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Nota di contenuto	Frontmatter -- Contents -- Foreword -- Preface -- Acknowledgments -- Part 1: The Material Surface -- 1. Surface Characterization of Implant Materials: Biological Implications / Smith, D.C. -- 2. The Biomaterial-Tissue Interface and Its Analogues in Surface Science and Technology / Kasemo, B. / Lausmaa, J. -- 3. Surface Reaction Kinetics and Adsorption of Biological Moieties: A Mechanistic Approach to Tissue Attachment / Hench, L.L. -- 4. Titanium and Its Oxide Film: A Substrate for Formation of Apatite / Hanawa, T. -- 5. Titanium: Immersion-Induced Surface Chemistry Changes and the Relationship to Passive Dissolution and Bioactivity / Ducheyne, P. / Healy, K. -- 6. Kinetics of Mineralization, Demineralization, and Transformation of Calcium Phosphates at Mineral and Protein Surfaces / Johnsson, M.S-A. / Paschalis, E. / Nancollas, G.H. -- 7. Substrate Surface Dissolution and Interfacial Biological Mineralization / LeGeros, R.Z. / Orly, I. / Gregoire, M. / Daculsi, G. -- 8. High-Resolution Electron Microscopy of a Bone Implant Interface / Bonfield, W. / Luklinska, Z.B. -- Part 2: Bone Proteins and Other Macromolecules -- 9. Non-Collagenous Bone Proteins and Their Role in Substrate-Induced Bioactivity / Sodek, J. /

Zhang, Q. / Goldberg, H.A. / Domenicucci, C. / Kasugai, S. / Wrana, J.L. / Shapiro, H. / Chen, J. -- 10. Role of Adhesive Proteins and Integrins in Bone and Ligament Cell Behavior at the Material Surface / Sank, J.J. / Van Kampen, C.L. / Somerman, M.J. -- 11. Non-Endocrine Regulation of Bone Cell Activity / Tenenbaum, H.C. / McCulloch, C.A.G. / Limeback, H.F. / Birek, P. -- 12. Osteogenesis Induced by BMP-Coated Biomaterials: Biochemical Principles of Bone Reconstruction in Dentistry / Kuboki, Y. / Yamaguchi, H. / Yokoyama, A. / Murata, M. / Takita, H. / Tazaki, M. / Mizuno, M. / Hasegawa, T. / Iida, S. / Shigenobu, K. / Fujisawa, R. / Kawamura, M. / Atsuta, T. / Matsumoto, A. / Kato, H. / Zhou, H.-Y. / Ono, I. / Takeshita, N. / Nagai, N. -- 13. Ceramic Synthesis using Biological Processes / Tarasevich, B.J. / Rieke, P.C. / McVay, G.L. -- Parts 1 and 2 - General Discussion -- Part 3: Cellular Activity at the Interface -- 14. Inflammatory Cell Response to Bone Implant Surfaces / Thomsen, P. / Ericson, L.E. -- 15. Modulation of Cell Activity by Titanium Peroxy Compounds / Bjursten, L.M. / Tengvall, P. -- 16. Behaviour of Osteoblasts on Micromachined Surfaces / Brunette, D.M. / Ratkay, J. / Chehroudi, B. -- 17. Osteoblast Reactions to Charged Polymers / Shelton, R.M. / Davies, J.E. -- 18. Cell-Mediated Bone Regeneration / Caplan, A.I. -- 19. The Influence of Sputtered Bone Substitutes on Cell Growth and Phenotypic Expression / Windeler, A.S. / Bonewald, L. / Khare, A.G. / Boyan, B. / Mundy, G.R. -- 20. Early Extracellular Matrix Synthesis by Bone Cells / Davies, J.E. / Ottensmeyer, P. / Shen, X. / Hashimoto, M. / Peel, S.A.F. -- 21. Transmission Electron Microscopical Identification of Extracellular Matrix Components using Immunocytochemistry / Magloire, H. / Bouvier, M. / Exbrayat, P. / Andujar, M.B. / Couble, M.L. / Joffre, A. / Poly, H. / Veron, M.H. / Seux, D. / Hartmann, D.J. -- 22. Molecular Biological Approaches to Investigate Cell/Biomaterial Interactions / Goldring, S.R. / Wang, J.-T. -- 23. Biological Cascades of Fracture Healing as Models for Bone-Biomaterial Interfacial Reactions / Jingushi, S. / Bolander, M.E. -- 24. Tissue Responses to Bone-Derived and Synthetic Materials / Glowacki, J. / Spector, M. -- 25. Hard and Soft Connective Tissue Growth and Repair in Response to Charged Surfaces / Krukowski, M. / Eppley, B. / Mustoe, T. / Osdoby, P. -- 26. Deposition of Cement-like Matrix on Implant Materials / Davies, J.E. / Nagai, N. / Takeshita, N. / Smith, D.C. -- 27. Polymer Reactions Resulting in Bone Bonding: A Review of the Biocompatibility of Polyactive / Blitterswijk, C.A. van / Hesselink, S.C. / Brink, J. van den / Leenders, H. / Bakker, D. -- 28. Comparative Morphology of the Bone Interface with Glass Ceramics, Hydroxyapatite, and Natural Coral / Gross, U.M. / Mutter-Mai, C. / Voigt, C. -- 29. Interfacial Reactions to Bioactive and Non-bioactive Bone Cements / Oonishi, H. -- 30. Modulation of Bone Ingrowth by Surface Chemistry and Roughness / Ricci, J.L. / Spivak, J.M. / Blumenthal, N.C. / Alexander, H. -- 31. Comparative Push-out Data of Bioactive and Non-bioactive Materials of Similar Rugosity / Niki, M. / Ito, G. / Matsuda, T. / Ogino, M. -- 32. Quantified Bone Tissue Reactions to Various Metallic Materials with Reference to the So-called Osseointegration Concept / Albrektsson, T. / Johansson, C. -- Part 5: Mechanical Effects on Interfacial Biology -- 33. Effect of Mechanical Stress on Tissue Differentiation in the Bony Implant Bed / Carter, D.R. / Giori, N.J. -- 34. Quantitative Evaluation of the Effect of Movement at a Porous Coated Implant-Bone Interface / Pilliar, R.M. -- 35. Bone Ingrowth into Porous Coatings Attached to Prostheses of Differing Stiffness / Sumner, D.R. / Turner, T.M. / Urban, R.M. / Galante, J.O. -- 36. Influence of Biomechanical Factors at the Bone-Biomaterial Interface / Brunski, J.B. -- 37. Bone Bonding Behavior of Biomaterials with Different Surface Characteristics under Load-

Bearing Conditions / Yamamuro, T. / Takagi, H. -- Part 5 - General Discussion: The Effect of Micromotion on Bone Healing -- Part 6: Retrieval Analysis for Interpreting Interfacial Phenomena -- 38. Bone-Biomaterial Interfaces of Retrieved Implants / Lemons, J.E. -- 39. Ultrastructural Investigation and Analysis of the Interface of Retrieved Metal Implants / Ericson, L.E. / Johansson, B.R. / Rosengren, A. / Sennerby, L. / Thomsen, P. -- 40. Synovial Cells at the Interface with Retrieved Implants / Revell, P.A. / Lalor, P.A. -- 41. Phenotypic Characteristics of Inflammatory Cells Derived from Hip Revision Capsules / Athanasou, N.A. / Triffitt, J.T. / Bulstrode, C.J.K. / Quinn, J. -- 42. Bone Bonding to Retrieved Hydroxyapatite-Coated Human Hip Prostheses / Hardy, D.C.R. / Frayssinet, P. / Primout, I. / Yasik, E. / Lafontaine, M.A. / Delince, P.E. -- Part 6 - General Discussion -- Part 7: The Industrial Perception -- Biographical Sketches of Invited Attendees at the Bone-Biomaterial Interface Workshop, Toronto, December 3 and 4, 1990 -- Affiliations of Contributing Authors -- Index

Sommario/riassunto

Each year more than 500,000 arthritic or injured hips are replaced by orthopaedic surgeons around the world. A critical element in the longevity of each replacement is the successful interaction of bone tissue with biomaterial. The same critical element applies in other joint replacements, in the hundreds of thousands of dental implants performed each year, and in a widening range of veterinary applications. To address the diverse interests and areas of expertise related to the subject of bone-biomaterial interaction, a conference in Toronto at the end of 1990 brought together forty scientists from research teams in Canada, Europe, Japan, and the USA, as well as representatives of 23 of the world's major health-care companies. They came together to exchange information and informed opinion on developments which affect the design, manufacture, and use of bone implants. This volume includes not only the papers presented at the conference but also the debate and discussion which followed each one, as recorded by video cameras and a team of court stenographers. Thus the reader has a unique opportunity to experience the full range of current research and opinion, in all its diversity, as it was explored at the conference. Topics of the papers include current understanding of the influence of materials surfaces on bone generation; bone cell response to materials; molecular biological probes to study the interface; mechanical influence on interfacial biology; and retrieval analysis for interpreting interfacial phenomena. Debate following the papers focused on such issues as the relative importance of mechanical stress and the issue of weight-bearing in the choice of biomaterial; the effect of cleaning and sterilization methods on tissue response in the bony implantation bed; the existence of evidence that metal alloys, implanted in bone, adversely affect biological tissue. Both the texts of papers and the transcripts of discussions have been annotated extensively by J.E. Davies, the workshop's co-ordinator. His work adds an additional dimension to the research presented here and provides invaluable cohesion to this innovative volume.
