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Titolo	Visions of DNA Nanotechnology at 40 for the Next 40 [[electronic resource]] : A Tribute to Nadrian C. Seeman // edited by Nataša Jonoska, Erik Winfree
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ISBN	981-19-9891-4
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Descrizione fisica	1 online resource (XXVIII, 431 p. 160 illus., 145 illus. in color.)
Collana	Natural Computing Series, , 2627-6461
Disciplina	004.0151
Soggetti	Computer science Nanotechnology Molecular biology Bionics Models of Computation Molecular Biology Bioinspired Technologies
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Beyond Watson-Crick -- DNA nanotechnology out of equilibrium -- The Evolution of DNA-Based Molecular Computing -- DNA Nanotechnology Research in Japan -- Reminiscences from the Trenches -- Beyond DNA -- Controlling single molecule conjugated oligomers and polymers with DNA -- Organizing charge flow with DNA -- DNA Assembly of Dye Aggregates -- Building with DNA -- From Molecules to Mathematics -- Origami Life -- Ok: a kinetic model for locally reconfigurable molecular systems -- Implementing a Theoretician's Toolkit for Self-Assembly with DNA Components -- Reasoning As If -- Scaling up DNA computing with array-based synthesis and high-throughput sequencing -- Sequenceable Event Recorders -- Computational Design of Nucleic Acid Circuits -- Parallel computations with DNA-encoded chemical reaction networks -- Social DNA Nanorobots -- Models of Gellular Automata -- Patterning DNA origami on membranes through protein self-organization.
Sommario/riassunto	This open access book provides a unique and state-of-the-art view on

DNA nanotechnology with an eye toward future developments. Intended as a tribute to Nadrian C. Seeman, who founded the field of DNA nanotechnology, the content is an exciting mixture of technical and non-technical material, reviews, tutorials, perspectives, new findings, and open questions. The book aims to inspire current researchers to sit back and think about the big picture, while also enticing new researchers to enter the field. Most of all, the book captures voices from a unique moment in time: 40 years after the publication of the first paper that envisioned DNA nanotechnology. From this vantage point, what are the untold stories, the unspoken concerns, the underlying fundamental issues, the overlooked opportunities, and the unifying grand challenges? What will help us see more clearly, see more creatively, or see farther? What is transpiring right now that could pave the way for the future? To address these questions, leading researchers have contributed 22 chapters, grouped into five sections: perspectives, chemistry and physics, structures, biochemical circuits, and spatial systems. This book will be an important reference point in the field of DNA nanotechnology, both for established researchers looking to take stock of the field and its future, and for newcomers such as graduate students and researchers in other fields who are beginning to appreciate the power and applicability of its methods.
