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	Nota di contenuto	Part I, The BEACON Center for Evolution in Action -- 2010: A BEACON Odyssey -- A Strong Director Facilitates the Successes of All BEACON Members: A Personal Example -- BEACON: Using Diversity as an Evolutionary Tool for a High-Performing Science and Technology Center -- Threading Together a Successful NSF-Funded Science and Technology Center: The Impact of Dr. Erik Goodman -- How BEACON Shaped My Research and Career Trajectory -- The Man Behind the Leader -- Part II – Evolution of Genomes and Evolvability -- Limits to Predicting Evolution: Insights from a Long-Term Experiment with Escherichia coli -- A Test of the Repeatability of Measurements of Relative Fitness in the Long-Term Evolution Experiment with Escherichia coli -- Experimental Evolution of Metal Resistance in Bacteria -- Probing the Deep Genetic Basis of a Novel Trait in Escherichia coli -- Fitness Costs and Benefits of Resistance to Phage Lambda in Experimentally Evolved Escherichia coli -- Experimental

Evolution of Human Rhinovirus Strains Adapting to Mouse Cells -- Normed Phase Space Model of Natural Variation in Bacterial Chromosomes -- Genome Size and the Extinction of Small Populations -- Part III – Evolution of Behavior and Intelligence -- Temporal Niche Evolution and the Sensory Brain -- Time Makes You Older, Parasites Make You Bolder – Toxoplasma Gondii Infections Predict Hyena Boldness Toward Definitive Lion Hosts -- Behavioral Strategy Chases Promote the Evolution of Prey Intelligence -- A Hologenomic Approach to Animal Behavior -- Creative AI Through Evolutionary Computation -- Part IV – Evolution of Communities and Collective Dynamics -- Subtle Environmental Differences have Cascading Effects on the Ecology and Evolution of a Model Micro-bial Community -- Ecological Context Influences Evolution in Host-Parasite Interactions: Insights from the Daphnia-Parasite Model System -- Toward a Model of Investigating "Coordinated Stasis" Through Habitat Tracking in Communities of Digital Organisms -- Major Transitions in Digital Evolution -- Part V, Evolutionary Applications -- Rise of Evolutionary Multi-criterion Optimization: A Brief History of Time with Key Contributions -- Doing Research at the Intersection of Arts and Science -- Making Better Use of Repair Templates in Automated Program Repair: A Multi-objective Approach -- From Biological to Computational Arms Races – Studying Cyber Security Dynamics -- Small Implementation Differences Can Have Large Effects on Evolvability -- Surrogate Model-Driven Evolutionary Algorithms: Theory and Applications -- Mechatronic Design Automation: A Short Review -- Evolving SNP Panels for Genomic Prediction -- Part VI, Evolution Education -- Overcoming Classroom Skepticism with Evolution in Action -- How to Increase Creativity in Research -- Student Learning Across Course Instruction in Genetics and Evolution -- The Evolution of the Scientific Virtues Toolbox Approach to Responsible Conduct of Research Training -- The Influence of Instructor Technological Pedagogical Content Knowledge on Implementation and Student Affective Outcomes -- Exploring Evolution in Action in the Classroom, Through Human Genetic Diversity and Patterns -- Part VII, The Evolution of Erik Goodman -- Academic Biography of Erik D. Goodman. .

Sommario/riassunto	This edited research monograph brings together contributions from computer scientists, biologists, and engineers who are engaged with the study of evolution and how it may be applied to solve real-world problems. It also serves as a Festschrift dedicated to Erik D. Goodman, the founding director of the BEACON Center for the Study of Evolution in Action, a pioneering NSF Science and Technology Center headquartered at Michigan State University. The contributing authors are leading experts associated with the center, and they serve in top research and industrial establishments across the US and worldwide. Part I summarizes the history of the BEACON Center, with refreshingly personal chapters that describe Erik's working and leadership style, and others that discuss the development and successes of the center in the context of research funding, projects, and careers. The chapters in Part II deal with the evolution of genomes and evolvability. The contributions in Part III discuss the evolution of behavior and intelligence. Those in Part IV concentrate on the evolution of communities and collective dynamics. The chapters in Part V discuss selected evolutionary computing applications in domains such as arts and science, automated program repair, cybersecurity, mechatronics, and genomic prediction. Part VI deals with evolution in the classroom, using creativity in research, and responsible conduct in research training. The book concludes with a special chapter from Erik Goodman, a short biography that concentrates on his personal positive

influences and experiences throughout his long career in academia and industry.