

ELLEN KUHL, PH.D.

Associate Professor
Departments of Mechanical Engineering
Bioengineering, and Cardiothoracic Surgery
Stanford University, Stanford, CA 94305

Professional Preparation

TU Kaiserslautern, Germany	Mechanical Engineering	Habilitation	2004
University of Stuttgart, Germany	Civil Engineering	Ph.D.	2000
Leibniz University of Hannover, Germany	Civil Engineering	M.S.	1995
Leibniz University of Hannover, Germany	Computational Engineering	B.S.	1993

Appointments

01/10-	Associate Professor, Mechanical Engineering, Bioengineering (courtesy), and Cardiothoracic Surgery (courtesy), Stanford University, Stanford, CA
01/07-12/09	Assistant Professor, Mechanical Engineering, Stanford University, Stanford, CA
11/02-10/05	Assistant Professor, Mechanical Engineering, TU Kaiserslautern, Germany
04/01-10/02	Habilitation Researcher, Mechanical Engineering, TU Kaiserslautern, Germany
04/00-03/01	Postdoctoral Fellow, Aerospace Engineering, TU Delft, The Netherlands

Honors and Awards

CAREER Award, National Science Foundation NSF (2010), Hellman Faculty Scholar (2009), Habilitation Research Fellowship, German Science Foundation DFG (2001), Graduate Research Fellowship, German Science Foundation DFG (1996)

Professional Societies

American Heart Association (AHA), American Society of Engineering Education (ASEE), American Society of Mechanical Engineers (ASME), Biomedical Engineering Society (BMES), Biophysical Society (BPS), European Society of Biomechanics (ESB), International Association of Applied Mathematics and Mechanics (GAMM), International Association for Computational Mechanics (IACM), US Association for Computational Mechanics (USACM)

Related Publications

underlined: Kuhl's students and postdocs

- Wong J, Abilez OJ, **Kuhl E**. Computational optogenetics - A novel continuum framework for the photoelectrochemistry of living systems. J Mech Phys Solids, doi:10.1016/j.jmps.2012.02.004.
- Abilez OJ, Wong J, Prakash R, Deisseroth K, Zarins CK, **Kuhl E**. Multiscale computational models for optogenetic control of cardiac function. Biophys J, 2011;101:1326-1334.
- Wong J, Goktepe S, **Kuhl E**. Computational modeling of electrochemical coupling: Ionic models for cardiac electrophysiology. Comp Meth Appl Mech Eng, 2011;200:3139-3158.
- Kotikanyadanam M, Goktepe S, **Kuhl E**. Computational modeling of electrocardiograms - A finite element approach towards cardiac excitation. Int J Num Meth Biomed Eng. 2010;26:524-533.
- Goktepe S, Abilez OJ, Parker KK, **Kuhl E**. A multiscale model for eccentric and concentric cardiac growth through sarcomerogenesis. J Theor Bio, 2010;265:433-442.

Additional Publications

underlined: Kuhl's students and postdocs

- Chen MQ, Wong J, **Kuhl E**, Giovangrandi L, Kovacs GTA. Characterization of conduction in cardiomyocyte co-cultures. Comp Meth Biomech Biomed Eng, doi:10.1080/10255842.2011.615310.
- Tsamis A, Bothe W, Kvitting JP, Swanson JC, Miller DC, **Kuhl E**. Active contraction of cardiac muscle. J Mech Behavior Biomed Mat, 2011;4:1167-1176.
- Rausch MK, Dam A, Goktepe S, Abilez OJ, **Kuhl E**. Computational modeling of growth: Systemic and pulmonary hypertension. Biomech Mod Mechanobio, 2011;10:799-811.
- Kvitting JP, Bothe W, Goktepe S, Rausch MK, Swanson JC, **Kuhl E**, Ingels NB, Miller DC. Anterior mitral leaflet curvature during the cardiac cycle. Circulation, 2010;122:1683-1689.
- Goktepe S, **Kuhl E**. Computational modeling of electrophysiology: A novel finite element approach. Int J Num Meth Eng. 2009; 79:156-178.

Synergistic Activities

- Editorial Board: International Journal for Numerical Methods in Biomedical Engineering, Computer Methods in Biomechanics and Biomedical Engineering
- Reviewer: American Journal of Physiology Heart and Circulatory Physiology, Annals of Biomedical Engineering, Archive of Applied Mechanics, Biomechanics and Modeling in Mechanobiology, Computational Materials Science, Computational Mechanics, Computer Methods in Applied Mechanics and Engineering, Computer Methods in Biomechanics and Biomedical Engineering, Continuum Mechanics and Thermodynamics, Encyclopedia of Computational Mechanics, Engineering and Computational Mechanics, Engineering Computations, Engineering with Computers, European Journal of Mechanics, Experimental Biology and Medicine, Frontiers in Computational Physiology and Medicine, International Journal for Numerical and Analytical Methods in Geomechanics, International Journal for Numerical Methods in Biomedical Engineering, International Journal for Numerical Methods in Engineering, International Journal of Engineering Science, International Journal of Multiscale Computational Engineering, International Journal of Non-Linear Mechanics, International Journal of Solids and Structures, International Journal of Structural Changes in Solids, Journal of Applied Mechanics, Journal of Biological Dynamics, Journal of Biomechanics, Journal of Computational Physics, Journal of Engineering Mechanics, Journal of Mechanics of Materials and Structures, Journal of Structural Changes in Solids, Journal of the Mechanical Behavior of Biomedical Materials, Journal of the Mechanics and Physics of Solids, Journal of Theoretical Biology, Mechanics Research Communications, Medical Engineering and Physics, PLoS Computational Biology, PLoS ONE, Proceedings in Applied Mathematics and Mechanics, Proceedings of the Royal Society London, Philosophical Magazine, Technische Mechanik
- Scientific Reviewer: National Science Foundation (NSF: CMMI-MOM, CMMI-NanoBio, CMMI-BMMB, CBET-BBBE, CDI, EFRI, CAREER), German Science Foundation (DFG), Israel Science Foundation (ISF), Swiss National Science Foundation (SNF)
- Guest Editor: Recent Advances on the Biomechanics of Growth and Remodeling, Mechanics Research Communications, 2012, Active Tissue Modeling - From Single Muscle Cells to Muscular Contraction, International Journal of Multiscale Computational Engineering, in press, 2010; Mechanics in Biology: Cells and Tissues, Philosophical Transactions of the Royal Society London, Vol 369, 2009; Computer Simulations of Mechanobiology, Computer Methods in Biomechanics and Biomedical Engineering, Vol 11, 2008.
- Workshop, Symposia, and Session Organization: IUTAM Symposium on Computer Methods in Biomechanics: From Nano to Macro, Stanford, CA, 2011; Minisymposium on Computational Modeling of Electro-Active Materials, WCCM IX, Adelaide, Australia, 2010; Minisymposium on Active Tissue Modeling from Single Muscle Cells to Muscular Contraction, USNCCM X, Columbus, OH, 2009, IUTAM Symposium on Cellular, Molecular and Tissue Mechanics, Woods Hole, MA, 2008; Miniworkshop on the Mathematics of Growth and Remodeling of Soft Biological Tissues, Oberwolfach, Germany, 2008; Minisymposium on Growth and Remodeling, USNCCM IX, San Francisco, CA, 2007; Minisymposium on Multiscale Modeling of Materials, USNCCM IX, San Francisco, CA, 2007; Biomechanics, GAMM Annual Meeting, Berlin, 2006.

Collaborators and Students

- Collaborators: Craig Miller, Christopher Zarins, Ramin Beygui, Joseph Wu, Karl Deisseroth, Gregory Kovacs, Tom Andriacchi (all Stanford), Julius Guccione (UCSF), Mark Ratcliffe (UCSF), Michael Ortiz (Caltech), Kevin Kit Parker (Harvard), Arun Gosain (Case Western), Ellen Arruda (UMich), Krishna Garikipati (UMich), Garth Wells (Cambridge, UK), Harm Askes (USheffield, UK), Gerhard Holzapfel (TU Graz, Austria), Davide Ambrosi (Politecnico di Torino, Italy), Serdar Goktepe (METU, Turkey), Paul Steinmann (UErlangen, Germany), Andreas Menzel (TU Dortmund, Germany), Markus Bol (TU Braunschweig, Germany)
- Current Students: Alexander Zollner, Adrian Buganza Tepole, Manuel Rausch, Jonathan Wong
- Previous Students and Postdoc: Alkiviadis Tsamis (now Postdoc), Serdar Goktepe (now Assistant Professor), Philippe Jager, Holger Meier, Grieta Himpel, Julia Mergheim (now Assistant Professor), Swantje Bargmann (now Full Professor)