



## John B. Brunski

Casual - Non-Exempt, Surgery - Plastic and Reconstructive Surgery

 NIH Biosketch available Online

 Curriculum Vitae available Online

---

### Bio

#### BIO

John B. Brunski is currently Senior Research Engineer in the Division of Plastic and Reconstructive Surgery, Department of Surgery, School of Medicine, Stanford University, Stanford, CA. From 1977 to December 2009, he was Professor in the Department of Biomedical Engineering at Rensselaer Polytechnic Institute in Troy, NY. He received his B.S. degree at the University of Pennsylvania, his M.S. degree at Stanford University, and his Ph.D. at the University of Pennsylvania, all in Metallurgy and Materials Science. Dr. Brunski's 1977 Ph.D. thesis identified factors responsible for development of fibrous tissue vs. bone at the oral implant interface, and it was the first doctorate degree to be granted for dental implant research at an engineering school in the US.

Dr. Brunski's research has largely focused on bioengineering aspects of dental and orthopaedic implant design, bone-implant interactions, and the biomechanics of bone healing. Dr. Brunski is one of the Principal Investigators of an ongoing R01 research grant from NIH to Stanford University and the University of Montreal entitled "Mechanobiology at healing bone-implant interfaces." Dr. Brunski has authored over 30 textbook chapters on oral implants, bone, and related topics, plus 125 papers and extended abstracts. He has also delivered over 160 public presentations on these and related topics at national and international meetings, including many keynote lectures. Over his career, Dr. Brunski has been the Principal Investigator or co-investigator on over 20 research grants.

For more than 10 years Dr. Brunski was a Consultant to the Dental Devices Panel of the FDA. From 2009-2012 he was a member of the Musculoskeletal Tissue Engineering (MTE) Study Section of the NIH. Dr. Brunski has also professionally consulted for over 20 legal firms and corporations on topics ranging from patent infringement to product design and product liability. Dr. Brunski serves as Section Editor for Biomechanics and Biomaterials for the International Journal of Oral and Maxillofacial Implants. He has also served on the editorial boards of Clinical Oral Implant Research, J Dent Research, J Biomechanics, and other journals, and has served as a reviewer for many other journals including Bone, J Orthopaedic Research, and J Biomechanical Engineering.

Dr. Brunski has received a number of awards for innovation and excellence in teaching and engineering education, including being a member of a 10-person Rensselaer team that won the first Boeing Outstanding Educator Award in 1995. Also, he was part of a Rensselaer faculty team that won the Premier Award for Excellence in Engineering Education Courseware, Dec. 2000, sponsored by NEEDS and John Wiley and Sons, as well as the 2001 American Society of Mechanical Engineers (ASME) Curriculum Innovation Award.

For his research, Dr. Brunski received the Isaiah Lew Memorial Research Award from the American Academy of Implant Dentistry Research Foundation in 2001, being only the third engineer to receive this award. In 2006, Dr. Brunski was appointed as the first William R. Laney Visiting Professor at the Division of Prosthodontics at the Mayo Foundation in Rochester, NY, and also received the Jerome M. and Dorothy Schweitzer Research Award from the Greater New York Academy of Prosthodontics, New York City, NY. In 2007 Dr. Brunski was the recipient of the Anders Tjellström Award from the Craniofacial Osseointegration

and Maxillofacial Prosthetics Rehabilitation Unit, Edmonton, Alberta, Canada. In 2008 he received the Astra Tech Scientific Award for Applied Research in Osseointegration.

## CURRENT ROLE AT STANFORD

Senior Research Engineer, Division of Plastic & Reconstructive Surgery, Dept. of Surgery

## HONORS AND AWARDS

- Isaiah Lew Memorial Research Award, American Academy of Implant Dentistry Research Foundation (2001)
- William R. Laney Visiting Professor Award, Mayo Clinic Foundation in Rochester, MN (2006)
- Jerome M. and Dorothy Schweitzer Research Award, Greater New York Academy of Prosthodontics, New York City, NY (2006)
- Anders Tjellström Award, Craniofacial Osseointegration and Maxillofacial Prosthetics Rehabilitation Unit, Alberta, Canada (2007)
- Astra Tech Scientific Award for Applied Research in Osseointegration, Astra Tech Implant Corporation (2008)

## EDUCATION AND CERTIFICATIONS

- B.S., University of Pennsylvania , Metallurgy & Materials Science (1970)
- M.S., Stanford University , Materials Science and Engineering (1972)
- Ph.D., University of Pennsylvania , Metallurgy and Materials Science (1977)

## PROJECTS

- Mechanobiology at Healing Bone-Implant Interfaces - Stanford University

## Professional

---

### WORK EXPERIENCE

- Professor Emeritus, Department of Biomedical Engineering, Rensselaer Polytechnic Institute, Troy NY - Rensselaer Polytechnic Institute (12/31/2009 - present)

### PROFESSIONAL AFFILIATIONS AND ACTIVITIES

- member, Orthopaedic Research Society (1988 - present)
- member, Academy of Osseointegration (1990 - present)

## Publications

---

### PUBLICATIONS

- **System for application of controlled forces on dental implants in rat maxillae: Influence of the number of load cycles on bone healing.** *Journal of biomedical materials research. Part B, Applied biomaterials*  
de Barros E Lima Bueno, R., Dias, A. P., Ponce, K. J., Brunski, J. B., Nanci, A.  
2019
- **Mechanical and Biological Advantages of a Tri-Oval Implant Design.** *Journal of clinical medicine*  
Yin, X., Li, J., Hoffmann, W., Gasser, A., Brunski, J. B., Helms, J. A.  
2019; 8 (4)
- **A Novel Osteotomy Preparation Technique to Preserve Implant Site Viability and Enhance Osteogenesis.** *Journal of clinical medicine*  
Chen, C. H., Coyac, B. R., Arioka, M., Leahy, B., Tulu, U. S., Aghvami, M., Holst, S., Hoffmann, W., Quarry, A., Bahat, O., Salmon, B., Brunski, J. B., Helms, et al  
2019; 8 (2)
- **A Thermal and Biological Analysis of Bone Drilling.** *Journal of biomechanical engineering*  
Aghvami, M., Brunski, J. B., Serdar Tulu, U., Chen, C., Helms, J. A.  
2018; 140 (10)

- **Bone healing response in cyclically loaded implants: Comparing zero, one, and two loading sessions per day** *JOURNAL OF THE MECHANICAL BEHAVIOR OF BIOMEDICAL MATERIALS*  
Bueno, R., Dias, A., Ponce, K. J., Wazen, R., Brunski, J. B., Nanci, A.  
2018; 85: 152–61
- **An osteopenic/osteoporotic phenotype delays alveolar bone repair.** *Bone*  
Chen, C., Wang, L., Serdar Tulu, U., Arioka, M., Moghim, M. M., Salmon, B., Chen, C., Hoffmann, W., Gilgenbach, J., Brunski, J. B., Helms, J. A.  
2018; 112: 212–19
- **Effects of Condensation on Peri-implant Bone Density and Remodeling** *JOURNAL OF DENTAL RESEARCH*  
Wang, L., Wu, Y., Perez, K. C., Hyman, S., Brunski, J. B., Tulu, U., Bao, C., Salmon, B., Helms, J. A.  
2017; 96 (4): 406-413
- **Relationships among Bone Quality, Implant Osseointegration, and Wnt Signaling.** *Journal of dental research*  
Li, J., Yin, X., Huang, L., Mouraret, S., Brunski, J. B., Cordova, L., Salmon, B., Helms, J. A.  
2017: 22034517700131-?
- **Effects of Condensation on Peri-implant Bone Density and Remodeling.** *Journal of dental research*  
Wang, L., Wu, Y., Perez, K. C., Hyman, S., Brunski, J. B., Tulu, U., Bao, C., Salmon, B., Helms, J. A.  
2016: 22034516683932-?
- **Axin2-expressing cells execute regeneration after skeletal injury** *SCIENTIFIC REPORTS*  
Ransom, R. C., Hunter, D. J., Hyman, S., Singh, G., RANSOM, S. C., Shen, E. Z., Perez, K. C., Gillette, M., Li, J., Liu, B., Brunski, J. B., Helms, J. A.  
2016; 6
- **Mechanoresponsive Properties of the Periodontal Ligament** *JOURNAL OF DENTAL RESEARCH*  
Huang, L., Liu, B., Cha, J. Y., Yuan, G., Kelly, M., Singh, G., Hyman, S., Brunski, J. B., Li, J., Helms, J. A.  
2016; 95 (4): 467-475
- **Rescuing failed oral implants via Wnt activation.** *Journal of clinical periodontology*  
Yin, X., Li, J., Chen, T., Mouraret, S., Dhamdhare, G., Brunski, J. B., Zou, S., Helms, J. A.  
2016; 43 (2): 180-192
- **Linking suckling biomechanics to the development of the palate.** *Scientific reports*  
Li, J., Johnson, C. A., Smith, A. A., Hunter, D. J., Singh, G., Brunski, J. B., Helms, J. A.  
2016; 6: 20419-?
- **Disrupting the intrinsic growth potential of a suture contributes to midfacial hypoplasia.** *Bone*  
Li, J., Johnson, C. A., Smith, A. A., Salmon, B., Shi, B., Brunski, J., Helms, J. A.  
2015; 81: 186-195
- **Multiscale Analyses of the Bone-implant Interface.** *Journal of dental research*  
Cha, J. Y., Pereira, M. D., Smith, A. A., Houschyar, K. S., Yin, X., Mouraret, S., Brunski, J. B., Helms, J. A.  
2015; 94 (3): 482-490
- **Molecular mechanisms underlying skeletal growth arrest by cutaneous scarring.** *Bone*  
Li, J., Johnson, C. A., Smith, A. A., Shi, B., Brunski, J. B., Helms, J. A.  
2014; 66: 223-231
- **Molecular mechanisms underlying skeletal growth arrest by cutaneous scarring.** *Bone*  
Li, J., Johnson, C. A., Smith, A. A., Shi, B., Brunski, J. B., Helms, J. A.  
2014; 66: 223-231
- **Biomechanical aspects of the optimal number of implants to carry a cross-arch full restoration** *EUROPEAN JOURNAL OF ORAL IMPLANTOLOGY*  
Brunski, J. B.  
2014; 7: S111-S131
- **Improving oral implant osseointegration in a murine model via Wnt signal amplification.** *Journal of clinical periodontology*  
Mouraret, S., Hunter, D. J., Bardet, C., Popelut, A., Brunski, J. B., Chaussain, C., Bouchard, P., Helms, J. A.  
2014; 41 (2): 172-180

- **A pre-clinical murine model of oral implant osseointegration.** *Bone*  
Mouraret, S., Hunter, D. J., Bardet, C., Brunski, J. B., Bouchard, P., Helms, J. A.  
2014; 58: 177-184
- **A pre-clinical murine model of oral implant osseointegration** *BONE*  
Mouraret, S., Hunter, D. J., Bardet, C., Brunski, J. B., Bouchard, P., Helms, J. A.  
2014; 58: 177-184
- **Effects of Biomechanical Properties of the Bone-Implant Interface on Dental Implant Stability: From In Silico Approaches to the Patient's Mouth** *ANNUAL REVIEW OF BIOMEDICAL ENGINEERING, VOL 16*  
Haiat, G., Wang, H., Brunski, J.  
2014; 16: 187-213
- **Gene expression profiling and histomorphometric analyses of the early bone healing response around nanotextured implants** *NANOMEDICINE*  
Wazen, R. M., Kuroda, S., Nishio, C., Sellin, K., Brunski, J. B., Nanci, A.  
2013; 8 (9): 1385-1395
- **Micromotion-induced strain fields influence early stages of repair at bone-implant interfaces.** *Acta biomaterialia*  
Wazen, R. M., Currey, J. A., Guo, H., Brunski, J. B., Helms, J. A., Nanci, A.  
2013; 9 (5): 6663-6674
- **Primary cilia act as mechanosensors during bone healing around an implant** *MEDICAL ENGINEERING & PHYSICS*  
Leucht, P., Monica, S. D., Temiyasathit, S., Lenton, K., Manu, A., Longaker, M. T., Jacobs, C. R., Spilkere, R. L., Guo, H., Brunski, J. B., Helms, J. A.  
2013; 35 (3): 392-402
- **Nanoscale surface modifications of medically relevant metals: state-of-the art and perspectives** *NANOSCALE*  
Variola, F., Brunski, J. B., Orsini, G., de Oliveira, P. T., Wazen, R., Nanci, A.  
2011; 3 (2): 335-353
- **The acceleration of implant osseointegration by liposomal Wnt3a** *BIOMATERIALS*  
Popelut, A., Rooker, S. M., Leucht, P., Medio, M., Brunski, J. B., Helms, J. A.  
2010; 31 (35): 9173-9181
- **Molecular analysis of healing at a bone-implant interface** *JOURNAL OF DENTAL RESEARCH*  
Colnot, C., Romero, D. M., Huang, S., Rahman, J., Currey, J. A., Nanci, A., Brunski, J. B., Helms, J. A.  
2007; 86 (9): 862-867
- **FAK-Mediated Mechanotransduction in Skeletal Regeneration** *PLOS ONE*  
Leucht, P., Kim, J., Currey, J. A., Brunski, J., Helms, J. A.  
2007; 2 (4)
- **Effect of mechanical stimuli on skeletal regeneration around implants** *BONE*  
Leucht, P., Kim, J., Wazen, R., Currey, J. A., Nanci, A., Brunski, J. B., Heims, J. A.  
2007; 40 (4): 919-930