

**U.K. Engineering and Physical Sciences Research Council (EPSRC)  
Network on Evolvability in Biological & Software Systems**

**EVOLVABILITY AND INDIVIDUALITY**

**SYMPOSIUM  
PROGRAMME**

**Invited Speakers**

BRIAN C. GOODWIN (SCHUMACHER COLLEGE, U.K.)  
RICHARD E. MICHOD (UNIVERSITY OF ARIZONA, U.S.A.)  
PAULIEN HOGEWEG (UNIVERSITY OF UTRECHT, THE NETHERLANDS)  
NICHOLAS J. MACIAS (CELL MATRIX CORPORATION, U.S.A.)  
JULIAN F. MILLER (UNIVERSITY OF BIRMINGHAM, U.K.)  
AURORA M. NEDELCO (UNIVERSITY OF ARIZONA, U.S.A.)  
LARRY BULL (UNIVERSITY OF THE WEST OF ENGLAND, U.K.)  
JOEL R. PECK (UNIVERSITY OF SUSSEX, U.K.)

**Program Chairs**

CHRISTOPHER L. NEHANIV (UNIVERSITY OF HERTFORDSHIRE)  
RENÉ TE BOEKHORST (UNIVERSITY OF HERTFORDSHIRE)

**Co-Organizers**

KERSTIN DAUTENHAHN (UNIVERSITY OF HERTFORDSHIRE)  
MARTIN LOOMES (UNIVERSITY OF HERTFORDSHIRE)  
PAUL MARROW (BRITISH TELECOM)

**18-20 September 2002**

**St. Albans, Hertfordshire, U.K.**

**Sponsored by**

**Network on Evolvability in Biological & Software Systems  
Adaptive Systems Research Group, University of Hertfordshire  
EPSRC Grant GR/N23158**

**Wednesday - 18 September 2002**  
**St. Albans Town Hall**

8:45-9:30 Refreshments

INVITED LECTURE

9:30-10:30 ..... *Cancer, Morphogenesis and Evolvability*  
BRIAN C. GOODWIN (Schumacher College, U.K.)

COFFEE AND BISCUITS

CONTRIBUTED PAPERS

10:45-11:45 ..... *Evolvability and Individuality: Some Minimal Examples in Constructive Biology*  
CHRISTOPHER L. NEHANIV

11:45-12:15 ..... *Investigating Evolvability Enhancing Properties*  
GWENN VOLKERT

LUNCH

INVITED LECTURE

2:15-3:15 ..... *Symbiogenesis in Machine Learning*  
LARRY BULL (University of the West of England, U.K.)

COFFEE AND BISCUITS

CONTRIBUTED PAPERS

3:40-4:10 ..... *An Individual Based Model for Simulating Bacterial Evolution*  
RICHARD GREGORY, R. PATON, J. R. SAUNDERS, AND H. WU

4:10-4:40 ..... *Tag Based Models of Group Specialization*  
DAVID HALES

4:40-5:10 ..... *Surviving on a Sand-Pile: Investigating the Type of Behaviour that Evolves in the Presence of Crises*  
BRUCE EDMONDS

5:10-5:30 ..... POSTER INTRODUCTIONS (5 MINUTES EACH)

**Thursday - 19 September 2002**  
**St. Albans Council Chambers**

8:30-9:00 Refreshments

INVITED LECTURE

9:00-10:00 ..... *Cooperation and Conflict Mediation During the Origin of Multicellular Individuals*  
RICHARD E. MICHOD (University of Arizona, U.S.A.)

COFFEE AND BISCUITS

WALK OVER TO AND VISIT ST. ALBANS CATHEDRAL  
(GUIDED TOURS STARTING 10:30 AND 11:30 AT CATHEDRAL'S WEST END)

LUNCH

INVITED LECTURE

1:00-2:00 ..... *Inducing Complex Higher-Order Behavior from a System of Identical Individuals*  
NICHOLAS J. MACIAS AND LISA J. K. DURBECK (Cell Matrix Corporation, U.S.A.)

COFFEE AND BISCUITS

CONTRIBUTED PAPERS

2:15-2:45 ..... *Links between Sexual Selection and Evolvability*  
RENÉ TE BOEKHORST

2:45-3:15 ..... *Individuality and Autonomous Robots*  
KERSTIN DAUTENHAHN

..... *Measuring Individuality: Homeostasis and System Organisation in the  
Formation of New Biological Levels*  
ALEXANDRA PENN ‡

INVITED LECTURE

3:15-4:15 ..... *Growing Multi-Cellular Organisms Inside Computers*  
JULIAN F. MILLER (University of Birmingham, U.K.)

POSTER SESSION WITH COFFEE AND BISCUITS (4:15-5:15)

FRANCO DI PRIMIO ‡ ..... *Basic Constraints on Evolvable (Artificial) Individuals*

PAUL HODGSON ..... *Creativity and Artificial Evolution*

TIMOTHY A. MILLEA ..... *Autonomic Computing - Creating Self-Evolving Software Systems*

TIMOTHY A. MILLEA ..... *Darwin Meets Lehman - Generalising Evolution*

‡ unable to attend.

**Friday - 20 September 2002**  
**St. Albans Council Chambers**

8:30-9:00 Refreshments

INVITED LECTURE

9:00-10:00 ..... *Sex Causes Altruism*  
JOEL R. PECK (University of Sussex, U.K.)

COFFEE AND BISCUITS

CONTRIBUTED PAPERS

10:15-10:45 ..... *On Individuality, Emergence and Information Preservation*  
DANIEL POLANI

10:45-11:15 ..... *Can "Bad" Biology be Good for Artificial Life?*  
TONY HIRST

11:15-11:45 ..... *Evolvability: From Biology to Genetic Programming*  
MICHAEL LONES AND ANDY TYRRELL

11:45-12:15 ..... *Individuality, Control Networks and Computer Systems*  
NEIL MCBRIDE

LUNCH

INVITED LECTURE

2:15-3:15 ..... *Evolvability and Individuality during the Transition to Multicellularity in Volvocalean Green Algae*  
AURORA M. NEDELCO (University of Arizona, U.S.A.)

COFFEE AND BISCUITS

INVITED LECTURE

3:30-4:30 ..... *Individuality at Multiple Levels — Phenotype-First: Evolution toward Robustness*  
PAULIEN HOGEWEG (University of Utrecht, The Netherlands)

DISCUSSION WITH COFFEE AND BISCUITS (4:30-5:00)