

JAMES RENNIE BEQUEST REPORT

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EMBL PhD Student Symposium on EVOLUTION

9th and 10th November 2001

European Molecular Biology Laboratory,
Heidelberg, Germany.

Aims of the symposium

"Nothing in biology makes sense except in the light of evolution." (Theodosius Dobzhansky, 1973).

As expressed so well in Dobzhansky's famous statement, the theory of evolution is the central unifying idea in biology. Consequently, an appreciation of evolutionary theories will always aid our understanding of biological phenomena.

The symposium was focused mainly on evolution in a molecular context. This central theme was complemented by a few talks covering other aspects of the study of evolution. Speakers gave a broad introduction to their subject as well as discussing specific aspects of their work in more detail.

Objective of the travel and how far they have been achieved

My main objective in attending this symposium was to have a better understanding in some aspects of molecular evolution especially in protein perspective. As mentioned in my application proposal, I have listed a few objectives regarding my participation in this symposium. I took the opportunity to discuss some of my questions on how an evolutionary perspective can be applied to different types of biological problems with the experts.

I managed to have a few discussions with some of the experts such as Adrian Friday, Christine Orengo, and a few more, regarding on how to construct phylogenetic trees using different data input; an evolution of protein folds and how the evolutionary relationships between protein domains were detected. The interactions with the speakers and the participants helped me in building up my confidence to communicate and exchanging ideas in order to encounter the

evolutionary issues. I also managed to get a clear perspective and to learn on how to use the right evolutionary terminology, which I hope I will be able to apply those in my PhD project/thesis.

Apart from the intention to answer my questions of interest, I also found a few interesting talks (list of speakers and talk titles included) in different aspects of evolutionary, for example: Evolutionary Robotics: The biology of self-organising machines, which is an automated process of generation, selection and reproduction of artificial brains and morphologies for autonomous robots without human intervention.

After attending this symposium, I found that I had a different way in broadening the knowledge on evolution, and the important thing was that I have developed the contacts with the speakers and the participants so I can get in touch should I encounter any evolutionary related questions and problems that outreach the usual research focus of my group.

I would like to take this opportunity to thank the James Rennie Bequest committees for providing me with the financial support so that I was able to attend this interesting symposium.

Enclosed is the programme and speakers list:

Friday, 9th November 2001

- 8:00 Registration
- 9:15 **Organizing Committee** Welcome address
- 9:30 **Eörs Szatháry** (Budapest, HUN)
Early molecular evolution
- 10:30 Coffee break
- 11:00 Inpharmatica Lecture: **Christine Orengo** (London, UK)
Evolution of Structure and Function in Protein Families: Perspectives from the CATH Domain Database
- 12:00 EMBO Lecture: **Jonathan Howard** (Cologne, GER)
The evolution of the MHC: a gene complex under selection
- 13:00-14:00 Lunch
- 14:30 **Adrian Friday** (Cambridge, UK)
"Homology" – does it have a useful meaning?
- 15:30 **Thomas Cavalier-Smith** (Oxford, UK)
Eukaryote cell and organelle evolution, membrane heredity and the skeletal function of nuclear DNA
- 16:30 Coffee Break
- 17:00 **Michalis Averof** (Herakleon, GR)
Developmental genes and morphological evolution: comparisons among flies, spiders and shrimps
- 18:00 **David Stern** (Princeton, USA)
Naked valleys and shaven babies: the developmental genetics of microevolution
- 19:00 - 20:00 Dinner
- 20:30 **Stephen Jay Gould** (Cambridge, USA)
- 21:30 Wine and Cheese Mixer

Saturday, November 10, 2001

- 9:00 **Andrew Griffiths** (Cambridge, UK)
Evolution of enzymes in the laboratory
- 10:00 **Dario Floreano** (Lausanne, CH)
Evolutionary robotics: the biology of self-organizing machines
- 11:00 Coffee Break
- 11:30 **Gregory Velicer** (Tübingen, GER)
Unseen cheats and degenerates: social evolution in the microbial world
- 12:30 - 13:30 Lunch
- 14:00 **Oliver Curry** (London, UK)
Cooperation in the state of nature
- 15:00 EMBO Lecture: **Svante Pääbo** (Leipzig, GER)
A genomic approach to understanding human origins
- 16:00 Coffee Break
- 16:30 **Simon Conway Morris** (Cambridge, UK)
Converging on the Cambrian explosion
- 17:30 **Panel Discussion**
Microevolution and macroevolution
- 19:30 **Concluding Remarks by Fotis Kafatos**
- 19:30 - 21:30 Banquet Dinner
- 21:30 **End-of-Symposium Party**