

Table of Contents

Experimental Tools

An Object Oriented Simulation of Real Occurring Molecular Biological Processes for DNA Computing and Its Experimental Verification	1
<i>T. Hinze, U. Hatnik, M. Sturm</i>	
Towards Optimization of PCR Protocol in DNA Computing	14
<i>S. Kashiwamura, M. Nakatsugawa, M. Yamamoto, T. Shiba, A. Ohuchi</i>	
DNASequencesGenerator: A Program for the Construction of DNA Sequences	23
<i>U. Feldkamp, S. Saghafi, W. Banzhaf, H. Rauhe</i>	
DNA Computing in Microreactors	33
<i>D. van Noort, F.-U. Gast, J.S. McCaskill</i>	
Cascadable Hybridisation Transfer of Specific DNA between Microreactor Selection Modules	46
<i>R. Penchovsky, J.S. McCaskill</i>	

Theoretical Tools

Coding Properties of DNA Languages	57
<i>S. Hussini, L. Kari, S. Konstantinidis</i>	
Boundary Components of Thickened Graphs	70
<i>N. Jonoska, M. Saito</i>	

Probabilistic Computational Models

Population Computation and Majority Inference in Test Tube	82
<i>Y. Sakakibara</i>	
DNA Starts to Learn Poker	92
<i>D.H. Wood, H. Bi, S.O. Kimbrough, D.-J. Wu, J. Chen</i>	
PNA-mediated Whiplash PCR	104
<i>J.A. Rose, R.J. Deaton, M. Hagiya, A. Suyama</i>	

Computer Simulation and Sequence Design

Biomolecular Computation in Virtual Test Tubes	117
<i>M.H. Garzon, C. Oehmen</i>	

Developing Support System for Sequence Design in DNA Computing	129
<i>F. Tanaka, M. Nakatsugawa, M. Yamamoto, T. Shiba, A. Ohuchi</i>	
The Fidelity of the Tag-Antitag System	138
<i>J.A. Rose, R.J. Deaton, M. Hagiya, A. Suyama</i>	
PUNCH: An Evolutionary Algorithm for Optimizing Bit Set Selection . . .	150
<i>A.J. Ruben, S.J. Freeland, L.F. Landweber</i>	

Algorithms

Solving Knapsack Problems in a Sticker Based Model	161
<i>M.J. Pérez-Jiménez, F. Sancho-Caparrini</i>	
A Clause String DNA Algorithm for SAT	172
<i>V. Manca, C. Zandron</i>	
A Proposal of DNA Computing on Beads with Application to SAT Problems	182
<i>T. Yoichi, H. Akihiro</i>	

Experimental Solutions

Aqueous Solutions of Algorithmic Problems: Emphasizing Knights on a 3×3	191
<i>T. Head, X. Chen, M.J. Nichols, M. Yamamura, S. Gal</i>	
Solutions of Shortest Path Problems by Concentration Control	203
<i>M. Yamamoto, N. Matsuura, T. Shiba, Y. Kawazoe, A. Ohuchi</i>	
Another Realization of Aqueous Computing with Peptide Nucleic Acid . .	213
<i>M. Yamamura, Y. Hiroto, T. Matoba</i>	
Experimental Conformation of the Basic Principles of Length-only Discrimination	223
<i>Y. Khodor, J. Khodor, T.F. Knight, Jr.</i>	
Experimental Construction of Very Large Scale DNA Databases with Associative Search Capability	231
<i>J.H. Reif, T.H. LaBean, M. Pirrung, V.S. Rana, B. Guo, C. Kingsford, G.S. Wickham</i>	

Nano-tech Devices

Operation of a Purified DNA Nanoactuator	248
<i>F.C. Simmel, B. Yurke</i>	
DNA Scissors	258
<i>J.C. Mitchell, B. Yurke</i>	

Biomimetic Tools

A Realization of Information Gate by Using <i>Enterococcus faecalis</i> Pheromone System	269
<i>K. Wakabayashi, M. Yamamura</i>	
Patterns of Micronuclear Genes in Ciliates	279
<i>A. Ehrenfeucht, T. Harju, I. Petre, G. Rozenberg</i>	
Peptide Computing - Universality and Complexity	290
<i>M.S. Balan, K. Krithivasan, Y. Sivasubramanyam</i>	
Programmed Mutagenesis Is a Universal Model of Computation.....	300
<i>J. Khodor, D.K. Gifford</i>	

New Computing Models

Horn Clause Computation by Self-assembly of DNA Molecules	308
<i>H. Uejima, M. Hagiya, S. Kobayashi</i>	
DNA-based Parallel Computation of Simple Arithmetic	321
<i>H. Hug, R. Schuler</i>	

Splicing Systems and Membranes

On P Systems with Global Rules.....	329
<i>A. Păun</i>	
Computing with Membranes: Variants with an Enhanced Membrane Handling.....	340
<i>M. Margenstern, C. Martín-Vide, G. Păun</i>	
Towards an Electronic Implementation of Membrane Computing: A Formal Description of Non-deterministic Evolution in Transition P Systems	350
<i>A.V. Baranda, F. Arroyo, J. Castellanos, R. Gonzalo</i>	
Insertion-Deletion P Systems	360
<i>S.N. Krishna, R. Rama</i>	
A Universal Time-Varying Distributed H System of Degree 1	371
<i>M. Margenstern, Y. Rogozhin</i>	
A Note on Graph Splicing Languages	381
<i>N.G. David, K.G. Subramanian, D.G. Thomas</i>	
Author Index	391

DNA Computing

7th International Workshop on DNA-Based Computers,

DNA7, Tampa, FL, USA, June 10-13, 2001, Revised

Papers

Jonoska, N.; Seeman, N.C. (Eds.)

2002, XI, 392 p., Softcover

ISBN: 978-3-540-43775-8