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Nota di contenuto	1. Precision health monitoring and wellness tracking: Fundamentals and principles -- 2. Introduction to nano-bioelectronics for precision health monitoring -- 3. Fundamentals of Biomarkers and Biosensors for Precision Healthcare -- 4. Molecular, Physiological, and Digital Biomarkers in Precision Healthcare -- 5. Exploring novel healthcare monitoring modalities: wearable, ingestible, and implantable biosensors -- 6. Electrochemical biosensors for therapeutic drug monitoring: Next generation of disease management -- 7. Biosensors for Cardiovascular health monitoring -- 8. Next-Generation Bioelectronic Devices for Diabetes: Monitoring, Management, and Precision Healthcare -- 9. Nano-bioelectronics for neurodegenerative disease monitoring and management -- 10. Multimodal Sensing Arrays

for Comprehensive Health Monitoring and Disease Management -- 11. Smart skin and beyond: Unlocking the full potential of wearable health sensors -- 12. Integrated Bioelectronics for Precision Health Monitoring.

Sommario/riassunto

This Book offers a scholarly and in-depth exploration of the emerging field that brings together nanotechnology, biosensing, and electronic systems to support the growing vision of personalized and precision healthcare. As modern medicine moves away from generalized treatment approaches toward individualized, data-driven care, this book highlights the critical role of nano-bioelectronics in enabling real-time monitoring, early disease detection, and tailored clinician interventions for managing chronic diseases. In this book, readers will find detailed discussions on the design and application of wearable, implantable, and ingestible biosensors capable of continuously tracking a wide range of physiological and biochemical signals. Covering both theoretical foundations and applied innovations, the book addresses key areas such as cardiovascular health, diabetes management, neurodegenerative disease monitoring, and therapeutic drug tracking. Core topics include the science of biomarkers, sensor miniaturization, materials for bio-interfaces, and strategies for enhancing sensitivity, selectivity, and long-term stability of biosensors. This volume also presents advanced developments in multimodal sensing platforms, flexible and skin-conformable electronics, and the integration of biosensing systems with wireless communication, cloud infrastructure, and machine learning for automated health analytics. These technologies offer the potential to redefine health monitoring from hospital-centric models to continuous, patient-centric solutions. Written for researchers, biomedical engineers, clinicians, and health technology developers, this book serves as both a foundational reference and a forward-looking guide. Readers will find not only comprehensive insights into current technologies but also a vision for future innovations that aim to make precision health a practical and impactful reality.