

BIOGRAPHICAL SKETCH

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NAME	POSITION TITLE		
David H. Kohn	Associate Professor		
EDUCATION/TRAINING (<i>Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.</i>)			
INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
Tulane University, New Orleans, LA	BSE	1983	Biomedical Engineering
University of Pennsylvania, Philadelphia, PA	MSE	1985	Bioengineering
University of Pennsylvania, Philadelphia, PA	Ph.D.	1989	Bioengineering

A. Positions and Honors.**Positions and Employment**

1982 – 1983	Research Assistant, Biomechanics Laboratory Tulane University, New Orleans, LA
1983	Research Assistant, Dept. of Biomechanics, Hospital for Special Surgery, New York, NY
1983	Teaching Assistant, Dept. of Bioengineering, University of Pennsylvania, Philadelphia, PA
1984 – 1989	Research Fellow, Dept. of Bioengineering, University of Pennsylvania, Philadelphia, PA
1987 – 1989	Health Science Specialist, Veteran's Administration, Philadelphia, PA
1989 – 1996	Assistant Professor, Dept. of Biologic and Materials Sciences, University of Michigan
1990 – 1996	Assistant Professor, Graduate Program in Bioengineering, University of Michigan
1992 -	Director, Bioengineering Consulting, Inc., Ann Arbor, MI
1996 -	Associate Professor (with tenure), Dept. of Biologic & Materials Sciences, University of Michigan
1996 -	Associate Professor, Dept. of Biomedical Engineering, College of Engineering, University of Michigan
2000 – 2001	Visiting Professor, Craniofacial and Skeletal Diseases Branch, NIDCR, NIH
2002 -	Chair, Graduate Committee, Department of Biomedical Engineering, University of Michigan

Selected Awards and Other Professional Activities

1979-1983	M.H. Rykoski Scholarship, Tulane University
1982 -	Tau Beta Pi (National Engineering Honor Society)
1989	Society for Biomaterials Student Scholarship
1994 - 1997	The Whitaker Foundation - Biomedical Research Award,
1994 - 1998	National Science Foundation, Research Initiation Award
1996 - 1999	Chair, Society for Biomaterials - Oral/Craniofacial Biomaterials Special Interest Group
1996 - 2000	NIH, Orthopaedics Study Section for SBIR/STTR Grants; Chair 1998 - 2000
1997 -	Society for Biomaterials Program Committee; Symposium Organizer
1998 – 2001	Arthritis Foundation - Biomechanics/Biotechnology Study Section
1998-2003	NIH, Oral Biology and Medicine II Study Section, Ad-Hoc member
1999 –	NSF Review Panels – Divisions of Materials Research; Bioengineering & Environmental Systems
2000 - 2001	NIH IPA Award
2001 - 2002	President, International Association for Dental Research, Implantology Research Group
2002 -	NIH, NCRR Study Section, Ad-Hoc member
2002 -	Associate Editor, <i>Journal of Dental Research</i>
2003 -	NIH, Skeletal Biology Development and Disease, Ad-Hoc member

B. Selected peer-reviewed publications (in chronological order, from a total of 165 Papers, Chapters and Abstracts)

- Cowin SC, Hart RT, Balser JR, **Kohn DH**, Functional adaptation in long bones: establishing in vivo values for surface remodeling rate coefficients, *J Biomech*, 18: 665-684, 1985.
- Ducheyne P, **Kohn DH**, Smith TS, Fatigue properties of cast and heat treated Ti-6Al-4V alloy for anatomic hip prostheses, *Biomater*, 8: 223-227, 1987.
- Kohn DH**, Ducheyne P, A parametric study of factors affecting fatigue strength of porous coated Ti-6Al-4V implant alloy, *J Biomed Mater Res* 24:1483-1501, 1990.

- Kohn DH**, Ducheyne P, Tensile and fatigue strength of hydrogen treated Ti-6Al-4V alloy, *J Mater Sci*, 26:328-334, 1991.
- Kohn, DH**, Ducheyne P, Microstructural refinement of beta-sintered and porous coated Ti-6Al-4V by temporary alloying with hydrogen, *J Mater Sci*, 26:534-544, 1991.
- Kohn DH**, Ducheyne P, Awerbuch J, Acoustic emission during fatigue of porous coated Ti-6Al-4V implant alloy, *J Biomed Mater Res* 26:19-38, 1992.
- Kohn DH**, Ducheyne P, Awerbuch J, Sources of acoustic emission during fatigue of Ti-6Al-4V: effect of microstructure, *J Mater Sci*, 27:1633-1641, 1992.
- Kohn DH**, Ducheyne P, Awerbuch J, Acoustic emission during fatigue of Ti-6Al-4V: incipient fatigue crack detection limits and generalized data analysis methodology, *J Mater Sci*, 27:3133-3142, 1992.
- Ko CC, **Kohn DH**, Hollister SJ, Micromechanics of implant/tissue interfaces, *J Oral Implantol*, 18:220-230, 1992.
- Kohn DH**, Ducheyne P, Materials for bone, joint and cartilage replacement, In: *Medical and Dental Materials*, Ed. DF Williams, VCH Verlagsgesellschaft, FRG, 29-109, 1992.
- Kohn DH**, Fatigue crack detection and data analysis, *Handbook of Advanced Materials Testing*, NP Cheremisinoff, PN Cheremisinoff, Eds, Marcel Dekker, Matawan, NJ, 593-627, 1995.
- Ko CC, **Kohn DH**, Hollister SJ, Effective Anisotropic elastic constants of bimaterial interphases: comparison between experimental and analytical techniques, *J Mater Sci: Mater Med*, 7:109-117, 1995.
- Kohn DH**, Acoustic emission and non-destructive evaluation of biomaterials and tissues, *Crit Rev Biomed Eng* 22: 221-306, 1995.
- Ko CC, **Kohn DH**, Hollister SJ, Goldstein SA, Ingrowth Rule: A relationship between tissue strain and osseointegration for porous coated implants, *Proc. Summer Bioeng. Conference BED-Vol 29*, RM Hochmuth, et al, Ed, ASME, NY, 481-482, 1995.
- Renier M, **Kohn DH**, Development and characterization of a biodegradable polyphosphate, *J Biomed Mater Res*, 34: 95-104, 1997.
- Rajachar RM, Chow DL, **Kohn DH**, Determining mechanisms of microdamage formation and accumulation in cortical bone using acoustic emission, In: *Proc Summer Bioengineering Conference*, BED-Vol 42, VK Goel, et al., Eds, ASME, NY, 317-318, 1999.
- Tsai S, Rutherford RB, Clarkson BH, **Kohn DH**, Atomic force microscopy to quantify local mechanical properties of engineered tissue, *Biomedical Materials: Drug Delivery, Implants, Tissue Engineering*, T Neenan, et al, Eds, MRS, Warrendale, PA, 137, 1999.
- Rajachar RM, Chow DL, Weissman NA, Curtis CE, **Kohn DH**, Use of acoustic emission to characterize focal and diffuse microdamage in Bone, *Acoustic Emission: Standards and Technology Update*, SJ Vahaviolos, Ed, ASTM, Phila., 3-21, 1999.
- Murphy WL, **Kohn DH**, Mooney DJ, Growth of continuous bone-like mineral within porous poly(lactic-co- glycolic acid) scaffolds in-vitro, *J Biomed Mater Res*, 50: 50-58, 2000.
- Pietrzak WS, Sarver DR, **Kohn DH**, Fatigue testing of bioabsorbable screws in a synthetic bone substitute, In: *Mechanical Testing of Bone and the Bone-Implant Interface*, YH An, RA Draughn, Eds, CRC Press, Boca Raton, FL, pp. 581-591, 2000.
- Timlin JA, Carden A, Morris MD, Rajachar RM, **Kohn DH**, Raman spectroscopic markers for fatigue-related bovine bone microdamage, *Anal Chem*, 72: 2229-2236, 2000.
- Murphy WL, Gilhool KA, **Kohn DH**, Mooney DJ, Effects of growth factor presence on mineralization of porous poly (lactide-co-glycolide) scaffolds in-vitro, *Mineralization in Natural & Synthetic Biomaterials*, P Li, et al, Eds, MRS, Warrendale, PA, 2000, pp. 347-352.
- Murphy WL, Peters MC, **Kohn DH**, Mooney DJ, Sustained release of vascular endothelial growth factor from mineralized poly(lactide-co-glycolide) scaffolds for tissue engineering, *Biomater*, 21: 2521-2527, 2000.
- Morris MD, Carden A, Rajachar RM, **Kohn DH**, Bone microstructure deformation observed by raman spectroscopy, In: *Biomedical Diagnostic, Guidance & Surgical-Assist Systems III*, T Vo-Dinh, et al, Eds, SPIE Press, Vol 4254, Bellingham, WA, 81-89, 2001.
- Rajacher RM, Carden A., Morris MD, **Kohn DH**, Ultrastructural-Level Characterization of Microdamage in Cortical Bone Using Raman Spectroscopy and WAXS, In: *Proceedings of the 2001 Bioengineering Conference*, BED-Volume 50, RD Kamm, et al., Eds, ASME, New York, pp. 309-310, 2001.
- Kohn DH**, Sarmadi M, Chow DL, Krebsbach PH, Effects of pH on human bone marrow stromal cells in culture: implications for tissue engineering of bone, *J Biomed Mater Res*, 60: 292-299, 2002.
- Kohn DH**, Implant and Bone Augmentation Materials, In: *Dental Materials and Their Selection*, 3rd Edition (Chapter 23), W.J. O'Brien, Ed., Quintessence, Chicago, pp. 298-312, 2002.
- Kohn DH**, Bioceramics, In: *Biomedical Engineers Handbook*, M Kutz, Ed, McGraw-Hill, NY, pp. 13.1-13.24, 2002.
- Morris, M.D., Carden, A., Rajachar, R.M., and **Kohn, D.H.**, "Effects of Applied Load on Bone Tissue as Observed by Raman Spectroscopy," In: *Biomedical Vibrational Spectroscopy II*, A. Mahadevan-Jansen, et al., Eds, SPIE Press, Volume 4614, Bellingham, WA, pp. 47-54, 2002.
- Carden A, Rajachar RM, Morris MD, **Kohn DH**, Ultrastructural Changes Accompanying the Mechanical Deformation of Bone Tissue: A Raman Imaging Study, *Calcified Tissue International*, 72:166-175, 2003..
- Morris MD, de Carmejane O, Carden A, Davis MK, Stixrude L, Tecklenburg M, Rajachar RM, **Kohn DH**, Application of high pressure raman spectroscopy to bone biomechanics, In: *Advanced Biomedical and Clinical Diagnostic Systems*, T Vo-Dinh, et al., Eds, SPIE Press, Vol 4958, Bellingham, WA, 2003.
- Morris MD, Finney WF, Rajachar RM, **Kohn DH**, Bone tissue ultrastructural response to elastic deformation probed by raman spectroscopy, *Faraday Discussions*, Volume 126, 2003.
- Jayasuriya AC, **Kohn DH**, Biomaterials for permanent reconstruction and temporary biological guidance, In: *Encyclopedia of Chemical Technology*, Wiley, NY, in press.

Rajachar RM, Chow DL, **Kohn DH**, Incipient fatigue damage mechanisms in bovine cortical bone as detected by acoustic emission, *J Biomech*, conditionally accepted.

C. Research Support

ACTIVE

R01-DE 13380-03 (PI: DH Kohn) NIH/NIDCR/NIAMS Three Dimensional Biomimetic Scaffolds for Functional Bone Tissue Engineering	04-01-01 to 03-31-06 \$697,500 TDC	20%
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The major goals of this project are to test the hypothesis that the extracellular microenvironment provided by a biomimetic ceramic modulates the ability of human bone marrow stromal cells to differentiate toward an osteoblast phenotype.

There is no budgetary or scientific overlap with any other grant.

US Army Bone Health and Military Readiness Research Program (PI: DH Kohn) US DoD Effects of Age and Exercise on Microdamage and Composition of Bone	05-01-03 to 04-30-07 \$524,149 TDC	10%
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The major goal is the examination of age and physical activity on whole bone mechanical and geometric properties, fatigue-induced microdamage and local composition of bone mineral and matrix.

There is no budgetary or scientific overlap with any other grant.

R01 DE 015411-01 (PI: DH Kohn) NIH/NIDCR Organic/Inorganic Hybrids to Guide Bone Regeneration	8/01/03 to 7/31/07 \$800,000 TDC	20%
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The major goals of this project are to synthesize hybrid biomaterials consisting of self-assembled bioactive mineral layers containing biologically active organic phases that can actively provide cues for stem cell differentiation.

There is no budgetary or scientific overlap with any other grant.

R01 DE 013608 (Co-I, Project Director; SJ Hollister, PI) NIH/NIDCR Engineering Joint Scaffolds for Concurrent Function and Regeneration	09-15-01 to 09-14-06 \$2,805,161 TDC/\$295,655 Kohn Sub-budget TDC	10%
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The major goal of this Biomedical Engineering Research Partnership is to engineer a TMJ condyle.

There is no budgetary or scientific overlap with any other grant.

T32 DE 07101-20 (Co-PI/Associate Director; PI: DJ Chiego) NIH/NIDCR Short-Term Training in Health Professional Schools	06-01-00 to 05-31-05 \$242,820 TDC	5%
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The major goal of this grant is to provide clinical students with opportunities for research rotations

There is no budgetary or scientific overlap with any other grant.

R01 DE 013386-04 (Co-I, PI: RT Franceschi) NIH/NIDCR Gene Therapy Approach for Engineering Craniofacial Bone	03-01-00 to 02-28-05 \$1,000,000 TDC	5%
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The major goals of this project are to use virally-transfected cells that overexpress BMPs as a platform for craniofacial engineering

There is no budgetary or scientific overlap with any other grant.

COMPLETED RESEARCH SUPPORT

IPA AWARD (PI)

NIH/NIDCR

The major goal of this project is to subsidize the PI's salary while on sabbatical in NIH intramural laboratories.

BES-9410303 (PI)

National Science Foundation

Microdamage and Fatigue Damage Accumulation in Compact Bone

Biomedical Research Award (PI)

Whitaker Foundation

Detection, Quantification and Analysis of Microdamage in Cortical Bone