

1. Record Nr.	UNINA9910132341503321
Titolo	From physics to daily life : applications in biology, medicine, and healthcare // edited by Beatrice Bressan
Pubbl/distr/stampa	Weinheim an der Bergstrasse, Germany : , : Wiley Blackwell, , 2014 ©2014
ISBN	3-527-68706-8 3-527-68707-6 3-527-68705-X
Edizione	[2nd ed.]
Descrizione fisica	1 online resource (389 p.)
Disciplina	303.48/30112
Soggetti	Science - History - 21st century Science - Social aspects - Forecasting
Lingua di pubblicazione	Tedesco
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Include indexes.
Nota di contenuto	From Physics to Daily Life: Applications in Biology, Medicine, and Healthcare; Contents; Contributors' CVs; Foreword; List of Acronyms; List of Units; 1 Introduction; Part I: Knowledge Management and Technology Transfer in an Organization; 2 Knowledge Management: From Theory to Practice; 2.1 Knowledge-Based and Innovative Organization; 2.2 The Theory of Knowledge; 2.2.1 Tacit and Explicit Knowledge; 2.2.2 The SECI Model and the Knowledge Creation Spiral; 2.2.3 The Two Dimensions and the Two Spirals of Knowledge Creation; 2.2.4 The Five Conditions and the Five Phases in Two Dimensions 2.3 The Core Processes of Managing Knowledge2.3.1 Knowledge Outputs and Outcomes; 2.4 The Knowledge Worker; 2.4.1 The Individual Learning Process; 2.4.2 Scientific, Technological and Social Processes; 2.4.3 Concept Formation and the Hierarchical Levels of Conceptualization; 2.5 The Knowledge Creation, Acquisition, and Transfer Model; 2.6 Knowledge Management: A Case Study of CERN; 2.6.1 The LHC Case Study Survey; Part II: Examples of Knowledge and Technology Transfer; Section 1: Medical Applications; 3 Particle Beams for Cancer; 3.1 Radiations in the Therapy of Solid Tumours 3.2 Conventional Radiation Therapy3.3 Neutrontherapy and

Protontherapy; 3.4 Ion Therapy; 3.5 Proton Single-Room Facilities; 3.6 Conclusion; 4 Detection and Imaging; 4.1 Invention of the Multiwire Proportional Chamber; 4.2 Modalities for Medical Imaging; 4.3 Development of the HIDAC Detector; 4.4 The Dual-HIDAC PET Camera; 4.5 Early Developments in Positron Tomography; 4.6 Fully Three-Dimensional PET Acquisition; 4.7 The Partial Ring Tomograph; 4.8 The Birth of Multimodality Instrumentation; 4.9 Conclusion; 5 Micro-Fabricated Sensors; 5.1 3D Silicon Sensors; 5.1.1 3D Sensor Fabrication 5.1.2 3D Silicon Sensors, State of the Art5.2 3D Sensor Applications; 5.2.1 Micro-Dosimetry for Cancer Therapy; 5.2.2 Structural Molecular Biology; 5.2.3 Scattering from Crystals; Section 2: Impact on Life Sciences; 6 Omics: Technologies and Translations; 6.1 Biology from Different Perspectives; 6.1.1 Biology from a Descriptive Discipline to a Holistic, Molecular, and Quantitative Science; 6.1.2 Biology from a Chain-of-Events Perspective to Network Thinking; 6.2 Quantum Leaps in Omics Development; 6.2.1 From Gene and DNA Analysis to Deep Sequencing 6.2.1.1 Single Gene Expression Analysis: Real-Time PCR6.2.1.2 Microarrays-Based Transcriptomics; 6.2.1.3 Deep Sequencing; 6.2.2 Classical Biochemistry Goes -Omics; 6.2.2.1 Proteomics; 6.2.2.2 Metabolites; 6.2.2.3 Metabolomics; 6.3 Omics Output (I): Knowledge Bases; 6.3.1 Human Genome Projects; 6.3.2 Human Proteome Projects; 6.3.3 Human Metabolome Projects; 6.4 Omics Output (II): Translations and Challenges; 6.4.1 Genetics to Diagnostics; 6.4.2 Proteomics to Diagnostics; 6.5 From Omics to 'Know-mics': Translation into Personal and Actionable (gen)omics; 7 Technology Fallout in Bioinformatics 7.1 Fundamental Research and the Development of New Technology

---

## Sommario/riassunto

Beatrice Bressan brings together a number of outstanding examples of successful cross-disciplinary technology transfer originating in fundamental physics research, which dramatically impacted progress in biomedical research and clinical applications. Many of these examples were developed at CERN, a hotbed of fundamental inventions in particle physics. Additional sections of the book deal with knowledge management and technology transfer including its economic aspects. While each chapter has been drafted by an expert in the field, the editor has carefully edited the whole book, ensuring a coh

---