

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



**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 4th

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.

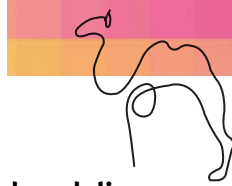
Coffee break

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 5th

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)

