

1. Record Nr.	UNINA9910812903403321
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Titolo	The Bone-biomaterial interface // editor, J. E. Davies
Pubbl/distr/stampa	Toronto : , : University of Toronto Press, , 1991 ©1991
ISBN	1-282-03984-9 9786612039843 1-4426-7150-5
Descrizione fisica	1 online resource (xiv, 502 pages) : illustrations
Disciplina	617.3
Soggetti	Orthopedic implants - Materials Orthopedic implants - Biocompatibility
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Based on the proceedings of the Bone-Biomaterial Interface Workshop held in Toronto, Ont., Dec. 3-4, 1990--Cf. p. x.
Nota di bibliografia	Includes bibliographical references and index.
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#### 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.

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