

# ROBERT J. FULL

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## EDUCATION

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<b>PhD</b>	State University of New York at Buffalo, Biology Dissertation: "Energetics of Invertebrate Terrestrial Locomotion" Committee Chair: Clyde F. Herreid	1984
<b>MA</b>	State University of New York at Buffalo	1982
<b>BA</b>	State University of New York at Buffalo Graduated <i>Summa Cum Laude</i>	1979

## PROFESSIONAL POSITIONS

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Howard Hughes Medical Institute Professor University of California, Berkeley	2017-present
Goldman Professor University of California, Berkeley	1999-01
Chancellor's Professor University of California, Berkeley	1996-99
Professor University of California, Berkeley	1995-present
Associate Professor University of California, Berkeley	1991-95
Assistant Professor University of California, Berkeley	1986-91
Postdoctoral Lectureship The University of Chicago	1984-86
National Science Foundation Research Assistant State University of New York at Buffalo	1979-84
Teaching Assistant State University of New York at Buffalo	1979-84

## HONORS AND AWARDS

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Howard Hughes Medical Institute Professorship	2017
American Academy of Arts and Sciences Fellow	2016
California Academy of Sciences Fellow	2014
Technology, Entertainment and Design (TED) top 100 speaker (30 <sup>th</sup> Anniversary, Vancouver, Canada)	2014
American Association for the Advancement of Science Fellow	2011

National Academy of Sciences Mentor in the Life Sciences	2006
Distinguished Alumni Award, State University of New York at Buffalo	2005
Who's Really Who (Ranked 316 among 1,000 most creative individuals in U.S.)	2002
Goldman Professorship, U.C. Berkeley	1999-01
Chancellor's Professorship, U.C. Berkeley	1996-99
Distinguished Teaching Award, U.C. Berkeley	1996
G.W. Thorn Distinguished Alumni, State University of New York at Buffalo	1995
National Academy of Sciences Invited Speaker, Annual Meeting	1995
Frontiers of Science Speaker, National Academy of Sciences	1995
Presidential Young Investigator Award, NSF	1990
Excellence in Teaching Award for Graduate Students, S.U.N.Y. Buffalo	1983
Master's Scholar Award, Northeastern Association of Graduate Schools	1982
<i>Sigma Xi</i> , Willard B. Elliot Award, Outstanding Research Accomplishments	1982
<i>Phi Beta Kappa</i> , State University of New York at Buffalo	1979
<i>Summa Cum Laude</i> , State University of New York at Buffalo	1979
Outstanding Undergraduate Senior Award - Biology, S.U.N.Y Buffalo	1979
<i>Phi Eta Sigma</i> - Honor Society, State University of New York at Buffalo	1979

#### **PROFESSIONAL AFFILIATIONS**

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Society of Integrative and Comparative Biology  
 (Formerly the American Society of Zoologists)  
 American Society of Biomechanics  
 American Physiological Society  
 American Association for the Advancement of Science  
*Sigma Xi* - Scientific Research Society  
 Society of Experimental Biology  
 International Society of Neuroethology

#### **PATENTS**

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Inventors: Full, R. J., Fearing, R., Kenny, T. & Autumn, K. 2011. "Adhesive microstructure and method of forming same." Japanese National Patent No. 2001-550314. Based on International Patent Application No. PCT/US2000/033495.

Inventors: Full, R. J., Fearing, R., Kenny, T. & Autumn, K. 2007. "Adhesive microstructure and method of forming same (part 4)". United States Patent No. 7,828,982

Inventors: Full, R. J., Fearing, R., Kenny, T. & Autumn, K. 2007. "Adhesive microstructure and method of forming same (part 3)". United States Patent No. 7,229,685.

Inventors: Full, R. J., Fearing, R., Kenny, T. and Autumn, K. 2006. "Adhesive microstructure and method of forming same (part 2)". United States Patent No. 7,011,723.

Inventors: Full, R.J., Fearing, R., Kenny, T. and Autumn, K., May 2004. "Adhesive Microstructure and Method of Forming the Same." United States Patent No. 6,737,160.

Ranked among top 10 Nanotechnology Patents in 2007.

## PUBLICATIONS

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### JOURNAL PUBLICATIONS

- Jayaram, K., Mongeau, J., Mohapatra, A., McRae, B., Birkmeyer, P., Fearing, R.S., and Full, R.J. 2018. Transition by head-on collision: Mechanically mediated maneuvers in cockroaches and small robots. *J. Royal Soc. Interface*. 14 February. DOI: 10.1098/rsif.2017.0664.
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- Li, C., Kessens, C. C., Fearing, R. S., and Full, R. J. 2017. Mechanical principles of dynamic terrestrial self-righting using wings. *Advanced Robotics*, 31(17), 881-900.
- Libby, T., Johnson, A.M., Chang-Siu, E., Full, R.J. and Koditschek, D.E., 2016. Comparative design, scaling, and control of appendages for inertial reorientation. *IEEE Transactions on Robotics*, 32(6), pp.1380-1398.
- Jayaram, K. and Full, R.J. 2016. Cockroaches traverse crevices, crawl rapidly in confined spaces, and inspire a soft, legged robot. *PNAS*, 113(8): E950-E957.
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- Full, R.J., Dudley, R., Koehl, M.A.R., Libby, T., and Schwab, C. 2015. An interdisciplinary learning laboratory course facilitating epistemological development, mutualistic teaming and original discovery. *Integrative and Comparative Biology*. doi: 10.1093/icb/icv095.
- Qian, F., Zhang, Korff, W., Umbanhowar, P., Full, R.J., and Goldman, D. 2015. Principles of foot design in robots and animals determining terradynamic performance on flowable ground. *Bioinspiration & Biomimetics*. 10(4): 046003.
- Mongeau, J., Sponberg, S.N., Miller, J.P., Full, R.J. 2015. Sensory processing within cockroach antenna enables rapid implementation of feedback control for high-speed running maneuvers. *J. Exp. Biol.* 218(15): 2344-2354. doi: 10.1242/jeb.118604.
- Li, C., Pullin, A.O., Haldane, D.W., Lam, H.K., Fearing, R.S., and Full, R.J. 2015. Terradynamically streamlined shapes in animals and robots enhance traversability through densely cluttered three-dimensional terrain. *Bioinspiration & Biomimetics*. 10(4): 046003.
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- Gillies, A.G., Henry, A., Lin, H., Ren, A., Shiuan, K., Fearing, R.S., and Full, R.J. 2014. Gecko toe and lamellar shear adhesion on macroscopic, engineered rough surfaces. *J. Exp. Biol.* 217, 283-289. doi: 10.1242/jeb.092015.

- Mongeau, J., Demir, A., Lee, J., Full, R.J., and Cowan, N.J. 2013. Locomotion-mediated active sensing with sensor reconfiguration *via* passive mechanics. *J. Exp. Biol.* 216, 4530-4541. doi:10.1242/jeb.083477.
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- Mongeau, J., McRae, B., Jusufi, A., Birkmeyer, P., Hoover, A., Fearing, R.S., and Full, R.J. 2012. Rapid inversion: Running animals and robots swing like a pendulum under ledges. *PLoS ONE*. 7(6): E38003.
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- Full, R.J. 2001. Using Biological Inspiration to Build Artificial Life That Locomotes. In: *Evolutionary Robotics From Intelligent Robotics to Artificial Life*, International Symposium, Tokyo, Japan, Proceedings. Lecture Notes in Computer Science. (ed. T. Gomi), Springer-Verlag Berlin, pp.110-120.
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## **RESEARCH PRESENTATIONS AND INVITED LECTURES**

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### INVITED INTERNATIONAL SYMPOSIA AND PRESENTATIONS

- United States. *Plenary Lecture*, International Conference on Living Machines. “The Challenges of Advancing BioDesign Principles, Processes, and Inclusive Excellence.” Stanford University. (Stanford, CA) 2017
- England. Cambridge Philosophical Society. New Frontiers in Robotics. “The Challenges of Bioinspired Robotics.” Cambridge University. (Cambridge, UK) 2017
- Switzerland. Ecoles Polytechnique Fédérale de Lausanne. Reconfigurable Robotics Laboratory. “BioMotion Science: Leapin’ Lizards, Compressed Cockroaches and Smart Squirrels Inspire Robots.” (Lausanne, Switzerland) 2017
- United States. *Plenary Lecture*, 7<sup>th</sup> International Conference on Adaptive Motion of Animals and Machines. “Motion Science of Animals and Machines - An Exemplar of Convergence.” (Cambridge, MA) 2015
- United States. IEEE International Conference on Robotics and Automation. Workshop on Robotics Inspired Biology. “Challenges of Bioinspired Robotics and Robot Enabled Biology.” (Seattle, WA) 2015
- Switzerland. *Plenary Lecture*, 2<sup>nd</sup> The Biomimicry Europe Innovation and Finance Summit. “The Challenges of Biological Inspiration: From Idea to Innovation.” (Zurich, Switzerland) 2014
- Spain. *Plenary Lecture*, 13<sup>th</sup> International Conference on Simulation of Adaptive Behavior. “Principles of Robustness in Motion Science of Animals, Animations and Robots.” (Castellón, Spain) 2014

United States. <i>Symposium Co-organizer (2), Chair and Introduction, 7<sup>th</sup> World Congress of Biomechanics. “Design of Feet in Relation to Locomotion and Maneuvering on Challenging Terrain.”</i> (Boston, USA)	2014
China. <i>Plenary Lecture, 4<sup>th</sup> International Conference on Bionic Engineering. “Biological Inspiration: How We Learn from Nature to Design Robots, Adhesives and Exoskeletons.”</i> (Nanjing, PRC)	2013
England. Royal Veterinary College. “Robustness – Inspiration for the Next Generation Robot.” (London, UK)	2013
England. <i>Plenary Lecture, Living Machines, 2<sup>nd</sup> International Conference. “Robustness – Inspiration for the Next Generation Robot.”</i> (London, UK)	2013
England. Cambridge University. Department of Zoology. “Robustness – Inspiration for the Next Generation Robot.” (Cambridge, UK)	2013
15 <sup>th</sup> International Conference on Climbing and Walking Robots and the Support Technologies for Mobile Machines (CLAWAR). <i>Plenary &amp; Meeting Opening Lecture. “Robustness in Animals as Inspiration for the Next Generation Robot”</i> Johns Hopkins University. (Baltimore, MD)	2012
United States. <i>Plenary Talk. “Robustness in Animals as Inspiration for the Next Generation Robot.”</i> IEEE/RSJ International Conference on Intelligent Robots and Systems. (San Francisco, USA)	2011
United States. NSF Sponsored U.S.-Japan Workshop on Bio-inspired Engineering of Next-Generation Sensors and Actuators. “Cautions on extracting principles from Nature to inspired the design of sensors and actuators.” (Berkeley, USA)	2011
Germany. <i>Plenary Lecture. BLOKON. International Industrial Convention of Biomimetics. “How We Learn from Nature to Design Robots, Exoskeletons and Adhesives.”</i> (Berlin, GER)	2011
England. <i>Meeting Opening Plenary Lecture. Cold Spring Harbor, Wellcome Trust Conference on Engineering Principles in Biological Systems. “Neuromechanical Systems Biology: A Tale of Tails.”</i> (Cambridge, UK)	2009
England. Cambridge University. Department of Zoology. “Neuromechanical Systems Biology. Gripping Geckos, Bipedal Bugs and Galloping Ghost Crabs.” (Cambridge, UK)	2009
Switzerland. <i>Keynote Address. Ecoles Polytechnique Fédérale de Lausanne Research Day. “Biological Inspired Robots.”</i> (Lausanne, Switzerland)	2009
Switzerland. Ecoles Polytechnique Fédérale de Lausanne. Summer Research Institute Seminar Series. “Bipedal Bugs, Galloping Ghosts and Gripping Geckos: Biological Inspiration.” (Lausanne, Switzerland)	2008
Switzerland. Workshop on Control of Locomotion: From Animals to Robots. Meeting of Robotics: Science & Systems. “Biological Perspective on Neuromechanical Control Architectures.” (Zurich, Switzerland)	2008
England. Royal Veterinary College. “Bipedal Bugs, Galloping Ghosts and Gripping Geckos: Neuromechanical Systems Biology.” (London, UK)	2008
England. <i>Meeting Opening Plenary Lecture. Biological Approaches for Engineering. “The Challenges of Providing Biological Inspiration.”</i> (Southampton, UK)	2008

Italy. Advanced Robotics Technology and Systems Laboratory. The Sant' Anna School of Advanced Studies of Pisa. "Neuromechanical Systems Biology." (Pisa, ITA)	2007
Italy. IEEE International Conference on Robotics and Automation. Workshop on Biomimetic Robotics. "From Bio-inspiration to Robotic Implementation". (Rome, Italy)	2007
England. University of Bath Workshop. Biologically Inspired Robots. (Bath, UK)	2004
Japan. <i>Keynote Address</i> . 2 <sup>nd</sup> International Symposium on Adaptive Motion of Animals and Machines. "Biorobotics in the Age of Integration." (Kyoto, Japan)	2003
Canada. World Congress of Biomechanics. Symposium on <i>Self-Stability</i> . "Scaling of Damping: Implications for Stability." (Calgary, Canada)	2002
Germany. Symposium on <i>Systems Approach to Motor Behavior</i> . "BioInspiration: From Template to Anchor." (Bielefeld, Germany)	2002
Germany. "Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspiration for Animation, Adhesives and Robots." Berlin Institute of Advanced Studies. (Berlin, Germany)	2002
Japan. Symposium on Evolutionary Robotics From Intelligent Robotics to Artificial Life "Using Biological Inspiration to Build Artificial Life that Locomotes." (Tokyo, Japan)	2001
Germany. <i>Keynote Address</i> . 2 <sup>nd</sup> International Conference on Motion Systems. Friedrich-Schiller-Universitat. "Control and Stability: From Galloping Ghosts to Gripping Geckos." (Jena, Germany)	2001
England. Society of Experimental Biology. Symposium on Mechanical Function of Muscle: Molecules to Movement. "The role of muscle in the control of dynamically coupled systems." (Exeter, England)	2000
Japan. Symposium at International Biological Award Presentation supported by the Emperor of Japan and the Japan Society for the Promotion of Science (JSPS). "Neuromechanics: Lessons from Many-Legged Locomotors." (Nagoya, Japan)	1999
Scotland. Symposium on Design of Life: The Science of Biomechanics. Society of Experimental Biology. "Biomechanical templates and anchors: Invertebrate legged locomotion on land." (Edinburgh, Scotland)	1999
Scotland. Symposium on Biomechanics and Behavior. Society of Experimental Biology. "Intermittent Work Alters Distance Capacity." (Edinburgh, Scotland)	1999
England. Symposium on Neuromechanics. Society of Experimental Biology "The role of the mechanical system in the neuromuscular control of arthropod walking and running." (York, UK)	1998
Germany. <i>Keynote Address</i> . International Conference on Motion Systems. Friedrich-Schiller-Universitat. "The role of the mechanical system in control." (Jena, Germany)	1997
Mexico. Neural Control of Movement Conference. Workshop. "Human locomotion: What should our next step be?" (Cancun, Mexico)	1997

- Canada. Intersociety Conference and the American Physiological Society. Symposium on linking muscle mechanics to energetics: from cross-bridge to locomotion. The Integrative Biology of Exercise. “3D Dynamic models: Multiple muscle systems to whole body terrestrial locomotion.” (Vancouver, Canada) 1996
- England. *Symposium Organizer*. Symposium on Comparative physiology and robotics. 4<sup>TH</sup> International Congress of Comparative Physiology and Biochemistry sponsored by the International Union of Biological Sciences. “Biological inspiration toward the design of hexapedal robots: stability and maneuverability.” (Birmingham, UK) 1995
- USSR. Symposia on Current concepts in gravitational biology. International Union of Physiological Sciences. Meeting on Gravitational Biology. “Comparative animal motility and gravity.” (Leningrad, U.S.S.R.) 1990
- Finland. Proceeding of the International Union of Physiological Sciences, XXXI Congress. “Hot hexapedal runners: exercise induced heat production in the American cockroach.” (Helsinki, Finland) 1989
- Austria. International Symposia on *Energy transformation in cells and animals*. 10<sup>th</sup> Conference of the European Society of Comparative Physiology and Biochemistry. “Bouncing endothermic insects.” (Innsbruck, Austria) 1988
- Canada. University of British Columbia. Department of Zoology. “Terrestrial locomotion energetics and performance: From running sideways to exercising without lungs.” (Vancouver, Canada) 1988
- Canada. Proceeding of the International Union of Physiological Sciences, XXX Congress. “Energetics of multi-legged locomotion.” (Vancouver, Canada) 1986
- West Germany. Max Planck Institut. “Energetics and endurance in arthropods and some lower vertebrates.” (Goettingen, West Germany) 1985

#### NATIONAL – INVITED SYMPOSIA AND PRESENTATIONS

- Bay Area Robotics Symposium. *Keynote Speaker*. “*Grand Challenges of Robotics*.” (Berkeley, CA) 2017
- Workshop on Biological Collections as a Resource for Technical Innovation. *Keynote Speaker*. Smithsonian National Museum of Natural History. “Bringing Museum Specimens to Life: Opportunities and Challenges to Bio-inspired Engineering.” (Washington, DC) 2016
- Future Directions Workshop on Foundations of Intelligent Sensing, Action and Learning. Sponsored by the Basic Research Office of the Assistant Secretary of Defense for Research and Engineering, “Capabilities Inspired from Motion Science of Animals.” University of Pennsylvania (PA) 2015
- Santa Fe Institute. Annual Science Board Symposium. “Robustness in Complex Environments: Leaping lizards, crashing cockroaches, and running robots.” (Santa Fe, NM) 2015
- International Society of Optics and Electronics (SPIE). Symposium on Defense and Security. Micro- and Nanotechnology Sensors, Systems, and

Applications VII. "Bio-inspired principles of terrestrial motion science." (Baltimore, MD)	2015
San Diego Zoo. <i>Plenary Lecture</i> . 4 <sup>th</sup> Annual Conference on Biomimicry: Accelerating the Development of Nature's Solutions. "The Challenges of Biological Inspiration: From Idea to Innovation." (San Diego, CA)	2013
ARL Colloquium. "Biological Inspiration: How We Learn from Nature to Design the Next Generation of Devices." (Adelphi, MD)	2013
American Association of Advancement of Sciences – Local. Inaugural Meeting. <i>Invited Speaker</i> . "Curiosity-based Research: Animals, Robots & Adhesives" (Mountain View, CA)	2013
MAST Micromechanics Workshop. "Ambulation: Biological Mechanics" University of Maryland. (College Park, MD)	2012
Wyss Institute. <i>Keynote Lecture</i> . Symposium on Rhythm & Noise. Harvard University. "Neuromechanical Control Architectures: Diversity Enables Discovery." (Cambridge, MA)	2012
National Science Foundation. IGERT PI Meeting. "Leaping lizards, bio- inspired robots and dinosaurs." (Washington, DC)	2012
National Science Foundation / Army Research Office. <i>Meeting Opening Presentation</i> . Workshop on Why Animals are Better: Integration of Physics, Engineering and Biology. (Washington, DC)	2012
National Science Foundation / Army Research Office. Workshop on Why Animals are Better: Integration of Physics, Engineering and Biology. "Robustness." (Washington, DC)	2012
BioMechanical Engineering Conference at Stanford. Keynote Speaker. Stanford University. "Leaping Lizards, Gripping Geckos & Crashing Cockroaches Inspire Mobile Robots." (Stanford, CA)	2012
CalTech Neuromorphic Engineering Student Society Retreat. "Neuromechanical Systems Biology." (Dana Point, CA)	2011
Cold Spring Harbor. "Neuromechanical Systems Biology." (Cold Spring Harbor, NY)	2011
San Diego Zoo. <i>Plenary Lecture</i> . Symposium on Biomimicry. "Making it Real: From Idea to Innovation." (San Diego, CA)	2011
Micro-Autonomous Systems Technology (MAST). Collaborative Technology Alliance (CTA). Center on Microsystems Mechanics. Mobile Robotics Inc. "Ambulation." (Joppa, MD)	2011
Society of Integrative and Comparative Biology. Symposium on Bioinspiration: Applying Mechanical Design to Experimental Biology. "Role of robustness in running: bio- and bio-inspired exoskeletons." (Salt Lake City, UT)	2011
Entomological Society of America. Symposium on Bio-Inspiration. "Biological Inspiration: Running Robotics, Artificial Muscles and Computer Animation" (San Diego, CA)	2010
Humanitarian Demining. Radcliffe Institute for Advanced Study. Harvard University. "Bio-inspired mobility in challenging terrains." (Cambridge, MA)	2009

- Biotechnology Symposium. Special Session on Interfacing Biotechnology and Engineering. California State University, Los Angeles. “Biological Inspiration: Robots, Artificial Muscles and Gecko-inspired Adhesives.” (Los Angeles, CA) 2009
- Micro-Autonomous Systems Technology (MAST). Collaborative Technology Alliance (CTA). Center on Microsystems Mechanics. Univ. of Maryland. “Ambulation.” (College Park, MD) 2008
- Mathematical Biosciences Institute. *Co-organizer*. Symposium on Neuromechanics of Locomotion. Ohio State University. “Biological Perspective on Neuromechanical Control Architectures.” (Columbus, OH) 2008
- Bio-X Symposium. Life in Motion. Stanford University. “Using Dynamic Models to Test Neuromechanical Control Hypotheses.” (Stanford, CA) 2007
- Cold Spring Harbor Banbury Center. Design Principles in Biological Systems. “Challenges of an Integrative Systems Biology.” (Cold Spring Harbor, NY) 2007
- American Association of Advancement of Sciences Annual Meeting. Sustainable Partners in Search and Rescue, Environmental Monitoring and Exploration.” Robotics Seminar Part I: Robots - Our Future's Sustainable Partner. “Biologically Inspired Robot Motion.” (San Francisco, CA) 2007
- National Science Foundation. *Workshop Speaker and Session Leader* at National Research Council Committee on Conceptual Basis of Biology for the 21<sup>st</sup> Century. “Toward an Integrative Biology.” (Arlington, VA) 2006
- Society of Integrative and Comparative Biology. Symposium on Biomechanics and Neuromuscular Control. “Principles of Neuromechanics: Integration of Experiments, Mathematical and Physical Models.” (Orlando, FL) 2006
- Google Science Foo. Google Inc. “Bipedal Bugs, Galloping Ghosts and Gripping Geckos Bio-Inspired Computer Animation, Robotics, Artificial Muscles and Adhesives.” (Mountain View, CA) 2006
- Symposium on Biologically-inspired Design and Engineering. *Keynote Address*. Georgia Institute of Technology. “Galloping Ghosts, Gripping Geckos and Bipedal Bugs: Bio-Inspired Robots, Adhesives and Artificial Muscles” (Atlanta, GA) 2006
- Progress in Motor Control V - A Multidisciplinary Approach. Penn State University. “Neuromechanical Integration: Templates and Anchors.” (College Park, PA) 2005
- Robotics Institute 25<sup>th</sup> Anniversary. *Plenary Lecture*. Robots and Thought. Grand Challenges Symposium. Carnegie Mellon University. “Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspired Computer Animation, Robotics, Artificial Muscles and Adhesives.” (Pittsburgh, PA) 2005
- Defense Advanced Research Projects Agency. Biodynotics Program. “Biological Inspiration for a Dynamic Climbing Robot.” (Pittsburgh, PA) 2005
- National Science Foundation. U.S. Automation from the Leading Edge of Research. Robots: Highlighting The WTEC International Study of Robotics. RiSE and RHex Demonstration. (Arlington, VA) 2005

- Inaugural Robotics: Science and Systems Conference. *Meeting Opening Plenary Lecture*. MIT. “Biological Inspiration in the Design of Legged Robots.” (Cambridge, MA) 2005
- International Union of Physiological Sciences Satellite Symposium. Symposium on Biophysical and Biomechanical Adaptation and Bioinspired Engineering. California Institute of Technology. “Extending the Reflex: Perturbation Rejection, Distributed Feet and Task Level Control.” (Pasadena, CA) 2005
- Society of Integrative and Comparative Biology. “Dynamic Stability Model Predicts Constraints In Sprawled Posture Running.” (New Orleans, LA) 2004
- American Chemical Society Meeting. Symposium on Interface of Polymers and Biomimetics. “Evolutionary Nanotechnology: Gecko Adhesive Mechanisms.” (Anaheim, CA) 2004
- Society of Integrative and Comparative Biology. “Can a simple neural oscillator generate rapid running in cockroaches?” (Toronto, Canada) 2003
- 22<sup>nd</sup> Highlands Forum on Life Sciences Complexity and National Security. *Invitation from Secretary of Defense and DARPA*. “Programming Work to Go Anywhere: Bio-Inspired Robots, Artificial Muscles and Adhesives.” (St. Michaels, MD) 2003
- Bio2003. Biotechnology Industry Organization. Session on More than Medical-Emerging Application for Biotechnology in Biodefense. “Biological Inspiration.” (Washington, DC) 2003
- Meeting of the National Science Collections Alliance. *Plenary Lecture*. University of California at Berkeley. “Bipedal Bugs, Galloping Ghosts and Gripping Geckos: Natural History Leading to Computer Animation, Robotics and Adhesives” (Berkeley, CA) 2003
- Defense Science Research Council. “Dynamic Energy Storage Systems.” Workshop on Dynamically Stable Malleable Materials and Structures. (Washington, DC) 2003
- Power of Design Conference. Young Presidents Organization. Quadrus Club. “Biological Inspiration.” (Palo Alto, CA) 2003
- University of California System-wide Biomedical Engineering Symposium. *Plenary Lecture*. University of California at San Diego. “Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BiopInspired Robots, Adhesives and Artificial Muscles” (San Diego, CA) 2003
- Boz, Allen and Hamilton - DARPA Study Group. Meeting on Cognitive Arthropods. “Problems and Challenges in BioRobotics.” (Washington, DC) 2003
- American Physiological Society. *Organizer*. Symposium on The Influence of Comparative Physiology on Engineering: Neuromuscular Biological Inspiration toward the Design of Artificial Muscle and Robots. “Inspiration from Comparative Physiology in the Design of Artificial Muscles, Skeletons and Control Systems.” (San Diego, CA) 2002
- Association for Computing Machinery. Special Interest Group on GRAPHics and Interactive Techniques (ACM SIGGRAPH) “Bipedal Bugs, Galloping

Ghosts and Gripping Geckos: BioInspiration for Computer Animation.” (San Antonio, TX)	2002
Sigma Xi – Scientific Research Society. “Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspiration for Animation, Adhesives and Robots.” (Berkeley, CA)	2002
Defense Advanced Research Projects Agency. Bio-Vision Seminar Series “Biological Inspiration for Robotics.” (Arlington, VA)	2002
Society of Integrative and Comparative Biology. <i>Opening Meeting Plenary Presentation</i> . “Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspiration for Animation, Adhesives and Robots.” (Anaheim, CA)	2002
Fortune 500 CEO Public Relations Seminar. “Bouncing Bugs, Galloping Ghosts and Gripping Geckos: All in the Name of Bioinspiration.” (Naples, FL)	2002
Technology Panel of the Defense Science Board of the United States. “Biological Inspiration for Robotics.” (Arlington, VA)	2001
Society of Integrative and Comparative Biology. <i>Co-organizer</i> . Symposium on Stability and Maneuverability. “Stability And Maneuverability In Sprawled Posture, Legged Locomotion.” (Chicago, IL)	2001
Society of Industrial and Applied Mathematics. <i>Plenary Presentation</i> . “Dynamics of Galloping Ghosts, Gripping Geckos and Running Robots.” (Snowbird, UT)	2001
Defense Advanced Research Projects Agency. Meeting on Controlled Biological Systems. “Computational Neuromechanics and Component Technologies for Climbing.” (Breckenridge, CO)	2001
National Research Council - Study Group. <i>Co-organizer</i> with D. Koditschek. Workshop on Frontiers at the Interface between Computing and Biology. Beckman Center. “Challenges and Opportunities in Bio-Inspired Computing and Enabling Technologies.” (Irvine CA)	2001
American Society of Biomechanics. “Preflexive and reflexive components of stability: cockroach as a model musculo-skeletal system. (San Diego, CA)	2001
Society of Integrative and Comparative Biology. <i>Organizer</i> . Symposium on Intermittent Locomotion. “The Next Step for Locomotion.” (Atlanta, GA)	2000
Neural Information Processing Systems Conference. “Neuromechanical Integration: From Galloping Ghosts to Gripping Geckos.” (Denver, CO)	2000
Jet Propulsion Laboratory, NASA. Symposium on Robotic Explorers. “An Insect Inspired Hexapod Running Machine.” (Pasadena, CA)	2000
Defense Advanced Research Projects Agency. Focus 2000 Meeting. <i>Symposium Organizer</i> . “Biology on the Move, From Molecules to Organisms.” (Washington, DC)	2000
Society of Optical Engineering. <i>Keynote</i> . Smart Structures Meeting. Symposium on Electroactive Polymer Actuators and Devices. “Artificial muscles versus natural actuators from frogs to flies.” (Newport Beach, CA)	2000
7 <sup>th</sup> Annual Pacific Rim Conference on Exercise Science & Sports Medicine. <i>Keynote Presentation</i> . “Animal and Robot Athletes.” (Berkeley, CA)	2000

International Society of Robotics Research. *Plenary Lecture*. “Biological inspiration: lessons from many-legged locomotors.” (Snowbird, UT) 1999

International Conference on Field and Service Robotics. *Plenary Lecture*. “Biological inspiration: lessons from many-legged locomotors.” Carnegie Mellon University (Pittsburgh, PA) 1999

JASON Project. “Biological inspiration: lessons from many-legged locomotors.” (McClean, VA) 1999

Society of Integrative and Comparative Biology. “Rapid negotiation of rough terrain by the death-head cockroach.” (Denver, CO) 1999

Defense Advanced Research Projects Agency. Controlled Biological Systems Meeting. “Computational Neuromechanics: Programming Work in Biological Systems.” Presented with University of Michigan. (Washington, DC) 1999

Defense Advanced Research Projects Agency. Controlled Biological Systems Meeting. Demonstration presented with IS Robotics Inc. (now iRobot). “Component technologies of climbing.” (Washington, DC) 1999

Defense Advanced Research Projects Agency. Controlled Biological Systems Meeting. “Component technologies of climbing.” Presented with IS Robotics Inc. (Tucson, Arizona) 1999

NASA, Goddard. “Biological inspiration: lessons from many-legged locomotors.” (Goddard, MD) 1999

Institute for Mathematics and Its Applications. Symposium on Animal Locomotion and Robotics. “Neuromechanics of self-stabilization and maneuverability in polypeds.” (Minneapolis, MN) 1998

Clinical Gait Society. *Presidential Keynote Address*. “Diversity enables discovery: lessons from many-legged animals and robots.” (San Diego, CA) 1998

Society of Integrative and Comparative Biology. “Dynamics of Cockroach Climbing: Vaulting, Bouncing or Powering Over A Step?” (Boston, MA) 1998

Jet Propulsion Laboratory, NASA. Symposium on Biomorphic Explorers. “Inspiration from nature toward the design of surface-roving biomorphic explorers.” (Pasadena, CA) 1998

Defense Advanced Research Projects Agency. Controlled Biological Systems Meeting. “Neuromechanics of self-stabilization, maneuverability and gripping in polypeds.” (San Diego, CA) 1998

Office of Naval Research. Naval EOD Technology Center. Workshop and Symposium on Legged locomotion – muscle-like actuators. “Self-stabilization, maneuverability and gripping.” (Indian Head, MD) 1998

Santa Fe Institute. Workshop on Neuromechanics. “Neuromechanical Systems, Approaches, Techniques and Variables: When do they matter most?” (Santa Fe, NM) 1998

Swedish Medical Center. University of Washington. Pinkham Lecture Series Continuing Medical Education Workshop. “Walking machines and the biomechanics of movement.” (Seattle, WA) 1997

Office of Naval Research. Workshop and symposium held in the MIT Leg Laboratory on Pattern generation vs the use of dynamic feedback and

- hybrid approaches. “Polyped self-stabilization, reflexes and performance.” (Boston, MA) 1997
- Society of Integrative and Comparative Biology. Symposium on Muscle properties and organismal function: shifting paradigms. “Muscles inside skeletons: a 3D leg musculo-skeletal model.” (Albuquerque, NM) 1996
- Defense Sciences Research Council. Workshop on Mesoscopic Machines. “Animal locomotion: biological inspiration toward the design of new meso-robots.” (San Diego, CA) 1996
- Naval Undersea Warfare Center. Autonomous Robotic Systems For U.S. Navy Littoral Operations Workshop. “Biological inspiration for the design of legged, amphibious robots.” (Newport RI) 1996
- IEEE International Conference on Robotics and Automation. Workshop on Recent trends on robot locomotion. “Lessons from many-legged locomotors.” (Albuquerque, NM) 1997
- The Ninth Engineering Foundation Conference on Biomechanics and Neural Control of Movement. *Symposium Organizer*. Symposium on Rhythmic Movement in Natural and Artificial Systems. “The challenge of integrating musculo-skeletal mechanics with the neural control - a comparative view.” (Columbus, OH) 1996
- IEEE International Conference on Robotics and Automation. Workshop on “Bio-Mechatronics,” sponsored by the East Japanese Railway Corp. “Biomechanics of bouncing insects - Implication for robot design.” (Minneapolis, MN) 1996
- Association for Computing Machinery. Special Interest Group on GRAPHics and Interactive Techniques (ACM SIGGRAPH) “The AAPE center at U. C. Berkeley: Using Data Acquisition, Analysis, Presentation, and Exchange to address Biological Complexity.” (New Orleans, LA) 1996
- National Academy of Sciences Annual Meeting. “Diversity enables discovery: Lessons from many legged locomotors.” (Washington, DC) 1995
- Society of Integrative and Comparative Biology. “Tuned tracks for hexapedal runners?” (Washington, DC) 1995
- American Society of Zoologists. “Mechanical energy of swinging six legs.” (St. Louis, MO) 1995
- American Society of Biomechanics. Symposium on Comparative Locomotion. “Muscles inside a skeleton: Isolated muscle function and musculo-skeletal modeling of running insects.” (Stanford University, CA) 1995
- American Physiological Society. “Instantaneous joint power of running roaches.” (San Diego, CA) 1994
- National Academy of Sciences 6<sup>th</sup> Annual Symposium on the Frontiers of Science. Beckman Center. “Animal locomotion and robot design.” (Irvine, CA) 1994
- Adaptive and Learning Systems Conference. Yale University. “The importance of mechanical systems in understanding arthropod neural control of locomotion.” (New Haven, CT) 1994
- American Society of Zoologists. “Instantaneous power at the leg joints of running roaches.” (Los Angeles, CA) 1993

- Defense Advanced Projects Research Agency. "Inspiration from crustaceans toward the design of legged amphibious robots." (Washington, DC) 1993
- National Academy of Sciences Study Center. Office of Naval Research. Symposium on Aquatic Locomotion. "Biomechanics of crab locomotion." (Woods Hole, MA) 1993
- American Society of Zoologists. "Minimization of moments in multi-legged locomotion: roaches and robots." (Vancouver, Canada) 1992
- National Academy of Sciences Study Center. Office of Naval Research. Symposium on Control of Invertebrate Legged Locomotion. "Mechanics of legged locomotion in invertebrates." (Woods Hole, MA) 1991
- Pacific Coast Entomological Society. California Academy of Sciences. "Inspiration from insects: the design of legged robots." (San Francisco, CA) 1991
- American Society of Zoologists. "Gait changes in ghost crabs: evidence from exoskeleton strain." (Atlanta, Georgia) 1991
- American Society of Zoologists. Symposium on *The Compleat Crab*. "Energetics and endurance of continuous and intermittent activity in ghost crabs (*Ocypode quadrata*)." (San Antonio, TX) 1990
- American Physiological Society. "Do insects have a maximal oxygen consumption?" (Orlando, FL) 1990
- American Society of Zoologists. "Drag and lift on rapid running insects." (Boston, MA) 1989
- American Society of Mechanical Engineers. Division of Dynamics and Control. Symposium on Locomotion and lower extremity control. "Dynamics of insect locomotion compared to hexapod walking machines." (San Francisco, CA) 1989
- American Society of Zoologists. Symposium on Concepts of efficiency in biological systems. "Cost of transport and the efficiency of invertebrate terrestrial locomotion." (San Francisco, CA) 1988
- American Society of Zoologists. "Exercising with and without lungs: a comparative study of gas exchange and endurance in salamanders." (New Orleans, LA) 1987
- American Society of Zoologists. "Anaerobic metabolism of bouncing gaits in ghost crabs." (Nashville, TN) 1986
- American Physiological Society. Symposium on *Physiological limitations to performance: A comparative approach*. "Exercise limitations in many-legged travelers: arthropod terrestrial locomotion." (New Orleans, LA) 1986
- American Society of Zoologists. "Ghost crab locomotion: the efficiency of traveling sideways." (Baltimore, MD) 1985
- American Physiological Society. "Exercising without lungs: energetics and endurance in a lungless salamander, *Plethodon jordani*." (Niagara Falls, NY) 1985
- American Society of Zoologists. "Economics of cockroaches exercising with loads." (Denver, CO) 1984
- American Society of Zoologists. "Running ghosts (*Ocypode quadrata*): a comparison of large and small crabs." (Philadelphia, PA) 1983

Rochester Academy of Science. St. John Fisher College. “Exercising crabs: an intraspecific comparison of the cost of locomotion as a function of mass.” (Rochester, NY) 1983

American Society of Zoologists. “Net whole body lactate production during sustained exercise in the fiddler crab.” (Louisville, KY) 1982

Rochester Academy of Science. “Energetic cost of locomotion in crabs: an evaluation of aerobic and anaerobic contributions.” (S.U.N.Y. College at Brockport, NY) 1982

American Society of Zoologists. “Aerobic response to exercise in the fastest pedestrian invertebrate.” (Dallas, Texas) 1981

American Society of Zoologists. “Energetics of running sideways.” (Seattle, WA) 1980

American Society of Zoologists. “The effect of temperature on the energetic cost of locomotion in the cockroach.” (Tampa, FL) 1979

#### UNIVERSITY PRESENTATIONS

Stanford University. Department of Mechanical Engineering. “BioMotion Science Leapin’ Lizards, Compressed Cockroaches and Smart Squirrels Inspire Robots.” (Stanford, CA) 2017

Tufts University. Kenneth Roeder Memorial Lecture. Department of Biology. “Bioinspiration from Neuromechanics.” (Medford, MA) 2015

Georgia Institute of Technology. Department of Bioengineering. “Leaping lizards, Gripping Geckos and Galloping Ghost Crabs Inspire Robots.” (Atlanta, GA) 2012

Virginia Technical University. Kevin Granata Memorial Lecture. 5<sup>th</sup> Anniversary honoring his heroic behavior during the tragic shootings. Department of Engineering Science and Mechanics. “Neuromechanical Systems Biology. Gripping Geckos, Bipedal Bugs and Galloping Ghost Crabs.” (Blacksburg, VA) 2012

Brown University. Department of Ecology & Evolutionary Biology. “Neuromechanical Systems Biology. Gripping Geckos, Bipedal Bugs and Galloping Ghost Crabs.” (Providence, RI) 2010

Wake Forest University. *Keynote Presentation*. 25<sup>th</sup> Annual Perspectives In Biology Seminar. “Amazing Feats of Feet: How Geckos Stick.” (Winston-Salem, NC) 2009

Wake Forest University. *Keynote Presentation*. 25<sup>th</sup> Annual Perspectives In Biology Seminar. “Bio-Inspired Computer Animation, Robotics, Artificial Muscles and Adhesives.” (Winston-Salem, NC) 2009

Harvard University. Department of Organismal Biology and Evolution. “Neuromechanics of Legged Locomotion: Inspiring the Design of Robots.” (Cambridge, MA) 2009

University of California, Santa Barbara. Department of Mechanical Engineering. “Bipedal Bugs, Galloping Ghosts and Gripping Geckos: Control of Neuromechanical Systems.” (Santa Barbara, CA) 2008

- Wake Forest University. Department of Biology. “Bio-Inspired Computer Animation, Robotics, Artificial Muscles and Adhesives.” (Winston-Salem, NC) 2007
- University of Washington. Robotics, Controls and Mechantronics Colloquium. “Neuromechanical Systems Biology.” (Seattle, WA) 2007
- Massachusetts Institute of Technology. *Distinguished Lecturer*. Dertouzos Lecture Series. Computer Science and Artificial Intelligence Laboratory (CSAIL). “Neuromechanical Systems Biology.” (Cambridge, MA) 2007
- State University of New York at Buffalo. *2005-2006 Distinguished Alumni Speaker*. Department of Biological Sciences. “Bipedal Bugs, Galloping Ghosts and Gripping Geckos Bio-Inspired Computer Animation, Robotics, Artificial Muscles and Adhesives.” (Buffalo, NY) 2005
- University of Pennsylvania. GRASP Laboratory Lecture. “Bipedal Bugs, Galloping Ghosts and Gripping Geckos Bio-Inspired Computer Animation, Robotics, Artificial Muscles and Adhesives.” (Philadelphia, PA) 2005
- Johns Hopkins University. *XXII Alexander Graham Christie Lecture*. Department of Mechanical Engineering. “Bipedal Bugs, Galloping Ghosts and Gripping Geckos Bio-Inspired Computer Animation, Robotics, Artificial Muscles and Adhesives.” (Baltimore, MD) 2005
- Harvey Mudd College. “Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspired Computer Animation, Robotics, Artificial Muscles and Adhesives.” (Claremont, CA) 2004
- Lawrence Berkeley National Laboratories (EX-Ls)150. “Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspiration for Animation, Adhesives and Robots.” (Berkeley, CA) 2004
- University of California at Irvine. *Plenary Lecture*. Symposium on Exercise. Department of Biology. “Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspiration for Animation, Adhesives and Robots.” (Irvine, CA) 2004
- Harvard University. Department of Organismal Biology and Evolution. “Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspiration for Animation, Adhesives and Robots.” (Cambridge, MA) 2004
- Princeton University. Department of Aerospace Engineering and Applied Mathematics. “Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspiration for Animation, Adhesives and Robots.” (Princeton, NJ) 2004
- Stanford Linear Accelerator Center. “Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspired Robotics, Artificial Muscles and Adhesives.” (Stanford, CA) 2003
- Pennsylvania State University. Department of Kinesiology – Action Club. “Neuromechanics of Locomotion: Coupled Clocks and Leg Springs Tested in Physical Models that Run.” (College Park, PA) 2003
- Pennsylvania State University. Department of Biology and Kinesiology. “Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspiration for Animation, Adhesives and Robots.” (College Park, PA) 2003

University of Southern California. Mann Institute for Biomedical Engineering & Computer Science Department and Neuroscience Program. “Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspiration for Artificial Muscles, Adhesives and Robots.” (Pasadena, CA)	2002
Case Western University. NSF Integrative Graduate Education and Research Traineeship Program invited speaker. “Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspired Robots, Adhesives and Artificial Muscles.” (Cleveland, OH.)	2002
Cornell University. Department of Aerospace and Mechanical Engineering. “Muscles as Multi-functional Materials.” (Ithaca, NY)	2002
Cornell University. Department of Aerospace and Mechanical Engineering. “Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspiration for Animation, Adhesives and Robots.” (Ithaca, NY)	2002
Stanford University. AI, Geometry, Graphics, Vision, and Robotics: Stanford Broad Area Colloquium. “Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspiration for Rapid Running Robots.” (Palo Alto, CA)	2001
California Institute of Technology. Department of Physics. “Diversity enables discovery: Insights from many legged locomotors.” (Pasadena, CA)	2000
University of California at Santa Cruz. Department of Physics. “Diversity enables discovery: Insights from many legged locomotors.” (Santa Cruz, CA)	2000
Stanford Linear Accelerator Center. “Neuromechanics: Lessons from Many-Legged Locomotors.” (Stanford, CA)	2000
San Diego State University. Carpenter Lecture. “Biological inspiration: lessons from many-legged locomotors.” (San Diego, CA)	1999
Boston University. Department of Mathematics. “Lessons for the design of legged robots.” (Boston, MA)	1997
University of Michigan. Department of Biology. “Poly-pedal animal locomotion: lessons for the design of legged robots.” (Ann Arbor, MI)	1997
University of Michigan. Department of Electrical Engineering and Computer Science - Complex Systems Group. “3D dynamic models: multiple muscle systems to whole body terrestrial locomotion.” (Ann Arbor, MI)	1997
University of California at Irvine. Department of Ecology and Evolutionary Biology. “Poly-pedal animal locomotion: lessons for the design of legged robots.” (Irvine, CA)	1996
University of California at Irvine. Department of Ecology and Evolutionary Biology. “3D dynamic models: multiple muscle systems to whole body terrestrial locomotion.” (Irvine, CA)	1996
University of Washington. Electrical Engineering. “Diversity enables discovery: Insights from many legged locomotors.” (Seattle, WA)	1996
University of Washington. Department of Zoology. “Muscles inside skeletons.” (Seattle, WA)	1996
University of Puget Sound. Department of Biology. “Diversity enables discovery: Insights from many legged locomotors.” (Tacoma, WA)	1996

California Institute of Technology. Department of Neurobiology. "Diversity enables discovery: Insights from many legged locomotors." (Pasadena, CA) 1996

University of Arizona. Motor Control Training Program. "Muscles inside skeletons." (Tucson, AZ) 1995

University of Arizona. ARL Division of Neurobiology, Department of Physiology. "Diversity enables discovery: Insights from many legged locomotors." (Tucson, AZ) 1995

Duke University. Department of Zoology. Biomechanics Group. "Muscles inside skeletons." (Durham, NC) 1995

Marine Biological Laboratory. "Diversity enables discovery: Lessons from many legged locomotors as inspiration for robot design." (Woods Hole, MA) 1995

State University of New York at Buffalo. Alumni Awards Meeting. "Diversity enables discovery: Lessons from many legged locomotors." (Buffalo, NY) 1995

Hopkins Marine Station. Stanford University. "Diversity enables discovery: Inspiration from insects: the design of legged robots." (Monterey, CA) 1994

State University of New York at Buffalo. Department of Biological Sciences. "Diversity enables discovery: Inspiration from insects: the design of legged robots." (Buffalo, NY) 1994

University of California at Los Angeles. Department of Biology. "Diversity enables discovery: Inspiration from insects: the design of legged robots." (Los Angeles, CA) 1994

Scripps Oceanographic Institute. University of California at Los Angeles. "Diversity enables discovery: Inspiration from arthropods: the design of legged robots." (Los Angeles, CA) 1994

Scripps Oceanographic Institute. University of California at San Diego. "Inspiration from arthropods: the design of legged robots." (LaJolla, CA) 1993

University of California at Riverside. Department of Biology. "Inspiration from insects: the design of legged robots." (Riverside, CA) 1993

Stanford University. Department of Bioengineering. "Inspiration from insects: the design of legged robots." (Stanford, CA) 1992

Case Western Reserve University. Howard Hughes Regional Lecture. "Diversity enables discovery." (Cleveland, OH) 1992

Case Western Reserve University. Department of Biology. "Inspiration from insects: the design of legged robots." (Cleveland, OH,) 1991

Brown University. Department of Biology. "Mechanics of polypedal locomotion." (Providence, RI) 1991

University of Utah. Department of Biology. "Mechanics of terrestrial locomotion." (Salt Lake City, UT) 1991

University of Utah. Department of Biology. "Endurance capacity of terrestrial locomotion." (Salt Lake City, UT) 1991

University of California at Irvine. Department of Ecology and Evolutionary Biology. "Energetics of terrestrial locomotion." (Irvine, CA) 1991

University of California at Irvine. Department of Ecology and Evolutionary Biology. "Mechanics of terrestrial locomotion." (Irvine, CA) 1991

Idaho State University. Sigma Xi Chapter. "Diversity enables discovery." (Pocatello, ID) 1991

Idaho State University. Department of Biology. "Endurance capacity of terrestrial locomotion." (Pocatello, ID) 1991

San Diego State University. Department of Biology. "Energetics and mechanics of terrestrial locomotion." (San Diego, CA) 1990

Stanford University. Design Division. Department of Mechanical Engineering. "Dynamics of 6-legged runners compared to hexapedal walking machines." (Stanford, CA) 1989

University of Oklahoma. Department of Zoology. "Locomotion energetics: from running sideways to exercising without lungs." (Norman, OK) 1989

Scripps Oceanographic Institute. University of California at San Diego. "Energetics of terrestrial locomotion." (LaJolla, CA) 1989

Duke University. Department of Zoology. Biomechanics Group. "Mechanics of polypedal locomotion." (Durham, NC) 1989

Duke University. Department of Zoology. "Locomotion energetics: from running sideways to exercising without lungs." (Durham, NC) 1989

State University of New York at Buffalo. Department of Physical Therapy. "Mechanics of terrestrial locomotion: polypeds to bipeds." (Buffalo, NY) 1988

University of Kentucky. Department of Zoology. "Mechanics and energetics of terrestrial locomotion." (Lexington, KY) 1987

California State, Hayward. Department of Biology. "Terrestrial locomotion energetics and performance." (Hayward, CA) 1987

University of California at Davis. Department of Biology. "Locomotion energetics and performance: From running sideways to exercising without lungs." (Davis, CA) 1987

College of the Holy Cross. Department of Biology. "Locomotion without lungs" (Worcester, MA) 1987

University of Florida. Department of Biology. "Terrestrial locomotion energetics." (Gainesville, FL) 1986

College of the Holy Cross. Department of Biology. "Locomotion energetics and performance." (Worcester, MA) 1985

Wellesley College. "Multilegged exercise." (Wellesley, MA) 1984

The University of Chicago. Department of Anatomy. "Invertebrate locomotion." (Chicago, IL) 1984

Duke University Marine Laboratory. "The invertebrate runner." (Beaufort, NC) 1981

CORPORATE/INDUSTRY PRESENTATIONS

Infinity Ward - Activision. "Bio-inspired Motion Science." (Los Angeles, CA) 2015

Activision - Blizzard Entertainment. "Bio-inspired Motion Science: Bipedal Bugs, Gripping Geckos and Compressed Cockroaches Inspire Robots, Adhesives and Exoskeletons." (Santa Barbara, CA) 2014

Yahoo. Tech Pulse Meeting. "Biological Inspiration." (San Jose, CA) 2011

BP. "Biological Inspiration - How We Learn from Nature". (Berkeley, CA) 2011

ITT/ Vanguard. NextGens Technologies. “Biological Inspiration.” (Charlottesville, NC)	2010
Applied Brilliance. “Biological Inspiration.” (Ojai, CA)	2010
Procter & Gamble. “Biological Inspiration - How We Learn from Nature: Gecko Adhesion”. (Berkeley, CA)	2010
Kimberly-Clark (Adhesive Company). “Biological Inspiration - How We Learn from Nature: Gecko Adhesion”. (Berkeley, CA)	2010
Michelin (Tire Company). “Biological Inspiration - How We Learn from Nature: Gecko Adhesion.” (Berkeley, CA)	2009
Nike Inc. “Gecko Inspired Synthetic Adhesive.” (Berkeley, CA)	2009
Willow Garage (Robot company). “Bio-inspired Motion.” (Menlo Park, CA).	2008
Blizzard Entertainment. “The Science of Motion: Bipedal Bugs, Somersaulting Shrimp, and Galloping Ghosts.” (Irvine, CA)	2008
Lockheed Martin, Nitto Denko, Henkel, Avery Dennison, North Safety, Kimberly-Clark, Johnson & Johnson and Nike Inc. “Biology Inspiration’ Gecko Inspired Adhesion Symposium, CiBER. (Berkeley, CA)	2008
KLA-Tencor Microsoft. “The Science of Motion: Bipedal Bugs, Somersaulting Shrimp, and Galloping Ghosts.” Microsoft Graphics Advisory Board Summit. (Seattle, WA)	2008
Tata Chemicals Innovation Centre. “Biological Inspiration - How We Learn from Nature: Gecko Adhesion”. (Berkeley, CA)	2008
Kimberly-Clark (Adhesive Company). “Biological Inspiration - How We Learn from Nature: Gecko Adhesion”. (Berkeley, CA)	2008
Avery-Dennison (Adhesive Company). “Biological Inspiration - How We Learn from Nature: Gecko Adhesion” (Pasadena, CA)	2008
Nike Inc. “Gecko Inspired Synthetic Adhesive.” (Beaverton, OR)	2008
Samsung. “Biological Inspiration - Materials.” Leading the Next Symposium. (Berkeley, CA)	2007
General Motors. Workshop on Bio-inspired materials & Systems. “Biological Inspiration in the Design of Complex Systems.” (Detroit, MI)	2006
Google. Google Zeitgeist. “Bio-Inspired Robots.” (Mountain View, CA)	2006
Samsung. “Biological Inspiration.” Leading the Next Symposium. (Seoul, Korea)	2005
Mitre Corporation. “Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspiration for Animation, Adhesives and Robots.” (Bedford, MA)	2004
Samsung. “Biological Inspiration.” Leading the Next Symposium. (Seoul, Korea)	2004
Johnson & Johnson. “Biological Inspiration.” (Newark, NJ)	2003
Tippett Studio. “Unlocking the Secrets of Biomotion.” (Berkeley, CA)	2003
DreamWorks. “Unlocking the Secrets of BioMotion.”	2003
Foundation Capital. “Simple Solutions to Complex Problems.”	2002
Deka Research & Development Corp. (Segway). “Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspiration for Animation, Adhesives and Robots.” (Manchester, NH)	2002
Microsoft Research. “Where will you go tomorrow? BioInspiration for Animation, Adhesives and Robots.” (Redmond, WA)	2002

Nike Inc. “Biological Inspiration of Reflexive Behavior” (Beaverton, OR)	2002
Industrial Light & Magic. “Dynamic Simulations Directed by Newton? Running, Robots and Reality.” (San Rafael, CA)	2001
Nike Inc. “Biological Inspiration of Locomotion and Adhesion.” (Beaverton, OR)	2001
Global Business Network. “Clean technologies for transportation.” (Berkeley, CA)	2001
Henkel. “Gripping Geckos: Integration Provides Inspiration toward Mecho-geckos and Dry Adhesives.” (Dusseldorf, Germany)	2001
Disney Imagineering. “The design of spiders.” Disney Imagineering. (Anaheim, CA)	2000
Xerox PARC. “Gripping geckos.” (Menlo Park, CA)	2000
Pixar. “Diversity enables discovery: Lessons from many legged locomotors”, for Movie, <i>A Bug’s Life</i> . (Richmond, CA)	1995-96
Character Shop. “Insect Locomotion.’ Movie, the <i>Mimic</i> , from Mirimax Films (Los Angeles, CA)	1994
Rockwell International. “Inspiration from crustaceans toward the design of legged amphibious robots.” (Thousands Oaks, CA)	1993
National Instruments. MacWorld Convention. “Galloping ghosts and data acquisition technology.” (San Francisco, CA). Moving real-time data acquisition technology from research to teaching. Instructional Technologies Program. Sponsored by Apple Computer and National Instruments.	1989

UNIVERSITY OF CALIFORNIA AT BERKELEY

Seminar. Department of Bioengineering. “Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspired Computer Animation, Robotics, Artificial Muscles and Adhesives.” (BioE 26)	2017
Panel to Discuss the Future of Science. (MCB 15)	2015
The Seventh Warren William Chupp Distinguished Lecture. Lawrence Hall of Science.	2014
Science@Cal Public Presentation. Biological Inspiration: How We Learn from Nature to Design Robots, Exoskeletons and Adhesives.”	2014
Graduate Course on Biomimetics. Department of Mechanical Engineering. “Challenges of Biological Inspiration.”	2014
Miller Institute. Invited Speaker. “BioMotion: Bipedal Bugs, Gripping Geckos and Leaping Lizards Inspire Robots.”	2014
Panel to Discuss the Future of Science. (MCB 15)	2014
Exploring Biology at Berkeley (MCB 98). Guest Speaker. “Biological Inspiration.”	2013
Panel to Discuss the Future of Science. (MCB 15)	2013
Freshman Seminar. Guest Speaker. “Biological Inspiration: Running Robots, Artificial Muscles and Gecko-inspired Adhesives.”	2013
Freshman Seminar. Guest Speaker. “Biological Inspiration: Running Robots, Artificial Muscles and Gecko-inspired Adhesives.”	2012

Biological Division Services Seminar. “Biological Inspiration: Running Robots, Artificial Muscles and Gecko-inspired Adhesives.”	2012
Biological Division Services Teaching Staff Seminar. “Comparative Biomechanics and Physiology Courses at Berkeley.”	2012
Freshman Seminar. Guest Speaker. “Biological Inspiration: Running Robots, Artificial Muscles and Gecko-inspired Adhesives.”	2011
Graduate Division Donor Hosted Event Lecture. “Bio-inspiration.”	2011
Biomechanics Seminar. “Bio-inspired Design Challenges.”	2011
Cal Day. “Bio-Inspired Robots: Bipedal Bugs, Galloping Ghosts and Gripping Geckos.”	2011
Freshman Seminar. Guest Speaker. “Biological Inspiration: Running Robots, Artificial Muscles and Gecko-inspired Adhesives.”	2010
Graduate Course on Biomimetics. Department of Mechanical Engineering. “Biological Inspiration of Dry Adhesion.”	2010
Center for Intelligent Systems. Department of Electrical Engineering and Computer Science. “The Role of Mechanical System in the Control of Locomotion.”	2010
Graduate Course on Biomimetics. Department of Mechanical Engineering. “Biological Inspiration of Dry Adhesion.”	2009
Freshman Seminar. Guest Speaker. “Biological Inspiration: Running Robots, Artificial Muscles and Gecko-inspired Adhesives.”	2009
Seminar. Department of Bioengineering. “Neuromechanics of Locomotion.”	2009
Freshman Seminar. Guest Speaker. “Biological Inspiration: Running Robots, Artificial Muscles and Gecko-inspired Adhesives.”	2008
Graduate Seminar. “How would nature do that?” Lecture. “Biological Inspiration of Fibrillar Adhesives.”	2008
Cal Day. “Biological Inspiration: Running Robots, Artificial Muscles and Gecko-inspired Adhesives.”	2008
Knight Digital Media Center. “How we learn from nature: Biological Inspiration.”	2008
Development Group. “Center for interdisciplinary Bio-inspiration in Education and Research.”	2008
Inaugural Industrial Symposium, CiBER - Center for interdisciplinary Bioinspiration in Education and Research. “Biological Inspiration - How We Learn from Nature: Gecko Adhesion”	2008
Electrical Engineering and Computer Science Robotics and Control Seminar. Department of Electrical Engineering and Computer Science. “Bio-inspired Legged Robots: Insights from Animal Neuromechanics.”	2008
Army Research Laboratory Site Visit Presentation. “Biological Inspiration for Microsystems Mechanics - Ambulation.”	2008
Cal Day. “Biological Inspiration: Running Robots, Artificial Muscles and Gecko-inspired Adhesives.”	2006
College of Letters & Science Donor Recognition Lecture. “Bipedal Bugs, Galloping Ghosts and Gripping Geckos Bio-Inspired Computer Animation, Robotics, Artificial Muscles and Adhesives.”	2006

Graduate Course on Biomimetics. Guest Speaker. Department of Mechanical Engineering. "Bio-inspired Robots and Artificial Muscles."	2005
Graduate Course on Biomimetics. Guest Speaker. Department of Mechanical Engineering. "Biological Inspiration of Dry Adhesion."	2005
Letters & Science Intro Course 1. "Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspired Computer Animation, Robotics, Artificial Muscles and Adhesives."	2003
Seminar. Department of Bioengineering. "Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspired Computer Animation, Robotics, Artificial Muscles and Adhesives."	2003
University of California Berkeley Emeriti Association. "Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BiopInspired Robots, Adhesives and Artificial Muscles"	2003
Cal Homecoming and Parent Weekend. "Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspiration for Animation, Adhesives and Robots."	2002
Mechanics of Organisms Class. Guest Lecture. "Mechanics of locomotion."	2002
Letters & Science Intro Course 1. "Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspired Computer Animation, Robotics, Artificial Muscles and Adhesives."	2002
Seminar. Department of Integrative Biology. "Gripping Geckos: Integration Provides Biology Inspiration toward Mecho-Geckos and Dry Adhesives."	2001
Museum of Paleontology. Lawrence Hall of Science. "Dinosaurs: Movies, Robots and Reality."	2001
Mechanical Engineering Course. Guest Lecture. "Mechanics of locomotion."	2001
Mechanical Engineering Course. Guest Lecture. "Mechanics of locomotion."	1999
SCIBUGS - Society of Integrative Biology Undergraduates Presentation. "The philosophy behind Integrative Biology."	1999
Mechanical Engineering Course. Guest Lecture. "Mechanics of locomotion."	1998
Computer Science Course. User-Interfaces to Computer Systems. Guest Lecture. "Dynamic modeling in movement."	1998
Letters & Science Alumni Presentation. "Diversity Enables Discovery: Inspiration from Insects in the Design of Legged Robots." (Modesto, CA)	1996
Chancellor's Forum. "Diversity Enables Discovery: Inspiration from Insects in the Design of Legged Robots."	1996
Cal Parents Day. "Diversity Enables Discovery: Inspiration from Insects in the Design of Legged Robots."	1996
Commencement Speech. Department of Integrative Biology "Integrative Biology at Cal: A thank you."	1996
Mechatronics Course. Department of Electrical Engineering and Computer Science. "Inspiration from insects: the design of legged robots."	1995
Berkeley Alumni Association. University of California at Berkeley. "Inspiration from biology: the design of legged robots." (Monterey Bay, CA)	1994
Seminar. Department of Biological Psychology. "Inspiration from insects: the design of legged robots."	1993

Berkeley Alumni Association. “Inspiration from biology: the design of legged robots.” (Walnut Creek, CA)	1993
Seminar. Department of Mechanical Engineering. “The design of six-legged robots.”	1992
Seminar. Department of Integrative Biology. “Inspiration from insects: the design of legged robots.”	1992
Seminar. Department of Zoology. “Locomotion without lungs.”	1988
Seminar. Phys. Ed. Department. “Variation in exercise energetics and performance.”	1988
Bodega Marine Laboratory. “Terrestrial locomotion energetics and performance.”	1987
Seminar. Department of Entomology. “Locomotion energetics and performance of insects and other arthropods.”	1987
Seminar. Department of Zoology. “Locomotion energetics and performance: From running sideways to exercising without lungs.”	1986

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#### RESEARCH - PROFESSIONAL SERVICE TO SOCIETIES, AGENCIES AND INSTITUTES

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International Bionic Award. BIODON. Judge.	2016
International Bionic Award. BIODON. Judge.	2014
National Science Foundation – Army Research Office. Meeting Opening Presentation. Workshop on Why Animals are Better: Integration of Physics, Engineering and Biology. Themes and Modes in Locomotion Systems Science. Advisory Board.	2012
International Bionic Award. BIODON. Judge.	2012
San Diego Zoo – Biomimicry in Business and Education	2011-13
Swiss National Science Foundation. National Centre for Competence in Research (NCCR) Robotics - Science Advisory Board.	2011-present
Wyss Institute - Biomimetics, Science Advisory Board. Harvard University.	2010-present
Research Corporation for Science Advancement. Presidential Advisory Board Member. Yearly meetings.	2009-13
National Science Foundation. Civil, Mechanical, and Manufacturing Innovation (CMMI) Workshop on Neuromechanical Engineering.	2009
Virtual Faculty Member of the Institute of Cognitive Interaction Technology (CITEC). Bielefeld, Germany.	2008-present
National Academies’ Research at the Interface of the Physical and Life Sciences Committee Member. Issued report identifying high priority research opportunities at this intersection, articulate the potential benefits to society, and recommend strategies for realizing them.	2007-09
Committee on Defining and Advancing the Conceptual Basis of Biology in the 21 <sup>st</sup> Century. Invited participant. National Research Council of the National Academy of Sciences.	2008
Founder and Elected Chair of the Comparative Biomechanics Division - Society of Integrative and Comparative Biology.	2006-11

National Academies of Science Panel on the Future of Biomaterials. Invited perspective and presentation. Lawrence Berkeley Laboratories (Berkeley, CA)	2006
NASA Advanced Planning and Integration Presidential Commission. Team member for the Autonomous Systems and Robotics Capability Roadmap to 2030 for a Moon-Mars Mission. Planned complete mission. Met with teams at all NASA space centers.	2004-05
NASA Review of Mars Technology Program Tasks in Regional Mobility at Jet Propulsion Laboratory.	2005
Google Zeitgeist, Google Inc. Zeitgeist, translated from German, means “spirit of the times.” Meeting attended by over two hundred leaders from technology and the media. Discussed biological inspiration with former Vice President Al Gore and General Colin Powell.	2006
Steering Committee of the “Towards an Integrative Biology” Program. International Union of Biological Sciences.	2005
National Science Foundation Panel Member.	2001, -05
Executive Committee as a Member at Large for the Society of Integrative and Comparative Biology. Elected.	2003-06
Biology, Complex Systems, and National Security - 22 <sup>nd</sup> Highlands Forum. Invited participant. Explored in a cross-disciplinary way, the future of life sciences and the relationship of life sciences research to national security interests.	2003
Evolutionary Robotics: From Intelligent Robotics to Artificial Life. Invited by Applied AI to give advice to the leaders of Japanese business on the future of manufacturing using Evolutionary Robotics. Canadian Embassy, Tokyo, Japan.	2001
Bio2003. Invited by Director of the Defense Advanced Research Projects Agency (DARPA) to expand our view of Biodefense at the largest Biotechnology Industry Meeting in the world.	2003
US Defense Science Board. Invited by the Under Secretary of Defense (Acquisition, Technology and Logistics) and the Deputy Under Secretary of Defense (Science and Technology) to present 10-30 year vision for bioinspired robotics.	2001
Engineering Research Center (ERC) Review. Invited by the National Science Foundation to review the Center for Neuromorphic Systems Engineering (CNSE) at Caltech.	2003
The Clean Revolution: Technologies from the Leading Edge. Invited to assist Clean Edge in producing a report on the environment and clean technologies as they relate to transportation for GBN Worldview Meeting.	2001
National Research Council on Bio-Inspired Computing and Enabling Technologies. Invited to provide vision of bio-inspired computing at National Academy of Sciences Study Center.	2001
Focus 2000. Invited by Undersecretary of Defense and the Director of DARPA (Defense Advanced Research Project Agency) to provide a vision for the direction of biologically inspired robotics integrating biology, information technology and physical sciences.	2000

Program Advisory Committee. Society of Integrative and Comparative Biology.	1996-2001
Chair of Science Task Force. Invited to provide vision for the direction of the Society of Integrative and Comparative Biology.	1999
Chair Electronic Communication Committee. Created the first World Wide Web Site for the Society of Integrative and Comparative Biology.	1994-96
Student/Post-Doctoral Committee Workshop. Society of Integrative and Comparative Biology.	1998
Presidential nomination committee. Society of Integrative and Comparative Biology.	1998
Review Committee for the Bartholomew Award. Society of Integrative and Comparative Biology.	1998
Expansion of the Biosystems, Analysis and Control Panel. National Science Foundation. Opening opportunity for biologists to collaborate with engineers.	1995
Chair Membership Committee. American Society of Zoologists. Produced 12-point action plan to move society into the next century. Suggested name change to Society of Integrative and Comparative Biology.	1990-94
Constitutional Amendment for American Society of Zoologists. Drafted amendment that allowed for the first time outstanding undergraduates to be members of the society and present at national meetings.	1987

#### UNIVERSITY FACILITY DIRECTORSHIPS

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Director of the Center for interdisciplinary Bionspiration in Education and Research (CiBER)	2005-present
Principal Investigator. National Science Foundation. Integrative Graduate Education and Research Traineeship Program. Biological and Bio-inspired Motion Systems Operating in Complex Environments.	2009-16
Director for the Multimedia and Scientific Visualization Center using data Acquisition, Analysis, Presentation, and Exchange (AAPE) to address Biological Complexity - VLSB.	1996-2004

#### SERVICE TO JOURNALS

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##### EDITORIAL BOARD MEMBER

<i>Science</i> Robotics Journal. American Association for the Advancement Science. Science Advisory Board.	2016-present
Editor-in-Chief. <i>Bioinspiration &amp; Biomimetics</i> from the Institute of Physics.	2013-present
Editorial board. <i>Bioinspiration &amp; Biomimetics</i> from the Institute of Physics.	2006-13
Assistant Editor. Editorial Board <i>Experimental Biology Online</i> .	1998

##### REVIEWER

Proc. Nat. Acad. Sciences	Journal of Experimental Biology
Nature	Biological Cybernetics
Science	IEEE Robotics and Automation

Journal of Comparative Physiology  
Phil. Trans. R. Soc. B.  
Deutsche Forschungsgemeinschaft  
(German Research Foundation)

National Science Foundation  
NASA Grants

## CONSULTING / ADVISEMENT

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### SCIENCE & ENGINEERING ADVISORY BOARDS

National Academy of Sciences Board of Life Sciences	2017-present
DaVINCI Global Advisory Board (bio-inspired business, innovation and finance)	2015-17
National Centre of Competence in Research (NCCR) - Robotics. Swiss National Science Foundation. Science Advisory Board.	2011-present
Wyss Institute, Harvard University. Science Advisory Board.	2010-present
Sandbox Innovations Inc.	2008-12
Samsung Inc.	2003-06

### COMPANY/AREA

#### ADHESIVES – SYNTHETIC, GECKO-INSPIRED

Termuro	2011
Procter & Gamble	2010
Kimberly-Clark	2008, -10
Michelin	2009
Avery Dennison	2008
Nitto Denko	2008
North Safety	2008
Lockheed Martin	2008
KLA-Tencor	2008
Johnson & Johnson	2003, -08
Henkel	2001, -08
Nike	2001, -02, -09

#### BIOLOGICALLY INSPIRED DESIGN – APPROACH & FORECASTING

Tencent (WeChat, China)	2018
Swedish Biomimetics 3000	2011
San Diego Zoo	2011, -13
ITT/Vanguard	2010
Applied Brilliance	2010
Samsung. Leading the Next Symposium. Seoul, Korea	2004
General Motors. Biological Inspiration in the Design of Complex Systems	2006
Foundation Capital. Simple Solutions to Complex Problems	2002
Primordial (toy company)	1996

## ROBOTICS

Willow Garage Robot Company	2008
Microsoft Research	2002
Global Business Network. Clean technologies for transportation	2001
Deka Research & Development Corporation (Segway)	2002
Disney Imagineering. Design for It's Tough to be a Bug! Attraction at Disneyland	2000
Boston Dynamics	2003-08, -14
SRI International	1998-2006
iRobot (IS Robotics)	1996-2003
Intelligent Inferences Systems Inc.	1995

## COMPUTER ANIMATION

Activision/Infinity ward. "Bio-inspired Motion Science." (Los Angeles, CA)	2015
Activision/Blizzard Entertainment. "Bio-inspired Motion Science: Bipedal Bugs, Gripping Geckos and Compressed Cockroaches Inspire Robots, Adhesives and Exoskeletons." (Santa Barbara, CA)	2014
Microsoft Graphics Advisory Board. The Science of Motion	2008
Blizzard Entertainment. The Science of Motion – World of Warcraft	2008
Dreamworks. Character motion for movie, "Kung Fu Panda"	2005
Tippett Studio. Unlocking the Secrets of Biomotion	2003
Industrial Light and Magic. Dynamic Simulations Directed by Newton?	2001
Pixar. Character design for A Bug's Life, Disney Movie	1995-96
Clorox (pesticide division). Computer simulation for commercial	1995
Character Shop. Creature design for movie, the <i>Mimic</i> , from Mirimax Films directed by Guillermo del Toro	1994

## HIGH-SPEED VIDEO CAPTURE & ANALYSIS

Xcitex Inc. ProAnalyst. Motion analysis software	2007-12
Fastec	2007-11
AOS Technologies	2007-10
Redlake	1996-06
Peak Performance Technologies Inc. (motion analysis corporation)	1990-92
National Instruments. Data acquisition	1990-92
Kodak	1990-92

## EDUCATION & OUTREACH

San Diego Zoo	2011-14
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## SERVICE TO THE UNIVERSITY OF CALIFORNIA AT BERKELEY

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### UNIVERSITY COMMITTEES

Jacobs Institute of Design Innovation Advisory Board Presentation (Nov)	2017
Jacobs Institute of Design Innovation Director Search Committee	2015
Jacobs Institute of Design Innovation Launch Committee	2014-2015
Design Innovation Minor Committee	2014-present
Sponsored Project Office User's Network (SUN)	2014-present

Design, development and directorship of center – the Center for interdisciplinary Bioinspiration in Education and Research (CiBER)	2005-present
Assistance and advice to the Office of Technology Licensing (OTL) and the Office of the President’s Office of Technology Transfer (OTT).	2001-08
Network Advisory Committee.	2002-03
Re-accreditation of the University of California at Berkeley Committee.	
Western Association of Schools and Colleges (WASC) Academic Engagement Working Group to provide vision for the future of education at Berkeley.	2001-03
Educational Technology Committee.	2001
Senate Committee on Computing and Communication.	2000-01
Advisory Committee for the Formation of the Center for Teaching, Learning and Technology.	2000-01
Member of Executive Committee for the UCB/UCSF Joint Department of Bioengineering.	1999
Life Sciences Complex Shop Committee.	1998-2000
Office of Media Services Director Search Committee.	1998
Commission on Campus Computing.	1997-98
Campus <i>Ad hoc</i> Review Committees	1996, 1999, 2001 2005, 2006-07, 15
Undergraduate Research Initiative Committee.	1994-96
Instructional Technologies Representative.	1994-95
Division of Biological Sciences Shop Review Committee.	1994
Chancellor's Advisory Council on Biology.	1993-1996
Life sciences complex shop committee.	1993-96
Committee for Affairs of Gump Tropical Research Laboratory on Moorea.	1992-94
Committee on Animal Housing Space.	1992-94
<i>Ad hoc</i> Review Committee for Evaluation of the Behavior Station.	1992
<i>Ad hoc</i> Review Committee for Evaluation of Physical Education Department.	1990
Valley Life Science Building Management and Program Planning Committee.	
Advised committee on issues of policy, space allocation, funding allotment, retrofit, repair, networking, and equipment spending for construction of the largest academic building for biology in the country.	1988-1996
<b>DEPARTMENT COMMITTEES (ZOOLOGY AND INTEGRATIVE BIOLOGY)</b>	
Development Committee	2014-present
Space Committee	2012-13
UCB Student Learning Initiative (IB)	2007
Integrative Biology Funding Initiatives Committee	2004
Safety and Facilities Committee	2000-2008
Search Committee	2003, 2004
Search Committee	2001
Computing Committee	1996,1999
Vice Chair of Integrative Biology	1994-1996
Academic Program Planning Committee	1994-1996, 1998-2003

Chair Search Committee	2006-2007
Integrative Biology Executive Committee	1994
Personnel and Promotion	1994-1996,
Graduate Advisor	2005
	1994-1996
	1992-1994,
	1998-2007
Vice Chair of Education and Academic Program Committee	1990-1994
Development and Public Relations Committee	1990-1994
Academic Curriculum Committee	1986-1990
	Chair 2007-08
Undergraduate Advisor	1986-1992
Computing Committee	1986-1994
Awards Committee	1986-1990,
	2003-2004
Research Allocation Committee	1986-1990

#### **EDUCATION - PROFESSIONAL SERVICE TO SOCIETIES, AGENCIES, INSTITUTES AND SCHOOLS**

Center for Interdisciplinary Bio-inspiration in Education and Research (CiBER). Founder and director of center for undergraduate and graduate students with the goal of integrating research-based education and original research. 2008-present

#### UNDERGRADUATE EDUCATION

- Tapping the Potential of All Students: Undergraduate Research for Community Colleges. Opening, Keynote Lecture on “Undergraduate Interdisciplinary Research-based Learning” North Hennepin Community College, Brooklyn Park, MN. 2013
- Congressional Briefing. Briefed policymakers and staffers of United States House of Representatives Science, Technology, Engineering and Mathematics Education Caucus on Interdisciplinary Undergraduate Research and American Innovation. 2010
- Undergraduate Research as Transformative Practice: Developing Leaders and Solutions for a Better Society. Council on Undergraduate Research Conference Meeting (CUR). Opening, plenary lecture on “The Value of Interdisciplinary Research-based Learning” 2010
- Undergraduate Biology in the 21<sup>st</sup> Century. Invited by National Science Foundation to participate in workshop and offer a vision for the future. 2008
- Annual Biomedical Research Conference for Minority Students (ABRCMS). Steering Committee Member and presented Plenary Lecture at annual Meeting. ABRCMS is the largest multidisciplinary student conference in

- the United States. Conference attracts approximately 2,600 underrepresented minorities, including 1,650 undergraduate students interested in attending graduate school, 300 graduate students/postdoctoral scientists and 750 faculty and administrators. 2006-2012
- Reinventing Undergraduate Education Conference, Transforming the Culture: Undergraduate Education and the Multiple Functions of the Research University. Invited to organize workshop and published report on The Reciprocal Relationships Among Research, Teaching, and Learning. 2006
- California Science Teachers Association. Presented on the value of research-based instruction at annual meeting. 2006
- Science Education for New Civic Engagements and Responsibilities (SENCER) Education Conference. Opening Plenary Lecture at national meeting (2006-8) and serving on Advisory Board. SENCER has established and supports a community of faculty, students, academic leaders, and others to improve undergraduate STEM (science, technology, engineering and mathematics) education by connecting learning to *critical civic questions*. 2006-10
- Investigating Introductory Science Courses in the Undergraduate Context: A Systems Approach. Invited to participate in a workshop at The National Academies' Center for Education in conjunction with the Board on Science Education. 2004
- National Academy of Sciences Summer Institutes for Undergraduate Education in Biology. Support from the Howard Hughes Medical Institute. Invited by Bruce Alberts, then President of the National Academy of Sciences and the Chair of The National Research Council, to assist in creating a summer institute on undergraduate biology education specifically designed for faculty at research universities. The goal of the institute is to serve as a forum for faculty to work together to improve the teaching of science to undergraduate biology students. 2003, -05
- National Academies of Sciences Board on Life Sciences Speaker. Selected from the 30 participants in the Pilot Summer Institute to speak at the National Research Council's Board on Life Sciences on research-based biology education 2003
- GRADUATE EDUCATION
- Integrative Graduate Education and Research Traineeship (IGERT) Grant. Supported by the National Science Foundation (NSF). Principal Investigator on 5-year graduate training grant that teaches the next generation of biologists and engineering how to learn from Nature through

mutualistic teaming. In association with the Center for Interdisciplinary Bio-Inspiration in Education & Research (CiBER).	2009-16
NSF-AGEP California Alliance - Second Annual Retreat of Stanford, Berkeley, UCLA and Caltech consortium that supports over 100 underrepresented minority doctoral students and postdoctoral fellows in the physical sciences, mathematics and engineering as they advance into the professoriate and other leadership careers. Theme - The Next Generation of Researchers. Served on panels, roundtable discussion and met with students to offer career advice. (Caltech, CA) (April)	2015
The California Alliance Mentor Matching Program - Mentored underrepresented minority from Stanford (May)	2015
German Research Foundation (Deutsche Forschungsgemeinschaft). Consulting for Juergen Bretkopf, Division of Research Careers, to improve the doctoral education in Germany.	2010
<b>K-12 EDUCATION</b>	
National Youth Leadership Forum on Technology. Board of Advisors and presented Plenary Lecture. Organization serves the nation's best high school students through a yearly conference.	2004-06
Designed and Implemented Inquiry-based Learning in Public Middle School Curriculum. Assisted in teaching 6 <sup>th</sup> Grade Public Middle School Science Class that included lectures on Bio-inspired Design, student group presentations, a visit to UC Berkeley, hands-on experiments, a group project to design a Biomorphic Explorer Robot for NASA, and a simulated Mission to Mars.	1998-99

#### **EDUCATION – PRESENTATIONS AND INVITED LECTURES**

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##### **INTERNATIONAL**

Centre for Research and Interdisciplinarity (CRI). NightScience: Collective creativity in scientific discovery and education. "i <sup>4</sup> s Beyond the Classroom." Faculty of Medicine - Paris Descartes University (Paris, FR)	2013
Centre for Research and Interdisciplinarity (CRI). Workshop: Hands-on Experiments, Scientific Discovery Games and Citizen Science - Learning through Research for all. "Bio-inspired Design Challenges." Faculty of Medicine - Paris Descartes University (Paris, FR)	2011

##### **NATIONAL**

Howard Hughes Medical Institute. i <sup>4</sup> 's Toward Tomorrow Program Using Bioinspired Design. (Chevy Chase, MD) Oct.	2017
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- Convocation at the National Academy of Sciences on "Integrating Discovery-Based Research into the Undergraduate Curriculum" sponsored by the Board on Life Sciences and Science Education of the National Research Council. "Interdisciplinary Laboratory Course Facilitating Knowledge Integration, Mutualistic Teaming and Authentic Discovery." (Washington, DC) 2015
- Society of Integrative and Comparative Biology Annual Meeting. Full, R.J., Dudley, R., Koehl, M.A.R., Libby, T., and Schwab, C. "The impact of discovery-based instruction on interdisciplinary research skills." Symposium on Leading Students and Faculty to Quantitative Biology Through Active Learning. (West Palm Beach, FL.) 2015
- Undergraduate Capstone Research Conference at Mathematical Biosciences Institute. *Keynote Speaker*. "Using Mathematical, Physical and Animal Models to Discover the Principles of Motion Science." The Ohio State University (Columbus, OH) 2014
- Technology, Entertainment & Design Conference - Youth. "I<sup>4</sup>s Eyes Toward Tomorrow." (New York, NY) 2011
- Science Center Dedication. Grand Opening Celebration Albright College. "The Value of Interdisciplinary Research-based Learning." (Reading, PA) 2011
- Council on Undergraduate Research Conference (CUR) - Undergraduate Research as Transformative Practice, Developing Leaders and Solutions for a Better Society. "The Value of Interdisciplinary Research-based Instruction" Weber State University. (Ogden, UT) 2010
- National Science Foundation /American Association for the Advancement of Science. *Plenary Speaker*. Course, Curriculum, and Laboratory Improvement (CCLI) PI Conference. "The Value of Interdisciplinary Research-Based Instruction." (Washington, DC) 2008
- Science Education for New Civic Engagements and Responsibilities (SENCER) Annual Meeting. *Meeting Opening Plenary Lecture*. "SENCER & Interdisciplinary Research-based Learning." (Portland, Maine) 2007
- Annual Biomedical Research Conference for Minority Students (ABRCMS) "Research-based Education: From Galloping Ghosts to Gripping Geckos." Plenary Lecture. (Anaheim, CA) 2006
- Re-inventing Undergraduate Education Meeting on Transforming the Culture: Undergraduate Education and the Multiple Functions of the Research University. Workshop leader and speaker. "The Reciprocal Relationships Among Research, Teaching, and Learning." (Washington, DC) 2006
- Science Education for New Civic Engagements and Responsibilities (SENCER) Summer Institute. Meeting Opening Plenary Lecture. "The Value of Interdisciplinary Research-based Learning – the Student as Colleague." Santa Clara University. (Santa Clara, CA) 2006
- National Academe of Sciences. National Research Council. Summer Institute for Undergraduate Education in Biology. "The Value of Interdisciplinary Instruction." Univ. of Wisconsin. (Madison, WI) 2005

Massachusetts Institute of Technology/Howard Hughes Medical Institute. “The Value of Interdisciplinary Education.” (Cambridge, MA)	2005
California Science Teachers Association Meeting. “The Value of Interdisciplinary Research-Based Instruction.” (San Francisco, CA)	2005
National Academy of Sciences. Investigating Introductory Sciences Courses in the Undergraduate Context: A Systems Approach. NRC Education Center. “The Value of Interdisciplinary Education.” (Washington, DC)	2004
Chapman University. “The Value of Interdisciplinary Education in K-12.” (Concord, CA)	2004
American Association for the Advancement of Science. Symposium: Developing Student-Scientist Relationships Through Robotics: Educating the Future Generation. “Sharing Research Discoveries Enables Students to Design Novel, Bio-inspired Robots.” (Denver, CO)	2003
National Academy of Science. Board on Life Sciences. “The Value of Interdisciplinary Instruction.” Beckman Center. (Irvine, CA)	2003
National Academe of Sciences. National Research Council. Bio 2010: Summer Institute Pilot. “The Value of Interdisciplinary Instruction.” Univ. of Wisconsin. (Madison, WI)	2003
McGraw Hill Center for Teaching and Learning. Princeton University. “Closing the Gap between Teaching and Research – Shared Discoveries.” McGraw Hill Center for Teaching and Learning. (Princeton, NJ)	2001
Workshop on Education – Meeting of Deans and Vice Provosts of UC Universities. “Closing the gap between teaching and research.” (UCLA, Los Angeles, CA)	1998
Oklahoma Scholar Leadership Enhancement Program. Oklahoma State University. “Diversity enables discovery: Inspiration from insects in the design of legged robots.” (Stillwater, OK)	1994
UNIVERSITY OF CALIFORNIA AT BERKELEY	
Women in Science and Engineering Theme program - (Faculty Dinner).	2017
Womyn in Science and Engineering Theme program - WiSE O.N.E. (Outreach Networking Empowerment) Conference. Panel.	2016
Berkeley Collegium “Novel curriculum connecting undergraduate explorers at UCB.	2014
Grad Division alumni event. “Biological Inspiration, Learning from Nature.” (New York City, NY)	2013
Public Understanding of Science Panel. Molecular and Cell Biology Class 15.	2013-15
Bio-inspired Design Challenges. Integrative Biology Class 232	2011
Cal Parents Board. “The Value of Interdisciplinary Research-Based Instruction.”	2009
Frontiers of Education Symposium. Chancellor’s Inauguration. “The Value of Interdisciplinary Instruction.”	2005
e-Berkeley Symposium. From Information Overload to Information Rich: Teaching and Critical Thinking in the Point-and-Click Age. Session C - Changing the Recipe: Designing Alternatives to the Research Project.	

“From Personal to Universal Discovery Research-Based Instruction in the Classroom.”	2005
The Development and Identification of Critical Thinking in Education. Lecture. Integrative Biology Class 303.	2004
The Development and Identification of Critical Thinking in Education. Lecture. Integrative Biology Class 303.	2003
Mellon Faculty Institute on Undergraduate Research. “Educating the Next Generation: Sharing Research Discoveries Enables Engagement, Creativity and Critical Thinking.”	2003
Graduate Student Instructor FORUM. “Teaching Undergraduates to Conduct Research.”	2001
Biomechanics Seminar. “Closing the Gap between Teaching and Research – Shared Discoveries.”	2001
Short Course for Faculty Advisors of GSIs and Professional Developers of GSIs. "Closing the gap between teaching and research."	1999
Graduate Student Instructor Affairs Meeting and Graduate Student Instructor FORUM. "Rethinking teaching in light of research."	1999
SCIBUGS - Society of Integrative Biology Undergraduates. "The philosophy behind Integrative Biology."	1999
Letters & Science Alumni Presentation. “Closing the gap between teaching and research.”	1999
FORUM on Education – Meeting with UC President. “Shared Discoveries Program.”	1998
Graduate Student Instructor Affairs Meeting and Graduate Student Instructor FORUM. “Rethinking teaching in light of research.”	1999
Graduate Student Instructor Affairs Meeting and Graduate Student Instructor FORUM. “Development of critical thinking using the Perry model.”	1992

## TEACHING

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### AWARDS

Howard Hughes Medical Institute Professor	2017
National Academy of Sciences Mentor in the Life Sciences	2005
Goldman Professorship	1998-99
Distinguished Teaching Award – UC Berkeley	1996
Featured in Education Highlight by Hoopes Laura L. Mays. CBE-Life Sciences Education. Vol. 9, Issue. 4, 390-391, doi: 10.1187/cbe.10-09-0115.	2010

### UNDERGRADUATE RESEARCHERS

201 Students
54 Awards / Fellowships
13 Departmental Citation, LeConte, Franklin Henry or Marian Diamond Awards
27 Journal articles with at least one undergraduate researcher
7 Published Proceedings with at least one undergraduate researcher

88 Published Abstracts with at least one undergraduate researcher  
40 Presentations at National Meetings  
1 University of California, Berkeley Award for Excellence in Creative Innovation 2002  
3 Harvard University Professors former undergraduate researchers

#### UNDERGRADUATE COURSES

52 Courses, 3,603 Students

Interactive Seating Design Competition, Design Innovation (1 Semester, 25 students)  
Bioinspired Design (1 Semester, 107 students)  
Biomotion (4 Semesters, 346 students)  
Physiology, Structure and Biomechanics (5 Semesters, 969 students)  
The Mechanics of Organisms (6 Semesters, 480 students)  
The Mechanics of Organisms Laboratory (7 Semesters, 116 students)  
Comparative Animal Physiology (16 Semesters, 1,202 students)  
Physiological Ecology (8 Semesters, 404 students)  
Physiological Ecology Laboratory (6 Semesters, 86 students)

#### GRADUATE COURSES

52 Seminars, 638 Students

Bio-inspired of Robots (1 Semester, 25 students)  
Biomechanics (24 Semesters, 364 students)  
Research (7 Semesters, 7 students)  
Controversies in Comparative Physiology (10 Semesters, 85 students)  
Invertebrate Review (3 Semesters, 31 students)  
Academic Survivorship (5 Semesters, 114 students)  
Locomotion (1 Semester, 22 students)  
Goals of Dissemination of Research: Your Interface with the Public (1 Semester, 6 students)

#### UNDERGRADUATE STUDENT DIRECTED RESEARCH

Research/Independent Study/Thesis/Honor Thesis (71 Courses, 71 students)

#### GRADUATE STUDENT DIRECTED RESEARCH

Research/ Special Study (117 Courses, 117 students)

#### UNDERGRADUATE RESEARCH STUDENTS ADVISED – 213 STUDENTS

Ahn, Anna – Professor, Harvey Mudd	Bashore, Claudia
Akella, Prithvi	Berger, Jeremy Maxwell
Alexander, Teressa – Harvard Fellow	Berns, Madalyn – Masters, MIT
Alocozy, Sameera - Creighton University, MD	Beylina, Julia
Amsbaugh, Alysa	Bishop-Moser, Joshua– PhD, Michigan
Anderson, Bruce, PhD Berkeley	Bocchi, Steven
Armiger, Jaron	Bourgain-Chang, Eric
Arnaud, Paul-Henri – Programmer, Autodesk	Chang, Chanson – PhD student, Cornell
Assad, John – Professor, Harvard	Chang, Kevin – Dentist
Azpiroz, Richard	Chavdarian, Aram – CEO Complex Imaginary
Baek, Benjamin	Chen, Crytsal
Balint, Claire – PhD, Caltech	Chen, Ed – Software Eng., Spotify
Basho, Shevta	Chen, Juliann – Proj. Mgr, Iris Enironmental

Chen, Tao – Co-Founder Digzibit LLC  
 Chen, Tim  
 Chitaphan, Chaniga  
 Chiu, Alan  
 Chiu, Jessica  
 Chow, Song – MD, Stanford  
 Chun, David – CEO, Kai PT & Rehabilitation  
 Chung, John Inn – Sr. Scientist, Amgen  
 Chung, Joseph Sunghyuhn  
 Clemente, Yeah  
 Cohen, Daniel – PostDoc, Stanford  
 Combes, Stacey – Professor, Harvard  
 Comendant, Tosha – Conservation Biol. Inst.  
 Corbett, Daniel – PhD, U. of Washington  
 Corder, Andrew – Lead Engineer, Evalve, Inc.  
 Cueva, Kristine – Medical Assistant  
 Dastoor, Sanjay – CEO, Boosted Boards  
 Doherty, Rene  
 Duckering, Casey  
 Earls, Kay – PhD, Brown  
 Eckel, Christine, M. – Prof., Carroll College  
 Emon, Nora – MD, Kaiser  
 Emshwiller, Maya – Nurse Practitioner  
 Fajardo, Ivonne  
 Fallejo, Sam – MD, Optometry, Kaiser  
 Finnerty, Casey – Professor, SMU-Minn  
 Fischer, Christopher – MD student, UCSD  
 Freundberg-Mates, Elijah  
 Friedrich, Denise  
 Gao, Peiran – Propulsion Scientist, Space X  
 Garcia, David  
 Gooding, Justin – MD, Radiology  
 Greene, Nicole  
 Hammond, Zachary Michael  
 Hang, Jemey  
 Hayden, Jennifer – Veterinarian  
 Hoekstra, Hopi – Professor, Harvard  
 Hsieh, Emmelyn Shin-Shyuan, UC Davis  
 Hsieh, Tonia – Professor, Temple  
 Hu, Charles – PhD, Johns Hopkins  
 Huang, Huajian  
 Hwang, Michael  
 Jagger, Amy – Dentist  
 Jain, Jinendra – Nightingale Intelligent Sys.  
 Jindrich, Devin – Professor, Arizona State  
 Jinn, Judy – PhD, UC Berkeley  
 Jusufi, Ardian – PostDoc, Harvard  
 Keppel-Henry, Wesley – MS Food Science  
 Kim, Jeehyun  
 Ko, Christine  
 Koh, Mingeong  
 Kooker, Andrew  
 Kubow, Timothy – MS  
 Kurihara, Chie  
 Lam, Han K  
 Lam, Kiet  
 Le, Michael  
 Lecoeuche, Marina  
 Lee, Brian  
 Lee, Chai Sue – MD, Kaiser  
 Lee, Crystal  
 Lee, Jusuk – Sr. Eng., Samsung Electronics  
 Lee, Strom Ben – Software Eng., Apple  
 Lerner, Lora  
 Levy, Joshua  
 Li, Debbie – NPI Eng., Intuitive Surgical  
 Lian, Thang  
 Liao, Eddy – Sr. Eng., Aspen Med. Products  
 Libby, Tom – PhD student, Berkeley  
 Lie, Stephanie Feng  
 Lin, Stanley – Dentist  
 Lotto, Beau – Lecturer, U. College London  
 Lum, Robert – Dentist  
 Maclafferty, Michael  
 Macpherson, Roshena – PhD, Stanford U.  
 Mahavadi, Anil, M.D. Candidate, U. of Miami  
 Armita Manafzadeh – PhD, Brown U.  
 McRae, Brian, Genentech  
 Merritt, Cody  
 Min, Carol – MD, Kaiser  
 Mitra, Subhodeep  
 Mohapatra, Andy, MD cand., Washington U.  
 Moon, Ha  
 Moon, Won  
 Moore, Talia – PhD, Harvard  
 Moran, Dan – Assoc. Dir., U. S. California  
 Mueller, Rachel – Professor, CSU  
 Murphy, ERin  
 Mullens, Christopher – PhD student, NWU  
 Najman, Laura – Veterinarian  
 Ng, Qiwen Paulina – M.Eng., U. of Illinois  
 Nowak, Joshua – Lawrence Berkeley Nat. Lab  
 Noy, David – VP Prod. Mgmt., EMC  
 Nuygen, Anne – Eng., Slated, Inc.  
 Olivas, Jake – Engineer, Lockheed Martin  
 Patak, Avantika  
 Patel, Dhvani  
 Patel, Nilesh – MD  
 Pham, Diem – MD  
 Phoumthippavong, Eric – Eng., Pocket Gems  
 Perng, Yung-En – DPT, MGH Inst. of Health  
 Porter, William Cameron  
 Robert, Jayden  
 Robin, Amanda  
 Roderick, Will  
 Rosenthal, Marcus – CEO, Revolve Robotics  
 Rundong, Tian  
 Ryman, Ginevra – McHenry Conservation  
 Saulsbury, James  
 Segel, Jeff – PI, Ironwood Pharmaceuticals  
 Shamble, Paul – PhD student, Cornell  
 Soni, Chirag, Eng., JGC

Spool, Jeremy – PhD, U. of Wisconsin  
 St. Louis, Ian  
 Strachan-Olson, David  
 Ta, Ryan  
 Tan, Irene – Dentist  
 Tearle, Benjamin – Engineer, General Motors  
 Tian, Rundong  
 Ting, Lena – Professor, Emory  
 Tiwana, Manpreet  
 Tobias, Paul – MD cand., Ohio State U.  
 Trejo, Raul – MD, San Ysidro Health Ctr.  
 Tsang, Michael – PhD, U. of Southern CA  
 Tu, Mike – PhD, U. Chicago  
 Tullis, Alexa – Professor, U of Puget Sound  
 Utsumi, Kaera  
 Van Laarhoven, Marianne – Professor, UIU  
 Wai, Dennis

Wang, Zhongyuan  
 Wei, Randy – MD, PhD student, UCI  
 Weiss, Brandon  
 Whang, John  
 Wong, Ben  
 Wong, Stan – Dentist  
 Woo, Jesse  
 Wu, Grace - BU Biomedical Engineering  
 Wu, Katherine  
 Yamauchi, Angela – Northern Arizona U.  
 Yeates, Kyle – VA Ctr. Or Excellence in  
 Prosthetic Engineering  
 Yu, Kelly – Development, Juma Ventures  
 Zangenah, Nikki  
 Zuccarello, Danielle – PhD, U. Chicago

#### GRADUATE STUDENTS ADVISED - PHD

Ahn, Anna – 2000, Prof. Harvey Mudd  
 Anderson, Bruce – 2000, Augmented Reality  
 Autumn, Kellar – PhD, 1995, Prof. Lewis & Clark  
 Burden, Sam – PhD, 2014, Prof. UW  
 Dudek, Daniel – PhD, 2006, Prof. VA Tech  
 Chang-Siu, Evan – PhD, 2014, Lect. Maritime Aca  
 Hunt, Nate, PhD, 2017, U Nebraska  
 Jayaram, Kaushik – PhD, Post doc, Harvard  
 Jindrich, Devin – 2001, Cal State San Marcos  
 Jusufi, Ardian – PhD, 2013, U Technology Sydney  
 Lee, Jessica, PhD, current  
 Libby, Thomas – PhD, Post doc U Washington

Martinez, Marlene, PhD, 1999, American River College  
 McInroe, Ben, PhD, current  
 Mongeau Jean – PhD, 2013, Penn State  
 Moritz, Chet – PhD, 2003, Prof. UW  
 Naik, Shilpa, Masters, 2017  
 Peattie, Anne – PhD, 2007, ION Translations  
 Revzen, Shai – PhD, 2009, Prof. Michigan  
 Simon, Sponberg – PhD, 2008, Prof. GT  
 Springthrope, Dwight, 2017, DASH Robotics  
 Weinstein, Randi – PhD, 1994, Lecturer, UA  
 Worcester, Suzi – PhD, 1994, Prof. UC Merced

#### POST DOCTORAL STUDENTS ADVISED

Autumn, Kellar – Professor, Lewis & Clark  
 Carrier, David – Professor, U. Utah  
 Cowan, Noah – Professor, Johns Hopkins  
 Farley, Claire – Professor, U. Colorado  
 Federle, Walter – U. Lecturer, Cambridge UK  
 Garcia, Mariano – Engineer  
 Glasheen, James – CIT Venture Capital  
 Goldman, Daniel – Professor, Georgia Tech

Irschick, Duncan – Professor, U. Mass  
 Kram, Rodger – Professor, U. Colorado  
 Li, Chen – Professor, Johns Hopkins  
 Meijer, Kenneth – Professor, Maastricht  
 Queathem, Elizabeth – Lecturer, Grinnell  
 Seipel, Justin – Professor, Purdue  
 Spence, Andrew – Professor, Temple

Noah Cowan (2010) and Daniel Goldman (2012) received Presidential Early Career Award for Scientists and Engineers (PECASE) Awards from President Obama.

#### VISITING FACULTY AND STUDENTS HOSTED

Song, Yi, PhD, Nanjing University	2017-18
Wang, Zhongyuan Wang, PhD, Nanjing University	2015-16
Wu, Shilin – PhD, Beijing University	2016
Donbbenga, Sander – PhD, Delft University of Technology	2015
Max Donovan, Max – Professor, Simon Fraser University	2014
Lin, Pei-Chun – Assoc. Professor, National Taiwan University	2014

**COMMUNITY SERVICE & PUBLIC OUTREACH – PRESENTATIONS, ACTIVITIES AND INVITED LECTURES**

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Academic Innovation Studio. Panel. “Designing Successful Team Projects: Why, How, and For Whom.” (UC Berkeley, Berkeley, CA) (Nov)	2017
CITRIS Connected Communities Initiative in collaboration with the Office of the Lt. Governor of California. A Wake-Up Call for California: Innovations in Earthquake Preparedness. Invited Speaker. “Bioinspired Search and Rescue Robots.” (UC Berkeley, Berkeley, CA)	2016
TEDxBerkeley - Theme, Finding x. Demonstrated cockroach inspired robot. UC Berkeley	2016
Swissnex. Bay Area Science Festival. Invited presentation on “Bio-Inspired Robots: Learning from Nature.” (San Francisco, CA)	2015
National Youth Leadership Foundation on Technology. Invited Presentation on “Bio-Inspired Robots: Bipedal Bugs, Galloping Ghosts and Gripping Geckos.” (Berkeley, CA)	2015
Chabot, Space & Science Center. Invited Public Lecture. “Bio-Inspired Robots: Bipedal Bugs, Galloping Ghosts and Gripping Geckos.” Robots at Chabot Weekend. (Oakland, CA)	2015
Society for Advancement of Chicanos and Native Americans in Science (SACNAS) National Meeting. Invited Speaker in Session “You’re Gonna Build a What? Creativity and Vision in Biomedical Engineering.” (Los Angeles, CA)	2014
Society for Advancement of Chicanos and Native Americans in Science (SACNAS) National Meeting. Participated in <i>Conversations with Scientists</i> where attendees engaged in informal round-table discussions about discipline-specific careers. (Los Angeles, CA)	2014
Northgate High School. Invited Lecture. “Journey from Sensing to Movement.” Physiology and veterinary students. (Walnut Creek, CA)	2013
Northgate High School. Senior Projects. Judge. (Walnut Creek, CA)	2012
World Science Festival. Invited Panelist. “Radicle Innovation in Nature.” (New York City, NY)	2012
Northgate High School. Invited Lecture. “Walking, Running, Climbing, Robots and Animation.” Sports medicine, robotics club and animation students. (Walnut Creek, CA)	2012
Northgate High School. Invited Lecture. “Journey from Sensing to Movement.” Physiology and veterinary students. (Walnut Creek, CA)	2012
Technology, Entertainment & Design Conference – XSan Diego. TED <sup>x</sup> SanDiego. Demonstration of Gecko-inspired Adhesive. (San Diego, CA)	2011
Berkeley Edge Conference (Minority Recruitment). Session dedicated to the Bay Area's Interdisciplinary Centers at UCB and the National Laboratories. “Graduate School Decisions: CiBER-IGERT.” (Berkeley, CA)	2011

Society for Advancement of Chicanos and Native Americans in Science. Annual Meeting. Poster judge. (San Jose, CA)	2011
Northgate High School. Senior Projects. Judge. (Walnut Creek, CA)	2011
Minority Biomedical Research Support-Research Initiative for Scientific Enhancement (MBRS-RISE), Consortium for Evolutionary Studies and Tri-Beta Biological Honor Society. California State University, Fresno. “Biological Inspiration: Running Robots, Artificial Muscles and Gecko- inspired Adhesives.” (Fresno, CA)	2010
Biology Fellows Program/Initiative for Maximizing Student Diversity/ Minority Access to Research Careers and Biology Scholars Program Panel. "What makes a good graduate school applicant?" (Berkeley, CA)	2010
Berkeley Edge Conference (Minority Recruitment). Session dedicated to the Bay Area's Interdisciplinary Centers at UCB and the National Laboratories. “Graduate School Decisions: CiBER-IGERT.” (Berkeley, CA)	2010
Cal Day. Public Lecture. “Bio-Inspired Robots: Bipedal Bugs, Galloping Ghosts and Gripping Geckos.” (Berkeley, CA)	2010
Cal Day. Public Lecture. Public Television - KQED QUEST. University of California at Berkeley. “Bio-inspiration: Nature as Muse” (Berkeley, CA)	2010
Cottrell Scholar Conference for Early Career Research Scientists. Research Corporation for Science Advancement. “The Value of Interdisciplinary Research-based Instruction.” at the Cottrell Scholar Conference. Led conference-wide discussion with Harry Gray entitled. “The Challenges to Bridging the Ever Widening Gap Between the Research Frontier and Teaching.” (Tucson, AZ)	2009
Beckman Scholars Symposium for Undergraduate Researchers. ‘Bipedal Bugs, Galloping Ghosts and Gripping Geckos and Bipedal Bugs: Bio- Inspired Robots, Adhesives and Artificial Muscles.’ (Irvine, CA)	2009
Technology, Entertainment & Design Conference. TED2009. “Beyond Biomimetics: Biomutualism.” (Long Beach, CA)	2009
MathScience Innovation Center Conference. Remote video presentation. “Biological Inspiration: Running Robots, Artificial Muscles and Gecko- inspired Adhesives.” to the (Richmond, VA)	2009
The Science and Entertainment Exchange. The National Academies. “Biologically Inspired Robots.” (Los Angeles, CA)	2008
Cal Day. Public Lecture. “Biological Inspiration: “Bipedal Bugs, Galloping Ghosts and Gripping Geckos.” (Berkeley, CA)	2008
15 <sup>th</sup> Annual Undergraduate and Graduate Research Symposium. <i>Keynote Speaker</i> . Morgan State University. “Biological Inspiration: Robotics, Artificial Muscles and Adhesives.” (Baltimore, MD)	2008
Mathematical Biosciences Institute. Public Lecture. The Ohio State University. “Biological Inspiration: “Bipedal Bugs, Galloping Ghosts and Gripping Geckos.” (Columbus, OH)	2008
National Youth Leadership Foundation on Medicine. Lecture “Bio-inspired Design in Medicine.” (Berkeley, CA)	2007

Foothill Middle School. "Human evolution." Ancient Civilizations. (Walnut Creek, CA)	2007
Technology, Entertainment and Design Conference, TED. "Biologically Inspired Design." (Monterey, CA)	2005
National Youth Leadership Foundation on Technology. <i>Plenary Lecture</i> . "Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspired Computer Animation, Robotics, Artificial Muscles and Adhesives." (San Jose, CA)	2005
Exploratorium. Mission to Mars Celebration. Webcast Live. "Robotic BioMotion." (San Francisco, CA)	2004
Woodside Elementary School. "Bugs and Robots." (Walnut Creek, CA)	2004
Siemens Westinghouse Science Mathematics and Technology Competition Presentation. University of California at Berkeley. "Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspired Computer Animation, Robotics, Artificial Muscles and Adhesives." (Berkeley, CA)	2003
Technology, Entertainment and Design for Medicine, TEDMED3 Conference. "Unlocking the Secrets of BioMotion." (Philadelphia, PA)	2003
National Youth Leadership Foundation on Technology. <i>Plenary Lecture</i> . "Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspired Computer Animation, Robotics, Artificial Muscles and Adhesives." (San Jose, CA)	2003
Robotics Society of America. "Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspired Computer Animation, Robotics, Artificial Muscles and Adhesives." (San Francisco, CA)	2003
Cal Day. Public Lecture. University of California at Berkeley. "Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspiration for Animation, Adhesives and Robots." (Berkeley, CA)	2002
Technology, Entertainment and Design Conference, TED. "Bouncing Bugs, Galloping Ghosts and Gripping Geckos: BioInspired Materials, Robots and Adhesives." (Monterey, CA)	2002
New York Hall of Science. "Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspiration for Animation, Adhesives and Robots." – Giving hope to children after 9/11. (New York, NY)	2002
Spencer Trask Public Lecture. Princeton University. "Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspiration for Rapid Running Robots." (Princeton, NJ)	2001
Science, Entertainment and Teaching. Symposium. Society of Integrative and Comparative Biology. "Bestowing Biological Inspiration And Getting Novel Insight From Engineering And Entertainment." (Chicago, IL)	2001
Cal Day. Public Lecture. "Bipedal bugs, galloping ghosts and gripping geckos: animation and design of rapid running robots." (Berkeley, CA)	1999
Exploratorium. "Treadmill toads, bipedal bugs, galloping ghosts and gripping geckos: animation and design of rapid running robots." (San Francisco, CA)	1999
Exploratorium. Woodrow Wilson National Fellowship Foundation. "Life in Motion Outreach." (San Francisco, CA)	1999

7 <sup>th</sup> Annual Technology, Entertainment and Design Conference, TED. “Roots, rules and relevance: the importance of integrative biology.” (Monterey, CA)	1997
Northern California Science Writers Association. Lawrence Berkeley Laboratory. “Diversity enables discovery.” (Berkeley, CA)	1997
33 <sup>rd</sup> Annual Briefing New Horizons in Science. Council for the Advancement of Science Writing. “Diversity enables discovery: Lessons from many legged locomotors as inspiration for robot design.” (Durham, NC)	1995
Contra Costa District Elementary School Science Fair. “Bugs, robots and science.” (Concord, CA)	1993

## **COMMUNITY SERVICE & PUBLIC OUTREACH – TELEVISION AND VIDEO**

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### GENERAL PUBLIC - INTERNATIONAL

German Public Television. Bilderfest. Factual Entertainment. "Biological Inspiration in Animal Locomotion."	2013
<i>Nature</i> Publishing Co. Video. Leaping lizards! <i>Jurassic Park</i> got it right.	2012
Australian Broadcast Corporation Television's <i>Catalyst</i> Series. "Robot Biomimicry."	2009
Dutch Science TV. Series of science shorts focusing on nature and engineering. Kleven als een gekko. Dat willen wij ook. Episode 4.	2004
Korean Broadcasting System segment on “Science 21.”	2003
Dutch Public Television Science Documentary on “We want that too.” The program goal is to amaze people by our own ingenious ways to imitate nature.	2003
National Danish Broadcasting Company (Nightly News and Radio) segment by Peter Hesseldahl on "The PolyPEDAL Lab."	2002
National Geographic Channel. “Locomotion” from the Toyota World of Wildlife Series. 160 countries.	2002
Oxford Scientific Films – BugWorld Series.	2002
BBC Natural History Unit and The Learning Channel – “Robocritters.” profile of the latest in robotic technology and of the scientists who look to nature for inspiration as they design the world’s newest generation of robots.	2000
Australian Broadcast Corporation – Quantum on “Polypedal Robots.”	2000

### GENERAL PUBLIC - NATIONAL

SERIES	
National Geographic. “Watch: Cockroaches Survive Squeezing, Smashing, and More.”	2016
Nanotechnology. The World Beyond Micro. Silicone Run Productions featured gecko and gecko-inspired adhesive.	2012
Discovery Channel. Daily Planet featured Poly-PEDAL Lab and CiBER in "How Lizards and Robots Use Tails."	2012
PBS. QUEST featured Poly-PEDAL Lab and CiBER in "Bio-Inspiration: Nature as Muse."	2008

Discovery Channel. Prototype This. Episode on “Gecko Superman Suit.”	2008
Discovery Channel. Prototype This. Episode on “Six-legged All Terrain Vehicle.”	2008
Discovery Channel. Daily Planet Show. Episode on “Gecko Tails”.	2008
History Channel. Modern Marvels Television Series. Episode on “Sticky Stuff” featuring how geckos stick and the inspired they provided for climbing robots.	2007
Animal Planet. Most Extreme Series. Movers. Gecko featured as one of the top ten swiftest animals.	2005
National Geographic Television and Film. “The Shape of Life - The Conquerers” Series produced by Sea Studios Foundation. Premiered on PBS.	2002
Beyond 2000. TV Series. “Feets of Daring”	2000
Discover 2000. TV Series. “Can man mimic organic life-forms with machinery?”	2000
ABC Special. “Living a Bug’s Life”. Explained how we assisted Disney and Pixar with computer animation movie.	1998
 NEWS	
Science News. Watch this cockroach-inspired robot try to walk through walls by Michael Allen. (Feb)	2018
NY Times Video. How Cockroaches Crash Into Walls and Keep Going by Douglas Quenqua. (Feb)	2018
NY Times Video. Cockroaches: Indestructible, and Instructive to Robot Makers by James Gorman.	2016
SmartPlanet (CNET). Video. Robots Inspire Leaping lizards. March	2012
CBS Evening News. Segment on “Robotic creepy creatures give new meaning to software bugs.”	2003
CBS Up to the Minute. Segment on “Insects; Insects are the little inspirations behind some big advances in robotics.”	2003
CBS Evening News. Segment “Better Cockroach; Cockroaches are inspiring scientists to build the next generation of robots.”	2003
Tech Live, TechTV. Segment on “Biological Inspiration.”	2002
New York Times Television. Segment on “Bio-Inspiration.”	2002
Next@CNN. Segment on “Bug Bots.”	2002
ABC Television World News Tonight/Morning with Peter Jennings - Ned Potter interview. Segment on “Bug Robots”	2000
ABC Television World News Tonight/Morning with Peter Jennings - Ned Potter interview. Segment on “Evolution: Sticky Fingers.”	2000
ABC Television World News Tonight/Morning with Peter Jennings - Robert Krulwich. Assisted in week-long nightly segments comparing animals to athletes for the upcoming Olympics.	2000
Discovery Channel News. Segment on “Gecko Feats.”	2000
Science and Technology Network. Segment on “Gecko Feats”	2000

## CHILDREN – K-12

- Wild Kratts. PBS TV Children’s cartoon. “The Gecko Effect.” Ep. 38 S1. 2013  
PBS Random House Preschool TV. Cat in the Hat Knows All About That.  
“Talk a walk.” Program on animal gaits in nature. (Oct) 2011  
PBS DragonflyTV. Nano. Children Science Series. "Gecko Feet." 2009  
Kids and Chaos. Show dedicated to allowing children to see what it is like to  
be a researcher. 1999  
Disney Channel Documentary. “Movie surfers go inside ‘A Bug’s Life’”.  
Explained how we assisted Disney and Pixar with computer animation for  
the movies. 1999  
Learning Channel Cable in the Classroom. “See how they run.” Elementary  
School Educational Documentary Series. Edited script for entire show and  
provided scientific consulting. 1997

## COMMUNITY SERVICE & PUBLIC OUTREACH – RADIO & PODCASTS

- National Public Radio. Science Friday. “Learning to walk like a gecko, see  
like a lobster.” 2016  
BBC Radio. The Science Hour. “Cockroaches Inspire Search and Rescue  
Robot.” 2016  
National Public Radio. KQED FM. “Biorobotics goes high tech.” 2012  
German Public Radio. “Disappearing cockroaches.” 2012  
American Association for the Advancement of Science Podcast. 2012  
German Public Radio. “Leaping lizards, robots and dinosaurs.” 2012  
Pulse of the Planet. Kids Science Challenge. 2009  
APM Market Place. “Gecko inspired Adhesive.” 2008  
Robot Podcast. Switzerland – EPFL "Bio-inspired Locomotion" 2008  
Science Podcast. “Gecko tails.” 2008  
KQED Public Radio. Living on Earth. “Biomimicry.” 2007  
ABC Radio National. The Science Show. “Robots.” 2007  
National Public Radio. Science Friday. Gecko adhesives designated as one of  
the top 10 scientific advances for 2006. 2006  
BBC Radio. Leading Edge. “Walking octopuses.” 2005  
Exploratorium Museum. Webcast Live. “Journey to Mars.” 2004  
National Public Radio. All Things Considered with Linda Wertheimer.  
“Lizard Study May Create Super-Strong 'Gecko' Tape.” 2003  
CBC Radio. 2000  
BBC Radio – Radio Science Live – Science in Action. 2000  
German Public Radio. “Sticky geckos.” 2000  
Australian Broadcasting Corporation's Radio National Breakfast. 2000  
Learning Channel Cable in the Classroom. “See how they run.” Elementary  
School Educational Documentary Series. Edited script for the entire show  
and provided scientific consulting. 1997

**COMMUNITY SERVICE & PUBLIC OUTREACH - SELECTED BOOKS, NEWSPAPERS, MAGAZINES  
AND WEBSITES COMMUNICATING SCIENCE TO THE PUBLIC (SELECTED)**

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Today. "How cockroaches crash into walls and keep going". by Douglas Quenqua.	2018
Time. "Here's Why it's so hard to kill a cockroach" by Nolan Feeney.	2016
Scientific American. "Robotic coaches can squeeze into small spaces."	2016
Los Angeles Times. "If you can't squish 'em, join 'em: Scientists build cockroach robot" Amina Khan.	2016
Popular Science. "This roach-inspired robot crawls even when squished" by Kelsey D. Atherton.	2016
Tech Insider. "Scientists came up with some wild experiments to build a robotic cockroach."	2016
Reuters. "Robot roaches to the rescue" Ben Gruber.	2016
Los Angeles Times. "Engineers look to insects for robotic inspiration." Tracey Lien.	2015
Really? Robots. Book Chapters on "Explorer bots" and "Nature's secrets" by Susan Hayes. Scholastic Press. For 7-12 year old children.	2015
Reuters. "Cockroach robot uses shell to overcome obstacles."	2015
CNBC. "What a robot shaped like a cockroach can do" by Robert Ferris.	2015
Popular Science. "Watch a robotic roach learn to tuck and roll" by Kelsey D. Atherton.	2015
IEEE Spectrum. "Armored Exoskeletons Help Roachbots Go Anywhere, Handle Anything" by Evan Ackerman.	2015
Tech Times. "Roach-inspired robot scuttles through clutter with ease" by Andrea Alfano.	2015
New Scientist. "Robo-roach rolls its curved back to wriggle through cracks" by Sandrine Ceurstemont.	2015
BBC News. "Sandpit probes walking strategies." Institute of Physics.	2015
Phys.org. "On soft ground? Tread lightly to stay fast."	2015
Science Daily. "Lessons from cockroaches could inform robotics."	2013
IEEE Spectrum. "UC Berkeley's Little Legged Robots Grow Wings and Tails." by Evan Ackerman.	2013
Nova Next. "The Evolution of the Bioinspired Robot" by Rachel Nuwer.	2013
Washington Post. "Leaping lizards and the power of interdisciplinary collaboration." by Emi Kolawole.	2012
Action Magazine, Scholastic publication for low-level reading middle schoolers. Robots inspired by nature.	2011
Cal Parents Magazine. Letters Home. Undergrad researchers push the knowledge envelope.	2011
National Geographic. Biomimetics: Design by Nature by Tom Mueller.	2008
California Magazine. "Back to nature: The latest inventions are inspired by the world around us." Nov/Dec by Vicki Haddock.	2008
Book, "The Gecko's Foot - Bio-inspiration: Engineering New Materials from Nature" by Peter Forbes. W. W. Norton & Company: 288 pages.	2006

Wired Magazine. Featured in article “Why 6-Legged Bots Rule,” by Tom McNichol. 2002

Metropolis Magazine. Featured in article “Bioninspiration: Take design cues from the natural world,” by Martin C. Pedersen. 2002

Book, “Evolution of a New Species: *Robo sapiens*.” Featured in robotics book by Menzel, P. and D’Aluisio, F. Cambridge. MIT Press. p. 90-101. Presents interviews on the inspiration in the design of four mobile robots using principles from nature. 2000

International Design Magazine. “Secrets of Motion.” Sept/Oct. by Chee Pearlman. 1997

Discover Magazine. “See How They Run.” September by Carl Zimmer. 1994

*Science* (AAAS Journal) and *ScienceNOW* (AAAS On-line)

Watch this cockroach-inspired robot try to walk through walls by Michael Allen. (Feb) 2018

Why is it so hard to squash a cockroach? by Elizabeth Pennisi. 2016

Cockroaches and Geckos 'Vanish' With Amazing Acrobatics. 2012

Tails Guided Leaping Dinosaurs to a Safe Landing. 2012

Racing Crash-Happy Cockroaches. *Science Meeting Briefs*. 327, 776 2010

One Tail, Many Feats. 2008

Crab’s Downfall Reveals a Hole in Biomechanics Studies. 315, 325 2007

Scurrying Roaches Outwit Without Their Brains. 307, 346-347 2005

Cockroach Stability. 297, 1643 2002

Biology Reveals New Ways to Hold on Tight. 296, 250-251 2002

How geckos stick on der Waals. 2002

It’s Not Easy to Derail a Roach. 2002

Geckos Climb by the Hairs of Their Toes. 288, 1717-1718 2000

Better Than Nature Made It. 288, 5463 2000

In Nature, Animals That Stop And Start Win The Race. 288: 83-85 2000

*Nature* (Journal) and *Nature.com* (On-line)

Cockroaches inspire robot. *Nature* 530, 257. doi:10.1038/530257d. 2016

Leaping lizards! *Jurassic Park* got it right. *Velociraptor* adjusted the angle of its tail to stay stable when jumping by Charlotte Stoddart. 2012

News and Views. “Biomechanics: Leaping lizards and dinosaurs.” by R. McNeill Alexander. 2012

Ninja Geckos (with video). 2008

Evidence for van der Waals Adhesion in Gecko Setae. 2002

Biomechanics: Gripping Feat. 405, 631 2000

*NY Times* (Newspaper and/or On-line)

How Cockroaches Crash Into Walls and Keep Going by Douglas Quenqua. (Feb) 2018

Cockroaches: Indestructible, and Instructive to Robot Makers by James Gorman. 2016

Now You See It, Now It’s Swung Out of Sight by Sindya N. Bhanoo. 2012

When a Sticky Gecko Starts to Slip, Its Tail Comes to the Rescue.	2008
They're Robots? Those Beasts!	2004
The TED Conference: 3 Days in the Future.	2002
Design Debut: Trade Secrets of the 6-Legged Set.	2002
Engineers Ask Nature for Design Advice.	2001
Pitter-patter of hairy feet.	2000
<i>Business &amp; Industry (Print and On-line)</i>	
Business Times. "How cockroaches crash into walls and keep going".	2018
Forbes. "Robotic Roaches May Be The Future Of Earthquake Rescue" by Janet Burns.	2016
MIT Technology Review. "This Uncrushable Robot Cockroach Just Wants to Rescue You" by Will Knigh.	2016
The Atlantic. "Atlantic. Why You Can't Keep Cockroaches Out of Your Home" by Ed Yong.	2016
Slate. "Why Cockroaches Are So Difficult to Crush. It could make them excellent rescue robots in disasters" by Rachel Becker.	2016
Market Business News. "Robot cockroach squeezes through tiny cracks great for rescue missions" by Marie Singer.	2016
The Economist. Insect acrobatics: Flipping roaches: How cockroaches vanish.	2012
Nanopatents and Innovation. "Leaping Lizards And Dinosaurs Inspire Robot Design."	2012
PC World. "Tailbot Grows A Lizard-Like Tail, Could Help Save Lives." by Elizabeth Fish.	2012
Newsweek. "Nature is the Model Factory."	2010
Biotech Business Week. Featured in article "Arrays; New adhesive mimics gecko toe hairs"	2008
Nanotechnology Today. "The pitter patter of little feet... climbing straight up a wall."	2008
R&D. "This gecko's not selling car insurance."	2008
Associated Press Financial Wire. "Scientists taking cues from nature to solve tech problems."	2006
Forbes. "The Robots are Coming - The Stickybot." Designated as one of the "EGang" list of technology innovators.	2006
U.S. Industry Today. "Biomimicry"	2003
Economist. "A bug's life for robots: roachmobile on the march."	2003
Newsfactor Innovation. "Gecko Glue May Aid Computer Chipmaking."	2003
BusinessWeek. "Geckos stick like glue -without goo."	2000
Fortune Magazine. "Biobots."	2000
The Economist. "Climbing the walls."	2000
Chemical & Engineering News. "Gecko bonding."	2000
Chemistry and Industry. "Secrets of a gecko's sticky fingers."	2000

*International* (Print and On-line)

Australia & New Zealand. Scimex. "Robotic roaches run headlong into walls without damage."	2018
Africa. Mail&Guardian. "Versatile 'cockroach' robots to the rescue" by Oliver Milman.	2016
India. The Telegraph. "Eeks! A robot inspired by roach" by G.S. Mudur.	2016
UK. BBC News Magazine. "How cockroaches could save lives."	2015
Pakistan. AIPakistan. "Cockroach robot uses shell to overcome obstacles."	2015
India. Business Insider. "This cockroach-inspired robot uses 'parkour' moves to sneak through obstacles" by Tanya Lewis.	2015
UK. Daily Mail. "The terrifying cockroach bot that can squeeze through the tiniest of gaps" by Mark Prigg.	2015
France. French Tribune. "African Lizards Inspire Creation of Search-and-Rescue Robots." by Raoul Girard.	2012
UK. The Guardian. "Leaping lizards."	2012
Al Jazeera. "Leaping lizards give technology a nudge."	2012
India. The Hindu. "African leaping lizards inspire."	2012
SouthAsia News. "Leaping lizards help design robots with tails."	2012
Indonesia. Jakarta Globe. "UC Berkeley Lab Makes Robot That Emulates Leaping Lizard."	2012
South Africa. Brainstorm Magazine. "Turning to nature for the robot revolution."	2010
Indonesia. Situs Kimia. "Rahasia di balik kemahiran tokek merayap."	2009
UK. The Daily Telegraph. "Gecko's use their tails to run up walls."	2008
UK. BBC News. "Tail 'key' for gecko acrobatics."	2008
India. Daily India. "Gecko's tail aids aeronautics researchers."	2008
UK. The Guardian. Science: In control. "How geckos stay upright."	2008
Germany. Focus Magazine. "Gecko-Schwanz verhindert Stürze."	2008
Germany. Die Welt. "Geckos steuern mit ihrem Schwanz; Nach dem Vorbild von Füßen und Schwänzen der Echsen wollen Forscher Kletter- und Gleitroboter entwickeln."	2008
Germany. Die Welt. Geckofüße halten bis zu 140 Kilogramm.	2008
Spain. El Mundo. "El paracaídas corporal de los lagartos; Descubren que los geocos usan su cola para trepar y evitar descensos bruscos."	2008
Germany. Frankfurter Allgemeine Zeitung. "Natur und Wissenschaft; Im Sauseschritt die Wand hoch Wie Geckos ihre Zehen verankern und wieder lösen."	2006
UK. The Guardian. "Two legs good for tiptoeing octopus."	2005
UK. BBC News. "Walking Octopus Inspired Soft Robotics."	2005
India. The Hindu. "Wall-climbing Robot to Combat Terror."	2003
Germany. Stern. "Roboter."	2000
India. Times of India. "Scientists working on synthetic gecko feet."	2000
UK. The Daily Telegraph. "Gripping solution to mystery of geckos."	2000
France. Liberation. "Lézards appliqués. Le gecko colle même sur les surfaces lisses. Les scientifiques lèvent le voile sur sa technique d'adhésion."	2000

Malaysia. Suara Merdeka. “Eahasia tokek untuk buat perekat hebat.” 2000

#### **CONTRIBUTION TO DESIGN OF PUBLIC EXHIBITS AND CONTESTS**

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Design Showcase. Jacobs Institute of Design Innovation. Bioinspired Design Class Presentation (Integrative Biology 32, Berkeley, CA) 2016

National Kids Science Challenge. Biomimetic Design Contest for 3<sup>rd</sup> to 6<sup>th</sup> grade school children. 1,500 entries. Assisted in contest design and judged entries. Sponsored by National Science Foundation and Pulse of the Planet. 2010

Biomimetics Exhibition. Alfred Nobel's Dynamite Factory in Stockholm, Sweden. 2007

Robots: An Exhibition of U.S. Automation from the Leading Edge of Research. Highlighting The WTEC International Study of Robotics. At National Science Foundation. 2005

Crustacean Exhibit. Shedd Aquarium (Chicago, IL) 2005

Nanozone. Lawrence Hall of Science Museum. Featured profile and gecko nano-hair adhesive. Supported by National Science Foundation. 2004

Robots and Us - Robots Inspired by Life Traveling Exhibit. Science Museum of Minnesota. Supported by National Science Foundation. 2004

Living World of Insects Exhibit. Lawrence Hall of Science. (Berkeley, CA) 1995

Amazing Feets Traveling Exhibit. North Carolina Museum of Natural History. Supported by National Science Foundation. 1987

#### **CONTRIBUTION TO ART, DESIGN & ENTERTAINMENT**

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Jackson Hole Wildlife Film Festival. Invited as Panel member for Science in the Field with Scientific American (Denver, CO) 2012

Sundance Film Festival. Invited as Juror for Sundance Institute Science-in-Film Prize sponsored by the Alfred P. Sloan Foundation and The National Academies Science and Entertainment Exchange. (Park City, UT) 2012

The National Academies Science and Entertainment Exchange. Invited speaker at Inaugural Meeting. “Biologically Inspired Robots.” Consultant on movies and TV programs. (Los Angeles, CA) 2008

#### **PRESENTATIONS**

ACM SIGGRAPH/Eurographics Symposium on Computer Animation. Association for Computing Machinery. Special Interest Group on GRAPHics and Interactive Techniques. “Biomotion Science.” (Los Angeles, CA) 2015

TED. Technology, Entertainment & Design Conference. “Robustness in Design.” (Vancouver, CA) 2014

Authors and Ideas Festival. “Design Lesson from nature: Biological Inspiration” (Carmel, CA) 2013

TED. Technology, Entertainment & Design Conference. “Beyond Biomimetics: Biomutualism.” (Long Beach, CA) 2009

TED. Technology, Entertainment and Design Conference. “Biologically Inspired Design.” (Monterey, CA) 2005

TED. Technology, Entertainment and Design for Medicine 3 Conference. “Unlocking the Secrets of Biomotion.” (Philadelphia, PA) 2003

TED. Technology, Entertainment and Design Conference. “Bouncing Bugs and Galloping Ghost and Gripping Geckos. Bio-inspired Materials, Robots and Adhesives.” (Monterey, CA) 2002

TED. 7th Annual Technology, Entertainment and Design Conference. “Roots, rules and relevance: the importance of integrative biology.” (Monterey, CA) 1997

National Science Foundation Center - Science for Animators. De Anza College. “Bipedal Bugs, Somersaulting Shrimps and Galloping Ghosts – Computer Animation. (Cupertino, CA) 2009

ArtCenter College of Design. “Biologically Inspired Design.” (Pasadena, CA) 2005

ArtCenter College of Design. “Biologically Inspired Design.” (Pasadena, CA) 2004

ACM SIGGRAPH. Association for Computing Machinery. Special Interest Group on GRAPHics and Interactive Techniques. “Bipedal Bugs, Galloping Ghosts and Gripping Geckos: BioInspiration for Computer Animation.” (San Antonio, TX) 2002

ACM SIGGRAPH. Association for Computing Machinery. Special Interest Group on GRAPHics and Interactive Techniques. “The AAPE Center at UC Berkeley: Using Data Acquisition, Analysis, Presentation, and Exchange to address Biological Complexity.” (New Orleans, LA) 1996

**MOVIES**

*Kung Fu Panda*. Dreamworks. Delivered 3D kinematics of praying mantid. 2005

*A Bug's Life*. Pixar/Disney directed by John Lasseter. Character design. 1995-96

*The Mimic*. CharacterShop. Creature design. Mirimax Films directed by Guillermo del Toro. 1994

**ART EXHIBIT**

*THEM*. An Exhibition of Artists, Scientists and Designers concerned with the Entomological Universe. Displayed photographs and videos by Gary Brewer. 1999

