

Reading group on:

When?	Wednesday afternoon, 3 pm
Where?	"Argumentet", 2nd floor, Ecology Building

The Strategy of the Gene C. H. Waddington, 1957

Session 1:

Chapter 1 Form, End and Time

Chapter 2 The Cybernetics of Development

key words: development, differentiation, buffering of dev. systems, canalisation, the epigenetic landscape, (landscape-)metaphors in biology

Suggested reading:

Jan Baedke, 2013, *Studies in History and Philosophy of Biological and Biomedical Sciences* 44:756-773;
"The epigenetic landscape in the course of time: Conrad Hal Waddington's methodological impact on the life sciences"

Thomas Flatt, 2005, *The Quarterly Review of Biology* 80:287-316;
"The evolutionary genetics of canalization."

Greg Gibson & Gunter Wagner, 2000, *BioEssays* 22:372-380;
"Canalization in evolutionary genetics: a stabilizing theory?"

Scott F. Gilbert, 1991, *Biology and Philosophy* 6:135-154;
"Epigenetic Landscaping: Waddington's Use of Cell Fate Bifurcation Diagrams"

Session 2:

Chapter 3 Selection Of, For and By

key words: the 'active' organism, environmental influence, behaviour, niche construction, reciprocal causation,

Suggested reading:

Conrad H. Waddington, 1959, *Nature*, 183(4676): 1634-1638
"Evolutionary Systems – Animal and Human"

Kevin N. Laland, F. John Odling-Smee, Marcus Feldman, 2001. In *Cycles of Contingency: Developmental Systems and Evolution*, edited by S. Oyama, P. Griffiths, and R.D. Gray. MIT Press. pp. 117-126.
"Niche construction, ecological inheritance, and cycles of contingency in evolution"

Thomas C. Scott-Phillips, 2013, *Evolution* 68-5: 1231–1243
"The Niche Construction Perspective: A Critical Appraisal"

Raymond B. Huey, Paul E. Hertz and B. Sinervo, 2003, *The American Naturalist* 161(3):357-366
"Behavioral Drive versus Behavioral Inertia in Evolution: A Null Model Approach"

Session 3:

Chapter 4 The Organisation of the Gene Pool

For more information, please contact Nathalie.Feiner@biol.lu.se

key words: genotype-phenotype map, the interactive genome, origins of phenotypic variation, developmental bias, modularity

Accompanying literature:

Gunther P. Wagner, & Jason G. Mezey, 2004, in *Modularity in Development and Evolution*, edited by G. Schlosser and G. P. Wagner, Chicago University Press, pp. 338-358

“The role of genetic architecture constraints for the origin of variational modularity.”

Lynne H. Caropale, 1999, *Annals New York Academy of Sciences* 870:1-21

“Chance favors the prepared genome.”

Session 4:

Chapter 5 The Survival of the Adaptable

key words: phenotype first, genetic assimilation, Baldwin effect,

Suggested reading:

Erika Crispo, 2007, *Evolution*, 61:2469-2479;

“The Baldwin Effect and Genetic Assimilation: Revisiting Two Mechanisms of Evolutionary Change Mediated by Phenotypic Plasticity”

Mary J. West-Eberhard, 2003, *Developmental Plasticity and Evolution*. Oxford: Oxford University Press, pp. 139-158

“Chapter 6: Adaptive Evolution”

Massimo Pigliucci, Courtney J. Murren & Carl D. Schlichtling, 2006, *The Journal of Experimental Biology* 209:2362-2367

“Phenotypic plasticity and evolution by genetic assimilation”

Armin Moczek et al., 2011, *Proc. R. Soc. B* 278:2705-2713

“The role of developmental plasticity in evolutionary innovation”

Paul Dominic Lewin, 1998, PhD thesis (Chapter 4), University of Leeds.

“Embryology and the evolutionary synthesis: Waddington, development and genetics.”

General background reading:

Brian K. Hall, 1992, *American Zoologist* 32:113-122

“Waddington's Legacy in Development and Evolution”

Edward Yoxen, 1986, In *A History of Embryology*, edited by T. J Horder, J. A Witkowski, and C. C Wylie. Cambridge: Cambridge University Press. pp. 310-11.

“Form and Strategy in Biology: Reflections on the Career of C. H. Waddington”

Jonathan M. W. Slack, 2002, *Nature Review Genetics* 3:889-895

“Conrad Hal Waddington: the last Renaissance biologist?”

Scott F. Gilbert, 2000, *Amer. Zool.* 40:729-737;

“Diachronic Biology Meets Evo-Devo: C. H. Waddington's Approach to Evolutionary Developmental Biology”