

James J. Hickman

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Professor, NanoScience Technology Center
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Professional Interests: Functional *in vitro* systems, human-on-a-chip systems, interface and surface chemistry, nanoscience, biocompatibility, neuroscience, functional genomics, drug discovery, high-throughput screening, bioelectronics and biological information processing leading to artificial intelligence

Experience:

- 2004 – present **Professor of NanoScience Technology, Chemistry, Biomolecular Science, Physics and Electrical Engineering; Head, Hybrid Systems Laboratory,** University of Central Florida, Orlando, FL.
- 2017 – present Adjunct Professor, College of Pharmacy, University of Florida, Lake Nona, FL
- 2014 – present **Chief Scientist, Hesperos, Inc.** Company is developing human-on-a-chip systems for drug discovery and toxicological evaluation.
- 2010 – present **Adjunct Professor,** The Sanford-Burnham Medical Research Institute, Lake Nona, FL.
- 2002 – 2014 **Member, Graduate Faculty,** The Medical University of South Carolina, Charleston, SC.
- 2000 – 2014 **Director of Research, Hesperos, LLC.** Company developed high-throughput functional genomics platforms.
- 2008 **Special Advisor to the Director, NanoScience Technology Center,** University of Central Florida, Orlando, FL.
- 2004 – 2008 **Director, NanoScience Technology Center,** University of Central Florida, Orlando, FL. Responsible for the establishment of a new interdisciplinary center based on nanoscience and applications of nanoscience, including biotechnology, electronics, agriculture and materials.
- 2000 – 2004 **Hunter Endowed Chair of Biomaterials** and Associate Professor in the Department of Bioengineering, Head, Hybrid Systems Laboratory, Clemson University, Clemson, SC.

- 2002 – 2004 **Joint Appointment/Adjunct Professor of Genetics and Biochemistry**, Department of Genetics and Biochemistry, Clemson University, Clemson, SC.
- 2000 – 2002 **Scientific Advisor to the Director**, EIA/CISE/NSF, in the topic of Biological Computation.
- 1998 - 2000 **Associate Research Professor of Chemistry**, The George Washington University, Washington, DC. Research in biological interface design for biosensors, biological computation and biocompatibility. Consulted in the areas of biocomputing and nanotechnology.
- 1998 – 1999 **Consultant**, Information Technology Office at the Defense Advanced Research Projects Agency (DARPA). New research initiative in ultrascale computing with applications in biological information processing.
- 1994 - 1998 **Program Manager**, Biotechnology Research and Applications Division, Science Applications International Corporation, Rockville, MD. Manager and PI on contracts and grants for approximately \$6 million total funding during this time. These projects focused on using surface chemical modification and analysis for applications such as engineering biocompatibility for CNS implants, *in vitro* cell patterning, studying cell-surface interactions both *in vitro* and *in vivo*, the development of cell-based biosensors and novel neuroelectric hybrid devices, biocompatible MEMS, as well as function-based assays for drug discovery.
- 1992 - 1995 **Adjunct Professor of Chemistry**, George Mason University, Fairfax, VA. Collaborated with faculty in the training of students and conducting research. Established joint laboratories for Chemistry and Cell Culture.
- 1990 - 1994 **Research Chemist**, Plasma Technology Division, Science Applications International Corporation, McLean, VA. Research in the areas of surface chemistry and surface analysis, with related work in microelectronics, electrochemistry, and biological interfaces.
- 1979 - 1982 **Chemical Technician**, Catalyst Systems and Equipment Division, Research and Development Department, Johnson Matthey, Inc., Wayne, PA. Research and development for next generation automotive catalysts. Primarily responsible for a new catalyst formulation and process which increased JMI's U.S. market share in automotive catalysts from 16% to over 60%.

Education:

- Ph.D. Degree: **Massachusetts Institute of Technology**, Cambridge, MA
Chemistry, 1990. Advisor: Professor Mark S. Wrighton; Thesis Title: "Selective Coordination Chemistry of Semiconductor and Patterned Metal Surfaces."
Studies of the interaction of functionalized monolayers with patterned surfaces and their characterization by electrochemical and surface analysis techniques. Engineered novel microsensors using these techniques that is considered some of

the foundational research in nanoscience. Lab representative in the organization and start-up of the joint Harvard-MIT Surface Analysis Facility.

Teaching assistant for General Chemistry lecture and lab 1985-86.

Member of the MIT Graduate Student Council 1985-89.

Chairman: Committee on Housing and Community Affairs 1986-88.

Member of MIT Athletic Board 1987-89.

Consultant to MIT Housing and Food Services Department 1988-89.

M.S. Degree: **The Pennsylvania State University**, University Park, PA
Chemistry, 1985. Advisor: Professor Emeritus Philip S. Skell; Thesis Title: "A New Type of Heterogeneous Catalyst with Isolated Fe-Rh Diatomic Sites."
Synthesis of thermally unstable hetero-bimetallic compounds. Characterization of catalysts by activity measurements, chemisorption, and isotope labeling studies.

B.S. Degree: **The Pennsylvania State University**, University Park, PA
Chemistry, 1983. Emphasis in inorganic chemistry

Awards and Honors:

2017	<i>JALA</i> 20 (2):107-126 (2015): SLAS Technology Authors Choice Award (reflecting popularity among authors by citations throughout 2016)
2017	<i>JALA</i> 20 (2):107-126 (2015): SLAS Technology Readers Choice Award, (reflecting popularity among readers throughout 2016)
2016	Inaugural Member of the National Academy of Inventors, Office of Research and Commercialization, University of Central Florida
2016	Finalist for Cade Museum Prize for Innovation in State of Florida (\$50,000 cash prize)
2015	Lush Prize, Science Category, Supports Animal Free Testing (cash prize - \$37,000)
2009-2013	Elected Board of Director's, American Institute for Medical and Biological Engineering
2007	Elected as a Fellow, American Vacuum Society
2004	Elected as a Fellow, American Institute for Medical and Biological Engineering
2002	NSF Director's Award for Collaborative Integration for contributions to integrating biology and information technology research program
1995, 1994, 1993	SAIC Publication Award (\$2500 cash prize)
1995, 1993	Berman Award (Outstanding publication from the NRL)
1995	SAIC Technology Achievement Award (\$25,000 stock award)
1989	MIT Gold Award for community service.

Professional Activities

2017 – present	Editorial Advisory Board, Microphysiological Systems
2013 – present	Bioengineering Dept. External Advisory Board, Florida International University
2012 – present	Co-Chair AIMBE Workshops on Validation and Qualification of New In Vitro Tools and Models for The Pre-clinical Drug Discovery Process – 5 to date
2011 – present	Honorary Advisory Board, Journal of Biomaterials and Tissue Engineering

2007 – present	Fellow, American Vacuum Society
2004 – present	Fellow, American Institute of Medical and Biomedical Engineers
2007 – present	Honorary Editorial Board, Nanotechnology, Science and Application
2012 – present	Editorial Board, Journal of Computational and Theoretical Nanoscience
2005 – present	Member, Florida Academy of Sciences
1994 – present	Member, New York Academy of Sciences
1993 – present	Member, Society for Neuroscience
1992 – present	Member, American Association for the Advancement of Science
1986 – present	Member, American Vacuum Society
1983 – present	Member, Sigma Xi
1980 – present	Member, American Chemical Society
2009 – 2013	Board Member, American Institute for Medical and Biological Engineering
2007 – 2013	Associate Editor, IEEE Transactions on Biomedical Engineering
2010 – 2013	Editorial Board, Journal of Biotechnology & Biomaterials
2008 – 2012	Associate Editor, Journal of Nanoneuroscience
2008 – 2011	Fellow Selection Committee of the College of Fellows, Neuroscience, American Institute for Medical and Biological Engineering
2007 – 2012	Editorial Board, Journal of Bionanoscience
2007 – 2011	Editorial Review Board, Journal of Nano Education
2006 – 2011	Associate Editor, Journal of Computational and Theoretical Nanoscience
2009 – 2010	Scientific Advisory Board, TERMIS National Meeting
1993 – 2005, 08 -	Member, Society for Biomaterials
1997 – 2005	Surface and Colloid Division's representative to the Biotechnology Secretariat for the American Chemical Society
2000 – 2003	Member, Liaison Committee, Society for Biomaterials
2000 – 2005	Treasurer and Membership Secretary, Biomaterial Interfaces Technical Group for the American Vacuum Society
1995 – 2000	Chair, Biomaterial Interfaces Technical Group for the American Vacuum Society

Recent Review Panel Participation

2017	Neurological Foundation of New Zealand, May 16, 2017.
2017	Science Foundation of Ireland, February 17, 2017.
2016	NIH BST ZRG1 BST-W (90), November 4, 2016.
2016	Brain Canada – CQDM Focus on Brain Panel, Chair, May 26-27, 2016.
2016	Member, AriSLA International Scientific Committee (ISC), May 13, 2016.
2016	NIH/NINDS ZNS SRB N(11), March 17-18, 2016.
2016	Motor Neurone Disease Association, March 10, 2016.
2012 - 2015	Charter Member, NIH Bioengineering of Neuroscience, Vision and Low Vision Technologies (BNVT) Study Section, July 1, 2012.
2015	New York State Department of Health and the Spinal Cord Injury Research Board (SCIRB), May 7, 2015.
2015	More Knowledge with Fewer Animals Programme (MKMD) German Federal Ministry of Education & Research (BMBF) and The Netherlands Organisation for Health Research and Development (ZonMw), April 3, 2015.
2015	ZDK1-GRB-M4 study panel, National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), March 16, 2015.

2012, Sept.	W.M. Keck Foundation, Medical Research, Science and Engineering Programs
2012, Apr.	NIH Director's Early Independence Award (DPS), April 6, 2012.
2011, Apr.	ETH Zurich proposal panel, April 30, 2011.
2011, Apr.	NSF proposal panel, April 7, 2011.
2011, Feb.	MND proposal panel, February 25, 2011.
2011 – 2013	NIH SBIR-STTR ZRG1 ETTN-G.
2010, Oct.	Member, NIH proposal panel, Drug Discovery, October 14-15, 2010.
2010, June	Member, NSF proposal panel, Program 1179, June 15-16, 2010.
2010, May	Member, International AFM 2010 proposal panel, May 14, 2010.
2009, July	Chair, NIEHS SBIR Review- ZES1 RAM-M(O1).
2009, June	Member, NIH Challenge grants: 2009/10 ZRG1 MDCN-A (58) R.
2009, June	Member, NIH Challenge grants: 2009/10 ZRG1 ETTN-A (58) R.
2009, Apr	Chair, SBIR-STTR panel review, ZRG1 BST-G(10).
2009	Special Emphasis Panel/Scientific Review, 2009/05 ZRG1 ETTN-F(03) M
2008 – 2012	Ad Hoc Member, Drug Discovery Committee panel, ZRG1 MNPS-C (09).
2008	Member, HHMI-NIBIB Phase 2 T32 Panel.
2007	Chair, Environmental Sensor Review ES-07-001, Special Emphasis Panel, ZES1 SET-A (R4) (1), June 12, 2007.
2007	Chair, Biosensor Review ES-06-011, Special Emphasis Panel/Scientific Review Group 2007/05 ZES1 RAM-D (U1) (R), March 22-23, 2007.
2006 - 2008	Ad Hoc Member, NIH Special Emphasis Panel on Neurotechnology/Engineering ZRG-MDCN-K (50).
2005 – 2012	Member, NIH ZRG1 MDCN-C Neurotechnology (NT) proposal review panel.
2005	Ad Hoc Member, NIH Special Emphasis Panel on Neurotechnology/Engineering ZRG- MDCN-K (54), November 3, 2005.
2005	Member, NIH Reverse Site Visit for the Center for Neural Communication Technology, Washington, DC, August 11-12, 2005.
2003	Member, NIH Site Visit Panel for the Center for Neural Communication Technology at the University of Michigan, December 10-11, 2003.
2003	Chair, NIH Special Emphasis Panel on Advanced Neurotechnology, ZRG1 MDCN-4, August 1, 2003.
2003	Member, NSF Quantitative Systems Biotechnology Panel in the Bioengineering and Environmental Systems Division, June 18-19, 2003.
2003	Chair, NIH Special Emphasis Panel on Bioengineering, ZRG1-MDCN-1, April 18, 2003.
2002	Member, NIH/NCI Innovative Technologies for the Molecular Analysis of Cancer Panel, November 4-5, 2002.
2002	Member, NIH/NCI Innovative Technologies for the Molecular Analysis of Cancer Panel, March 6-8, 2002.

Academic Activities, University of Central Florida

2016	Chair, NanoScience Technology Center Promotion Committee
2010 – 2015	Member, NanoScience Technology Center Promotion and Tenure Committee
2007 – 2012	Member, Instrument Committee, NSTC
2008 – 2010	Chair, NanoScience Technology Center Promotion and Tenure Committee
2008 – 2010	Member, NanoScience Technology Center Fellowship Committee

2007 – present	Member, Seminar Committee, NSTC
2004 – present	Member, Tenure and Promotion Committee, Chemistry
2005 – 2008	Member, BioOptics Chair Search Committee
2005 – 2008	Member, Tenure Promotion Committee, Biomolecular Science Center
2005 – 2007	Member, Provost's Promotion and Tenure Task Force Committee

Academic Activities, Clemson

2002 - 2004	Alternate, Chaired and Titled Professors' Representative to President's Faculty Advisory Committee
2001 - 2004	Member, Graduate Recruitment Committee
2002 - 2003	Chairperson, Department Chair Search Committee (search cancelled – budget cuts)
2001 - 2003	Member, Ph.D. Qualifying Committee
2002 - 2003	Organized Departmental Seminar Series (academic year)
2000 - 2001	Organized Departmental Seminar Series (academic year)

Academic Activities, Students Graduated

Ph.D. students

Bonnie Berry, Biomolecular Sciences, Ph.D., 2015 (UCF) (Chair) (Pilot Program Manager, Institute of Translational Health Sciences, Univ of Wash)
Christopher McAleer, Biomolecular Sciences, Ph.D., 2015 (UCF) (Chair) (Hesperos, Inc)
Aditya Reddy Kolli, Chemistry, Ph.D. 2014 (UCF) (Chair) (Industry)
Vaibhav Thakore, Physics, Ph.D., 2012 (UCF) (Chair) (Aalto University)
Darin Edwards, Biomolecular Science, Ph.D., 2011 (UCF) (Chair) (Sanofi)
Craig Finch, Modeling and Simulation, Ph.D., 2011 (UCF) (Chair) (Rootwork InfoTech LLC)
Anupama Natarajan, Biomolecular Science, Ph.D., 2010 (UCF) (Chair) (Industry)
Hedvika Davis, Biomolecular Science, Ph.D., 2010 (UCF) (Chair) (UCLA)
Kerry Wilson, Chemistry, Ph.D. 2009 (UCF) (Chair) (Industry)
John W. Rumsey, Biomolecular Sciences, Ph.D., 2009 (UCF) (Chair) (Hesperos, Inc)
Mainak Das, Biomolecular Science, Ph.D., 2008 (UCF) (Chair) (Professor, Indian Institute of Technology)
Kucku Varghese, PhD., 2008 (Medical University of South Carolina) (Co-Chair) (Sanofi)

MS Students

Gregg Legters, Materials Science, MS., 2016 (UCF) (Chair)
Kristen Pirozzi, Materials Science, MS., 2014 (UCF) (Chair) (Design Engineer, Johnson and Johnson)
Albert Leyte-Vidal, EECS, MS, 2010 (UCF) (Co-Chair)
Abhijeet Bhalkikar, Electrical Engineering, MS., 2010 (UCF) (Chair) (Adjunct Professor, Valencia College)
Mona Rogers, 2014 (UCF) (Committee Member)
Prabhu Doss Mani, 2014 (UCF) (Committee Member)
Amirhossein Jabalameli, MS., 2015 (UCF) (Committee Member)

Selected Other Students: Heather Canavan, George Washington University, Ph.D., (Associate Prof, University of New Mexico); Del Leistriz, Clemson University, M.S. Aug. 2004, (VaxDesign, Inc.); Dinesh Kumar Mohan, Clemson University, M.S. Aug 2004, (Agiltron, Inc.); Matt Poeta, Clemson University, M.S. Aug. 2003, (Cellicon); Tao Xu, Clemson University, Ph.D. Dec 2005, (now in China).

Current Postdoctoral Researchers: Dr. Carlota Oleaga Sancho, NSTC, UCF; Dr. Carlos Moran, NSTC, UCF; Dr. Arindom Goswami, NSTC, UCF; Dr. Navaneetha Santhanam, NSTC, UCF

Selected Postdoctoral Researchers: Dr. Xiufang Guo (Research Professor, NSTC, UCF); Dr. Nesar Akanda (Scientist, NSTC, UCF); Dr. Frank Sommerhage (Kaiser University and Hybrid Systems Lab, NSTC, UCF); Dr. Liyuan Ma (Northeastern); Dr. Catia Bernibini (NSTC, UCF); Dr. Feng Gao, NSTC, UCF; Dr. Alec Smith (University of Washington); Dr. Christopher Long (Hesperos, Inc); Dr. William McLamb (CASIS); Dr. Balaji Srinivasan (Cornell University); Dr. Peter Molnar (Assistant Prof, NSTC, UCF, Associate Prof, University of West Hungary); Dr. Jennifer Ayala (Sanford-Burnham); Dr. Xiaofeng Cui (Industry); Dr. Jung-Fong Kang (Polymer Chemist, Polygenetics Inc.); Dr. Melissa Kuchma (MD Anderson Cancer Center); Dr. Murugan Ramalingam (University of Strasbourg, France); Dr. Andrea Lavado: NSTC, UCF; Dr. Lee Kumanchik (Germany);

Courses Developed and Taught

1. **Tissue Engineering** (University of Central Florida)

Course co-developed by J. Hickman. Tissue engineering is an interdisciplinary field that applies the principles of engineering and life sciences for the development of therapeutic strategies aimed at the replacement, repair, maintenance, and/or enhancement of tissue function for clinical use. The goal of this course is threefold: 1) it will give an overview of the present status and future trends of tissue engineering with an emphasis on promising new applications, 2) provide a solid base to understand the complex interaction between living cells and engineered materials, 3) offer an introduction to biomaterials and the engineering methods used for creating them.

2. **Molecular Neuroscience** (University of Central Florida)

This course addresses the aspects of the development, structure, and function of the nervous system to which molecular biology has made substantial contributions. Topics include the cellular structure of neurons and glia, neurogenesis, synaptogenesis, the molecular basis of neuronal transmission and memory, and the genetics of brain function. Special attention is paid to current issues such as stem cells, neuronal regeneration, and neurological disorders.

3. **Bioinstrumentation** (Clemson University, University of Central Florida)

This three-credit course with a lab explored and demonstrated the basics of instrumentation to study biological systems from the molecular to the human system level. Some of the techniques explored are Atomic Force Microscopy, Surface Plasmon Resonance, Ellipsometry, X-Ray Photoelectron Spectroscopy, Electrocardiography and Electroencephalography Diagnostics and Positron Emission Tomography. The labs demonstrate the instrumentation use and provide hands on experience for students in the analysis of biological systems.

4. **Emerging Materials** (University of Central Florida)

This three-credit hour course is comprised of classroom lectures and will include guest lectures from experts working in the field of advanced and emerging materials. Course objectives are: 1) Explain the importance of innovations in materials technology and their applications, 2) Obtain a knowledge of the methodology to develop new and advanced materials, 3) Learn about different advanced and emerging materials that are being developed, 4) Learn about new materials which will be used in technologies and processes in different industries, 5) Understand and appreciate the exceptional properties of these materials, 6) Appreciate the processing-structure-property

relationships of these new-generation materials, and 7) Ability to use the knowledge gained for material selection, design and substitution in emerging engineering applications.

5. **Neurobioengineering** (Clemson University)

New graduate course developed by J. Hickman. The course focused on teaching the basics of neuroscience to engineers and modeling basic neuronal systems. It also highlighted the current literature in engineering controlled neuronal and cellular systems. It contained demonstrations of brain dissections, patch-clamp and solid-state electrophysiology and neuronal cellular and circuit modeling. The goal was to give the students the ability to collect and understand current research in neuroscience and engineered neuronal systems.

Currently Funded Projects:

1. **Functional integrated human-on-a-chip systems for Alzheimer's research**

Funding Agency: Hesperos, Inc

Role: PI

Description of work: Support Hesperos by providing modified surfaces and analytical capabilities for their project.

Period of Performance: 9/01/2017 to 8/31/2020

2. **Integration of a kidney module into a 4-organ human-on-a-chip system**

Funding Agency: Hesperos, Inc

Role: PI

Description of work: Support Hesperos by providing modified surfaces and analytical capabilities for their project.

Period of Performance: 4/01/2017 to 03/31/2018

3. **Validation of an In Vitro Co-Culture Assay System Using Pharmacological References and Potential Active Compounds**

Funding Agency: L'Oreal, **contract**

Role: PI

Description of Work: Co-cultures of human muscle and motoneurons will be established and neuromuscular connectivity between these cells will be used to assess pharmacological compounds.

Period of Performance: 6/03/2013 to 6/30/2017

4. **Investigation of a functional 4-organ body-on-a-chip system with common serum free medium**

Funding Agency: L'Oreal, **contract**

Role: PI

Description of Work:

Period of Performance: 9/09/2013 to 5/30/2018

5. **An *In Vitro* Model of Stem Cell Innervation of Myotubes**

Funding Agency: NIH **grant**

Role: Principal Investigator

Description of work: Study synaptic communication development and reinnervation between motoneurons and myotubes.

Period of performance: 6/23/2005 to 6/30/2011

Renewed

Description of work: Complete the development of the entire reflex arc in vitro using primary rat cells and then with cells derived from human stem cells. Initiate experiments to increase the throughput of first the motoneurons to muscle segment of the stretch reflex arc and then for the entire reflex arc.

Period of performance: 3/01/2011 to 1/31/2017

Renewed

Description of work: This project will develop an in vitro model of the reflex arc utilizing human stem cells and utilize it to investigate functional models of ALS.

Period of performance: 9/26/2016 to 2/28/2021

4. Surface Modification and Analysis

Funding Agency: Hesperos, Inc

Role: Hickman (PI)

Description of work: Fabrication of MEMs chips, surface modification and analysis of coverslips and MEMs chips.

Period of performance: 9/24/2015 to 12/31/2018

5. Advanced human on a chip systems for drug discovery

Funding Agency: NIH 1R44TR001326/Hesperos, Inc (Hickman multi-PI on grant; PI on subcontract from Hesperos)

Description of work: Support Hesperos by providing modified surfaces and analytical capabilities for their project.

Period of performance: 9/30/2016 – 6/30/2018

6. RF- In Vitro Hybrid Neuronal Systems

Funding Agency: Unither Neurosciences **grant**

Role: Principal Investigator

Description of work: Dr. Hickman's research support on programs focused on an in vitro hybrid neuronal system for storage and retrieval of biological information.

Period of Performance: 4/16/2010 to 4/15/2014

7. Unconventional Concepts

Funding Agency: Unconventional Concepts **grant**

Role: Principal Investigator

Period of Performance: unrestricted grant

Previously Funded Projects:

1. Establishment of a Human-Based in Vitro Functional NMJ System for ALS Drug Screening

Funding Agency: DoD (CDMRP) **grant**

Role: PI

Description of Work: Develop an in vitro human-based functional NMJ model that utilizes human stem cells for therapeutic design and pre-clinical efficacy evaluation of compounds for ALS treatment.

Period of Performance: 9/1/14 to 8/31/16

2. Microphysiological Systems and Low Cost Microfluidic Platform with Analytics

Funding Agency: NIH/NCATS **grant**

Role: Multiple PI Project PI with M. Shuler (Cornell)

Description of Work: Our overall strategy is to utilize microphysiological systems in combination with functional readouts to establish systems capable of sophisticated analysis of drug candidates during pre-clinical testing.

Period of Performance: 9/1/2012 to 6/30/2016

3. Functional In vitro CNS and PNS Myelination Model

Funding Agency: NIH **grant**

Role: Co-Principal Investigator

Description of work: To utilize new developments in surface chemistry, Bio-MEMs fabrication and neuroscience to engineer a hybrid system chip to carry out functional analysis of myelination and demyelination.

Period of performance: 4/01/2010 to 1/31/2015

4. Towards Prevention of Muscle De-Training

Funding Agency: DoD/CDMRP **grant**

Role: SBMRI Sub-contract PI

Description of Work: We seek to identify candidates for new therapeutic approaches aimed at reducing de-training effects relevant to performance in the combat field and with prolonged travel in collaboration with D. Kelly of the SBMRI.

Period of Performance: 09/15/2011 to 09/14/2013

5. A high throughput cell-based metabolic analysis of anticancer drugs using nanostructure-enhanced mass spectrometry

Funding Agency: FL Department of Health, Bankhead-Coley (NIR) **grant**

Role: Co- Principal Investigator, Mentor

Description of work: This new investigator research project that will develop a novel high throughput technique to analyze the cellular level metabolic products of anticancer drugs.

Period of Performance: 7/1/2010 to 6/30/2013

6. Non-linear Characterization of the Stretch Reflex Arc and its Neuromodulation

Funding Agency: NIH **grant**

Role: Co - Investigator

Description of Work: Establish a data true non-linear dynamic model of the SRA and examine the effects of modulatory neurotransmission on the overall stability of the SRA.

Period of Performance: 4/01/2009 - 6/30/2012

7. In vitro Models for Biodefense

Funding Agency: USAMRMC **grant**

Role: Co- Principal Investigator

Description of work: This proposal combines expanding tissue engineering methodology for the fabrication of complex functional tissues, with models of tissue level function derived from Magnetic Resonance Images of normal and pathologic lungs.

Period of Performance: 6/28/2010 to 7/27/2012

8. High-Throughput Electrophysiology for Pathway Identification

Funding Agency: NIH **grant**

Role: Principal Investigator

Description of work: Creation of a new high through-put electrophysiological assay to determine a compound's effect on a cell's function.

Period of Performance: 9/15/2006 to 8/31/2011

7. Nanocolumn-supported nanoparticle array for early detection of lung cancer biomarkers.

Funding Agency: FL Department of Health, James & Ester King Biomedical Res Prog **grant**

Role: Co- Principal Investigator

Period of Performance: 7/1/2007 to 12/31/2010

8. A Joint Romanian/ U.S. NanoScience Workshop

Funding Agency: NSF **grant**

Role: Co- Principal Investigator

Period of Performance: 1/1/2009 to 6/30/2010

9. In Vitro LTP Circuits from AD Autopsy Tissue

Funding Agency: Johnnie B Byrd, Sr. Alzheimer's Center & Research Institute **grant**

Role: Principal Investigator

Period of Performance: 7/1/2008 to 6/30/2010

10. Human In Vitro Lung Model for Infectious Disease

Funding Agency: USAMRMC **grant**

Role: Co- Principal Investigator

Description of work: Develop a functional tissue equivalent of lung from human cells for assessing infectious challenge.

Period of Performance: 11/18/06 to 2/15/2010

11. Engineered Neuronal Networks for Drug Screening

Funding Agency: NIH **grant**

Role: Co - Investigator and Mentor

Description of Work: Mentored grant to teach Dr. Molnar, an electrophysiologist, surface chemistry

Period of performance: 4/01/2004 to 3/31/2010

12. Skin to Metal

Funding Agency: Sciperio, Inc. **grant**

Role: Principal Investigator

Description of work: Support Sciperio, Inc. in their attempt to demonstrate our concept for adherence of a skin construct to a metal implant for the creation of a novel interface.

Period of Performance: 9/15/2006 to 9/14/2007

13. **Function-based Biosensors for Use in Hazardous Waste Remediation**
Funding Agency: DOE/ Basis Energy Sciences **grant**
Role: Principal Investigator
Description of work: Using networks of neurons to sense toxins in environmental effluents
Period of performance: 4/01/2002 to 3/31/2007, Third renewal of grant
14. **Determining Extra-cellular Matrix Deposition Quantity and Composition from Cells in Response to Electronic Materials**
Funding Agency: DARPA/AFOSR **grant**
Role: Principal Investigator
Description of work: Address the composition and quantity of the extracellular matrix that is deposited by the cells when placed in contact with electronic materials.
Period of performance: 6/10/2005 to 2/28/2007
15. **Fuel-Specific SOFC Design & Control**
Funding Agency: Clarkson University **grant**
Role: Principal Investigator
Period of performance: 1/16/06 to 12/31/06
16. **Effect of Defined Surfaces on Cardiac Myocyte Physiology**
Funding Agency: NIH NIBIB **grant**
Role: Co-Principal Investigator
Period of performance: 2003-2005
17. **Biocompatible MEMS**
Funding Agency: NSF **grant**
Role: Principal Investigator
Description of work: Determining the parameters that control protein denaturization in MEMS fluidic systems
Period of performance: August 15, 2000 to August 14, 2004 (1 year no cost extension)
18. **Hybrid Biological/Non-Biological Constructs for Robotic Control Applications**
Funding Agency: DARPA/Information Technology Office **grant**
Role: Principal Investigator
Description of work: building the reflex arc on a chip to develop new algorithms for biorobotic applications
Period of performance: June 5, 2001 to June 4, 2004 (1 year no cost extension)
19. **An *In Vitro* Model of the Reflex Arc as Applied to Spinal Cord Injury**
Funding Agency: The Spinal Cord Injury Research Fund Board of SC **grant**
Role: Principal Investigator
Description of work: building the reflex arc on a chip to develop new paradigms in spinal cord repair and development
Period of performance: July 1, 2002 to December 31, 2003

20. **Development and Experimental Verification of Surface Effects in a Fluidics Model**
Funding Agency: DARPA/Microsystems Technology Office **cooperative agreement**
Role: Principal Investigator
Description of work: development and experimental verification of surface effects in a microfluidics modeling program
Period of performance: June 26, 2001 to June 25, 2003 (will be extended by 6-12 months)
21. **Surface Modification and Analysis of MEMS Materials at George Washington University**
Funding Agency: NIST **grant**
Role: Principal Investigator
Description of work: surface modification of polymeric materials used in microfluidic systems
Period of performance: 38 months
22. **IPA from NSF in Biocomputation**
Funding Agency: NSF **grant**
Role: Principal Investigator
Description of work: develop new programs for NSF in biocomputation
Period of performance: 2 years
23. **Fabrication of a Novel Neuroelectric Computational Device**
Funding Agency: DARPA/Information Technology Office **grant**
Role: Principal Investigator
Description of work: Construction and testing of a hybrid neuronal/silicon device
Period of performance: 5 years
24. **Surface Modification as an Enabling Technology for Biocompatible MEMS**
Funding Agency: DARPA/Electronic Technology Office **cooperative agreement**
Role: Principal Investigator
Description of work: Surface modification and subsequent analysis of microfluidics channels before and after biological fluid transport.
Period of performance: 2 years
25. **Feasibility Study for Transitioning a Cell-Based Sensor to Biological Toxin Detection**
Involved Agencies: NRL, (DARPA) **grant**
Role: Principal Investigator
Description of work: Development of new systems to build a prototype biosensor for chemical and biological warfare agent detection.
Period of performance: 3 years
26. **Surface Modification for Biocompatibility**
Funding Agency: NIH/ NINDS **contract**
Role: Principal Investigator
Description of work: Biocompatibility experiments for implanted cortical stimulating electrodes to examine tissue-surface interactions.
Period of performance: 3 years

27. Fabrication and Applications of Neuronal Networks

Involved Agencies: SAIC/ DoD **internal competitive funds**

Role: Principal Investigator

Description of work: Basic electrophysiological recordings from two-cell circuits and development of new assays for biological interfaces.

Period of performance: 3 years

28. Surface Studies for Genetic Analysis Systems

Customer: Perkin-Elmer Corporation **contract**

Role: Principal Investigator

Description of work: Surface studies for micro-PCR devices

Period of performance: 1 year

29. Surface Modification of Implantable Electrodes

Funding Agency: NIH/ CHHD **grant**

Role: Principal Investigator

Description of work: Biocompatibility of implantable cortical electrodes

Period of performance: 3 years

30. Support of NRL Micropatterning and Function-Based Microsensor Development

Funding Agency: NRL **grant**

Role: Principal Investigator

Description of work: Biosensor development using living neurons as sensor elements

Period of performance: 3 years

31. XPS Maintenance at George Washington University

Funding Agency: NRL **purchase order**

Role: Principal Investigator

Description of work: maintain the Fisons 220i Spectrometer at NRL

Period of performance: 1 year, renewable

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F. Sommerhage, C. Long, C. McAleer, K. Wilson and **J.J. Hickman**, “Characterization of individual myotubes with an integrated Bio-MEMS device,” Tissue Engineering and Regenerative Medicine International Society-North America, Orlando, FL, Dec 5-8, 2010.

F. Sommerhage, C.A. Finch, C. Long, M.B. Esch, M. Shuler and **J.J. Hickman**, “Towards an alveolar bioreactor for high-throughput drug screening,” Tissue Engineering and Regenerative Medicine International Society-North America, Orlando, FL, Dec 5-8, 2010.

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D. Edwards, B. Berry, F. Sommerhage, T. DeMarse and **J.J. Hickman**, “Adult neuronal function and synaptic activity in a high-throughput MEA system,” Tissue Engineering and Regenerative Medicine International Society-North America, Orlando, FL, Dec 5-8, 2010.

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J.W. Rumsey, C. McAleer, M. Das, **J.J. Hickman**, “The myelination of motoneurons by schwann cells in a defined serum-free system,” Tissue Engineering and Regenerative Medicine International Society-North America, Orlando, FL, Dec 5-8, 2010.

C. McAleer, J.W. Rumsey, M. Stancescu, S. Lambert **J.J. Hickman**, “Primary adult satellite cell differentiation and myotube fusion in a defined serum-free media,” Tissue Engineering and Regenerative Medicine International Society-North America, Orlando, FL, Dec 5-8, 2010.

A. Reddy Kolli, F. Sommerhage, J.E. Hood, P. Molnar, J. Jenkins, **J.J. Hickman**, “Data driven validation of a computer model for intracellular biochemical pathways,” Tissue Engineering and Regenerative Medicine International Society-North America, Orlando, FL, Dec 5-8, 2010.

X. Guo, M. Gonzalez, M. Das, J. Rumsey, M. Stancescu, K. Johe, H. Davis, P. Molnar and **J.J. Hickman**, “Development of in vitro human neuromuscular junction systems,” ALS/MND, Orlando, FL, Dec 11-13, 2010.

K. Wilson, C. Finch, P. Anderson, F. Vollmer, **J.J. Hickman**, “Adsorption of fibronectin on alkylsilane monolayers and its effect on cell adhesion and growth as compared to thiols on gold” ACS Spring Meeting, San Diego, CA, Mar 25-29, 2012.

C. Finch, K. Wilson, P. Anderson, F. Vollmer, **J.J. Hickman**, “Quantifying and modeling the adsorption kinetics of glucose oxidase utilizing a whispering gallery mode biosensor” ACS Spring Meeting, San Diego, CA, Mar 25-29, 2012.

B. Berry, D. Edwards, F. Sommerhage, T. DeMarse, **J.J. Hickman**, “Improving drug discovery and research technologies for neurobiological applications” Poster Presentation, 2012 UCF Graduate Research Forum, Orlando, FL, April 3, 2012.

X. Guo, S. Spradling, M. Stancescu, S. Lambert, **J.J. Hickman**, “Derivation of functional sensory neurons from human neural progenitor hNP1” Poster Presentation, 2012 World Stem Cell Summit, West Palm Beach, FL, December 3-5, 2012.

V. Thakore, P. Molnar, **J.J. Hickman**, “An optimization based study of equivalent circuit models for representing signals recorded at the neuron-electrode interface” Poster Presentation, SLAS 2013 Conference, Orlando, FL, January 14, 2013.

C.W. McAleer, C.J. Long, S.A. Najjar, K. L. Pirozzi, **J.J. Hickman**, “A bio-MEMS device for measuring contractile forces and endurance of cultured myotubes on microfabricated cantilevers” 2013 FLAVS Symposium, Materials characterization: Third place, Orlando, FL, March 4-5, 2013.

M. Stancescu, K. Wilson, M. Das, N. Bhargava, **J.J. Hickman**, “Patterning cells with alkylsilane monolayers” 2013 FLAVS Symposium, Materials processing: Honorable mention, Orlando, FL, March 4-5, 2013.

K.L. Pirozzi, C.J. Long, C.W. McAleer, A.S.T. Smith, **J.J. Hickman**, “Correlation of embryonic skeletal muscle myotube physical characteristics with contractile force generation on an AFM-based biomems device” 2013 FLAVS Symposium, Orlando, FL, March 4-5, 2013.

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V. Thakore, **J.J. Hickman**, “Charge relaxation dynamics of an electrolytic nanocapacitor” Meeting of the American Physical Society in Baltimore, Maryland, March 18-22, 2013.

X. Guo, S. Spradling, A. Mazza, S. Lambert, and **J.J. Hickman**, “Intrafusal Myofibers from Human Stem Cells and Their Innervations by Human Sensory Neurons,” BMES 2013 Annual Meeting, Seattle, Washington, September 25-28, 2013.

A. Smith, C. Long, K. Pirozzi, and **J.J. Hickman**, “Development and Characterization of a System for High-Content Screening of Functional NMJs In Vitro,” BMES 2013 Annual Meeting, Seattle, Washington, September 25-28, 2013.

V. Thakore, P. Molnar, A. Behal, and **J.J. Hickman**, “Understanding Signal Transduction at the Neuroelectronic Interface,” BMES 2013 Annual Meeting, Seattle, Washington, September 25-28, 2013.

B. Berry, M. Schnepfer, F. Sommerhage, M. Jackson, T. DeMarse, A. Lavado, **J.J. Hickman**, “In vitro model of CNS information processing for neurological disease applications” Florida Brain Project Symposium, Tallahassee, FL, July 28-29, 2014.

X. Guo, M. Das, J.W. Rumsey, A.S.T. Smith, A. Colon, C. McAleer, C. Long, K. Wilson, M. Stancescu, C. Martin, **J.J. Hickman**, “In vitro model of the reflex arc to understand nervous system disease and deficit” Florida Brain Project Symposium, Tallahassee, FL, July 28-29, 2014.

C. Kelley, **J.J. Hickman**, “Validation and qualification of new in vitro technologies for drug development” 9th World Congress on Alternatives and Animal Use in the Life Sciences, Prague, Czech Republic, August 24-28, 2014.

A.L. Bui, M.A. Lopez, M. Hossain, **J.J. Hickman**, “Cell printing of various cell types for bioMEMS applications” FL AVS, Orlando, FL, March 9-10, 2015.

C. Martin, B. Berry, G. Ekman, J. J. Hickman "XPS analysis of fibronectin and laminin on silane-modified glass substrates" FL AVS, Orlando, FL, March 9-10, 2015.

A. Colón, X. Guo, B. Srinivasan, C. Long, C. Bernabini, J. Rumsey, K. Wilson, N. Akanda, Y. Cai, C. Martin and **J.J. Hickman**, “A biomechanical device for human sensorimotor function” International Conference and Expo on Biomechanics and Implant Design, Orlando, Florida, July 27 – 29, 2015. Best poster award.

A.L. Bui, M.A. Lopez, M. Hossain and **J.J. Hickman**, “Cell printing of skeletal muscle and neurons for bioMEMS applications” International Conference and Expo on Biomechanics and Implant Design, Orlando, Florida, July 27 – 29, 2015.

C.W. McAleer, Y. Cui, C.J. Long, S.A. Najjar, K.L. Pirozzi and **J.J. Hickman**, “Mechanistic investigation of in vitro myotube response to chemical and physiological treatment using a multiplexed functional assay system” International Conference and Expo on Biomechanics and Implant Design, Orlando, Florida, July 27 – 29, 2015. Best poster award.

G. Legters, C. Oleaga, C.R. Martin, G.C. Eckman, R. Bridges, F. Sommerhage, **J.J. Hickman**, “Improving cardiomyocyte pattern fidelity and bio-adhesion to microelectrode arrays for long-term in vitro cardiac electrophysiology studies” International Conference and Expo on Biomechanics and Implant Design, Orlando, Florida, July 27 – 29, 2015.

K.M. Tasneem, K.L. Pirozzi, C.J. Long, C.W. McAleer, A.S. T. Smith and **J.J. Hickman**, “Measurement of in vitro responses of skeletal muscle mechanics: improved prediction of in vivo systems” International Conference and Expo on Biomechanics and Implant Design, Orlando, Florida, July 27 – 29, 2015.

L. Kumanchik, G. Legters, C. Oleaga, N. Santhanam, G. Ekman, R. Bridges and **J.J. Hickman**, “Novel serum-free 2D human cardiac organ-on-a-chip platform assesses contractile output in vitro for predictive pharmacology” International Conference and Expo on Biomechanics and Implant Design, Orlando, Florida, July 27 – 29, 2015.

N. Santhanam, X. Guo, C. McAleer, Y. Cai, F. Sommerhage, B. Srinivasan, L. Kumanchik, Y. Wang and **J.J. Hickman**, “Development of a micro-electrode array-cantilever system for the detection of functional neuromuscular junctions formed between human stem cell-derived motoneurons and human skeletal muscle in vitro” International Conference and Expo on Biomechanics and Implant Design, Orlando, Florida, July 27 – 29, 2015.

X. Guo and **J.J. Hickman**, “A functional human in vitro model of the spinal stretch reflex arc,” 4th Tissue Engineering and Regenerative Medicine International Society (TERMIS) World Congress, Boston, MA, September 8-11, 2015.

J.J. Hickman, X. Guo, A.S.T. Smith, C.J. Long, A. Colon, “Development of an in vitro model of the human reflex arc for understanding disease and injury in the spinal cord,” BMES 2015 Annual Meeting, Tampa, FL, October 7-10, 2015.

K.M. Tasneem, C.J. Long, **J.J. Hickman**, “Transient simulation of low volume gravity driven flow in a human organ mimicking microfluidic platform,” TMS 2016 145th Annual Meeting & Exhibition, Nashville, TN, February 14 – 18, 2016.

A.S. Lavado, C. Oleaga, S. Rothemund, Y. Cai, L. Kumanchik, R. Bridges, C.R. Martin, M. Jackson, C.W. McAleer, C.J. Long, J. Langer, A. Riu, R. Note, S. Teissier, J. Cotovio, L. Breton, M.L. Shuler, **J.J. Hickman**, “A four-organ-on-a-chip microfluidic system: towards a tool for long-term systemic toxicity assessment,” Society of Toxicology, 55th Annual Meeting and ToxExpo, New Orleans, LA, March 13-17, 2016.

C.J. Long, C. Oleaga, M. Stancescu, P. Molnar, C.W. McAleer, W. McLamb, G. Legters, J. Prot, **J. Hickman**, “Functional integrated human cardiac system for toxicological and pharmaceutical studies,” Society of Toxicology, 55th Annual Meeting and ToxExpo, New Orleans, LA, March 13-17, 2016.

C. Oleaga, G. Legters, L. Kumanchik, V. Platt, L.R. Bridges, C. Martin, M. Jackson, C.W. McAleer, C.J. Long, J. Langer, A. Riu, R. Note, **J.J. Hickman**, S. Teissier, J. Cotovio, and L. Breton, “A

human heart-liver platform to study drug metabolism and toxicity,” Society of Toxicology, 55th Annual Meeting and ToxExpo, New Orleans, LA, March 13-17, 2016.

N. Santhanam, L. Kumanchik, Y. Cai, M. Jackson, X. Guo, A. Lavado, C.W. McAleer, Y. Wang, M.T. Schnepfer, C. Martin, F. Sommerhage, C.J. Long, A. Riu, J. Langer, L. Breton, **J.J. Hickman**, “Development of an in vitro neuromuscular junction system between human stem cell-derived motoneurons and human skeletal muscle to evaluate compound toxicity,” Society of Toxicology, 55th Annual Meeting and ToxExpo, New Orleans, LA, March 13-17, 2016.

Z. Simandi, K. Pajer, H. Aga, Z. Kolostyak, K. Karolyi, Z. Sari, X. Zhang, A. Patsalos, X. Guo, A. Horvath, **J. Hickman**, P. Coen, A. Nogradi, L. Nagy, “Arginine methyltransferase PRMT8 is a neuroprotective regulator of stress response in spinal cord motoneurons,” Lake Nona Medical City Research Day, Lake Nona, FL, October, 14, 2016.

A. Lavado, **J.J. Hickman**, “A human model of neuromuscular junction activity for investigating ALS and other neurological diseases,” World Preclinical Congress-Europe, Lisbon Portugal, November 14-16, 2016.

J.W. Rumsey, N. Santhanam, L. Kumanchik, X. Guo, F. Sommerhage, Y. Cai, M. Jackson, C. Martin, G. Saad, C.W. McAleer, Y. Wang, A. Lavado, C.J. Long, and **J.J. Hickman**, “Pharmacological evaluation of the neuromuscular junction in a human-based functional in vitro system,” Society of Toxicology’s 56th Annual Meeting, Baltimore, MD, March 13-16, 2017.

A. Lavado, C. Oleaga, S. Rothemund, C. Carmona-Moran, Y. Cai, C. Lorance, L.R. Bridges, M.T. Schnepfer, C.W. McAleer, C.J. Long, J. Langer, A. Riu, R. Note, S. Teissier, J. Cotovio, L. Breton, M.L. Shuler, and **J.J. Hickman**, “Non-invasive, real time monitoring of cellular function and assessment of chronic toxicity in 4-organ microfluidic platform,” Society of Toxicology’s 56th Annual Meeting, Baltimore, MD, March 13-16, 2017.

C.W. McAleer, C.J. Long, D. Elbrecht, T. Sasserath, L.R. Bridges, J.W. Rumsey, and **J.J. Hickman**, “Reconfigurable multi-organ systems for evaluation of anti-cancer therapeutics targeting efficacy and off-target toxicity using functional readouts,” Society of Toxicology’s 56th Annual Meeting, Baltimore, MD, March 13-16, 2017.

X. Guo, A. Colon, N. Akanda, S. Spalding, M. Stancescu, C. Martin, **J.J. Hickman**, “Tissue engineering the mechanosensory circuit of the stretch reflex arc with human stem cells: sensory neuron innervation of intrafusal muscle fibers,” UCF’s 2017 Graduate Research Forum, Orlando, FL, April 4, 2017

X. Guo, C.J. Long, C.W. McAleer, C. Oleaga, J.W. Rumsey, A. Colon, Y. Cai, S. Lambert, M.L. Shuler, **J.J. Hickman**, “Development of human-based functional neuronal systems for drug screening,” AIMBE/NIH 6th Workshop on Validation and Qualification of New In Vitro Tools and Models for the Pre-Clinical Drug Discovery Process, Bethesda, MD. May 25-26, 2017.

N.S. Narasimhan, C.J. Long, C.W. McAleer, J.W. Rumsey, T. Sasserath, L.R. Bridges, C. Oleaga, X. Guo, F. Sommerhage, Y. Cai, M. Jackson, Y. Wang, M.L. Shuler, **J.J. Hickman**, “Multi-organ BioMEMS platforms for assessment of real-time functional effects of therapeutic drugs on organ

systems,” AIMBE/NIH 6th Workshop on Validation and Qualification of New In Vitro Tools and Models for the Pre-Clinical Drug Discovery Process, Bethesda, MD. May 25-26, 2017.

A. Riu, C. Oleaga, G. Legters, L. Kumanchik, V. Platt, L.R. Bridges, C. Martin, M. Jackson, C.W. McAleer C.J. Long, J. Langer, R. Note, **J.J. Hickman**, S. Teissier, J. Cotovio and L. Breton “A human heart-liver platform to study drug metabolism and toxicity” Tenth World Congress Alternatives and Animal Use in the Life Sciences, Seattle, WA. August 20-24, 2017.

C.A. Carmona-Moran, A. Lavado, C. Oleaga, S. Rothmund, Y. Cai, C. Lorance, R.L. Bridges, M. Schnepfer, C. McAleer, C.J. Long, J. Langer, A. Riu, R. Note, S. Teissier, J. Cotovio, M.L. Shuler and **J.J. Hickman**, “Non-invasive, real time monitoring of cellular function and assessment of chronic toxicity in 4-organ microfluidic platform” Tenth World Congress Alternatives and Animal Use in the Life Sciences, Seattle, WA. August 20-24, 2017.

Selected Oral Presentations:

J.J. Hickman, “Regulatory Aspects of Functional Organ-on-a-Chip Systems for Preclinical Drug Discovery and Toxicology,” Organ-on-a-Chip World Congress & 3D-Culture 2017, Boston, MA, July 10-11, 2017. **Keynote**

J.J. Hickman, “A Human Model of Neuromuscular Junction Activity for Investigating ALS and Other Neurological Diseases,” New Tools For Disease Modeling, Part of the 16th Annual World Preclinical Congress, Boston, MA, June 12, 2017. **Invited**

J.J. Hickman, “Human on a Chip Systems as Phenotypic Models for Drug Toxicity and Efficacy Evaluation,” Drug Toxicity, Part of the 16th Annual World Preclinical Congress, Boston, MA, June 13, 2017. **Keynote**

J.J. Hickman, “Human-on-a-Chip Systems for Understanding Neurological Diseases and Deficits as well as for Drug Discovery,” NGR seminars series, Kentucky Spinal Cord Injury Research Center, University of Louisville, Louisville, KY, May 4, 2017. **Invited**

J.J. Hickman, “Functional Human-on-a-Chip Systems for Preclinical Drug Discovery and Toxicology,” Department of Pharmaceutical Sciences Albany College of Pharmacy and Health Sciences, Albany NY, April 26-27, 2017. **Invited**

J.J. Hickman, “A human-analog platform for the study of drug effects on the CNS and PNS across the blood-brain barrier,” Blood-Brain Penetrant Inhibitors/Drug Discovery Chemistry meeting, San Diego, CA, April 23 - 27, 2017. **Invited**

J.J. Hickman, “Human-on-a-Chip Systems for Mechanistic Toxicology Investigations,” Society of Toxicology’s 56th Annual Meeting, Baltimore, MD, March 13-16, 2017. **Invited**

J.J. Hickman, “Human on a Chip Systems as Phenotypic Models for Drug Toxicity and Efficacy Evaluation UF Center for Pharmacometrics and Systems Pharmacology LNLC Meeting, Lake Nona, FL, March 12-14, 2017. **Invited**

J.J. Hickman, "Integration of CNS and PNS Cellular Components with BioMems Systems for Drug Discover and Toxicology," Pittcon, Chicago, IL, March 5-9, 2017. **Invited**

J.J. Hickman, "Engineering Robust Neural Interfaces: Progress and Challenges" panel, 7th PERSH Workshop, The Interface Between Materials and Biology, Alexandria, VA, February 7-9, 2017. **Invited**

J.J. Hickman, "Systemic Toxicity Using Human-on-a-Chip Systems," L'Oreal, Aulnay, Paris, France, November 16-20, 2016. **Invited**

J.J. Hickman, "Human on a Chip Systems as Phenotypic Models for Drug Toxicity and Efficacy Evaluation," World Preclinical Congress-Europe, Lisbon, Portugal, November 14-16, 2016. **Keynote**

J.J. Hickman, "The Challenge in Building Phenotype Body-on-a-Chip Models for Toxicological and Efficacy Evaluations in Drug Discovery as well as Precision Medicine," Select Biosciences Lab-on-a-Chip and Microfluidics World Congress, San Diego, CA, September 26-28, 2016. **Keynote**

J.J. Hickman, "Utilization of Human-on-a-Chip Systems for Efficacy and Toxicity Evaluation in the Therapeutic Development Process," pRED Pharmaceutical Sciences 'Organs on a chip – is the end of animal testing near?' Symposium, Basel, Switzerland, September 9, 2016. **Invited**

J.J. Hickman, "Integration of Cells with Silicon Devices for the Development of Functional Organ-on-a-Chip Systems for Preclinical Drug Discovery and Toxicology," Organ-on-a-Chip World Congress & 3D-Culture 2016, Boston, MA, July 6-8, 2016. **Keynote.**

J.J. Hickman, "Utilization of iPSCs in Developing Human-on-a-chip Systems for Phenotypic Screening Applications," Cambridge Healthtech Institute's 9th Annual New Approaches for Predicting Drug Toxicity, Boston, MA, June 15-16, 2016. **Invited**

J.J. Hickman, "Regulatory Issues for Validation and Qualification for New Organ-on-a-Chip Systems for Mechanistic Toxicology," Fetal Bovine Serum, Neubiberg, Germany, June 2-3, 2016. **Invited.**

J.J. Hickman, "Defined Systems for In Vitro Evaluation of Compounds and Drugs" Ludwig-Maximilians-Universität München, München, Germany, June 1, 2016. **Invited**

J.J. Hickman, "Hesperos Overview," Cade Museum Prize presentation, Gainesville, FL, April 30, 2016.

J.J. Hickman, "Therapeutic Development and Disease Modeling Creation Utilizing Body-on-a-Chip Systems Derived from Human Stem Cells," Stem Cell Summit, Boston, MA, April 25-27, 2016. **Invited**

J.J. Hickman, "Integration of Cells with Silicon Devices for In vitro Tissue Engineering of Functional Systems for Preclinical Drug Discovery and Toxicology," Department of Biomedical Engineering Texas A&M Seminar Series, College Station, TX, April 20-21, 2016. **Invited**

J.J. Hickman, "Integration of CNS and PNS Components with Silicon Devices via Surface Microengineering for Neuronal Mapping Applications," PITTCON Conference & Expo 2016, Atlanta, GA, March 6-10, 2016. **Invited**

J.J. Hickman, "Human on a Chip Systems," Abbvie, December 4, 2015. **Keynote**

J.J. Hickman, "Organ on a Chip Systems for Drug Discovery and Toxicology," Novartis, November 6, 2015. **Invited**

J.J. Hickman, "PB/PK Modeling for a Chronic Exposure," L'Oreal, Aulnay, France, November 3-5, 2015. **Invited**

J.J. Hickman, "Results on Skin Integration into the System," L'Oreal, Aulnay, France, November 3-5, 2015. **Invited**

J.J. Hickman, "Prediction of Repeat-Dose Systemic Toxicity: Multi Organ on a Chip Based Models Status form a US Regulatory Aspect," L'Oreal, Aulnay, France, November 3-5, 2015. **Invited**

J.J. Hickman, "Human-on-a-Chip Applications for Drug Discovery and Regenerative Medicine," BioFlorida, Orlando, FL, October 11-13, 2015. **Invited**

J.J. Hickman, X. Guo, A.S.T. Smith, C.J. Long, A. Colon, "Development of an In Vitro Model of the Human Reflex Arc for Understanding Disease and Injury in the Spinal Cord," BMES 2015 Annual Meeting, Tampa, FL, October 7-10, 2015. **Invited**

J.J. Hickman, "Integrated Functional in Vitro Systems for Toxicology and Drug Discovery Applications, Lab-on-a-Chip, Microfluidics & Microarrays World Congress, San Diego, CA, September 29-30, 2015. **Invited**

J.J. Hickman, "Tissue Engineering of Functional Systems for Preclinical Drug Discovery," Department of Chemical Engineering Distinguished Seminar Speaker, Northeastern University, Boston, MA, September 11, 2015. **Invited**

J.J. Hickman, "Regulatory Issues for Validation and Qualification for New Human-On-A-Chip Systems," 5th International Conference and Exhibition on Pharmaceutical Regulatory Affairs, Orlando, FL, August 03-05, 2015. **Keynote**

J.J. Hickman, "Human-on-a-Chip Systems to Direct or Possible Augment Clinical Trials," International Conference on Clinical Trials, Orlando, FL, July 27-29, 2015. **Keynote**

J.J. Hickman, "Integration of Cells with Silicon Devices for In Vitro Tissue Engineering of Functional Systems for Preclinical Drug Discovery," Select Biosciences Organ-on-a-Chip and 3D Printing in the Life Sciences Conference, Boston, MA, July 8-9, 2015. **Invited**

J.J. Hickman, "Utilizing a WGM Sensor System to Understand Protein Adsorption and Denaturation on Modified Surfaces and How it Affects Subsequent Cell Culture," FL AVS, Orlando, FL, March 9-10, 2015. **Invited**

J.J. Hickman, "Body-on-a-Chip Systems for Toxicological Evaluations," Organotypic Culture Models for Toxicology, Boston, MA, November 17-19, 2014. **Invited**

J.J. Hickman, "The Basics of Integrating Cells with Microfluidic Devices for Long-Term Cell Survival and Function in Organ-on-a-Chip Devices," Short course on microfluidics and cell culture chips, Organotypic Culture Models for Toxicology, Boston, MA, November 17-19, 2014. **Invited**

J.J. Hickman, "Integration of Cells with Silicon Devices for In vitro Tissue Engineering of Functional Systems for Preclinical Drug Discovery and Toxicology Applications," Biomedical Engineering Seminar, Cornell University, September 4, 2014. **Invited**

J.J. Hickman, "Functional CNS and PNS In Vitro Models Composed of Human Cells," Florida Brain Project Symposium, Tallahassee, FL, July 28-29, 2014. **Invited**

J.J. Hickman, "Body-on-a-Chip Systems Utilizing CDI Cells," CDI User Meeting, Boston, MA, August 11-13, 2014. **Invited**

C. Kelley and J.J. Hickman, "Validation and Qualification of New In Vitro Technologies for Drug Development," 9th World Congress on Alternatives and Animal Use in the Life Sciences (WC9), Prague, Czech Republic, August 24-28, 2014. **Invited**

J.J. Hickman, "Human Stem Cell Derived Body-on-a-Chip Systems for Drug Discovery and Toxicology," Stem Cell Research & Regenerative Medicine Conference, Cambridge, MA, April 23-25, 2014. **Invited**

J.J. Hickman, "Microphysiological Systems and Low Cost Microfluidic Platform with Analytics" DARPA-NIH MPS meeting, Bethesda, MD., January 29-31, 2014.

J.J. Hickman, "Replacing Animals with Human Body-on-a-chip Systems for Drug Discovery and Toxicology Applications" USF College of Engineering, Chemical and Biomedical Engineering Department Seminar Series, January 10, 2014. **Invited**

J.J. Hickman and M.L. Shuler, "Low Cost Microphysiological System with Analytics," TERMIS-AM 2013, Atlanta, GA, November 10-13, 2013.

J.J. Hickman and M.L. Shuler, "Low Cost Microphysiological Systems with Analytics," BMES 2013 Annual Meeting, Seattle, Washington, September 25-28, 2013.

J.J. Hickman, "Integration of CDI Neurons and Cardiac Cells in Functional Modules for Body-on-a-Chip Applications" CDI User Meeting, Madison, WI., August 26-28, 2013. **Invited**

J.J. Hickman, "Grand Challenges in Mapping the Human Brain: NSF Workshop Report" NSF Workshop on Mapping and Engineering the Brain panel participant, Arlington, VA., August 13-14, 2013.

J.J. Hickman, "Small Molecule Induction of Human Umbilical Stem Cells into Functional Oligodendrocytes and Astrocytes" Medicinal Chemistry Conference, Napa, CA., July 17-20, 2013. **Invited**

J.J. Hickman, "Integration of Cells with Silicon Devices for In Vitro Tissue Engineering of Functional Systems for Preclinical Drug Discovery and Toxicology Applications" L'Oreal, Paris, France. June 22-29, 2013. **Invited**

J.J. Hickman, "Design and Construction of Cognitive Function Test Beds Using Experimental and Simulation Based Approaches" ACS FAME conference, Clearwater, FL., May 9-11, 2013. **Invited**

J.J. Hickman, "Integration of Cells with Silicon Devices for In Vitro Tissue Engineering of Functional Systems for Preclinical Drug Discovery Applications" University of California, Berkeley, February 8, 2013. **Invited**

J.J. Hickman, "Microphysiological Systems and Low Cost Microfluidic Platform with Analytics" DARPA-NIH MPS meeting, Bethesda, MD., January 30-February 1, 2013.

J.J. Hickman, "Functional In Vitro Systems Derived from Human Stem Cells for Pre-Clinical Drug Discovery" 9th Stem Cell Research & Therapeutics Conference, Philadelphia, PA, October 24-26, 2012.

J.J. Hickman, "Microphysiological Systems and Low Cost Microfluidic Platform with Analytics" DARPA-NIH MPS meeting, Bethesda, MD., October 1-2, 2012.

J.J. Hickman, "Integration of Cells and Proteins with silicon Devices Via Surface Microengineering for the Creation of Functional In Vitro Systems" University of Natural Resources and Life Sciences, Vienna, Austria, September 3, 2012. **Invited**

J.J. Hickman, "Functional In Vitro Systems for Toxicology and Drug Discovery Applications" September 5-8, 2012, Tissue Engineering and Regenerative Medicine (TERMIS) conference, Vienna, Austria. Co-organizer, **Invited**

J.J. Hickman, "Hybrid Biological/Non-Biological Actuation System to Enable Direct Integration of a Prosthetic to an Amputation Site" February 22-23, 2012, Neuroprosthetics 2012, Worcester, MA. **Invited**

J.J. Hickman, "Is 3D Always Necessary for Recapitulating Function for In Vitro Tissue Engineered Systems?" November 17-19, 2011, CHI's Predictive Functional Human Tissue Models Conference, Boston, MA. **Invited**

J.J. Hickman, "Functional In Vitro Systems for the Development of Therapeutics and Counter Measures" November 14-18, 2011, Chemical & Biological Defense Science & Technology Conference, Las Vegas, NV. **Invited**

J.J. Hickman, "Remyelination Systems and MS" October 22, 2011, NMSS FLC 2011 Research Symposium and Annual Conference, Orlando, FL. **Invited**

J.J. Hickman, "Quantification and Structure Evaluation of Protein Adsorbed at Defined Interfaces Utilizing a Whispering Gallery Mode Sensor" September 29, 2011, NanoFlorida, Miami, FL. **Invited**

J.J. Hickman, "Functional In Vitro Systems" September 8-10, 2011, GE, Albany, NY. **Invited**

K.A. Wilson, C.A. Finch, P. Anderson, F. Vollmer and J.J. Hickman, "Quantification and Structure Evaluation of Protein Adsorbed at Defined Interfaces and its Effect on Subsequent Cell Culture" June 20-22, 2011, 8th International Symposium on Polymer Surface Modification: Relevance to Adhesion, Danbury, CT. **Invited.**

J.J. Hickman, "Engineered Functional In Vitro Systems as a Next Generation of Drug Discovery Tools and Models", Jan. 24, 2011, University of Florida, Joseph & Leila Applebaum Visiting Professorship Lecture in Health Sciences, Gainesville, FL. **Invited.**

J.J. Hickman, "Integration of Cells with Silicon Devices for In Vitro Tissue Engineering of Functional Neuronal and Cardiac Systems for Drug Discovery Applications," Jan 21, 2011, Scripps Florida, Jupiter, FL. **Invited**

J.J. Hickman, "In Vitro Model Systems for NMJ Formation Utilizing Motoneurons from ADULT RAT, MOUSE and SOD1 Transgenic Mouse," Dec 11-13, 2010, ALS/MND, Orlando, FL.

J.J. Hickman, "Engineering a Functional In Vitro Model of the Spinal Stretch Reflex Arc," Dec 5-8, 2010, Tissue Engineering and Regenerative Medicine International Society-North America, Orlando, FL. **Invited/** Session Chair

J.J. Hickman, "AIMBE Plan for Facilitating the Validation and Qualification of New Technologies in the FDA Approval Process by Leveraging the NIH, FDA Joint Initiative in Regulatory Science to Include Engineering," Oct 7, 2010, BMES, Austin, TX. **Invited**

J.J. Hickman, "Integration of Cells with Silicon Devices for In vitro Tissue Engineering of Functional Neuronal and Cardiac Systems," Sept 17, 2010, FIU Lecture Series, Florida International University. **Invited**

J.J. Hickman, "Plan for Facilitating Validation/Qualification of New Technologies in FDA Approval Process by Leveraging NIH/FDA Joint Initiative in Regulatory Science and Engineering," June 2, 2010, FDA Public Meeting, Washington, DC. **Invited**

J.J. Hickman, "Regeneration of Adult Rat, Mouse and Human Neurons in a Defined In Vitro System," Feb 28-Mar 3, 2010, 7th GCNN Annual Meeting, Radisson Blu Arlandia Hotel, Stockholm, Sweden.

Invited.

J.J. Hickman, "'Functional In vitro Systems as Models for the Next Generation of Systems Biology Research and Applications,'" Feb 23 -26, 2010, Unither Nanomedical & Telemedical Technology Conference, Quebec, CDN. **Invited.**

J.J. Hickman, "Functional In Vitro Systems as Models for Neurological Diseases, Neuroregeneration, and Novel High Information Content Screens," November 19, 2009, Wake Forest University, Winston-Salem, NC. **Invited**

J.J. Hickman, "Engineering Functional In Vitro Systems from Human Cells - Opportunities for Novel Assay Development," November 9-10, 2009, National Institutes of Health, MLPCN Steering Committee Meeting, Boston, MA. **Invited**

J.J. Hickman, "Functional In Vitro Systems as Models for the Next Generation of Systems Biology Research and Applications," August 19, 2009, Burnham Institute, La Jolla, CA. **Invited**

J.J. Hickman, "Development of Hybrid Biological/Non-Biological Systems as the Next Generation Fieldable Tissue Based Sensors for Application in CBW Detection and Medical Diagnostics," August 18, 2009, 12th Annual Force Health Protection Conference, Albuquerque, NM. **Invited**

J.J. Hickman, "In Vitro Models for Biodefense," July 28, 2009, Product Line Review (TATRC), Fredricksburg, MD.

J.J. Hickman, "Nanoscale Interface Design to Enable Integration of Cells with Silicon Devices for In Vitro Tissue Engineering Applications," June 2-5, 2009, Co-Director and U.S. Scientific Committee, NanoRomania, Iasi, Romania. **Invited**

J.J. Hickman, "Integration of Cells with Silicon Devices for Neuronal Tissue Engineering Applications," May 7, 2009, Harvard University, Boston, MA, **Invited.**

J.J. Hickman, "Functional In Vitro Systems as Models for Neurological and Cardiac Diseases and Deficits in High-Content, High-Throughput Screens," May 6, 2009, Genzyme, Boston, MA, **Invited.**

J.J. Hickman, "Engineered Networks of Cultured Neurons from Embryonic and Adult Rodent as well as Human Brain for Understanding Neurodegenerative Disorders," March 24, 2009, College of Medicine, University of South Florida, Tampa, FL. **Invited**

J.J. Hickman, "Integration of Cells with Silicon Devices for Neuronal Tissue Engineering Applications," January 30, 2009, Department of Biomedical Engineering, University of Alabama at Birmingham, Birmingham, AL. **Invited**

J.J. Hickman, "Integration of Cells with Silicon Devices via Surface Microengineering to Create Functional *in vitro* Systems as Models for Neurological and Cardiac Diseases and Deficits," January 14, 2009, University of Florida, Gainesville, FL. **Invited**

J.J. Hickman, "Functional *In Vitro* Systems as Models for Neurological and Cardiac Diseases and Deficits," December 19, 2008, Burnham Institute, Orlando, FL. **Invited**

J.J. Hickman, "Functional *In Vitro* Systems as Models for Neurological and Cardiac Diseases and Deficits," December 7, 2008, Burnham Institute, La Jolla, CA. **Invited**

J.J. Hickman, "Temporal Neurotransmitter Conditioning and Neuroprotection by Ceria Nanoparticles Enables Adult Rat Spinal Cord Neuron Regeneration," December 7-10, 2008, Tissue Engineering and Regenerative Medicine International Society (TERMIS) North America (NA), La Jolla, CA. **Invited**

J.J. Hickman, "New *In Vitro* Model Systems for Alzheimer's Disease," Nov 21-22, 2008, UK-US Alzheimer's Disease Symposium, University of South Florida College of Medicine, Miami, FL.

J.J. Hickman, "Integration of Cells and Proteins with Silicon Devices via Surface Microengineering for the Creation of Functional *In Vitro* Systems," November 7, 2008, MMAE, UCF, Orlando, FL.

J.J. Hickman, "Cell Based Systems for Diagnostics and Therapeutic Applications," October 17, 2008, FCoE-BITT Symposium on Detection, Diagnostics and Therapeutics, Tampa, FL. **Invited**

J.J. Hickman, "Biomedical Science and Technology Applications Utilizing Nanotechnology, Specifically in Regenerative Medicine," September, 27, 2008, NanoFlorida, Orlando, FL. **Invited**

J.J. Hickman, "Biological Information Processing May Have Correlates with Quantum Information Processing," August 24-26, 2008, Unconventional Computing Conference, Vienna, Austria. **Keynote**

J.J. Hickman, "Auto-catalytic Ceria Nanoparticles Offer Neuroprotection to Adult Rat Spinal Cord Neurons," April 3, 2008, 1st Annual Unither Nanomedical & Telemedical Technology Conference, Quebec, Canada. **Invited**

J.J. Hickman, "Understanding Protein and Extracellular Matrix Deposition at Biomaterial Interfaces," December 9-12, 2007, Indo-US Science and Technology Forum (IUSSTF), Chennai, India. Keynote Speaker. **Invited**

J.J. Hickman, "Regeneration and Functional Recovery of Adult Spinal Cord and Hippocampal Neurons *In Vitro*," December 9-12, 2007, Indo-US Science and Technology Forum (IUSSTF), Chennai, India. Keynote Speaker. **Invited**

J.J. Hickman, "Regeneration and Functional Recovery of Adult Spinal Cord Neurons *in Vitro*," Sept. 21, 2007, Drexel University, Philadelphia, PA. **Invited**

J.J. Hickman, "Human *in vitro* Lung Model for Infectious Diseases," August 6, 2007, 10th Annual Force Health Protection Conference, Louisville, KY. **Invited**

J.J. Hickman, "Regeneration and Functional Recovery of Adult Spinal Cord Neurons In Vitro," March 9, 2007, Eleventh Annual Hilton Head Workshop: Engineering Tissues: Replacement, Repair, Regenerate, Hilton Head, SC.

J.J. Hickman, "Fabrication of Neuronal Circuits in 2D and 3D Utilizing Embryonic and Adult Cells," December 14-18, 2006, Biomaterials from 2D to 3D to larger than life: A symposium on the future of biomaterials, Maui, HI.

J.J. Hickman, "Integration of Cells and Proteins with Silicon Devices via Surface Microengineering for Applications for ALS, SCI, Alzheimer's and other Neurodegenerative Diseases," December 8, 2006, The Miami Project to Cure Paralysis at the University of Miami Miller School of Medicine, Miami, FL. **Invited**

J.J. Hickman, "Auto-catalytic Ceria Nanoparticles Offer Neuroprotection to Adult Rat Spinal Cord Neurons," October 10, 2006, BioStar & ICBN 2006, Stuttgart, Germany.

J.J. Hickman, "Mechanistic Evaluation of Airborne Particulates using Neuronal Based Assays," August 9, 2006, 9th Annual Force Health Protection Conference, Albuquerque, NM. **Invited**

J.J. Hickman, "The Creation of Functional Cellular Circuits and Their Integration with Silicon-based Devices for Biosensor Application," August 10, 2006, 9th Annual Force Health Protection Conference, Albuquerque, NM. **Invited**

J.J. Hickman, "Auto-catalytic Ceria Nanoparticles Offer Neuroprotection to Adult Rat Spinal Cord Neurons," July 28, 2006, Alexandra Ion Cuza University, Iasi, Romania. **Invited**

J.J. Hickman, "Nanoscience Applications for Surrogate Biological Systems," March 12-16, 2006, Annual Joint Symposium, Florida Chapter of the AVS, Science & Technology Society & the Florida Society for Microscopy, Orlando, FL. **Invited**

J.J. Hickman, "Functional In Vitro Models of Neurodegenerative Diseases," February 22, 2006, BioFlorida, West Palm Beach, FL. **Invited**

J.J. Hickman, "Interface Design and Analysis for Tissue Engineering," December 4, 2005, Society for Basic Urologic Research, Miami Beach, FL. **Invited**

J.J. Hickman, "Integration of Cells and Proteins with Silicon Devices via Surface Microengineering," November 11, 2005, Science Seminar Series, Daytona Beach community College, Daytona Beach, FL. **Invited**

J.J. Hickman, "In Vitro Systems," National Science Foundation, September 20, 2005, Washington, DC. **Invited**

J.J. Hickman, "Integration of Cells and Proteins with Silicon Devices via Surface Microengineering," Zyvex Corporation, July 18, 2005, Richardson, TX. **Invited**

J.J. Hickman, "Hybrid in Vitro Systems for Toxin Detection, Functional Drug Screening and as Disease Models," Florida TechTransfer Conference, May 18-19, 2005, Orlando, FL **Invited**

J.J. Hickman, "The Creation of Cellular Circuits and Their Integration with Silicon-based Devices for Biological Applications," FL ASM, March 31- April 2, 2005, Ft. Lauderdale, FL. **Invited**

J.J. Hickman, "Analysis of Protein Adsorption under Flow and Static Conditions in Microfluidic Devices," FL AVS, March 14-16, 2005, Orlando, FL. **Invited**

J.J. Hickman, "Nanotechnology," NSF-UCF Workshop on Nanotechnology for K-12 Teachers and Students, January 22, 2005, Orlando, FL. **Invited**

J.J. Hickman, "The Creation of Neuronal Circuits and Their Integration with Silicon-based Devices for Biological Computation Applications," IASTED, CSS 2004, November 28 – December 1, 2004, Clearwater Beach, FL. Keynote Speaker. **Invited**

J.J. Hickman, M. Das, C. Gregory, L. Reidel, P. Molnar, J. Kang, C. Chun and K. Wilson, "Stretch Reflex Arc *In Vitro* – a Functional Model for ALS Research," BioFlorida Symposium, October 16-18, 2004, Boca Raton, FL. **Invited**

J.J. Hickman, "Development and Experimental Verification of Surface Effects in a Fluids Model," DARPA Simbiosys meeting, October 10-12, 2003, Vail, CO. **Invited**

J.J. Hickman, "Building Hybrid Neuroelectric Systems," Western North Carolina Society for Neuroscience Symposium, May 4, 2004, Wake Forest University, Winston-Salem, NC. **Invited**

J.J. Hickman, "Integration of Cells and Proteins with Silicon Devices via Surface MicroEngineering," National Institute for Biomedical Imaging and Bioengineering, April 23, 2004, Rockville, MD. **Invited**

J.J. Hickman, "Direct Monitoring of Signal Pathways by Extracellular Electrophysiology of Neurons," DARPA/DSO workshop, April 22, 2004, Arlington, VA. **Invited**

J.J. Hickman, "Engineering Cardiac Myocyte Hybrid Systems – Applications for Biocompatibility, Toxin Detection and High-throughput Screening," 8th Annual Hilton Head Workshop, Cardiovascular Tissue Engineering, March 6-10, 2004, Hilton Head, SC.

J.J. Hickman, "Development and Experimental Verification of Surface Effects in a Fluidics Model," DARPA Simbiosys Meeting, March 2-3, 2004, Palm Springs, CA. **Invited**

J.J. Hickman, "Adult Motoneurons in a Defined *In Vitro* System," Winter Conference of Neural Plasticity, February 21-26, 2004, St. Lucia, West Indies. **Invited**

J.J. Hickman, "Integration of cells and Silicon Devices via Surface Microengineering to Build Hybrid Neuroelectric Devices," Mechanical Engineering Seminar Series at LSU, February 12, 2004, Baton Rouge, LA. **Invited**

J.J. Hickman, K. Lenghaus, D. Henry, P. Molnar, K. Wilson, M. Das, S. Sundaram and J. Jenkins, "Building Hybrid Cellular Systems," HSARPA Bioinformatics and Advance Assay Workshop, February 3, 2004, Washington DC. **Invited**

J.J. Hickman, "Hybrid Biological/Non-Biological Constructs for Robotic Control Applications," DARPA Bio:Info:Micro PI meeting, November 5-6, 2003, San Francisco, CA. **Invited**

J.J. Hickman, K. Lenghaus, D. Henry, J. Dale, K. Wilson, A. Bhattacharyya, S. Sundaram and J. Jenkins, "Experimental and Theoretical Examination of Protein Adsorption on Static and Flow Conditions," 204th Meeting of the Electrochemical Society, October 14, Orlando, FL. **Invited**

J.J. Hickman, "Building Hybrid Neuroelectric Devices," University of Southern California Provost's Neuroscience Symposium, October 9, 2003, Los Angeles, CA. **Invited**

J.J. Hickman, "Development of Hybrid Cellular Systems via Surface Microengineering," Georgia Institute of Technology, September 25, 2003, Atlanta, GA. **Invited**

J.J. Hickman, "Development and Experimental Verification of Surface Effects in a Fluids Model," Joint DARPA BioFlips / Simbiosys meeting, September 10-12, 2003, Monterey, CA. **Invited**

J.J. Hickman, "Building Minimalistic Hybrid Neuroelectric Devices," University of Southern California, September 8, 2003, Los Angeles, CA. **Invited**

J.J. Hickman, "Integration of Neuronal Systems with Silicon Microstructures for New Hybrid Diagnostic Devices," Neuroscience Grand Rounds, Medical University of South Carolina, August 14, 2003, Charleston, SC. **Invited**

J.J. Hickman, "Integration of Cells and Silicon Devices via Surface Microengineering," North Carolina State University/University of North Carolina Joint Seminar Series. June 4-6, 2003, Raleigh, NC. **Invited**

J.J. Hickman, "Integration of Cells and Silicon Devices via Surface Microengineering," "Workshop on Nonlinear Dynamics, Control & Guidance of Unmanned Autonomous Vehicles". May 29-30, 2003, Gainesville, FL. **Invited**

M. Das, C. Gregory, A. Narayanan, P. Molnar, H. Devaraj, M. Poeta, J.J. Hickman, "Defined System for Investigating Spinal Motoneuron Directed Growth," Society for Biomaterials Annual Meeting, May 3, 2003, Reno, NV.

J.J. Hickman, "Toward Understanding the Effects of Surface Modification on the Biointerface in Biosensors," 225th ACS National Meeting, March 23-27, 2003, New Orleans, LA. **Invited**

J.J. Hickman, "The Role of Chemistry in Biomedical Sciences," Chemistry Department, North

Carolina State University, March 20, 2003, Raleigh, NC. **Invited**

J.J. Hickman, "Integration of Cells and Silicon Devices via Surface Microengineering to Create Minimalistic Cellular Systems," Winter Conference of Neural Plasticity, February 27, 2003, Guadeloupe, French Antilles. **Invited**

J.J. Hickman, "Development and Experimental Verification of Surface Effects in a Fluids Model," Joint DARPA BioFlips / Simbiosys meeting, February 5-7, 2003, Santa Barbara, CA.

J.J. Hickman, "An In Vitro Model of the Reflex Arc for Rehabilitation," NIH, NINDS and NIBIB, December 13, 2002, Rockville, MD.

J.J. Hickman, "Integration of Cells and Silicon Devices via Surface Microengineering," Bioengineering Dept., University of Florida, November 26, 2002, Gainesville, FL. **Invited**

J.J. Hickman, "Integration of Cells and Silicon Devices via Surface Microengineering," AVS International Symposium, November 4-8, 2002, Denver, CO.

J.J. Hickman, "Hybrid Biological/Non-Biological Constructs for Robotic Control Applications," Bio:Info:Micro Program PI meeting, October 31, 2002, Boston, MA. **Invited**

J.J. Hickman, "Integration of Cells and Silicon Devices via Surface Microengineering," University of South Carolina, October 21, 2002, Columbia, SC. **Invited**

J.J. Hickman, "Integration of Cells and Proteins with Silicon Devices via Surface Microengineering," BioDevice Interface Science and Technology Workshop, September 9, 2002, Scottsdale, AZ. **Invited**

J.J. Hickman, "Integration of Cells and Proteins with Silicon Devices via Surface Microengineering," Clemson University Biochemistry and Genetics Department, August 30, 2002, Clemson, SC. **Invited**

J.J. Hickman, "Development and Experimental Verification of Surface Effects in a Fluidic Model," Joint DARPA Bioflips/Simbiosys PI Meeting, August 21-23, 2002, Portland, OR. **Invited**

J.J. Hickman, "Proteins and Cells as Components for Microdevices and Engineered Tissues," SC Bio-X Retreat, July 22, 2002, Charleston, SC. **Invited**

J.J. Hickman, "Nanoscale Surface Manipulation to Build Hybrid Devices for Sensor Applications," 20th Symposium on Energy Engineering Sciences, Argonne National Laboratory, May 21, 2002, Chicago, IL. **Invited**

J.J. Hickman, "Integration of Cells and Silicon Devices via Surface Microengineering," University of Southern California, March 19, 2002, Los Angeles, CA. **Invited**

J.J. Hickman, "Development and Experimental Verification of Surface Effects In a Fluidics Model," Joint DARPA BIOFLIPS/SIMBIOSYS PI Meeting, February 20, 2002, Miami, FL.

J.J. Hickman, "Neurons Components as Engineered Devices and Tissues," Medical University of South Carolina, January 24, 2002, Charleston, SC. **Invited**

J.J. Hickman, "Neurons as Components in Engineered Tissue Sensors," DARPA sponsored workshop on TCAD, December 5, 2001, Arlington, VA. **Invited**

J.J. Hickman, "Neuronal Cells as Components in Devices and Engineered Tissue," Vanderbilt University, December 3, 2001, Nashville, TN. **Invited**

J.J. Hickman, P. Molnar, G. Jacob, M. Das, T. Tauber, "The Use of Surface Composition to Control Cell Phenotype Expression," American Vacuum Society, November 1, 2001, San Francisco, CA.

J.J. Hickman, "Integration of Cells and Silicon Devices via Surface Microengineering," BioMEMS and Biomedical Nanotechnology World 2001, September 22, 2001, Columbus, OH. **Invited**

J.J. Hickman, "Development and Experimental Verification of Surface Effects in a Fluidics Model," DARPA Bioflips/Simbiosys Program Meeting, August 10, 2001, Honolulu, HI. **Invited**

J.J. Hickman, "Biological Information Processing and Systems," Meeting of the Council on Energy Engineered Research, August 6, 2001, Dept. of Energy, MD. **Invited**

J.J. Hickman, "Neurons as Components in Sensors and Computational Devices," University of Heidelberg, Dept. of Physical Chemistry, July 2, 2001, Heidelberg, Germany. **Invited**

J.J. Hickman, "Neuronal and Cardiac Cells as Components in Devices and the Effects of a Defined System on Cell Functions," Max-Planck Workshop on Cell/Substrate Interactions, June 29, 2001, Bavaria, Germany. **Invited**

J.J. Hickman, "Function-Based Biosensors for Use in Hazardous Waste Remediation," Argonne National Laboratory, May 21, 2001, Argonne, IL. **Invited**

J.J. Hickman, "Biological Interface Design for Neuronal Tissue Engineering Applications," February 21-25, 2001, Hilton Head, SC.

J.J. Hickman, "Bioengineering in the 21st Century: Cells as Components in Engineered Devices and Tissues," Hunter Honors Lecture, Department of Bioengineering, Clemson University, April 6, 2001, Clemson, SC. **Invited**

J.J. Hickman, "Biological Computation: How does Biology do Information Technology," Meeting of the National Academy of Sciences, January 31, 2001, Irvine, CA. **Invited**

J.J. Hickman, "Report on Biological Information Processing and Systems," Oak Ridge National Laboratory, January 22, 2001, Oak Ridge, TN.

J.J. Hickman, "Constructing Simple Hybrid Neuronal Devices," Joint DOE/NSF Workshop, January 19, 2001, Clemson, SC. **Invited**

J.J. Hickman, "Neurons as Components in Sensors and Computational Devices," Biological Sciences Directorate, National Science Foundation, January 9, 2001, Washington, D.C. **Invited**

J.J. Hickman, "Using Microfluidics and MEMS Sensors to Program Cells," DARPA Workshop, December 12-13, 2000, Scottsdale, AZ. **Invited**

J.J. Hickman, "Bioengineering in the 21st Century," Panel session, University of California-Berkeley, November 14, 2000, Berkeley, CA. **Invited**

J.J. Hickman, "Neurons as Components in Sensors and Computational Devices," University of California-San Diego, November 10, 2000, San Diego, CA. **Invited**

J.J. Hickman, "Neurons as Components in Sensors and Computational Devices," Electrical Engineering Seminar, Clemson University, October 25, 2000, Clemson, SC. **Invited**

J.J. Hickman, "Biological Computations: How does biology do information technology?," National Science Foundation, Biocomputation Workshop, Washington, D.C., (September 21, 2000). **Invited**

J.J. Hickman, "Living Neural Cells as Components in Sensors and Computational Devices," American Vacuum Society 47th International Symposium, October 3, 2000, Boston, MA. **Invited**

J.J. Hickman, "Neurons as Components in Sensors and Computational Devices," The Johns Hopkins University, Department of Biomedical Engineering, September 29, 2000, Baltimore, MD. **Invited**

J.J. Hickman, "Biological Interface Design as an Enabling Step for Hybrid Cell-Based Biosensors and Computational Devices," Nanoengineering Workshop, University of California-Berkeley, August 5, 2000, Berkeley, CA. **Invited**

J.J. Hickman, D.R. Jung, R.S. Sathanoori and M.G. Coulombe, "XPS Analysis of Protein Deposited by Cells in a Defined *In Vitro* Culture System and its Relation to Cellular Health," 6th World Biomaterials Conference, May 16-21, 2000, Kamuela, HI.

J.J. Hickman, W. Ma, R.S. Sathanoori and M.G. Coulombe, "Manipulation of Cell Phenotype Expression of Cortical Neurons by Growth on Artificial Surfaces," 6th World Biomaterials Conference, May 16-21, 2000, Kamuela, HI.

J.J. Hickman, "Living Neural Cells as Components in Sensors and Computational Devices," Rockwell International, January 22, 2000, Thousand Oaks, CA. **Invited**

J.J. Hickman, "Living Neural Cells as Components in Sensors and Computational Devices," Clemson University, Department of Bioengineering, December 7, 2000, Clemson, SC. **Invited**

J.J. Hickman, M.S. Ravenscroft and H. Canavan, "Cells and Cellular Networks as Sensor Elements for Toxin Detection," Society for Professional and Industrial Engineers, September 22, 1999, Boston, MA. **Invited**

J.J. Hickman, M.S. Ravenscroft, H. Canavan and V. Krauthamer, "Biocompatibility of Cardiac Cells on Silane-Modified Surfaces," American Vacuum Society Meeting, Biomaterial Interfaces Group, October 27, 1999.

J.J. Hickman, "Biological Interface Design for Cardiac and Neuronal Systems," University of Illinois at Chicago Medical School, Department of Bioengineering, June 15, 1999, Chicago, IL. **Invited**

J.J. Hickman, "Biological Interface Design for *In Vitro* and *In Vivo* Applications," The Johns Hopkins University, May 24, 1999, Baltimore, MD. **Invited**

J.J. Hickman, "Living Neural Cells as Components in Sensors and Computational Devices," University of Illinois at Chicago, Department of Bioengineering, May 13, 1999, Chicago, IL. **Invited**

J.J. Hickman, "Biological Interface design for both *In Vivo* and *In Vitro* Applications," Syracuse University, May 6, 1999, Syracuse, NY. **Invited**

J.J. Hickman, "Neurons as the Basis for Sensors and Information Technology Peripherals," The Institute for Genomic Research, May 5, 1999, Gaithersburg, MD. **Invited**

J.J. Hickman, "Biological Interface Design for *In Vitro* and *In Vivo* Applications," Department of Applied Physics, Chalmers University of Technology, April 28, 1999, Gothenburg, Sweden. **Invited**

J.J. Hickman, "Biological Interface Design for Sensor Applications," International Workshop on Biosensors Utilizing Lipid Bilayer Membranes, Max-Planck-Institute for Polymer Research, April 22-25, 1999, Mainz, Germany. **Invited**

J.J. Hickman, "Living Neural Cells as Components in Sensors and Computational Devices," Oak Ridge National Laboratory, April 6, 1999, Oak Ridge, TN. **Invited**

J.J. Hickman, "Patterned Neuronal Networks for Applications in Biocomputing," National American Chemical Society Meeting, March 21-25, 1999, Anaheim, CA. **Invited**

J.J. Hickman, "Biological Interface Design for *In Vitro* and *In Vivo* Applications," Northwestern University, January 21, 1999, Evanston, IL. **Invited**

J.J. Hickman, "Creating Cellular Networks for Biosensor Applications," Gordon Research Conference on Bioanalytical Sensors, January 10-15, 1999, Ventura, CA. **Invited**

J.J. Hickman, "Monolayers as Templates for Neuronal Circuit Design," Biomedical Engineering Society Annual Meeting, October 10-13, 1998, Cleveland, OH. **Invited**

J.J. Hickman, "Living Neural Cells as Components of Sensors and Computational Devices," Microsystems Technology in Medicine and Biology, April 15-16, 1998, Boston, MA. **Invited**

J.J. Hickman, M.G. Coulombe, W. Ma, D.R. Jung and R. Sathanoori, "Surface Modification as a Method for Making CNS Implants Biocompatible," National American Chemical Society Meeting, September 8-11, 1997, Las Vegas, NV.

J.J. Hickman, "Monitoring Protein Deposition During *In Vitro* Cell Culture as a Diagnostic for Biosensor and Neuronal Circuit Construction," 1st International Symposium on Ordered Proteins at Interfaces, University of Washington, August 17-19, 1997, Seattle, WA. **Invited**

J.J. Hickman, "Cell-Based Sensors," Commercial Applications for Organo Electronic Materials, February 5-7, 1996, Los Angeles, CA. **Invited**

J.J. Hickman, "Biological Interface Design for Neuronal Networks," Commercial Applications for Organo Electronic Materials, February 5-7, 1996, Los Angeles, CA. **Invited**

J.J. Hickman, "Living Neural Cells as Components in Sensors and Computational Devices," VLSI Seminar Series, MIT, May 6, 1997, Cambridge MA. **Invited**

J.J. Hickman, "Biological Interface Design for Neuronal Sensors, Circuits, and Implants," Biotechnology Division, NIST, February 24, 1997, Germantown, MD. **Invited**

J.J. Hickman, M.G. Coulombe, W. Ma and D. Jung "Surface Modification as a Method for Making CNS Implants Biocompatible," Annual Meeting of the Society for Biomaterials, April 30, 1997, New Orleans, LA.

J.J. Hickman, D.A. Stenger and G.T.A. Kovacs, "Biosensors Utilizing Neural Cells as Sensing Elements," Society for Neuroscience, November 17, 1996, Washington DC.

J.J. Hickman, K.E. Foster, D.R. Jung, M.G. Coulombe, A.E. Schaffner and J.L. Barker. "Monolayers as Templates for Biocompatible Interface Design," National Symposium of the American Vacuum Society," October, 1995, Washington, DC. **Invited**

J.J. Hickman, M.A. Testoff, D.A. Stenger, B.J. Spargo, A.S. Rudolph and C.C. Chu, "Surface Characterization of Bioadsorbable Polymers Modified with Self-Assembled Monolayers," National American Chemical Society Meeting, August 22-27, 1993, Seattle, WA. **Session Chair**

J.J. Hickman, "Patterned Self-Assembled Monolayers as Templates for Controlled *In Vitro* Cellular Networks," Gordon Research Conference on Biocompatibility and Biomaterials, July 12-16, 1993, Tilton School, Tilton, NH. **Invited**

J.J. Hickman, J. Georger, M. Anderson, G.L. Bergeron and D. Kirkpatrick, "Ungated Vacuum Field Emission from Ordered Arrays of Microlithographically Defined Cylinders," Spring Meeting, Materials Research Society, April 27, 1993, San Francisco, CA.

J.J. Hickman, "Biological Interface Design for *In Vitro* Cellular Systems," James Madison University, April 2, 1993. **Invited**

J.J. Hickman, D.A. Stenger, A.E. Schaffner and J.L. Barker, "The Use of Monolayers as Templates for Biocompatibility Studies," National American Chemical Society Meeting, March 1993, Denver, CO.

J.J. Hickman and D.A. Stenger, "Self-Assembled Monolayer Templates for Neuron Culture," National Symposium of the American Vacuum Society and Topical Conference, November 9-13, 1992, Chicago, IL.

J.J. Hickman, D.A. Stenger, S.K. Bhatia, J.H. Georger and P.E. Schoen, "Characterization of Patterned Co-planar Silane Monolayers and Their Use for Selective Cell and Protein Adhesion," National Symposium of the American Vacuum Society, November 1991, Seattle, WA.

J.J. Hickman, "Surface Chemistry of TaSi₂/Si Eutectic Cold Cathodes," Department of Chemistry, Cambridge University, England, September, 1991. **Invited**

J.J. Hickman, C. Zou, D. Ofer and M.S. Wrighton, "Combining Coordination Chemistry with Microfabrication to Pattern Surfaces with Redox Active Molecules," National American Chemical Society Meeting, March 1991, Atlanta, GA.

J.J. Hickman and M.S. Wrighton, "Correlation of Electrochemistry with Face-Specific Interaction of Anionic Sulfur Donor Species with Oriented Single Crystals of Cadmium Chalcogenides," National Meeting of the American Chemical Society, September 1989, Miami, FL