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DNA Computing

14th International Meeting
on DNA Computing, DNA14
Prague, Czech Republic, June 2-9, 2008
Revised Selected Papers

Springer

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Preface

The 14th international meeting on DNA computation took place in the Czech Republic in Prague, June 2–9, 2008. During the last 14 years the DNA Computing meetings have been the key forum at the boundary between computer science, biochemistry and nanotechnology where the most recent results have been presented and their authors have met. Their scientific program includes mathematical foundations and theoretical study of DNA computing – or biocomputing in general – and recent experimental results in DNA nanotechnology, nanoscience and nanocomputing. It continues to be one of the most exciting interdisciplinary meetings, as exemplified by the diverse nature of contributions in this volume.

The meeting began with tutorial talks by Friedrich Simmel ("Molecular Biology for Computer Scientists"), Nadrian Seeman ("Structural DNA Nanotechnology"), and Yasubumi Sakakibara ("Formal Grammars for DNA Computation and Bioinformatics"). During the meeting, a number of excellent keynote speakers gave an up-to-date overview of different aspects of DNA computing and biochemical information processing. Luca Cardelli talked about "Molecules as Automata," while Niles Pierce gave an exciting talk entitled "Molecular Choreography—Programming Nucleic Acid Self-Assembly and Disassembly Pathways." In a more biological talk, Laura Landweber discussed "RNA-Guided, Epigenetic Programming and Re-programming of Genomic Information in Ciliates," and Ming Li gave an overview of "Modern Homology Search."

The meeting was concluded by a Nanoday with beautiful presentations by Christof Niemeyer, Kurt Gothelf, Andrew Ellington and David Pine.

In total, the meeting was attended by 85 researchers from 14 countries from Asia, North America and Europe. The DNA14 Program Committee received a total number of 59 submissions, of which 25 were presented orally. Their topics included theoretical models of biomolecular computing, demonstrations of biomolecular computing processes, self-assembly systems, DNA nanostructures and nanomachines, biotechnological and other applications of DNA computing and other related themes. This proceedings volume contains improved versions of 15 papers selected from these oral contributions.

We wish to express out gratitude to the members of the Program Committee, the local organizers, the sponsor – Silesian University in Opava – and the Steering Committee who made DNA14 a great success.

November 2008

Ashish Goel
Friedrich Simmel
Petr Sosík

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