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Nota di contenuto	Part 1: Visualizing and Controlling Molecules for Life -- Chapter 1. Photoacoustic Tomography: Deep Tissue Imaging by Ultrasonically Beating Optical Diffusion -- Chapter 2. Regulatory Mechanism of Neural Stem Cells Revealed by Optical Manipulation of Gene Expressions -- Chapter 3. Eavesdropping on Biological Processes with Multi-Dimensional Molecular Imaging -- Chapter 4. Apical microtubules define the function of epithelial cell sheets consisting of non-ciliated or multi-ciliated cells -- Chapter 5. Illuminating the brain -- Chapter 6. Optogenetic assemblies of cortical force-generating complexes during mitosis -- Chapter 7. In vivo Imaging Probes with Tunable Chemical Switches -- Chapter 8. Circuit-dependent striatal PKA and ERK signaling underlying action selection -- Chapter 9. Electrophysiology, Unplugged: New Chemical Tools to Image Voltage -- Chapter 10. Molecular dynamics revealed by single-molecule FRET measurement -- Chapter 11. Comprehensive approaches using luminescence to studies of cellular functions -- Part II: Imaging Disease Mechanisms -- Chapter 12. Make Chronic Pain Visible -- Chapter 13. Cortical plasticity after spinal cord injury using resting-state functional magnetic resonance imaging -- Chapter 14. Multimodal Label-free

imaging to assess compositional and morphological changes in cells during immune activation -- Chapter 15. Investigating in vivo myocardial and coronary molecular pathophysiology in mice with X-ray radiation imaging approaches -- Chapter 16. Visualizing the Immune Response to Infections -- Chapter 17. Imaging Sleep and Wakefulness -- Chapter 18. Abnormal local translation in dendrites impairs cognitive functions in neuropsychiatric disorders -- Chapter 19. Imaging synapse formation and remodeling in vitro and in vivo -- Part III: Imaging-based Diagnosis and Therapy -- Chapter 20. How MRI makes the Brain Visible -- Chapter 21. Intravital multiphoton imaging revealing cellular dynamics in vivo -- Chapter 22. Theranostic Near Infrared Photoimmunotherapy for Cancer -- Chapter 23. Novel and integrated imaging on Chronic Fatigue -- Chapter 24. Novel fluorescent probes for rapid tumor imaging and fast glutathione dynamics -- Chapter 25. Coronary Heart Disease Diagnosis: Engineering Triumphs, Economic Barriers -- Chapter 26. Live imaging of the skin immune responses -- Chapter 27. Development of a horizontal CT and its application to musculoskeletal disease -- Chapter 28. The Future of Precision Health & Integrated Diagnostics -- Chapter 29. Imaging and therapy against hypoxic tumors with ^{64}Cu -ATSM.

Sommario/riassunto

This open access book describes marked advances in imaging technology that have enabled the visualization of phenomena in ways formerly believed to be completely impossible. These technologies have made major contributions to the elucidation of the pathology of diseases as well as to their diagnosis and therapy. The volume presents various studies from molecular imaging to clinical imaging. It also focuses on innovative, creative, advanced research that gives full play to imaging technology in the broad sense, while exploring cross-disciplinary areas in which individual research fields interact and pursuing the development of new techniques where they fuse together. The book is separated into three parts, the first of which addresses the topic of visualizing and controlling molecules for life. The second part is devoted to imaging of disease mechanisms, while the final part comprises studies on the application of imaging technologies to diagnosis and therapy. The book contains the proceedings of the 12th Uehara International Symposium 2017, "Make Life Visible" sponsored by the Uehara Memorial Foundation and held from June 12 to 14, 2017. It is written by leading scientists in the field and is an open access publication under a CC BY 4.0 license. .
