PROGRAM

Workshop on:

Computational
and
Theoretical Biology

Michigan State University

Saturday, April 24, 1999

8:30 a.m. – 3:10 p.m.
Room 110 Radiology Building
(Near Clinical Center on the MSU Campus)
Workshop on Computational and Theoretical Biology

Workshop Organizer: P. K. Wong

Program Committee: Leslie Kuhn
Sakti Pramanik
Bill Punch
Mike Thorpe

Thanks are given to the College of Natural Science, the Engineering College, and the Office of the Vice President for Research and Graduate Studies for supporting this meeting.

The Computational Biology group maintains a web site at http://compbio.cse.msu.edu/

Please contact Bill Punch at punch@cse.msu.edu if you would like to add a link to your homepages.
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8:30 – 9:00 Introductions by George Leroi and P. K. Wong

Chair: Sakti Pramanik

Session A in room 110 Radiology Building

9:00 – 9:10 Robert J. Tempelman
A1 Generalized Linear Mixed Models for Genetic Evaluation of Livestock

9:10 – 9:20 Chichia Chiu
A2 Numerical Methods for Pattern Formation Problems in Biology

9:20 – 9:30 Sydney D'Silva
A3 How Honey Bees Make Decisions

9:30 – 9:40 Frank B. Dazzo
A4 CMEIAS: A Tool for Computational Microbial Ecology

9:40 – 9:50 Stuart H. Gage
A5 Computational Ecology and Visualization Technologies

9:50 – 10:00 George Garrity
A6 Markup of Microbiological Data for Accelerated Publication in Print and Electronic Form

10:00 – 10:10 Tom Getty
A7 Models of Signaling, Search, Discrimination and Selection

10:10 – 10:20 Richard E. Lenski
A8 Genomic Complexity in Micro Organisms and Digital Organisms

10:20 – 10:50 Coffee Break
Session B in room 139 Radiology Building

9:00 – 9:10  Simon J.L. Billinge
            B1  Local Structure of Folded Proteins

9:10 – 9:20  James R. Cole
            B2  The Ribosomal Database Project: Providing an Evolutionary Framework

9:20 – 9:30  Tien Yien Li
            B3  Solving Polynomial Systems

9:30 – 9:40  Shelagh S. Ferguson-Miller
            B4  How Proteins Get Together and Electrons Get Transferred: Mutational, Spectroscopic, Kinetic and Computational Analysis of Cytochrome c Docking with Cytochrome c Oxidase

9:40 – 9:50  Jay I. Goodman
            B5  Altered DNA Methylation: An Epigenetic Mechanism Involved in Carcinogenesis

9:50 – 10:00  Erik Goodman
              B6  Evolutionary Algorithms for Biological Science

10:00 – 10:10  Katharine Hunt
               B7  Optical Trapping of Biomolecules

10:10 – 10:20  Michael Kron
               B8  Structure Based Design of Aminoacyl-tRNA Synthetase Inhibitors as Anti-Parasitic Drugs

10:20 – 10:50  Coffee Break
Session C in room 110 Radiology Building

10:50 – 11:00 Wolfgang Bauer  
C1 Cancer Detection via Determination of Fractal Cell Dimension

11:00 – 11:10 Andre Benard  
C2 Image-Based Analysis of Heat Transfer in Biological Systems

11:10 – 11:20 Raoul LePage  
C3 Outline of Research Statistics Component

11:20 – 11:30 Jack Deller  
C4 BioSignal Processing Activities in MSU’s Department of Electrical and Computer Engineering

11:30 – 11:40 Nicolae Duta  
C5 Learning Biological Shape Models

11:40 – 11:50 Michael J. Harrison  
C6 The Role of Thermally Excited Eardrum Pressure: Fluctuations in Establishing Primate Auditory Thresholds

11:50 – 12:00 Robert Hubbard  
C7 Biomechanical Models for Seating Design

12:00 – 12:10 Fathi Salam  
C8 Bio-Engineering: An Integrated Systems Approach

12:10 – 1:10 Lunch
Session D in room 139 Radiology Building

10:50 – 11:00  Leslie Kuhn  
*D1*  
*How Proteins Fold, Flex and Bind Other Molecules*

11:00 – 11:10  M.F. Thorpe  
*D2*  
*Protein Flexibility*

11:10 – 11:20  Sakti Pramanik  
*D3*  
*Computational Challenges for Discovering Homologies between Genome Sequences*

11:20 – 11:30  Mark Dykman  
*D4*  
*Selective Control of Diffusion of Biological Systems*

11:30 – 11:40  S.D. Mahanti  
*D5*  
*Simulation on Coarse-Grained Models of Amphiphiles*

11:40 – 11:50  Eric Torng  
*D6*  
*Incremental Update of Phylogenetic Trees Using Hierarchical Modeling*

11:50 – 12:00  Joseph White  
*D7*  
*Bioinformatics for the Seed EST Functional Genomics Project*

12:00 – 12:10  Jack Preiss  
*D8*  
*Previous Funding Support for Computational Biology from the REF Center of Protein Structure, Function and Design*

12:10 – 1:10  Lunch
Session E in room 110 Radiology Building

1:10 – 1:20  
James E. Trosko  
E1  
Gene Regulation in Pluripotent Human Stem Cells

1:20 – 1:30  
C.Y. Wang  
E2  
Simulation of Biological Growth

1:30 – 1:40  
Tim Zacharewski  
E3  
Toxicogenomics

1:40 – 1:50  
Milan Miklavcic  
E4  
Stability for Discrete Velocity Models of the Extended Boltzmann Equation

1:50 – 2:00  
William Punch  
E5  
Systems Self-Assembly, Folding and Unfolding of Polymers

2:00 – 2:10  
William M. Hartmann  
E6  
Perceptually Relevant Models of Neural Excitation in the Auditory System

2:10 – 2:20  
J. Potchen  
E7  
CT and MR Fly Through Images in Humans and ROC of Observer Performance

2:20 – 3:10  
Group discussions
Session F in room 139 Radiology Building

1:10 – 1:20 Jianguo Liu  
*F1* Systems Modeling Laboratory: An Integrated Approach to Landscape and Biodiversity Study

1:20 – 1:30 David W. Hyndman  
*F2* Integrating Social Drivers and Environmental Impacts Using a Geographic Information System: The Land Transformation Modeling Project

1:30 – 1:40 Peter M. Saama  
*F3* Mixed Model Inference in the Analysis of cDNA Array Data

1:40 – 1:50 Tim Lilburn  
*F4* The Calculation of Large Phylogenetic Trees

1:50 – 2:00 Kim Scribner  

2:00 – 2:10 Mark Worden  
*F6* Role of Microbial Chemotaxis in Bioremediation of Microbial Ecology

2:20 – 3:10 Group discussions