. Local Information and Tourist Attractions

1. General Information:

Congress Flyer (pdf 110 kb)
Congress Announcement (pdf 135 kb)
Congress Brochure (pdf 600 kb)
The final programme will be displayed here in due time.

2. Submitting Abstracts:

The **on-line abstract submission** is closed.
Submission deadline was November 17th 2010 (midnight).
For abstract submission guidelines see the Congress Brochure (p. 5-8).

The Young Investigator Award

3. Posters:

Size and format of poster boards will be given in due time.

4. Registration for the Congress:

On-line registration will be available here.

5. Accommodation:

Information on hotel room reservation and booking will be available here.

6. Deadline Dates:

Receipt of abstracts	November 17, 2010
Registration at special rates	February 18, 2011
Reserving of accommodation at special rates	March 23, 2011
Deadline for presenters to register	February 18, 2011

7. For information:

EAPCCT General Secretary
Mr. Peter Hultén
Swedish Poisons Information Centre
17176 STOCKHOLM
tel: +46 8 610 0596,
fax: +46 8 32 7584

E-mail: gs@eapcct.org

8. Congress Stands:

Companies or organizations wishing to have a stand during the Congress may contact the EAPCCT General Secretary (see above) for information.

9. Local Information and Tourist Attractions:

Tourist information (Dubrovnik)
Tourist information (Croatia)
Car rental
Buses
Taxis
Airport information

2500 Calvert Street NW (at Connecticut Ave.), Washington, District of Columbia 20008
Phone: (202) 234-0700, Fax: (202) 265-7972

Welcome to the Omni Shoreham Hotel and the North American Congress of Clinical Toxicology

The Omni Shoreham Hotel welcomes attendees of Americans for the North American Congress of Clinical Toxicology. To reserve your room now and receive the special conference rate simply click on the "book now" button below.

Conference Dates:	September 21 - 26, 2011
Special Rate:	From $249 per night
Book By:	August 21 to receive special rate

We hope you enjoy your stay!

Book Now

NEW MEETING LISTING

LES ANIMAUX VENIMEUX ET VÉNÉNEUX

Systématique, biologie, toxicologie

Année 2010 - 2011

1981-2011: 30 ans

MODULE I - **Responsables : Jean-Philippe CHIPPAUX et Michel THIREAU**

Venimologie générale - Vertébrés terrestres

Lundi 24 janvier - Vendredi 28 janvier 2011

Lundi 24 janvier 2011
09h00 - 09h15 : **Accueil**
09h15 - 10h45 : **La fonction venimeuse**
C. ROLLARD, Muséum
11h00 - 12h15 : **Toxicité aiguë des venins. Serums antivenimeux**
J.-P. CHIPPAUX, IRD, Cotonou
14h00 - 15h30 : **Venins : génomique, protéomique et bio-informatique**
R. STÖCKLIN, Atheris, Genève
15h45 - 17h45 : **Les amphibiens venimeux**
J. LESCURE, Muséum

Mardi 25 janvier 2011
09h00 - 10h45 : **Les serpents : anatomie de l'appareil venimeux**
J.-P. GASC, Muséum
11h00 - 12h00 : **Visite du vivarium de la ménagerie ou des collections**
(1/2 groupe)
14h00 - 15h00 : **Visite du vivarium de la ménagerie ou des collections**
(1/2 groupe)
15h30 - 17h00 : **Les serpents : systématique moléculaire**
N. VIDAL, Muséum

Mercredi 26 janvier 2011
09h00 - 11h30 : **Biologie - Comportements des serpents**
X. BONNET, CNRS, Villiers-en-Bois
14h00 - 16h15 : **Composition et mode d'action des venins de serpents Viperidae**
F. DORANDEU, CRSSA, Grenoble
16h30 - 17h30 : **Les mammifères venimeux et les oiseaux vénéneux**
P. BOUSSES, Muséum

Jeudi 27 janvier 2011
09h00 - 12h00 : **Épidémiologie et clinique des envenimations ophidiennes**
J.-P. CHIPPAUX, IRD, Cotonou
14h00 - 15h30 : **Immunothérapie des envenimations ophidiennes**
M. SORKINE, clinique du Val d'Yerres, Yerres
15h45 - 17h15 : **Composition générale et mode d'action des venins de serpents Elapidae**
D. SERVENT, CEA

Vendredi 28 janvier 2011
09h00 - 10h15 : **Anticorps recombinants neutralisants**
P. BILLIALD, Muséum et UFR pharmacie, Paris-Sud
10h30 - 12h15 : **Les Atractaspididae : biologie et venins**
F. DUCANCEL, CEA
14h00 - 15h15 : **Inhibiteurs naturels des PLA_2. Résistance naturelle aux venins**
G. FAURE, Institut Pasteur, Paris
15h30 - 17h00 : **Synthèse et conclusion**
J.-P. CHIPPAUX, IRD, Cotonou

MODULE II - **Responsables : Christine ROLLARD et Max GOYFFON**

Arthropodes terrestres - Parasites

Lundi 14 mars - Vendredi 18 mars 2011

Lundi 14 mars 2011
09h00 - 09h15 : **Accueil**
09h30 - 10h30 : **Présentation des arthropodes**
C. ROLLARD, Muséum
10h45 - 12h15 : **Venins d'arthropodes et spectrométrie de masse**
C. GUETTE, Angers
14h00 - 16h30 : **Les insectes hyménoptères**
C. VILLEMANT et J. WEULERSSE, Muséum
16h45 - 17h30 : **Les venins d'hyménoptères**
M. GOYFFON, Muséum

Mardi 15 mars 2011
09h00 - 12h15 : **Les insectes piqueurs autres que les hyménoptères**
P. BOURDEAU, Oniris, Nantes
14h00 - 15h30 : **Les protistes. Les vers parasites. Effets venimeux**
P. BOURDEAU, Oniris, Nantes
15h45 - 17h45 : **Composition et activités biologiques de la salive des diptères**
V. CHOUMET, Institut Pasteur, Paris

Mercredi 16 mars 2011
09h00 - 12h30 : **Les myriapodes : systématique, biologie et fonction venimeuse**
J.-J. GEOFFROY, CNRS et Muséum
14h00 - 16h15 : **Les acariens : systématique, biologie et fonction venimeuse** (I)
R. CHERMETTE, ENV, Maisons-Alfort
16h30 - 17h30 : **Les acariens : systématique, biologie et fonction venimeuse** (II)
R. CHERMETTE, ENV, Maisons-Alfort

Jeudi 17 mars 2011
09h00 - 12h30 : **Les araignées : systématique, biologie, répartition, espèces dangereuses**
M.-L. CÉLÉRIER et C. ROLLARD, Muséum
14h00 - 15h15 : **Venins d'araignées et canaux ioniques**
S. DIOCHOT, CNRS, Sophia Antipolis
15h30 - 17h45 : **Les scorpions : systématique, biologie, répartition**
R. STOCKMANN, Paris

Vendredi 18 mars 2011
09h00 - 12h00 : **Les venins de scorpions**
C. LEGROS, Angers
14h00 - 16h15 : **Aranéisme - Scorpionisme**
M. GOYFFON, Muséum

MODULE III - **Responsables : Christine ROLLARD et Nadia AMÉZIANE**

Faune marine - Écosystèmes marins

Lundi 16 mai - Vendredi 20 mai 2011

Lundi 16 mai 2011
09h00 - 10h30 : **Panorama de la faune venimeuse et vénéneuse de la mer Méditerranée**
S. BAGHDIGUIAN, Montpellier
10h45 - 12h00 : **L'électrophysiologie comme méthode d'étude des biotoxines d'origine marine**
C. MATTEI, Angers
14h00 - 17h00 : **Les cnidaires**
M. GUILLAUME, Muséum

Mardi 17 mai 2011
09h00 - 10h30 : **Les mollusques**
P. FAVREAU, Atheris, Genève
10h45 - 12h30 : **Venins de cônes : diversité de leurs peptides et cibles moléculaires**
J. MOLGO, CNRS, Gif-Sur-Yvette
14h00 - 15h45 : **Les mollusques bivalves toxiques**
P. LASSUS, IFREMER, Nantes
16h00 - 17h00 : **Les annélides**
T. MÉZIANE, Muséum

Mercredi 18 mai 2011
09h00 - 12h00 : **Les poissons venimeux**
F. GOUDEY-PERRIÈRE, UFR pharmacie, Châtenay-Malabry
14h00 - 15h30 : **Les poissons venimeux** (suite)
F. GOUDEY-PERRIÈRE, UFR pharmacie, Châtenay-Malabry
15h45 - 17h00 : **Les bryozoaires**
N. AMÉZIANE et J.-L. D'HONDT, Muséum

Jeudi 19 mai 2011
09h00 - 11h00 : **Les éponges et les ascidies**
M.-L. BOURGUET-KONDRACKI, Muséum
11h15 - 12h45 : **Les échinodermes**
N. AMÉZIANE, Muséum
14h00 - 17h00 : **Ichtyotoxines. Toxines ciguatériques et ciguatera**
P. BOURDEAU, Oniris, Nantes

Vendredi 20 mai 2011
09h00 - 09h45 : **Intoxications par consommation de tortues marines**
J. LESCURE, Muséum
10h00 - 12h00 : **Les serpents marins** (cours suivi d'un film)
I. INEICH, Muséum
14h00 - 16h00 : **Les serpents marins** (suite)
I. INEICH, Muséum

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Institut de recherche pour le développement

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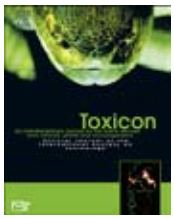

Obituary

Obituary Gerhard Habermehl (1931–2010)

One of the great promoters of the International Society on Toxinology (IST) and Toxicon, Gerhard Habermehl, died on August 30, 2010. We lost an excellent scientist and many of us a friend.

Gerd, as we called him, was born in Seligenstadt, a small city near Frankfurt (Germany) on February 19, 1931. He studied chemistry at the Technical University of Darmstadt where he completed in 1960 his PhD with a thesis on the structure of salamander alkaloids (samandarins) and became scientific assistant at the Institute of Organic Chemistry. In 1968 he stayed as a research fellow at the NIH in Bethesda, MD, USA, returned to the Technical University and was promoted to professor of organic chemistry in 1970. He was Dean of the Faculty from 1972 to 1974. In 1980 he moved to the Veterinary University of Hannover, where he was the Head of the Department of Chemistry till his retirement in 1996. Gerd was coeditor of the journals Organic Magnetic Resonance and of Toxicon (since 1972).

Gerd was a toxinologist in his heart and served twice as President of IST: from 1982 to 1985, and from 1991 to 1994. Natural products of plant and animal origin such as from frogs and salamanders (pumiliotoxins, samandarins), from marine animals (tetrodotoxin, holothurinogenins) as well as from Brazilian plants (miotoxins etc.) were his main interest. He established strong academic ties with Brazilian and Japanese colleagues and because of these activities he was honoured to become Honorary Member of the Japanese Pharmaceutical Society. Gerd wrote numerous scientific articles and several books among them the "Naturstoffchemie", an introduction to natural product chemistry with P.E. Hammann, H.C. Krebs and W. Ternes, which I consider one of his most remarkable works which needs to be translated into English.

I first met Gerd (1966) at the International Symposium on Animal, Plant and Microbial Toxins, which was held at the Instituto Butantan in São Paulo, Brazil. As a PhD student I approached him with great respect, because he had elucidated the structure of the alkaloids from the European salamanders (*Salamandra salamandra*), an important achievement considering the analytical methods and technical facilities at this time. But his open mind and kind attitude to newcomers like me made communication easy. Several years later, when he announced that he would organize the 3rd Symposium (later the World Congresses) 1972 in Darmstadt, I contacted him offering my help which he welcomed. It was a very successful meeting with a personal touch mainly due to the personal involvement of his family. On the last day we packed all participants in a bus for a wonderful trip through the Odenwald forest and the Bergstrasse. These were the good old days where two guys were able to organize an international meeting. Gerd was so enthusiastic about the success that he later (1983) organized the 5th European Symposium in Hannover.

It was a tense time where we both established a close scientific cooperation. I sent my students to his lab in Darmstadt and Hannover, his PhD students brought their samples to Frankfurt for toxicological testing (on mice, which was still possible without restrictions in these days). We both enjoyed travelling to the IST meetings, we rarely missed one. Gerd was also responsible for foreign relations of the Veterinary University of Hannover. When he was elected president of IST in 1982, I became his Secretary-Treasurer. It was an exciting time and we were able to initiate many projects: the publication of a Newsletter, establishing a Panamerican Section of IST with Charlotte Ownby, the first meeting of this Section in Stillwater, OK, USA, 1984, followed by the 9th International Congress at the same location in 1988. I still remember joyous evenings after a strenuous day of a meeting or a congress, sitting together and talking about presentations, gossips and personal news. Gerd had a special sense of humour and such an evening often ended, after several beers, with jokes and laughter.

It was our last common scientific endeavour when Gerd, already retired, but now Chairman of the Einhard Society in his hometown Seligenstadt (a Society dedicated to perform historical studies) asked me for help in a quite delicate field: forensic archaeology. The question was: Are the bones in a sarcophage in the basilica of Seligenstadt belonging to Einhard, the founder of the monastry, and to his wife? With two of my young forensic colleagues, Conny Niess and Silke Kauferstein, we sorted and analyzed

0041-0101/$ – see front matter
doi:10.1016/j.toxicon.2010.10.007

the remains. Although DNA studies were not successful, C^{14}-analysis dated the bones to the years 660–770 AD, just when Einhard lived. This was a great relief to the Seligenstadt community: they had the right bones in their basilica!

Gerd was a man with strong family bonds, to his wife Irmentrud and to his children and grandchildren. Several months before his death we still joked on phone about doctors and their diagnoses ("Gerd, you should better contact the real doctors, not your veterinary colleagues"). But he had entered a fight he finally could not win.

September 7, 2010, was a rainy day when we assembled in the magnificent basilica of Seligenstadt to say farewell to Gerd. The community of toxinologists will miss one of its leading fellows. I lost a friend and a true companion of our scientific adventures.

Dietrich Mebs*
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5 October 2010
Available online 16 October 2010

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Snake-bitten: Eric Worrell and the Australian Reptile Park

Kevin Markwell , Nancy Cushing ,
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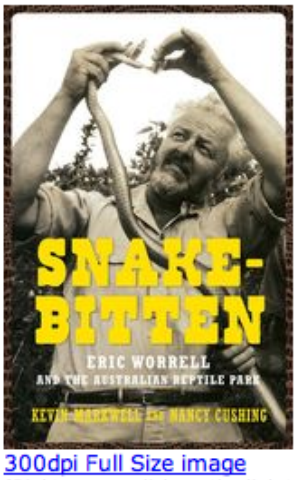
1 Add to Basket

Before Steve Irwin, Alby Mangels, the Leyland Brothers and Harry Butler there was Eric Worrell. This book traces the life and times of Worrell, the original reptile danger man and naturalist, and the iconic tourist attraction he established on the NSW Central Coast in 1959, The Australian Reptile Park. With the assistance of a committed team of keepers, Worrell created the country's pre-eminent reptile collection at the park, as well as being the main provider of snake and funnel web spider venom for the Commonwealth Serum Laboratory. Based on extensive interviews with staff and supporters, *Snake-bitten* is the intriguing story of the larger-than-life Eric Worrell and the Australian Reptile Park, which continues to be a leader in wildlife tourism, conservation, education and research.



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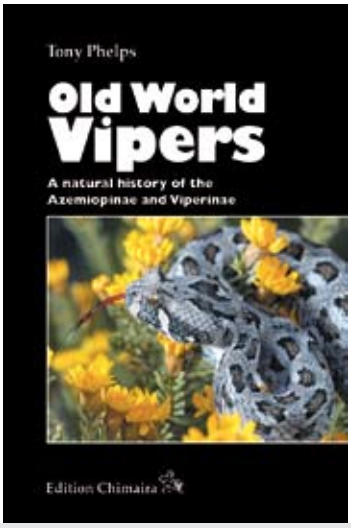

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Daboia palaestinae **recommended antivenoms:** Felsenstein Medical Research Center 'Vipera palaestinae antiserum', Vacsera/EgyVac polyvalent antivenoms.

Daboia russelii and *D. siamensis* – **Western** and **Eastern Russell's Vipers**

These medically-important species occur from Pakistan in the west through India and Sri Lanka, north into Nepal and Bhutan (*D. russelii*) and as far east as west Bengal; and in South East Asia, southern China, Taiwan and parts of Indonesia (*D. siamensis*). Throughout this range there are intriguing geographical variations in the clinical manifestations of envenoming which reflect differences in venom composition (Warrell, 1989).

Sri Lanka: *D. russelii* is a major cause of venomous snake bites, 28 % of patients bitten by this species showed no clinical evidence of envenoming. Apart from typical features of viperine envenoming (local envenoming, coagulopathy, bleeding and sometimes shock) (Fig. 550), there were in Sri Lanka distinctive features of neuromyotoxicity attributable to venom PLA2: ptosis (77 %), external ophthalmoplegia (82 %), inability to open the mouth (23 %) (Fig. 477), to swallow and protrude the tongue progressing to bulbar and respiratory paralysis in a few severe cases (Fig. 551), generalised muscle tenderness (32 %) and myoglobinuria (27 %). Most patients showed evidence of intravascular haemolysis. Acute renal failure was a common feature of severe envenoming (Phillips *et al.*, 1988).

Sri Lanka *D. russelii* recommended antivenom: Indian polyvalent antivenoms. MicroPharm 'PolongaTAb' or 'PulchellaTAb' is no longer available.

India: in most parts, *D. russelii* is an important cause of snake bite, but in Jammu in the

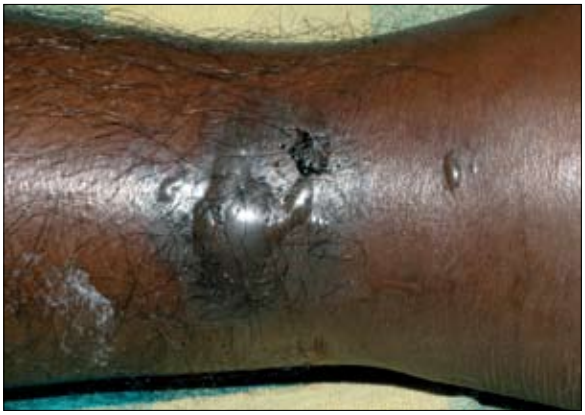

Fig. 550: *Daboia russelii* bite in Kerala, India showing local blistering and bruising at the site of the bite. D.A. Warrell

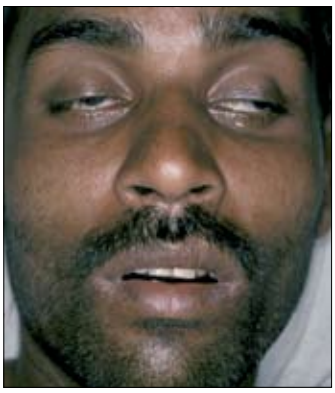

Fig. 551: *Daboia russelii* bite in Sri Lanka showing signs of neurotoxicity (bilateral ptosis and eternal ophthalmoplegia, facial paralysis and inability to open the mouth. D.A. Warrell

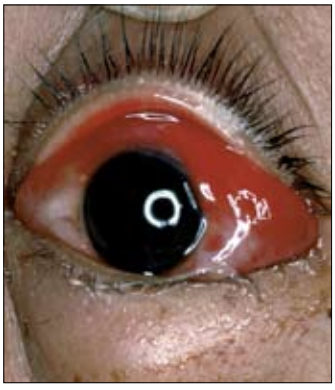

Fig. 552: *Daboia russelii* bite in Burma showing conjunctival oedema (chemosis). D.A. Warrell

northeast, only 4 out of 310 identified viperine bites were caused by this species. In Kerala, south India, neurotoxic signs such as ptosis and ophthalmoplegia, associated with haemostatic disorders, are familiar signs of envenoming by this species. Features of panhypopituitarism, presenting between one month and one year after the bite, were observed in 7 out of 1,000 cases of snake bite and there was one case of diabetes insipidus. Especially in the south, **Russell's Viper** bite is the most common cause of acute renal failure in both adults and children.

Indian *D. russelii* **recommended antivenom:** Indian polyvalent antivenoms.

Burma (Myanmar): Russell's Viper (*D. siamensis*) is the most important cause of snake bite morbidity and mortality. However, about one-third of all patients hospitalised after proven **Russell's Viper** bites develop no clinical evidence of envenoming at any stage. In Tharrawaddy, north of Rangoon, two distinct populations of **Russell's Vipers** were found to be responsible for bites during the November to January rice harvest. Smaller snakes (125–375 mm in total length) had probably been born that year while the larger snakes (500–1125 mm in total length) had been born in previous years. Bites by larger snakes were associated with more intense local swelling and a higher risk of systemic envenoming (Tun-Pe *et al.*, 1991). Severe systemic envenoming can result despite their being little or no local evidence of envenoming. Spontaneous bleeding

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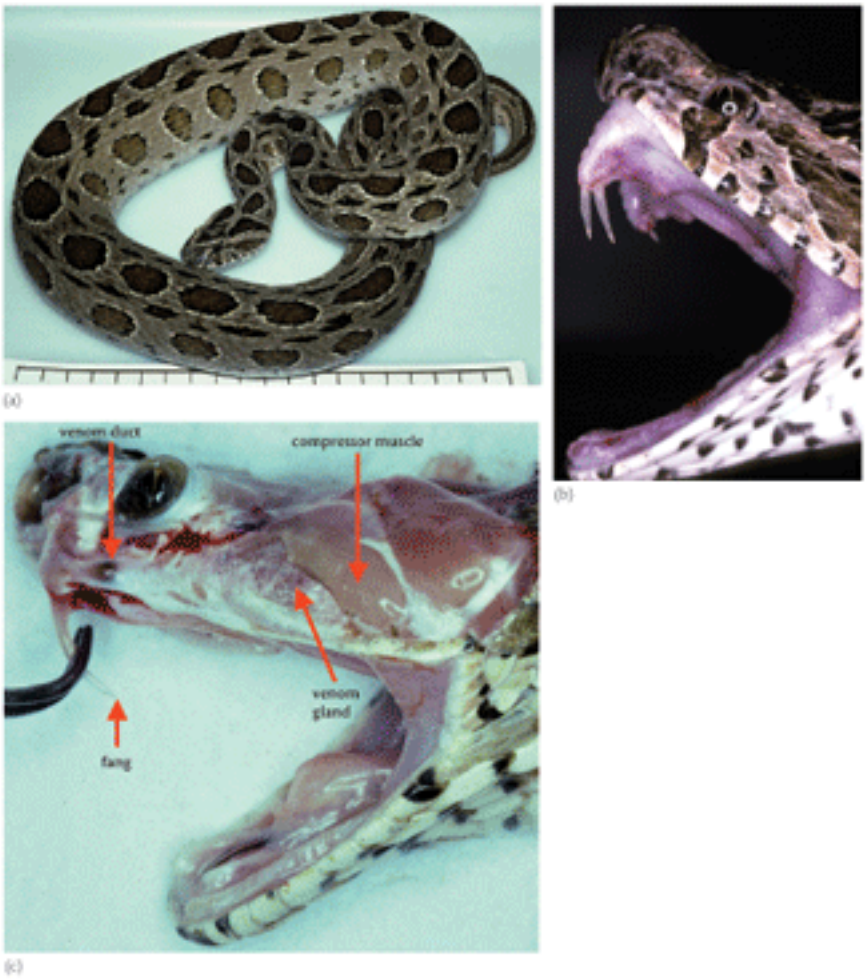

Fig. 9.2.7 Eastern Russell's viper *Daboia siamensis*, Ban Mi, Thailand (a) showing 'chain' pattern (scale in cm); (b) showing long hinged front fangs (reserve fang on the left side) in dental sheath; (c) dissection of venom apparatus.

induction of apoptosis, oedema, and haemolysis, antibacterial function, and platelet activation or inhibition.

Polypeptide toxins (neurotoxins)

Postsynaptic (α) neurotoxins such as α-bungarotoxin and cobrotoxin contain about 60 to 62 or 66 to 74 amino acids. They bind to acetylcholine receptors at the motor endplate. Presynaptic (β) neurotoxins, such as β-bungarotoxin, crotoxin, and taipoxin, contain about 120 to 140 amino acids and a phospholipase A subunit. These release acetylcholine at the nerve endings at neuromuscular junctions and then damage the endings, preventing further release of transmitter.

Venom pharmacology

The smaller neurotoxins of the Elapidae are rapidly absorbed into the bloodstream, whereas the larger phospholipase A_2 presynaptic toxins and Viperidae toxins are taken up more slowly through the lymphatics. Venoms of the spitting cobras and rinkhals can be absorbed through the intact cornea, causing systemic envenoming and even death in animals. Envenoming after ingestion of snake venom has not been reported in humans. Most venoms are concentrated and bound in the kidney, and some components are eliminated in the urine. Crotaline venoms are selectively bound in the lungs, concentrated in the liver, and excreted in bile, while polypeptide neurotoxins, such as α-bungarotoxin, are tightly bound at neuromuscular junctions. Most venom components do not cross the intact blood–brain barrier and so central effects of venoms are controversial.

Pathophysiology

Swelling and bruising of the bitten limb result from increased vascular permeability induced by proteases, phospholipases,

Fig. 9.2.8 South American tropical rattlesnake or cascabel *Crotalus durissus cascavella*.

Fig. 9.2.10 Saw-scaled or carpet viper *Echis ocellatus* from West Africa.

membrane-damaging metalloproteinases (haemorrhagins), and endogenous autacoids released by the venom, such as histamine, 5-hydroxytryptamine, and kinins. Venoms of some of the North American rattlesnakes and viperine species cause a generalized increase in vascular permeability resulting in hypovolaemia, haemoconcentration, hypoalbuminaemia, albuminuria, serous effusions, pulmonary oedema, and, in the case of Burmese *D. siamensis*, conjunctival and facial oedema (Fig. 9.2.12). Tissue necrosis near the site of the bite is caused by myotoxic and cytolytic factors: in some cases, ischaemia resulting from thrombosis, intracompartmental syndrome, or a tight tourniquet may contribute. Causes of hypotension and shock include hypovolaemia, vasodilatation, and myocardial dysfunction. Some venoms release vasodilating autacoids such as histamine and kinins. Venom of the Brazilian jararaca *B. jararaca* was found to activate bradykinin and, through a bradykinin-potentiating peptide, to prolong its hypotensive effect by inactivating the peptidyl dipeptidase responsible both for destroying bradykinin and for converting angiotensin I to angiotensin II. This observation led to the synthesis of angiotensin-converting enzyme (ACE) inhibitors. Bradykinin-potentiating and ACE-inhibiting peptides have also been found in a number of other crotaline venoms (genera *Bothrops* and *Agkistrodon*). To date, four sarafotoxins have been isolated from the venom of the Israeli burrowing asp *Atractaspis engaddensis* (Fig. 9.2.2). They show 60% sequence homology with the endothelins, which are also 21-amino acid polypeptides. Sarafotoxins and endothelins are potent vasoconstrictors (including coronary arteries), delay atrioventricular conduction, and are positively inotropic.

Snake venoms can cause haemostatic defects in a number of different ways. Venom procoagulant enzymes, many of them serine proteases, activate the blood clotting cascade at various sites. Some Viperidae venoms contain thrombin-like fibrinogenases, which remove fibrinopeptides from fibrinogen directly. Others activate endogenous plasminogen. Venoms may induce or inhibit platelet aggregation. Spontaneous systemic bleeding is caused by haemorrhagins, metalloendopeptidases, some with disintegrin-like and

Fig. 9.2.9 Southeast Asian white-lipped green pit viper *Cryptelytrops (Trimeresurus) albolabris* showing heat-sensitive pit organ between eye and nostril.

Fig. 9.2.11 European adder or viper *Vipera berus*, the only venomous British snake. This specimen is 50 cm long.

Fig. 9.3.1.14 Possible variations in appearance of fly agaric *Amanita muscaria*—may result in confusion with edible mushrooms. (Courtesy of Ole Högberg.)

are observed. Tachycardia, mydriasis, and urinary retention may occur. Cholinergic symptoms are attributable to trace amounts of muscarine in some specimens. Panther cap more often causes central nervous system depression, whereas fly agaric is more likely to trigger excitation and bizarre behaviour.

History and symptoms are often diagnostic. However, the history is often obscure until patients are fit enough to tell their story. Differential diagnoses include organic psychosis and central nervous system infections.

Treatment Treatment is symptomatic and supportive. Intravenous diazepam (adults 5–10 mg, children 0.1–0.2 mg/kg) is given and repeated for sedation. Haloperidol or chlorpromazine may be useful as a complement in delirious and agitated patients.

Hallucinogenic fungi ('magic mushrooms')

Psilocybin and related toxins occur particularly in *Psilocybe* and *Panaeolus* species, e.g. liberty cap *Psilocybe semilanceata* (Fig. 9.3.1.16). The toxins are tryptamine derivatives that increase serotonin levels in the central nervous system and act as potent hallucinogens. The effects mimic those of LSD. Ingestion is almost invariably related to abuse.

Fig. 9.3.1.15 Panther cap *Amanita pantherina*. (Courtesy of Hans Marklund.)

Fig. 9.3.1.16 Liberty cap/magic mushroom' *Psilocybe semilanceata*. (Courtesy of Hans Marklund.)

Clinical features

Within 20 to 60 min, the patient will experience altered sense of time and space, euphoria, hallucinations, and depersonalization. Less pleasurable symptoms are anxiety, agitation, bizarre and terrifying hallucinations, tachycardia, mydriasis, and flushing. Symptoms peak at around 2 h after ingestion and start vanishing after 4 to 6 h. However, symptoms may persist and there may be flashbacks after weeks or months.

Organic psychosis is a differential diagnosis. A reliable history may be available only after recovery.

Treatment

The patient should rest in a quiet environment and be sedated with e.g. diazepam. If this is inadequate, haloperidol or chlorpromazine can be added.

Cytotoxic fungi

Amatoxins

The highly poisonous amatoxins occur in species of the families Amanitaceae (genus *Amanita*), Agaricaceae (genus *Lepiota*), and Cortinariaceae (genus *Galerina*).

The death cap *Amanita phalloides* (Fig. 9.3.1.17), destroying angel *A. virosa* (Fig. 9.3.1.18), fool's mushroom *A. verna*, and *A. bisporigera* are the most commonly involved in human poisoning. Other species such as *Galerina marginata* and certain *Lepiota* spp. may also be implicated.

Epidemiology Amatoxin poisonings are reported from all continents, but are most frequent in Europe, where case fatalities ranged from around 18 to 22% in adults and 33 to 51% in children in the 1970s and 1980s. These figures have improved in Western countries but remain alarmingly high in other parts of the world.

Pathogenesis Amatoxins are cyclic octapeptides that inhibit transcription of DNA to mRNA by blocking nuclear RNA polymerase II activity. This results in defective protein synthesis and cell death. Amatoxins also act with endogenous cytokines to induce apoptosis, and there is glutathione depletion. The main target organs are intestinal mucosa, liver, and kidneys. Hepatotoxicity determines prognosis.

Clinical features After a latent period of 8 to 24 h (mean 12 h) after ingestion, gastrointestinal symptoms start violently with intense,

Fig. 9.3.1.17 Death cap *Amanita phalloides*. (Courtesy of Hans Marklund.)

watery diarrhoea, and vomiting. This latency has great diagnostic significance. Patients become rapidly dehydrated and develop oliguria, hypoglycaemia, hypokalaemia, and metabolic acidosis. Biochemical signs of liver damage appear after 36 to 48 h and progress over the next few days. Fulminant hepatic failure may develop. Initial disturbances of renal function will resolve after rehydration, but within another 3 to 4 days, renal function may again deteriorate because of toxic kidney damage, a sign of poor prognosis.

Treatment

Decontamination Forced emesis or gastric lavage is performed if the patient is admitted within 4 to 6 h and this can be accomplished safely. Activated charcoal is always given.

Toxin removal

- Multiple-dose activated charcoal is administered for 3 days after ingestion.
- A diuresis of about 200 ml/h (adults) is maintained for the first 24 to 48 h after ingestion.
- Haemoperfusion or haemodialysis is not indicated unless the patient has pre-existing renal disease or is admitted very early and in the asymptomatic period (very rare).

Fig. 9.3.1.18 Destroying angel *Amanita virosa*. (Courtesy of Hans Marklund.)

Reduction of hepatic toxin uptake Silibinin in a bolus dose of 5 mg/kg is given as an intravenous infusion over 1 h followed by 20 mg/kg per 24 h as continuous infusion during the 3 days after ingestion. The efficacy of this treatment is not entirely established. Parenteral silibinin is not always available, even in Western countries. High-dose benzyl penicillin is an alternative.

Symptomatic and supportive care

- Symptomatic care is crucial and includes cautious monitoring, fluid replacement, and correction of metabolic disturbances. Hepatic and renal support may be required.
- There is some experimental, theoretical, and clinical support for the use of *N*-acetylcysteine as a liver-protective agent.
- If fulminant hepatic failure is pending, a liver unit should be consulted for advice on treatment and with a view to possible transplantation.

Prognosis and comments The prognosis is related to toxic dose and start of treatment. Case fatality is high after heavy exposure. Vigorous symptomatic and supportive care, maintenance of an adequate diuresis, and multiple-dose activated charcoal are accepted treatments. Silibinin may modify toxicity to some extent through reduction of the hepatic uptake of amatoxin. In some cases, liver transplantation may be the ultimate way of saving the patient.

Orellanine

Orellanine is a potent nephrotoxin present in certain species of the family Cortinariaceae, genus *Cortinarius*. *C. orellanus* and *C. rubellus (speciosissimus)* (Figs. 9.3.1.19 and 9.3.1.20) are responsible for most poisonings. Orellanine is a bipyridine *N*-oxide that may interfere with protein synthesis in the kidneys causing interstitial nephritis, tubular cell damage, basal cell membrane rupture and, eventually, irreversible fibrosis.

Clinical features Orellanine poisoning is the most insidious of all mushroom poisonings. Usually, symptoms do not appear until 2 to 7 (or even 14) days after the mushroom meal, and, by then, reflect established kidney damage. Symptoms evolve insidiously and are difficult for the patient to interpret—headache, fatigue, intense thirst, chills, muscular discomfort, abdominal, lumbar, and flank pain. After a polyuric phase, oliguria and anuria may follow. Laboratory tests on admission reveal elevated serum creatinine and urea, proteinuria, haematuria, and—characteristically—leucocyturia. The acute renal damage may heal or become chronic.

Occasionally, there may be some mild gastrointestinal symptoms within a couple of days after the meal, but as these symptoms are both discrete and inconsistent they are easily overlooked.

Treatment Since patients are normally admitted late, therapeutic interventions can neither prevent nor reduce toxic damage. Renal function is monitored. Therapy is symptomatic with support of renal function and treatment of uraemia, including dialysis while waiting for the kidneys to recover. In case of persistent renal insufficiency, the options are chronic dialysis or transplantation. However, transplantation should not be performed too early, as renal recovery may be considerably delayed.

Very early suspicion of orellanine poisoning should prompt measures to prevent absorption and promote elimination.

Prognosis and comments Endstage renal failure was observed in 11% of Polish, 17% of French, and 40% of Swedish patients. It shall be emphasized that treatment measures discussed above are

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ORIGINAL STUDY

A Controlled Clinical Trial of A Novel Antivenom in Patients Envenomed by *Bungarus multicinctus*

Ha Tran Hung · Jonas Höjer · Trinh Xuan Kiem · Nguyen Thi Du

Abstract In northern Vietnam, a majority of severely envenomed patients are bitten by *Bungarus multicinctus*. Hitherto, these victims have received supportive care only. The aims of this study were to assess the possible efficacy and side effects of a new antivenom. This trial (ClinicalTrials.gov Identifier: NCT00811239) was performed during 2004–2006 at an ICU in Hanoi. For ethical reasons, the study was not randomized. All patients who fulfilled the inclusion criteria during 2004–2005 were prospectively enrolled, carefully recorded, and treated with optimal supportive therapy (control group). The patients who entered the study 2006 were treated with antivenom in addition to supportive care (antivenom group). The inclusion criteria were: envenomation by *B. multicinctus*, presence of systemic envenomation, and (during 2006) provision of written informed consent. Predefined endpoints were number of patients requiring mechanical ventilation, duration of mechanical ventilation, length of ICU stay, duration of muscle paralysis, and number of patients with ventilator-associated pneumonia. Eighty-one patients were included, 54 during 2004–2005 and 27 during 2006. Baseline characteristics were similar in the groups. The antivenom-group patients had a shorter duration of muscle paralysis of the limbs ($p<0.001$), of the diaphragm ($p<0.001$), and of ptosis ($p<0.001$). The duration of mechanical ventilation and length of ICU stay were shorter in the antivenom group ($p<0.001$). The rate of ventilator-associated pneumonia was lower in the antivenom group ($p<0.02$). However, the relative number of patients requiring mechanical ventilation was not reduced in the antivenom group. The rate of adverse reactions to the antivenom was 7.4%. A favorable efficacy and acceptable safety of this antivenom were demonstrated.

Keywords Antivenom · Snakebite · *Bungarus multicinctus* · Vietnam

Previous presentation: no data of this manuscript has previously been presented.

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Prod. No.	VENOM	(LD_{50} mg/kg, mice)	VENOM PRICE 1 mg	5 mg	25 mg	100 mg
	SOCIAL WASPS	(LD_{50})				
	Yellowjackets -- *Vespula*					
W-10	*V. pensylvanica*	(6.4)	50	225	1000	*
W-19	other species**		*			
	Hornets -- *Vespa*					
W-20	*V. mandarinia*	(4.1)	50	225	1000	*
W-21	*V. tropica*	(2.8)	50	225	1000	*
W-29	others **		*			
	Paper wasps -- *Polistes*					
W-30	*P. comanchus navajoe*	(5)	40	180	800	*
W-31	*P. flavus*	(3.8)	40	180	800	*
W-32	*P. canadensis*	(2.5)	50	225	*	
W-33	*P. erythrocephalis*	(1.5)	50	225	*	
W-39	*Polistes* sp. as available**		30	135	600	2100
	New World Polybiine wasps					
W-40	*Brachygastra mellifica*	(1.5)	60	270	1200	*
W-50	*Synoeca septentrionalis*	(2.7)	60	270	1200	*
W-60	*Parachartergus fraternus*	(5)	70	300	1400	*
W-70	*Polybia sericea*	(6)	80	350	*	
W-71	*P. simillima*	(4.1)	80	350	*	
W-72	*P. occidentalis*	(5)	100	*		
W-80	*Agelaia myrmecophila*	(5.6)	140	*		
	Old World Polybiine wasps					
W-90	*Belonogaster juncea colonialis*	(3)	80	350	*	
	SOCIAL BEES					
	Honey bees -- *Apis*					
B-10	*A. mellifera*	(2.8)	20	90	400	1400
B-11	*A. mellifera* Africanized bees	(2.8)	20	90	400	1400
B-12	*A. mellifera* queens		40	180	800	2800
B-13	*A. dorsata*	(2.8)	50	225	1000	3500
B-14	*A. cerana*	(3.1)	55	245	*	
B-19	others (*A. flo*rea, etc.)**		*			
	Bumble bees -- *Bombus*					
B-20	*B. sonorus*	(12)	50	225	1000	*
B-21	*B. impatiens*	(12)	50	225	*	
B-29	other species**		30	*		

Prod. No.	VENOM	(LD_{50} mg/kg, mice)	VENOM PRICE 1 mg	5 mg	25 mg	100 mg
	ANTS -- FORMICIDAE	(LD_{50})				
	Pogonomyrmex -- harvester ants					
A-10	*P. barbatus*	(0.6)	50	225	1000	3500
A-11	*P. maricopa*	(0.12)	60	270	1200	4200
A-12	*P. occidentalis*	(0.5)	70	315	1400	*
A-13	*P. rugosus*	(0.7)	50	225	1000	3500
A-15	*P. desertorum*	(0.7)	160	*		
A-19	*Pogonomyrmex* sp. as available		45	200	900	3200
	Myrmecia -- bull ants					
A-20	*M. gulosa*	(0.18)	60	270	1200	4200
A-21	*M. tarsata*	(0.18)	60	270	1200	*
A-22	*M. browningi*	(0.18)	70	315	*	
A-23	*M. rufinodis*	(0.35)	70	315	*	
A-24	*M. simillima*	(0.21)	70	315	*	
A-25	*M. pilosula*	(5.7)	100	*		
A-30	*Pachycondyla (Neoponera) villosa*	(7.5)	60	270	*	
A-31	*P. (Neoponera.) apicalis*	(>16)	70	*		
A-32	P. *crassinoda*	(2.8)	80	*		
A-33	*P. (Megaponera) foetens* (Metabele ant)	(130)	70	315	*	
A-34	*P. (Paltothyreus) tarsatus* (stink ant)	(64)	50	225	1000	3500
A-35	*P. (Bothroponera) strigulosa*	(9)	70	*		
A-36	*Termitopone commutata*	(10)	70	315	1400	*
A-40	*Platythyrea lamellosa*	(11)	70	315	*	
A-50	*Diacamma* sp.**	(35)	100	450	*	
A-60	*Dinoponera gigantea*	(11)	60	270	1200	4200
A-70	*Paraponera clavata* (bullet ant)	(6.0)	60	270	1200	4200
A-80	*Ectatomma tuberculatum*	(1)	60	270	*	
A-81	*E. quadridens*	(17)	60	270	*	
A-90	*Odontomachus* sp.**	(33)	60	275	*	
A-110	*Tetraponera* sp**	(.35)	140	600	*	
A-120	*Streblognathus aethiopicus*	(8.0)	80	360	*	
	SOLITARY WASPS AND BEES					
	Spider wasps -- Pompilidae					
SW-10	*Pepsis* sp.**	(65)	60	270	1200	4200
	Mutillid wasps -- Mutillidae					
SW-20	*Dasymutilla* sp.**	(71)	70	315	1400	*
SW-39	Other wasps (Scoliidae, Tiphiidae, Sphecidae, Eumenidae, etc.)**		*			
	Carpenter bees -- *Xylocopa*					
SB-10	*X. californica*	(21)	50	225	1000	*
SB-11	*X. veripuncta*	(33)	55	245	*	
SB-20	*Proxylocopa rufa*	(11)	100	450	*	
SB-39	Other bees**		*			

*Inquire for prices and availability.
**Available species provided; exact determinations usually included.

Natural Toxins Research Center (NTRC)

Texas A&M University Kingsville

Venom Quality Guarantee

Authenticity of Species • Purity of Venom
Maximum Biological Activity • Our Venom is Never Pooled

Snake venoms contain important molecules which are valuable for researching the treatments of strokes, heart attacks, and cancer.

The Natural Toxins Research Center (NTRC) at Texas A&M University-Kingsville is dedicated to providing high quality snake products for biomedical research. We are committed to the procurement and distribution of venoms, venom fractions and tissue for biomedical research. Venoms from the same species can be different, and therefore extracted venoms are never pooled. Each vial contains venom from a single snake, and venoms of the same species are never mixed. The vials are labeled with the snakes' scientific and common names, ID tag number and sex. The ID tag number can be traced back to the NTRC Internet Database (ntrc.tamuk.edu/cgi-bin/serpentarium/snake.query) for additional information about each snake.

(A) - neurotoxic venom
(B) - non-neurotoxic venom
****Subject to availability***

Southern Copperhead - *Agkistrodon contortrix contortrix*	$75.00/1g	$50.63/500mg			
Broad-Banded Copperhead - *Agkistrodon contortrix laticinctus*	$100.00/1g	$67.50/500mg			
Northern Copperhead - *Agkistrodon contortrix mokasen*	$50.00/1g	$33.75/500mg			
Trans-Pecos Copperhead - *Agkistrodon contortrix pictigaster*	$75.00/1g	$50.63/500mg			
Florida Cottonmouth - *Agkistrodon piscivorus conanti*	$60.00/1g	$40.50/500mg			
Western Cottonmouth - *Agkistrodon piscivorus leucostoma*	$56.00/1g	$37.80/500mg			
Eastern Diamondback Rattlesnake - *Crotalus adamanteus*	$50.00/1g	$33.75/500mg			
Western Diamondback Rattlesnake - *Crotalus atrox*	$45.00/1g	$30.38/500mg			
Sonoran Sidewinder - *Crotalus cerastes cercobombus*	$125.00/1g	$84.38/500mg			
Timber Rattlesnake - *Crotalus horridus*	$70.00/1g	$47.25/500mg			
Mottled Rock Rattlesnake - *Crotalus lepidus lepidus*	$125.00/1g	$84.38/500mg			
Blacktail Rattlesnake - *Crotalus molossus molossus*	$400.00/1g	$270.00/500mg	$72.90/100mg	$49.21/50mg	
Great Basin Rattlesnake - *Crotalus oreganus lutosus*	$125.00/1g	$84.38/500mg			
Grand Canyon Rattlesnake - *Crotalus oreganus abyssus*	$250.00/1g	$168.75/500mg	$45.56/100mg	$30.75/50mg	
Texas Coral Snake - *Mircrurus tener tener*	$2000.00/1g				
Florida Coral Snake - *Mircrurus fulvius*	$1800.00/1g				
Southern Pacific Rattlesnake - *Crotalus oreganus helleri*	$400.00/1g	$270.00/500mg	$72.90/100mg	$49.21/50mg	
Northern Pacific Rattlesnake - *Crotalus oreganus oreganus*	$400.00/1g	$270.00/500mg	$72.90/100mg	$49.21/50mg	
Mohave Rattlesnake - *Crotalus scutulatus scutulatus (A)*	$250.00/1g	$168.75/500mg	$45.56/100mg	$30.75/50mg	
Mohave Rattlesnake - *Crotalus scutulatus scutulatus (B)*	$1000.00/1g	$675.00/500mg	$182.25/100mg	$123.02/50mg	$33.22/10mg
Prairie Rattlesnake - *Crotalus viridis viridis*	$70.00/1g	$47.25/500mg			
Red Spitting Cobra - *Naja pallida*	$100.00/1g	$67.50/500mg			
Desert Massasauga - *Sistrurus catenatus edwardsii*	$1000.00/1g	$675.00/500mg	$182.25/100mg	$123.02/50m	$33.22/10mg
Western Massasauga - *Sistrurus catenatus tergeminus*	$1000.00/1g	$675.00/500mg	$182.25/100mg	$123.02/50mg	$33.22/10mg
Bushmaster - *Lachesis muta muta*	$2000.00/1g	$1350.00/500mg	$364.50/100mg	$246.04/50mg	$66.43/10mg

Venom is collected under stringent laboratory conditions using disposable labwear for each extraction. Venom is collected in new, non-reusable plastic cups with parafilm coverings. Snakes are allowed to bite into the parafilm diaphragm and the venom glands are not massaged. Immediately following collection, each venom sample is clarified by centrifugation at 500 x g for 5 minutes to remove cellular debris and frozen at -90º C until lyophilized.

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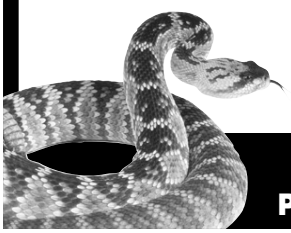

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Snakes

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Bitis rhinoceros	$75	$340
Bitis nasicornis	$75	$340
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Crotalus adamanteus	$100	$450
Crotalus unicolor	$200	$900
Crotalus vegrandis	$160	$700
Hoplocephalus stephensii	$220	$900
Hoplocephalus bitorquatus	$220	$900
Naja kaouthia	$60	$250
Naja melanoleuca	$50	$200
Naja mossambica	$60	$250
Naja siamensis	$60	$250
Notechis ater humphreysi	$350	$1,600
Notechis ater niger	$350	$1,600
Notechis ater serventyi	$350	$1,600
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Bothrops moojeni	$100.00
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Crotalus atrox	$70.00
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- Other venoms are available upon request in small quantities; please contact us for more information on other venoms
- CITES papers available on all CITES listed species. Extra costs apply for permits and inspection fees.
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