

1. Record Nr.	UNINA9910452303303321
Autore	Wallace Rodrick
Titolo	A mathematical approach to multilevel, multiscale health interventions [[electronic resource]] : pharmaceutical industry decline and policy response / / Rodrick Wallace, Deborah Wallace
Pubbl/distr/stampa	London, : Imperial College Press, 2013
ISBN	1-299-46216-2 1-84816-997-3
Descrizione fisica	1 online resource (238 p.)
Altri autori (Persone)	WallaceDeborah
Disciplina	615.5/80151
Soggetti	Drug development Drugs - Research Drugs - Design - Mathematical models Medical geography Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Preface; Contents; 1. BEYOND MAGIC BULLETS; 1.1 The Pharmaceutical Catastrophe; 1.2 A New Perspective; 1.3 Cognition as `Language'; 1.4 The Human Cognome; 2. EXPANDING THE THEORY; 2.1 No Free Lunch; 2.2 Multiple Broadcasts, Punctuated Detection; 2.3 Metabolic Constraints; 2.4 Environmental Signals; 3. DYNAMIC `REGRESSION' MODELS; 3.1 The Simplest Approach; 3.2 A Rate Distortion Reformulation; 3.3 Multiple Time Scales; 3.4 Incoming Information; 3.5 Pathologies; 3.6 Refining the Model; 4. AN EVOLUTIONARY EXCURSION; 4.1 Introduction; 4.2 Ecosystems as Information Sources; 4.3 Genetic Heritage 4.4 Gene Expression4.5 Interacting Information Sources; 4.6 Conclusions; 5. EXAMPLE: MENTAL DISORDERS; 5.1 Introduction; 5.2 Two Classes; 5.3 Global Broadcast Models; 5.4 Gene Expression; 5.5 Summary; 6. EXAMPLE: PROTEIN FOLDING; 6.1 Introduction; 6.2 Spontaneous Symmetry Breaking; 6.3 A Formal Approach; 6.4 The Energy Picture; 6.5 The Developmental Picture; 6.6 A Comprehensive Treatment; 6.7 Aging and Protein Folding; 6.8 Summary; 7. EXAMPLE:

GLYCOME DETERMINANTS; 7.1 Introduction; 7.2 Stochastic Topology; 7.3 The Glycomic Conundrum; 7.4 Another Cognitive Paradigm 7.5 Regulating Glycan Determinants 7.6 Glycan Spectra; 7.7 Summary; 8. EXAMPLE: GLYCAN/LECTIN LOGIC GATES; 8.1 Introduction; 8.2 The Critical Exponent; 8.3 Two Examples; 8.4 Information Catalysis; 8.5 A Tiling Symmetry Model; 8.6 Summary; 9. EXAMPLE: IDP LOGIC GATES; 9.1 Introduction; 9.2 Symbolic Dynamics of Molecular Switching; 9.3 Another Dual Information Source; 9.4 Information Catalysis; 9.5 Summary; 10. TREATMENT; 10.1 The Generalized Retina; 10.2 Therapeutic Efficacy; 10.3 Psychosocial Stress; 10.4 Flight, Fight, and Helplessness; 10.5 Institutions as Niche Construction 10.6 The Hall of Mirrors 10.7 Side Effects Reconsidered; 11. HISTORY AND HEALTH; 11.1 Malaria and the Fulani; 11.2 The American Catastrophe; 12. BEYOND GLASPERLENSPIEL; 13. MATHEMATICAL APPENDIX; 13.1 The Tuning Theorem; 13.2 The Rate Distortion Theorem; 13.3 Stochastic Differential Equations; 13.4 Morse Theory; 13.5 Groupoids; 13.6 'Biological' Renormalization; 13.7 Large Deviations; Bibliography; Index

Sommario/riassunto

This book, based on published studies, takes a unique perspective on the 30-year collapse of pharmaceutical industry productivity in the search for small molecule "magic bullet" interventions. The relentless escalation of inflation-adjusted cost per approved medicine in the United States - from 200 million in 1950 to 1.2 billion in 2010 - has driven industry giants to, at best, slavish imitation in drug design, and at worst, abandonment of research and embracing of widespread fraud in consumer marketing. The book adapts formalism across a number of disciplines to the strategy for design of mu
