

1. Record Nr.	UNISA996466048603316
Titolo	Aspects of Molecular Computing [[electronic resource]] : Essays Dedicated to Tom Head on the Occasion of His 70th Birthday // edited by Natasha Jonoska, Gheorghe Pun, Grzegorz Rozenberg
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 2004
ISBN	1-280-30666-1 9786610306664 3-540-24635-5
Edizione	[1st ed. 2004.]
Descrizione fisica	1 online resource (XII, 396 p.)
Collana	Lecture Notes in Computer Science, , 0302-9743 ; ; 2950
Disciplina	511.3
Soggetti	Mathematical logic Computer science Mathematical Logic and Foundations Computer Science, general
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Solving Graph Problems by P Systems with Restricted Elementary Active Membranes -- Writing Information into DNA -- Balance Machines: Computing = Balancing -- Eilenberg P Systems with Symbol-Objects -- Molecular Tiling and DNA Self-assembly -- On Some Classes of Splicing Languages -- The Power of Networks of Watson-Crick D0L Systems -- Fixed Point Approach to Commutation of Languages -- Remarks on Relativisations and DNA Encodings -- Splicing Test Tube Systems and Their Relation to Splicing Membrane Systems -- Digital Information Encoding on DNA -- DNA-based Cryptography -- Splicing to the Limit -- Formal Properties of Gene Assembly: Equivalence Problem for Overlap Graphs -- n-Insertion on Languages -- Transducers with Programmable Input by DNA Self-assembly -- Methods for Constructing Coded DNA Languages -- On the Universality of P Systems with Minimal Symport/Antiport Rules -- An Algorithm for Testing Structure Freeness of Biomolecular Sequences -- On Languages of Cyclic Words -- A DNA Algorithm for the Hamiltonian Path Problem

Using Microfluidic Systems -- Formal Languages Arising from Gene Repeated Duplication -- A Proof of Regularity for Finite Splicing -- The Duality of Patterning in Molecular Genetics -- Membrane Computing: Some Non-standard Ideas -- The P Versus NP Problem Through Cellular Computing with Membranes -- Realizing Switching Functions Using Peptide-Antibody Interactions -- Plasmids to Solve #3SAT -- Communicating Distributed H Systems with Alternating Filters.

Sommario/riassunto

Molecular computing is a rapidly growing subarea of natural computing. On the one hand, molecular computing is concerned with the use of bio-molecules for the purpose of actual computations while, on the other hand, it attempts to understand the computational nature of molecular processes going on in living cells. The book presents a unique and authoritative state-of-the-art survey on current research in molecular computing: 30 papers by leading researchers in the area are drawn together on the occasion of the 70th birthday of Tom Head, a pioneer in molecular computing. Among the topics addressed are molecular tiling, DNA self-assembly, splicing systems, DNA-based cryptography, DNA word design, gene assembly, and membrane computing.
