1. Record Nr. UNINA9910254297203321

| | |
|---|---|
| Autore | Scott L. Ridgway |
| Titolo | A Mathematical Approach to Protein Biophysics / / by L. Ridgway Scott, Ariel Fernández |
| Pubbl/distr/stampa | Cham : , : Springer International Publishing : , : Imprint : Springer, , 2017 |
| ISBN | 3-319-66032-2 |
| Edizione | [1st ed. 2017.] |
| Descrizione fisica | 1 online resource (XI, 290 p. 110 illus., 27 illus. in color.) |
| Collana | Biological and Medical Physics, Biomedical Engineering, , 1618-7210 |
| Disciplina | 571.4 |
| Soggetti | Biomathematics<br>Systems biology<br>Biological systems<br>Proteins<br>Clinical biochemistry<br>Mathematical and Computational Biology<br>Systems Biology<br>Protein Science<br>Medical Biochemistry |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Nota di contenuto | Understanding Proteins as Digital Widgets -- Digital Rules for Proteins -- Electrostatic Forces -- Protein Basics -- Protein Structure -- Hydrogen Bonds -- Composition of Protein-Protein Interfaces -- Wrapping Electrostatic Bonds -- Stickiness of Dehydrons -- Electrostatic Force Details -- Dehydrons in Protein Interactivity -- Aromatic Interactions -- Peptide Bond Rotation -- Continuum Equations for Electrostatics -- Wrapping Technology -- Epilogue -- Units -- Notes -- Glossary -- Index. . |
| Sommario/riassunto | This book explores quantitative aspects of protein biophysics and attempts to delineate certain rules of molecular behavior that make atomic scale objects behave in a digital way. This book will help readers to understand how certain biological systems involving proteins function as digital information systems despite the fact that underlying processes are analog in nature. The in-depth explanation of proteins |

from a quantitative point of view and the variety of level of exercises (including physical experiments) at the end of each chapter will appeal to graduate and senior undergraduate students in mathematics, computer science, mechanical engineering, and physics, wanting to learn about the biophysics of proteins. L. Ridgway Scott has been Professor of Computer Science and of Mathematics at the University of Chicago since 1998, and the Louis Block Professor since 2001. He obtained a B.S. degree (Magna Cum Laude) from Tulane University in 1969 and a PhD degree in Mathematics from the Massachusetts Institute of Technology in 1973. Professor Scott has published over 130 papers and three books, extending over biophysics, parallel computing and fundamental computing aspects of structural mechanics, fluid dynamics, nuclear engineering, and computational chemistry. Ariel Fernández (born Ariel Fernández Stigliano) is an Argentinian-American physical chemist and mathematician. He obtained his Ph. D. degree in Chemical Physics from Yale University and held the Karl F. Hasselmann Endowed Chair Professorship in Bioengineering at Rice University. He is currently involved in research and entrepreneurial activities at various consultancy firms. Ariel Fernández authored three books on translational medicine and biophysics, and published 360 papers in professional journals. He holds two patents in the field of biotechnology.