

**The Jacques Loeb Centre for the History and Philosophy of the Life Sciences** was inaugurated in March 2008. The Centre supports advanced research in topics related to the life sciences and pursues a broad range of investigations into the history and philosophy of modern research. It organizes national and international conferences aimed at an interdisciplinary exchange between scientists from different disciplines and commentators on science such as historians and philosophers of science. The proceedings of its annual international workshops have been published as special editions of leading scientific and historical journals.

The Centre offers post-doctoral and graduate fellowships or positions for exchange students and other qualified individuals in the history and philosophy of the modern life sciences.

Particular attention is given to historical and philosophical research on the history of modern structural and informational biology and the philosophies behind researchers' work, particularly:

- The analysis of the molecularization of biological phenomena such as the cell, development, and complex diseases like cancer, the accompanying rise of new concepts such as the regulatory genome, and the impact of this molecularization on the study of evolution.
- The impact of big data technology and mathematical modeling on research and epistemology of complex biological systems.
- The use of philosophical epistemologies such as Bacon's, Whewell's, Popper's, and Polanyi's to analyze the methodologies and philosophies underlying research and to understand the advancement of modern biology.
- Ethical and legal implications of recent research on genes and genomes.



Abstracts can be viewed at  
<https://goo.gl/mNwD10>

For further information and updates about the Centre,  
please visit: <https://goo.gl/hjfaHP> or contact [jloebcentre@post.bgu.ac.il](mailto:jloebcentre@post.bgu.ac.il)



**Jacques Loeb Centre  
for the History and Philosophy  
of the Life Sciences**

**Ninth International Workshop**

# Genomic Regulation: Experiments, Computational Modeling and Philosophy

**December 4-5, 2017**

Edgar de Picciotto Family National  
Institute for Biotechnology in the Negev  
Building (Bldg. 41)

BGU Marcus Family Campus, Beer-Sheva



אוניברסיטת בן-גוריון בנגב  
Ben-Gurion University of the Negev



## Monday, December 4<sup>th</sup>

9:15-9:40 a.m.

Registration and refreshments

9:40-10:00 a.m.

Greetings and opening remarks

**Prof. Michal Shapira**, Dean, Faculty of Natural Sciences, Ben-Gurion University of the Negev

**Prof. Ohad Birk**, Director, National Institute for Biotechnology in the Negev, Ben-Gurion University of the Negev

**Prof. Ofer Ovadia**, Chair, Department of Life Sciences, Ben-Gurion University of the Negev

**Prof. Ute Deichmann**, Director, Jacques Loeb Centre for the History and Philosophy of the Life Sciences, Ben-Gurion University of the Negev

10:00-11:20 a.m.

**I. Computation and experimentation in the history of biology and current research on the development of the central nervous system**

**Michel Morange**, Ecole Normale Supérieure, France  
*A time to model and a time to experiment*

**James Briscoe**, Francis Crick Institute, U.K.  
*The gene regulatory logic of spinal cord development*

11:20-11:40 a.m.

Coffee break

11:40 a.m.-1:00 p.m.

**II. Experiments and modeling genomic regulation in mammalian postnatal systems**

**Ellen Rothenberg**, California Institute of Technology, U.S.A.  
*Genomic regulation of commitment in developing lymphocytes*

**Roger Patient**, University of Oxford, U.K.  
*Gene regulatory networks governing the generation and regeneration of blood and the cardiovascular system*

1:00-2:00 p.m.

Lunch break

2:00-3:00 p.m.

**III. Douglas Erwin**, Smithsonian National Museum of Natural History, U.S.A.  
*Macroevolutionary dynamics: Development, ecology, environment*

3:00-3:30 p.m.

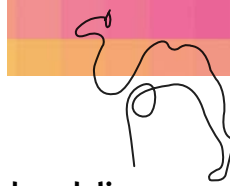
Coffee break

3:30-5:30 p.m.

**IV. Biological models and big data technology**

**Ute Deichmann**, Ben-Gurion University of the Negev, Israel  
*Mendel, Michaelis, and Davidson: Mathematical models in biology and their challenge in 'empiricist' big data-driven science*

**Ellen Rothenberg**, California Institute of Technology, U.S.A.  
*Modeling developmental discontinuities: the challenge of new transcriptional regulation insights*



**Michal Ziv-Ukelson**, Ben-Gurion University of the Negev, Israel  
*Large scale data mining of microbial genomes*

5:30-8:30 p.m.

Reception, musical interlude and dinner (for invited speakers and guests)

## Tuesday, December 5<sup>th</sup>

9:15-10:35 a.m.

**V. Eric Davidson, the regulatory genome, computer science and network architecture**

**Sorin Istrail**, Brown University, U.S.A.  
*Eric Davidson's regulatory genome for computer scientists*

**Isabelle Peter**, California Institute of Technology, U.S.A.  
*The architecture of genomic programs for development*

10:35-11:05 a.m.

Coffee break

11:05 a.m.-1:05 p.m.

**VI. The control of early development, signals, and biochemistry**

**Benny Shilo**, Weizmann Institute of Science, Israel  
*Creating and buffering morphogen gradients: Combining computation and experimental approaches*

**Smadar Ben-Tabou de Leon**, University of Haifa, Israel  
*Highly conserved developmental program for tube formation downstream of Vascular Endothelial Growth Factor (VEGF) signaling*

**Stanislav Shvartsman**, Princeton University, U.S.A.  
*Dynamic control of the synthesis of DNA precursors (dNTP) in early embryos*

1:05-2:05 p.m.

Lunch break

2:05-3:25 p.m.

**VII. Models of biochemical processes**

**Anthony S. Travis**, Hebrew University of Jerusalem, Israel  
*Imaging the chemical way: From cell structure to beta blocker. A brief history*

**Miguel García-Sancho**, University of Edinburgh, U.K.  
*Chemical experimentation and biological modelling: The emergence of DNA sequencing and the configuration of the genome as an informational object*

3:25-3:55 p.m.

Coffee break

3:55-4:35 p.m.

**VIII. Models of evolutionary novelty**

**Douglas Erwin**, Smithsonian National Museum of Natural History, U.S.A.  
*The changing nature of models of evolutionary novelty: Prospects for a general model*

4:35-5:15 p.m.

**IX. Round table discussion**

7:00 p.m.

Dinner and evening lecture (for invited speakers and guests)

