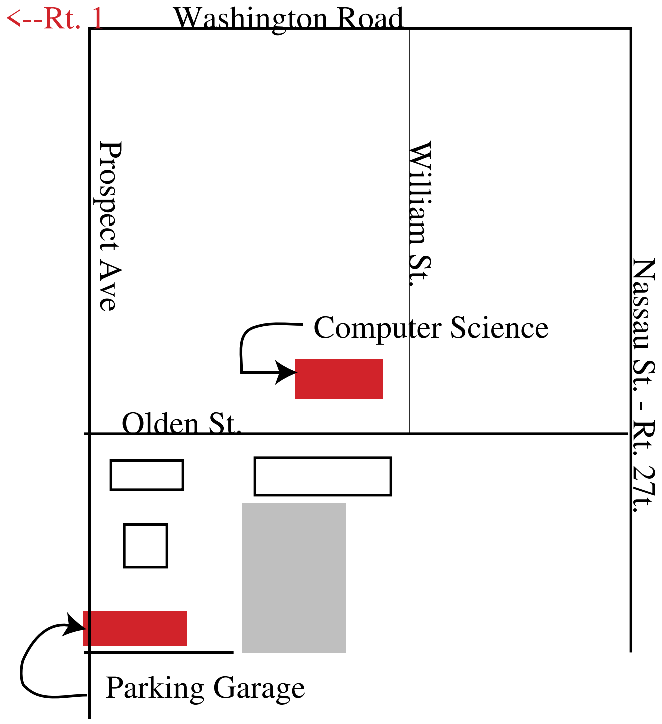
# Second Annual Meeting on DNA BASED COMPUTERS

Princeton University

**Program**

**June 10-12, 1996**



## Program Committee

Eric Baum

Dan Boneh

Peter Kaplan

Richard Lipton

John Reif

Nadrian Seeman

## Monday, June 10

**8:00 - 9:00 Registration**

**9:00 Introduction**

**9:30 - 10:30 Session 1: Implementation techniques I**

**9:30 Sam Roweis, Erik Winfree, Richard Burgoyne, Nickolas Chelyapov, Myron Goodman, Paul Rothemund, Leonard Adleman**
*"A Sticker Based Architecture for DNA Computation"*

**10:00 Leonard M. Adleman, Paul W.K. Rothemund, Sam Roweis, Erik Winfree**
*"On Applying Molecular Computation To The Data Encryption Standard"*

**10:30 - 11:00** *Coffee Break*

**11:00 - 12:00 Session 2: Algorithms I**

**11:00 Thomas H. Leete, Matthew D. Schwartz, Robert M. Williams, David H. Wood, Jerome S. Salem, and Harvey Rubin**
*"Massively Parallel DNA Computation: Expansion of Symbolic Determinants"*

**11:30 Gheorghe Paun**
*"Five Universal DNA Computing Models Based on the Splicing Operation"*

**12:00 - 2:00** *Lunch*

**2:00 - 3:30 Session 3: Errors**

**2:00 Martyn Amos, Alan Gibbons, and David Hodgson**
*"Error-resistant Implementation of DNA Computations"*

**2:30 Dan Boneh and Richard J. Lipton**
*"Making DNA Computers Error Resistant"*

**3:00 Stuart A. Kurtz, Stephen R. Mahaney, James S. Royer, Janos Simon**
*"Active Transport in Biological Computing"*

**3:30 - 4:00** *Tea Break*

**4:00 - 5:00** *Discussion & Impromptu talks*

**6:00 - 8:00 Reception**

## Tuesday, June 11

**9:00 - 10:30 Session 4: Encoding information using DNA**

**9:00 Eric B. Baum**
*"DNA Sequences Useful for Computation"*

**9:30 Kalim U. Mir**
*"A Restricted Genetic Alphabet for DNA Computing"*

**10:00 R. Deaton, R. C. Murphy, M. Garzon, D. R. Franceschetti, and S. E. Stevens, Jr.**
*"Good Encodings for DNA-based Solutions to Combinatorial Problems"*

**10:30 - 11:00** *Coffee Break*

**11:00 - 12:00 Session 5: Algorithms II**

**11:00 Eric B. Baum and Dan Boneh**
*"Running dynamic programming algorithms on a DNA computer"*

**11:30 Natasa Jonoska and Stephen A. Karl**
*"A Molecular Computation of the Road Coloring Problem"*

**12:00 - 1:30** *Lunch*

**1:30 - 3:00 Session 6: Complex structure formation**

**1:30 Peter D. Kaplan, G. Cecchi and A. Libchaber**
*"DNA Based molecular computation: template-template interactions in PCR"*

**2:00 Erik Winfree, Xiaoping Yang, and Nadrian C. Seeman**
*"Universal Computation via Self-assembly of DNA: Some Theory and Experiments"*

**2:30 Nadrian C. Seeman, Hui Wang, Bing Liu, Jing Qi, Xiaojun Li, Xiaoping Yang, Furong Liu, Weiqiong Sun, Zhiyong Shen, Ruojie Sha, Chengde Mao, Yinli Wang, Siwei Zhang, Tsu-Ju Fu, Shouming Du, John E. Mueller, Yuwen Zhang, and Junghuei Chen**
*"The Perils of Polynucleotides: The Experimental Gap Between the Design and Assembly of Unusual DNA Structures"*

**3:00 - 3:30** Tea Break

**3:30 - 4:30 Session 7: Implementation techniques II**

**3:30 Quinghua Liu, Zhen Guo, Anne E. Condon, Robert M. Corn, Max G. Lagally, Lloyd M. Smith**
*"A Surface-Based Approach to DNA Computation"*

**4:00 John-Thones Amenyo**
*"Mesoscopic Computer Engineering: Automating DNA-based Molecular Computing via Traditional Practices of Parallel Computer Architecture Design"*

**4:30 - 5:30 Discussion**

## Wednesday, June 12th

**9:00 - 10:30 Session 8: Algorithms III**

**9:00 John S. Oliver**
*"Computation With DNA-Matrix Multiplication"*

**9:30 Frank Guranieri and Carter Bancroft**
*"Use of a Horizontal Chain Reaction for DNA-based Addition"*

**10:00 Robert M. Williams and David H. Wood**
*"Exascale Computer Algebra Problems Interconnect with Molecular Reactions and Complexity Theory"*

**10:30 - 11:00** *Coffee Break*

**11:00 - 12:00** Discussion

**12:00** *Conclusion of Conference*

**DIMACS** is supported by the
National Science Foundation
and is a joint project of
Princeton University, Rutgers University,
AT&T Bell Labs, and Bellcore.

*Local Arrangements:*
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