

## **RAFAEL V. DAVALOS, PH.D.**

L. PRESTON WADE PROFESSOR  
BIOMEDICAL ENGINEERING AND MECHANICS  
VIRGINIA TECH – WAKE FOREST UNIVERSITY  
CELL: 540-998-9197 E-MAIL: DAVALOS@VT.EDU

### **EDUCATION**

#### **Ph.D. University of California - Berkeley, CA**

Department of Mechanical Engineering - 2002  
Major: Bioengineering Minors: Dynamics and BioMEMS Advisor: Boris Rubinsky  
Dissertation Title: Real-time imaging for molecular medicine through electrical impedance tomography of electroporation

#### **M.S. University of California - Berkeley, CA**

Department of Mechanical Engineering – 1995  
Major: Design

#### **B.S. Cornell University - Ithaca, NY**

Mechanical and Aerospace Engineering - 1994

### **RESEARCH AND TEACHING INTERESTS**

Biotransport, design, cellular engineering microsystems, bioheat transfer, dielectrophoresis, medical device design for cancer detection and treatment, electroporation, microfluidic tissue mimics, bio-inspired microfluidics, scaffolds for tissue engineering, brain-on-a-chip.

### **PROFESSIONAL APPOINTMENTS**

#### **Virginia Tech – Wake Forest University - Blacksburg, VA**

Professor: School of Biomedical Engineering and Sciences, 15 – present  
Professor: Biomedical Engineering and Mechanics, 15 - present  
Associate Professor: School of Biomedical Engineering and Sciences, 11 - 15  
Adjunct Appointment: Mechanical Engineering, 13 - present  
Adjunct Appointment: Wake Forest Institute of Regenerative Medicine, 08 - present  
Affiliate Appointment: Engineering Science and Mechanics at Virginia Tech, 08 - present  
Assistant Professor: School of Biomedical Engineering and Sciences, 06 - 11

#### **Sandia National Laboratories - Livermore, CA**

Principal Member of Technical Staff: Microsystems and Advanced Concepts Engineering, 06 - 07  
Senior Member of Technical Staff: Microsystems Design and Integration, 05 - 06  
Senior Member of Technical Staff: National Security Engineering, 03 - 05  
Senior Member of Technical Staff: Exploratory Systems Technology Division, 99 - 00  
Member of Technical Staff: Advanced Systems Division, 95 - 99

### **LICENSING OF INVENTIONS**

**Protea Biosciences** (Morgantown, WV): Acquired rights to license microfluidics technology  
**Angiodynamics** (Queensbury, NY): FDA approved system, which has treated over 6000 cancer patients  
**BC Genesis** (Blacksburg, VA): Start-up company based on licensed bio-fabrication technology  
**CytoRecovery** (Blacksburg, VA): Start-up company licensed rare cell sorting technology  
**VoltMed** (Blacksburg, VA): Start-up company licensed platform to treat brain cancer

## **COURSES TAUGHT**

**Biomedical Microdevices:** Created and teach of graduate course, 07 - present

**Quantitative Physiology:** Co-instruction of core graduate course in biomedical engineering, 07 - present

**Transport Processes in Biological Systems:** Undergraduate course in biological transport, 10 - present

**Senior Design Course:** Mentor students in design of platform for organ scaffolds, 10 - present

**Engineering Mathematics:** Created cross-disciplinary course for first year graduate students, 11- present

**Fundamentals of Cancer:** Course in Translational, Biology, Health and Medicine program, 15 – present

## **SELECTED HONORS AND AWARDS**

**Dean's Award:** Excellence in Research, 16

**Named Professorship:** L. Preston Wade Professorship, 16 - present

**Innovator Award:** Roanoke-Blacksburg Technology Council (RBTC) TechNite, 15

**ASME Fellow,** The American Society of Mechanical Engineers, 15

**Innovator Award:** Institute of Critical Technologies and Applied Sciences, 14

**Richard Skalak Award:** ASME Journal of Biomechanical Engineering for Best Paper, 14

**XCaliber Certificate of Teaching Excellence:** Technology-Enriched Learning, Center of Innovation, VT, 13

**Outstanding Dissertation Advisor of the Year:** Virginia Tech, 12

**Wallace H. Coulter Fellow,** Wallace H. Coulter Foundation, 12

**College of Engineering Faculty Fellow:** College of Engineering, Virginia Tech, 11-14

**NSF CAREER Award Recipient:** National Science Foundation, 11

**Unrestricted Research Grant:** Angiodynamics, 09 - 10

**Outstanding New Assistant Professor Award:** College of Engineering, Virginia Tech, 09

**NanoKnife:** One of 20 institutions awarded \$395K unit, 08 - present

**Early Career Award:** Wallace H. Coulter Foundation, 08 - 12

**Top 7 Inventions of '07:** Irreversible Electroporation. NASA Tech Briefs, The Year in Technology, 07

**Special Issue on Irreversible Electroporation:** Technology in Cancer Research and Treatment, 07

**Featured on NPR's Pulse of the Planet:** Irreversible Electroporation Therapy, 07, 12, 13, and 18

**National Award Recipient:** HENAAC – Nation's Most Promising Engineer or Scientist, 06

**Appointed Chair:** Sandia National Laboratories Diversity Division Council, 05 - 06

**Doctoral Studies Fellowship:** Sandia National Laboratories, 00 – 02

## **SELECTED INVITED TALKS**

**Keynote Speaker:** 1<sup>st</sup> Latin American Workshop on Electroporation, Buenos Aires, Argentina, 18

**Invited Speaker:** Design of Medical Devices (DMD) Conference, Minneapolis, MN, 18

**Plenary Speaker:** International Symposium on Bioelectrochemistry and Bioenergetics, Lyon, France, 17

**Keynote Address:** Research Day, Southern Adventist University, Collegedale, TN, 17

**Invited Speaker:** 2017 IEEE International Microwave Symposium, Honolulu, HI, 17

**Invited Speaker:** BioEM 2016, Ghent, Belgium, 16

**Invited Speaker:** Int'l Symposium on Electro & Liquid Phase-Separation Techniques, Minneapolis, MN 16

**Invited Speaker:** FACCS SciX 2016, Minneapolis, MN 16

**Plenary Speaker:** 1<sup>st</sup> World Congress on Electroporation, Portoroz, Slovenia, 15

**Invited Speaker:** SNO-SCIDOT Joint Conference on Therapeutic Delivery to the CNS, San Antonio, TX, 15

**Invited Speaker:** IEEE EMBS, Cellular BioMEMS Mini Symposium, Chicago, IL 14

**Invited Speaker:** 11<sup>th</sup> International Bioelectrics Symposium, Columbia, MO, 14

**Invited Speaker:** Microscale BioSeparations, Charlottesville, VA, 13

**Invited Speaker:** 1<sup>st</sup> Int'l Symp on Bacterial Nanocellulose, 245<sup>th</sup> ACS Ann Meeting, New Orleans, LA, 13

**Invited Speaker:** Gordon Conference, Bioelectrochemistry. Nr. Lucca, Italy, 12

**Invited Speaker:** 34<sup>th</sup> Annual IEEE EMBS Conference, San Diego, CA, 12

**Invited Speaker:** Electroporation-based Technologies and Treatments Workshop, Ljubljana, Slovenia, 12  
**Invited Speaker:** Int'l Scientific Workshop on Fundamentals and Applied Bioelectrics, Norfolk, VA, 12  
**Keynote Speaker:** Int'l Symposium on Electro & Liquid Phase-Separation Techniques, Baltimore, MD, 12  
**Invited Speaker:** SHPE, Thermofluids and Biomedical Optics Symposium. Anaheim, CA, 11  
**Invited Speaker:** 38<sup>th</sup> FACSS Conference. Reno, NV, 11  
**Invited Speaker:** Fourth Annual Breast Cancer Symposium. Peoria IL, 11  
**Invited Speaker:** IEEE EMBS Electric Fields Effects in Tumors Workshop. Argentina, 10  
**Invited Speaker:** 7<sup>th</sup> International Bioelectrics Symposium. Norfolk, VA, 10  
**Invited Speaker:** Engineering Platforms for Exploring Cellular and Molecular Processes. U Louisville, 10  
**Invited Speaker:** Thermal Biology and Therapy Workshop. U Minnesota, 10  
**Invited Speaker:** Society for CNS Interstitial Delivery of Therapeutics. Cleveland Clinic, 09  
**Invited Speaker:** 36<sup>th</sup> FACSS Conference. Louisville, KY, 09  
**Plenary Speaker:** 45<sup>th</sup> Annual Meeting of the Society for Cryobiology. Charlotte NC, 08  
**Invited Speaker:** Commercialization of Drug Discovery, Delivery and Diagnostics. Cambridge, MA, 05

#### **APPOINTMENTS AND ACTIVITIES**

**Member:** The American Electrophoresis Society, 09 - present  
**Member:** Brain Tumor Center of Excellence at Wake Forest University, 09 - present  
**Member:** Wake Forest University Comprehensive Cancer Center, 08 - present  
**Member:** Biomedical Engineering Society, 08 - present  
**Member:** Bioelectrochemistry Society (BES), 03 - present  
**Member:** ASME Biotransport Division, 02 - present  
**Visiting Research Associate:** CNRS, Institut Gustave Roussy, France, 01 - 02

#### **OUTREACH AND PROFESSIONAL SERVICE**

**Vice Chair:** ASME Biotransport Division, 18-20  
**Guest Editor:** Technology in Cancer Research and Treatment - Special Issue, 17-18  
**Editorial Board:** Bioelectricity, 18 - present  
**Program Committee:** Southern Bioengineering Conference, Charlotte, NC, 18  
**Elected Officer:** International Society for Electroporation-Based Technologies & Treatments, ISEBTT, 17  
**Virginia Tech Lead:** Inaugural VT-UVA Symposium on Nanomedicine, Charlottesville, VA, 17  
**Organizing Committee:** US-Australia Emerging Cancer Biomedical Technologies Workshop, VT-NCR, 17  
**International Organizing Committee:** 2nd World Congress on Electroporation, Norfolk, Virginia, 17  
**Study Section Chair:** NIH IMST-15 SBIR/STTR Cell and Molecular Biology, 17 - present  
**Student Awards Committee:** ASME NEMB, Houston, TX, 16  
**Associate Editor:** IEEE Transactions on Biomedical Engineering, 15 - present  
**Guest Editor:** Biomedical Engineering Online - Special Issue, 15  
**Scientific Program Committee:** 1<sup>st</sup> World Congress on Electroporation, Portoroz, Slovenia, 15  
**Special Session Co-Chair:** MBEC 2014: Advanced tech for treating deep-seated tumors using ECT and IRE  
**Associate Editor:** ASME Journal of Medical Devices, 13 - present  
**Program Chair:** American Electrophoresis Society Annual Meeting, 13  
**Information Chair:** ASME Summer Bioengineering Conference, 13  
**Editorial Board:** Journal of Electrophoresis, 11 - present  
**Session Chair:**  
SciX/AES, Microscale Electrokinetics and Electroporation, Atlanta, GA, 18  
NEMB, Micro/nanotechnology for diagnosis, prognosis, and drug delivery, Los Angeles, CA, 18  
8<sup>th</sup> World Congress on Biomechanics, Cryotherapy and cryopreservation, Dublin, Ireland, 18  
BioEM 16, Micro-chambers for single cell electromagnetic exposure and analysis, Ghent, Belgium, 16

1<sup>st</sup> World Congress on Electroporation, Portoroz, Slovenia, 15  
 BMES, Nano to Micro technologies: BioMEMS II, 14  
 BMES, Implantable Devices and Implantable Electronics, 14  
 BMES, Nano to Micro technologies: Microtechnologies for Cancer, 14  
 Bioelectrochemistry Gordon Research Conf, Cells and Models Under Electric Fields, 14  
 Bioelectrochemistry Gordon Research Seminar, Cells and Models Under Electric Fields, 14  
 BMES, Translation Biomedical Engr: Therapeutic and Diagnostic Biomedical Devices, 13  
 ITP 2012, Dielectrophoresis, 12  
 AIChE, Electroporation, Electrophysiology and Cell Electrokinetics, 11-13  
 IEEE Engineering in Medicine and Biology Conference, Magnetic Sensors and Systems, 12  
 ASME Summer Bioengineering Conference, Imaging in Biotransport, 12  
 ASME Summer Bioengineering Conference, Biotransport in Device and Design, 10  
 ASME Summer Bioengineering Conference, Improvements in Thermal Therapy, 09  
 ASME Summer Bioengineering Conference, Characterization of Thermal Medical Applications, 08  
 ASME Summer Bioengineering Conference, Biothermal Therapy, 07  
 ASME Heat Transfer Conf, Experimental and Computational Methods in Medicine and Biology, 05  
 ASME IMECE, Bioengineering Division, Thermal Aspects of Molecular Surgery, 04  
**Session Co-Chair:** ASME Summer Bioengineering Conference, Targeted Delivery and Electroporation, 11  
 AIChE, Electrokinetic Behavior of Microparticles and Nanoparticles, 10  
 AIChE, Advances in Electrokinetics and Electrophoresis - Particles and Biomolecules, 09  
**Track Chair:** IEEE EMBC (Co-Chair: M Khine), Bioinstrumentation: Microfluidics, 11-12  
 IEEE EMBC (Co-chair: RC Lee), Electric Fields at the Cell and Protein Scale, 10  
 IEEE EMBC (Co-chair: RC Lee), Electric Fields at the Cell and Protein Scale, 09  
**Judge:** 8<sup>th</sup> World Congress on Biomechanics, Dublin, Ireland, 18  
 ASME Summer Bioengineering Conference, Student Poster Competition, 10  
 ASME Summer Bioengineering Conference, Student Podium Competition, 08 - 09  
**Peer reviewer:** Nature - Scientific Reports, Applied Physics Letters, JBC Online, Journal of Tissue Engineering, IEEE Transactions on Biomedical Engineering, ASME Journal of Biomechanical Engineering, Biomedical Microdevices, Lab on a Chip, Bioelectrochemistry, Annals of Biomedical Engineering, IEEE EMBC, ASME SBC, Journal of Thermal Biology, Technology in Cancer Research and Treatment, IEEE Transactions on Plasma Science, Chemical Reviews, Analytical Chemistry, Journal of Membrane Biology, IEEE Transactions on Dielectrics and Electrical Insulation, IEEE Transactions on Instrumentation and Measurement, Biomicrofluidics, Analytical and Bioanalytical Chemistry, PLoS ONE, Electrophoresis, ASME Journal of Nanotechnology in Engineering and Medicine, Biomedical Engineering Online, Nanomedicine, Cancer Research, Analyst, Biomaterials  
**Review panel:** National Science Foundation, 07 - present  
 DoD's Congressionally Directed Medical Research Program (CDMRP), 18 - present  
 Slovenian Research Agency, 15 - present  
 Cariplo Foundation Scientific Committee, Italy, 11-present  
 National Institute of Health, 12 - present  
 Air Force Office of Scientific Research, 12  
 Engineering and Physical Sciences Research Council of the United Kingdom, 12

#### **INTERNAL SERVICE AND DIVERSITY INITIATIVES**

**Leadership Team:** Health Sciences and Technology - Translation and Commercialization, 18 - present

**Member:** Search Committee for Department Head, 18 - 19

**Member:** Search Committee for Mechanical Engineering, 18 – 19

**Member:** Biomedical Engineering and Mechanics Promotion and Tenure Committee, 17 - present

**Member:** Search Committee for Mechanical Engineering, 17 – 18  
**Member:** Search Committee for VTCRI in Computational Neuroscience, 17-18  
**Co-chair:** Health Sciences and Technology Building Design Committee, 17  
**Center Director:** ICTAS Center for Engineered Health, 16 - present  
**Member:** Stakeholder Committee on Innovation and Entrepreneurship, 16 - present  
**Chair:** Search Committee for Assistant/Associate Professor, 16-17  
**Member:** Advance VT/Inclusive VT Diversity Committee, 16 - present  
**Member:** VTCRI 5-year Review Committee, 16  
**Member:** Search Committee for College of Engineering Dean, 16 - present  
**Member:** Search Committee for VMCVM Associate Dean of Research and Graduate Studies, 16  
**Member:** Intellectual Property Committee, 15 - present  
**Member:** Beyond Boundaries Committee, 15 - present  
**Member:** Search Committee for Executive Vice President and Provost, 15  
**Member:** Search Committee for Associate Dean of Veterinary School, 15  
**Member:** Search Committee for WF Assistant Professor, 15  
**Chair:** Search Committee for VT Assistant Professor Position at Virginia Tech, 12  
**Steering Committee:** Center for Drug Discovery, Development, and Delivery (CD4), 12 - present  
**Member:** Search Committee for VT Assistant Professor Position at Virginia Tech, 11  
**Member:** Search Committee for WF Assistant Professor Position at Virginia Tech, 11  
**Instructor:** Interdisciplinary Training at ACC Interdisciplinary Forum for Discovery in Life Sciences, 10  
**Keynote Speaker:** Kids' Tech University: *Why can't humans walk on water and climb walls with their fingertips like spiders*, April, 10  
**Speaker:** Workshops for C-TECH<sup>2</sup> and NASA High-School Summer Programs, 10  
**Panel Member:** Virginia Tech GEM GRAD Lab, 10  
**Member:** Search Committee for SBES Department Head at Virginia Tech, 09  
**Director:** College of Engineering Diversity Summer Program, 07 - 14  
**Director:** NSF/NIBIB Bioengineering and Bioinformatics Summer Institute, 07 - 12  
**Chair:** ICTAS Theme Area on Cellular Engineering Microsystems (CEMS), 07 – present  
**Co-Director:** ICTAS Multi-scale Bio-Engineered Devices & Systems (M-BEDS), 07 - present  
**Recruiter:** Represent Virginia Tech at SHPE Career Fairs, 07 - present  
**Coordinator:** SBES graduate student weekend and other recruitment efforts, 07 - present  
**Member:** Virginia Tech College of Engineering Diversity Committee, 07 - present

**EXTERNAL GRANTS (>\$28M Total, \$17.8M VT, >\$6.7M PI Share)**

SBIR: Development of an MRI-compatible, High-Frequency Irreversible Electroporation (H-FIRE) for Non-thermal Ablation of Inoperable Tumors

PI: CB Avalos (Co-PI: Davalos, Rossmeisl) Source: NIH (2018-2019, \$245K, VT \$83K) 1R43CA233158

Microfluidic Platform for Cell Phenotyping

PI: RV Davalos Source: CytoRecovery Inc. (2018-2020, \$76,768)

Brain Cancer Treatment with High Frequency Electroporation

PI: RV Davalos (Co-PI: Rossmeisl, Arena, Miller) Source: VRIF (2018-2020, \$1.1M)

Commercialization of INSPIRE for Brain Cancer Treatment

PI: RV Davalos (Co-PI: Rossmeisl, Arena, Miller) Source: Virginia Biosciences Health Research Corporation (VBHRC) (2017-2019, \$800K)

PO1: Maximizing Local Access to Therapeutic Deliveries in Glioblastoma

PI: W Debinski (Co-PI: Davalos, Mintz, Rylander, Rossmeisl) Source: NIH (2018-2022, \$9.2M)

1PO1CA207206-01

Unrestricted Research Grant

PI: RV Davalos, Source: CytoRecovery (2018, \$32K)

Planning IUCRC VT: Center for Cyber-Physical Systems for the Hospital Operating Room (CyBHOR)

PI: RV Davalos (Co-PI: Behkam, Whittington, Priya, Dietrich) Source: NSF (2018-2019, \$15K)

US-Australia Emerging Cancer Biomedical Technologies Workshop

PI: RV Davalos (Co-PI: S Priya) Source: NSF (2017-2018, \$30K)

Development of INSPIRE for Brain Cancer Treatment

PI: RV Davalos, Source: Virginia Biosciences Health Research Corporation (VBHRC) (2016-2017, \$380K)

Role of Extracellular Space as a Modulator of the Cardiac Gap Junction-Conduction Velocity Relationship

PI: S Poelzing (Co-I: RV Davalos, R Gourdie, J Smyth) Source: NIH (2016-2020, \$2.1M) R01HL102298

High-Frequency Irreversible Electroporation for combinatorial GBM treatment

PI: RV Davalos, S Verbridge (Co-I: J Robertson, J Rossmeisl) Source: NIH (2017-22, \$1.76M) R01CA213423

Repurpose the Irreversible Electroporation System for Optimal Immune Modulation Efficacy

PI: RV Davalos (Co-PI: RC Martin), Source: Cures Within Reach (2017-2018, \$50K)

Development of next generation IRE treat pancreatic cancer

PI: D Iannitti (Co-PI: RV Davalos), Source: PanCAN (2016-2018, \$300K) 16-65-IANN

STTR Phase I: An Endoscopic-Based INSPIRE Platform for Treating and Monitoring Unresectable Pancreatic Cancer

VoltMed PI: MB Sano, VT PI Davalos, Source: NSF (2014, \$225K, VT \$68K) IIP-1346343

Minimally Invasive Surgical Platform for H-FIRE and Chemotherapy Treatment

VoltMed PI: PA Garcia (VT PI: Davalos) Source: CIT CRCF (2015-16, \$50K, VT \$20K) STTR 15-002-LS

STTR Match: INSPIRE Therapy: Real-time treatment and monitoring of Pancreatic Cancer

VoltMed PI: RV Davalos, Source: CIT CRCF (2014, \$50K) STTR 14S-003-LS

High Frequency Irreversible Electroporation for Pancreatic Cancer

PI: C Clark (Co-PI: RV Davalos), Source: Golfers Against Cancer (2015-16, \$40K)

PhenoCHIP: Phenotype-based Cell Hierarchy and Isolation Platform

PI: RV Davalos, Source: Virginia Biosciences Health Research Corporation (VBHRC) (2014-2015, \$270K)

R21: Targeted Electric Field Therapy for Malignant Infiltrative Glioma

MPI: RV Davalos, S Verbridge, Source NIH (2014-2017, \$386K) 1R21 CA192041-01

SBIR Phase I: Innovative Biofabrication of 3D Nano-Biocomposites for Repair of Osteochondral Defects

BC Genesis PI: P Gatenholm, VT PI: RV Davalos, Source: NIH (2013, \$150K, \$25K VT) R43 AG044153-01A1

R21: Isolation of Tumor Initiating Cells (TICs) using Contactless Dielectrophoresis

PI: RV Davalos (Co-PI: S Cramer), Source: NIH (2013-2015, \$368K) 5R21 CA173092-01

Use of bioceramic nanoscaffolds to enhance irreversible electroporation for in situ tissue destruction

PI: I McKillop (Co-PI: RV Davalos), Source: Carolina Medical Center (2014-2015, \$47K, \$7.6K VT)

High Frequency Irreversible Electroporation for Lung Cancer and other Endoscopic Ablation Applications

PI: RV Davalos, Source: CIT CRCF (2013-2014, \$100K) MF13-034-LS

Use of Electric Fields for the Isolation of Tumor Initiating Cells and other Rare Cells

PI: RV Davalos, Source: CIT CRCF (2013-2014, \$100K) MF13-037-LS

NSF RET: Biomechanics from Molecular to Organismal Scales

PI: D Dudek (Co-PI: J Socha, SP: RV Davalos), Source: NSF (2014-2016, \$500K) RET-1301037

I-Corps: Translation of High Frequency Irreversible Electroporation for Human Clinical Applications,

PI: RV Davalos, Source: NSF (2012-2013, \$50K) IIP 1265105

EFRI-RET: Complex Microsystem Networks Inspired by Internal Insect Physiology

PI: J Socha (Co-PI: RV Davalos, I Puri), Source: NSF (2013-2014, \$114K) RET-0938047

EFRI-RET: Complex Microsystem Networks Inspired by Internal Insect Physiology

PI: J Socha (Co-PI: RV Davalos, I Puri), Source: NSF (2012-2013, \$100K) RET-0938047

CAREER: An experimental and numerical investigation of the biophysical processes of pulsed electric field induced irreversible electroporation for Glioblastoma Multiforme

PI: RV Davalos Source: NSF (2011-17, \$452K) CBET-1055913

IGERT: MultiScale Transport in Environmental and Physiological Systems (MultiSTEPS)

PI: MA Stremier (Co-PI: RV Davalos, J Kuhn, S Ross, P Vlachos) Source: NSF (2010-14, \$3M) DGE-0966125

EFRI-BSBA Complex Microsystem Networks Inspired by Internal Insect Physiology

PI: J Socha (Co-PI: RV Davalos, R DeVita, J Harrison, A Staples), Source: NSF (2010-13, \$2M) EEC-0938047

Quantification of Blood-Brain-Barrier Disruption Achieved by Intracranial N-TIRE for an Optimized Combinatorial Therapy Against GBM

PI: TL Ellis (Co-PI: RV Davalos), Source: Golfers Against Cancer (2010-11, \$28K)

Task Order 1: Calibration Curves for Cassini Oval Lesion Estimator

PI: RV Davalos, Source: Angiodynamics (2010, \$20K)

Task Order 2: Regression Analysis to Fit Numerical Models to Experimental Data

PI: RV Davalos, Source: Angiodynamics (2010, \$30K)

Task Order 3: Three-Dimensional Irreversible Electroporation Modeling and Field Characterization

PI: RV Davalos, Source: Angiodynamics (2010, \$30K)

Task Order 4: FEA Modeling of Ablation Variables

PI: RV Davalos, Source: Angiodynamics (2012, \$104K)

Task Order 5: Hydrogel Modeling of IRE

PI: RV Davalos, Source: Angiodynamics (2013, \$40K)

Task Order 6: Brain Paper

PI: RV Davalos, Source: Angiodynamics (2013, \$38K)

Task Order 9: Bipolar probe modeling

PI: RV Davalos, Source: Angiodynamics (2013-2014, \$32K)

Task Order 10: Characterization of Lesion Volumes using ex vivo samples

PI: RV Davalos, Source: Angiodynamics (2015, \$12K)

Task Order 11: Modeling of Field Distributions in Tissue

PI: RV Davalos, Source: Angiodynamics (2015, \$10K)

Task Order 12: Experimental evaluation using perfused organ models

PI: RV Davalos, Source: Angiodynamics (2015-2016, \$65K)

Task Order 13: Advanced Experimental Ablation Protocols  
PI: RV Davalos, Source: Angiodynamics (2016-2017, \$65K)

Task Order 14: Advanced Experimental Ablation Evaluation using Perfused Organ Models  
PI: RV Davalos, Co-PI: JL Robertson, Source: Angiodynamics (2018-2018, \$65K)

Task Order 15: Hydrogel Models of Pancreatic Cancer  
PI: RV Davalos, Co-PI: SS Verbridge, Source: Angiodynamics (2018-2019, \$141K)

Task Order 16: Characterization of Irreversible Electroporation in Pancreas  
PI: IC Allen, Co-PI: Davalos, Source: Angiodynamics (2018-2019, \$578K)

SBIR: Customizable Meniscus Implant Prepared by Dielectrophoretic Biofabrication - Phase I and Phase II  
BC Genesis PI: P Gatenholm, VT PI: RV Davalos, Source: NSF (2009-12, \$1,141K, \$180K VT) IIP-1026421

Combinatorial Brain Cancer Therapy through Irreversible Electroporation and Carbon Nanotubes  
PI: RV Davalos (Co-PI: MN Rylander), Source: NSF CBET (2009-11, \$300K) CBET-0933335

Unrestricted Research Grant  
PI: RV Davalos, Source: PhenoCHIP (2017, \$30K)

Unrestricted Research Grant  
PI: RV Davalos, Source: PhenoCHIP (2016, \$15K)

Unrestricted Research Grant  
PI: RV Davalos, Source: Protea Biosciences (2014, \$25K)

Unrestricted Research Grant  
PI: RV Davalos, Source: Protea Biosciences (2011, \$10K)

Unrestricted Research Grant: Modeling of Irreversible Electroporation  
PI: RV Davalos, Source: Angiodynamics (2009, \$15K)

Irreversible Electroporation Devices to Treat Cancer - Phase I and Phase II  
PI: RV Davalos (Co-PI: TL Ellis), Source: Coulter Foundation - Early Career Award (2008-12, \$500K)

Isolation and Enrichment of Tumor Stem Cells using Insulator-Based Dielectrophoresis  
PI: S Cramer (Co-PI: RV Davalos), Source: Golfers Against Cancer (2008-10, \$35K)

Quantitative Evaluation of Micro-Electroporation  
PI: RV Davalos, Source: Jeffress Memorial Trust (2008, \$20K)

NSF-NIBIB BBSI: Summer Institute for Quantitative and Integrative Bioengineering  
PI: RV Davalos (Initial PI: E Scott, Co-PI: RC Laubenbacher), Source: NSF (2006-10, \$649K) EEC-0609225

## **INTERNAL SUPPORT**

Microfluidic Model of Cancer  
PI: RV Davalos (Co-PI: C Finkelstein), Source: Fralin Biotechnology Center (2010, \$10K)

Dielectrophoretic Microweaving  
PI: RV Davalos (Co-PI: P Gatenholm), Source: ICTAS (2009-11, \$99K)

Cancer Therapy through Irreversible Electroporation Enhanced with Carbon Nanotubes  
PI: RV Davalos, Source: Comprehensive Cancer Center - Wake Forest University (2008-09, \$25K)

Implantable Micro-Oncologists  
PI: RV Davalos (Co-PI: M Agah, I Puri, G Wang, P Gatenholm), Source: ICTAS (2007-09, \$104K)



**PEER-REVIEWED JOURNAL ARTICLES (cited >7500 times with h-index 45)**

1. DC Sweeney, JC Weaver, **RV Davalos**. Characterization of cell membrane permeability in vitro part I: Transport behavior induced by single-pulse electric fields, *Technology in Cancer Research & Treatment*, vol 17:1-15, 2018 **(IF 1.646)**
2. DC Sweeney, TA Douglas, **RV Davalos**. Characterization of cell membrane permeability in vitro part II: Computational model of electroporation-mediated membrane transport. *Technology in Cancer Research & Treatment*, vol 17:1-13, 2018 **(IF 1.646)**
3. Y Zhao, H Liu, SP Bhonsle, Y Wang, **RV Davalos**, C Yao. Ablation outcomes of irreversible electroporation on potato monitored by impedance spectrum under a multi-electrode system. *Biomedical Engineering Online*, vol 17(126): 1-13, 2018 **(IF 1.959)**
4. HJ Cho, SS Verbridge, **RV Davalos**, YW Lee. Development of an in vitro 3D brain tissue model mimicking in vivo-like pro-inflammatory and pro-oxidative responses. *Annals of Biomedical Engineering*, 46(6), 877-887, 2018. **(IF 3.221)**
5. TJ O'Brien, M Passeri, M Lorenzo, W Lyman, J Swet, D Vrochides, E Baker, D Iannitti, **RV Davalos**, I McKillop. Experimental High-Frequency Irreversible Electroporation using a single needle delivery device for non-thermal pancreatic ablation pancreatic ablation in vivo. *HPB*, 2018. **(IF 2.918)**
6. TJ O'Brien, M Bonakdar, S Bhonsle, RE Neal II, CH Aardema, JL Robertson, SN Goldberg, **RV Davalos**. Effects of internal electrode cooling on irreversible electroporation using a perfused organ model. *International Journal of Hyperthermia*, 2018. **(IF 3.262)**
7. Y Zhao, S Bhonsle, S Dong, Y Lv, H Liu, A Safaai-Jazi, **RV Davalos**, C Yao. Characterization of conductivity changes during high-frequency irreversible electroporation for treatment planning. *IEEE Transactions on Biomedical Engineering*, vol 65(8), pp 1810-1819, 2018. **(IF 3.577)**
8. S Bhonsle, MF Lorenzo, A Safaai-Jazi, **RV Davalos**. Characterization of nonlinearity and dispersion in tissue Impedance during High Frequency Electroporation. *IEEE Transactions on Biomedical Engineering*, 2018. **(IF 3.577)**
9. B Mercadal, CB Arena, **RV Davalos**, A Ivorra. Avoiding nerve stimulation in irreversible electroporation: a numerical modeling study. *Physics in Medicine and Biology*, vol 62(20), pp 8060-8079, 2017. **(IF 2.742)**
10. A Rolong, EM Schmelz, **RV Davalos**. High-frequency irreversible electroporation targets resilient tumor-initiating cells in ovarian cancer. *Integrative Biology*, vol 9, pp 979-987, 2017. **(IF 3.252)**
11. EL Latouche, MB Sano, MF Lorenzo, **RV Davalos**, RC Martin II. Irreversible electroporation for the ablation of pancreatic malignancies: A patient specific methodology. *Journal of Surgical Oncology*, vol 115(2), pp 711-717, 2017. **(IF 3.151)**
12. EM Wasson, JW Ivey, SS Verbridge, **RV Davalos**. The feasibility of enhancing susceptibility of glioblastoma cells to IRE using a calcium adjuvant. *Annals of Biomedical Engineering*, pp 1-13. 2017 **(IF 3.221)**

13. M Bonakdar, PM Graybill, **RV Davalos**. A microfluidic model of the blood–brain barrier to study permeabilization by pulsed electric fields, *RSC Advances*, vol 17, pp 42811-42818, 2017. **(IF 3.108)**
14. JW Ivey, EL Latouche, ML Richards, GJ Lesser, W Debinski, **RV Davalos**, SS Verbridge. Enhancing irreversible electroporation by manipulating cellular biophysics with a molecular adjuvant. *Biophysical Journal*, vol 113(2), pp 472-480, 2017. **(IF 3.972)**
15. JH Rossmeisl, K Hall-Manning, JL Robertson, JN King, **RV Davalos**, W Debinski, S Elankumaran. Expression and activity of the urokinase plasminogen activator system in canine primary tumors. *OncoTargets and Therapy*, vol 10, pp 2077-2085, 2017. **(IF 2.311)**
16. T Miklovic, EL Latouche, MR DeWitt, **RV Davalos**, MB Sano. A comprehensive characterization of parameters affecting high-frequency irreversible electroporation lesions. *Annals of Biomedical Engineering*, vol 45(11), pp 2524-253, 2017. **(IF 3.221)**
17. TA Douglas, J Cemazar, N Belani, DC Sweeney, EM Schmelz, **RV Davalos**. A feasibility study for enrichment of highly aggressive cancer subpopulations by their biophysical properties via dielectrophoresis enhanced with synergistic fluid flow. *Electrophoresis*, vol 38(11), pp 1507-1514, 2017. **(cover) (IF 3.028)**
18. PA Garcia, B Kos, JH Rossmeisl, D Pavliha, D Miklavcic, **RV Davalos**. Predictive therapeutic planning for irreversible electroporation treatment of spontaneous malignant glioma. *Medical Physics*, vol 4(9), pp 4968-4980, 2017. **(IF 2.635)**
19. I Goswami, S Coutermarsh-Ott, RG Morrison, IC Allen, **RV Davalos**, S Verbridge, LR Bickford. Irreversible electroporation inhibits pro-cancer inflammatory signaling in triple negative breast cancer cells. *Bioelectrochemistry*, vol 113, pp 42-50, 2017. **(IF 3.903)**
20. IA Siddiqui, EL Latouche, MR DeWitt, JH Swet, RC Kirks, EH Baker, DA Iannitti, D Vrochides, **RV Davalos**, IH McKillop. Induction of rapid, reproducible hepatic ablations using next-generation, high frequency irreversible electroporation (H-FIRE) in vivo. *HPB*, vol 18(9), pp 726-734, 2016. **(IF 2.918)**
21. T Murovec, DC Sweeney, E Latouche, **RV Davalos**, C Brosseau. Modeling of transmembrane potential in realistic multicellular structures before electroporation, *Biophysical Journal*, vol 111, pp 2286-2295, 2016. **(IF 3.972) (cover)**
22. M Bonakdar, EW Wasson, YW Lee, **RV Davalos**. Electroporation of brain endothelial cells on chip toward permeabilizing the blood-brain-barrier. *Biophysical Journal*, vol 110, pp 505-512, 2016. **(IF 3.972) (cover)**
23. SP Bhonsle, M Bonakdar, RE. Neal, C Aardema, JL Robertson, J Howarth, H Kavnaudias, KR Thomson, SN Goldberg, **RV Davalos**. Characterization of irreversible electroporation ablation with a validated perfused organ model. *Journal of Vascular and Interventional Radiology*, vol 27, pp 1913-1926, 2016. **(IF 2.570)**

24. DC Sweeney, M Reberšek, J Dermol, L Rems, D Miklavčič, **RV Davalos**. Quantification of cell membrane permeability induced by monopolar and high-frequency bipolar bursts of electrical pulses. *BBA-Biomembranes*, vol 1858(11), pp 2689-2698, 2016. **(IF 3.687)**
25. J Cemazar, TA Douglas, EM Schmelz, **RV Davalos**. Enhanced contactless dielectrophoresis enrichment and isolation platform via cell-scale microstructures. *Biomicrofluidics*, vol 10 pp 014109:1-14, 2016. **2016 Editor's Pick (IF 3.357)**
26. SA George, M Bonakdar, M Zeitz, **RV Davalos**, J Smyth, S Poelzing. Extracellular sodium dependence of the conduction velocity relationship: evidence on ephaptic self attenuation. *American Journal of Physiology-Heart and Circulatory Physiology*, vol 310(9), pp H1129-H1139, 2016. **(IF 3.838)**
27. JW Ivey, EL Latouche, MB Sano, JH Rossmeisl, **RV Davalos**, SS Verbridge. Targeted cellular ablation based on the morphology of malignant cells, *Nature Scientific Reports*, vol 5:17157, 2015. **(IF 5.078)**
28. MB Sano, CB Arena, KR Bittleman, MR DeWitt, PA Garcia, HJ Cho, CC Szot, D Saul, JM Cissell, J Robertson, YW Lee, **RV Davalos**. Bursts of bipolar microsecond pulses inhibit tumor growth, *Nature Scientific Reports*, vol 5:14999, 2015. **(IF 5.078)**
29. JH Rossmeisl, PA Garcia, TE Pancotto, JL Robertson, N Henao-Guerrero, RE Neal, TL Ellis, **RV Davalos**. Safety and feasibility of the nanoKnife system for irreversible electroporation ablative treatment of canine spontaneous intracranial gliomas. *J Neurosurgery*, vol 123(4), pp 1008-1025, 2015. **(IF 3.227)**
30. SP Bhonsle, CB Arena, DC Sweeney, **RV Davalos**. Mitigation of impedance changes due to electroporation therapy using bursts of high-frequency bipolar pulses. *Biomedical Engineering Online*, vol 14(S3), 2015. **(IF 1.430)**
31. M Bonakdar, E Latouche, R Mahajan, **RV Davalos**. The feasibility of a smart surgical probe for verification of IRE treatments using Electrical Impedance Spectroscopy (EIS), *IEEE Transactions on Biomedical Engineering*, vol 62(11), pp 2674-2684, 2015. **(IF 2.347)**
32. A Baah-Dwomoh, A Rolong, P Gatenholm, **RV Davalos**. The feasibility of using irreversible electroporation to introduce pores in bacterial cellulose scaffolds for tissue engineering. *Applied Microbiology and Biotechnology*, vol 99(11), pp 4785-4794, 2015. **(IF 3.811)**
33. RE Neal, PA Garcia, H Kavnoudias, F Rosenfeldt, CA Mclean, EV Victoria, J Bergman, **RV Davalos**, KR Thomson. In vivo irreversible electroporation kidney ablation: Experimentally correlated numerical models. *IEEE Transactions on Biomedical Engineering*, vol 62(2), pp 561-569, 2015. **(IF 2.233)**
34. KR Colacino, CB Arena, S Dong, M Roman, **RV Davalos**, YW Lee. Folate conjugated cellulose nanocrystals potentiate irreversible electroporation-induced cytotoxicity for the selective treatment of cancer cells, *Technology in Cancer Research and Treatment*, vol 14(6), pp 757-766, 2015. **(IF 1.943)**
35. CB Arena, PA Garcia, MB Sano, JD Olson, T Rogers-Cotrone, JH Rossmeisl, **RV Davalos**. Focal blood-brain-barrier disruption with high-frequency pulsed electric fields. *Technology*, vol 9(8), pp 1-8, 2014. **(IF N/A)**

36. PA Garcia, **RV Davalos**, D Miklavcic. A numerical investigation of the electric and thermal cell kill distributions in electroporation-based therapies in tissue. *PLoS ONE*, vol 9(8), pp e103083:1-12, 2014. **(IF 4.537)**
37. MB Sano, CB Arena, MR DeWitt, D Saur, **RV Davalos**. *In-vitro* bipolar nano- and microsecond electro pulse bursts for irreversible electroporation therapies. *Bioelectrochemistry*, vol 100, pp 69-79, 2014. **(IF 3.774)**
38. RC Gallo-Villanueva, MB Sano, BH Lapizco-Encinas, **RV Davalos**. Joule heating effects on particle immobilization in insulator-based dielectrophoretic devices. *Electrophoresis*, vol 35(2-3), pp 352-361, 2014. **(IF 3.261)**
39. RE Neal, JL Millar, H Kavnoudias, P Royce, F Rosenfeldt, A Pham, R Smith, **RV Davalos**, KR Thomson. In vivo characterization and numerical simulation of prostate properties for non-thermal irreversible electroporation ablation. *The Prostate*, vol 74(5), pp 458-468, 2014. **(IF 3.843)**
40. RE Neal, JH Rossmeisl, V D'Alfonso, JL Robertson, PA Garcia, S Elankumaran, **RV Davalos**. In vitro and numerical support for combinatorial irreversible electroporation and electrochemotherapy glioma treatment, *Annals of Biomedical Engineering*, vol 42(3) pp 475-487, 2014. **(IF 2.575)**
41. A Salmanzadeh, ES Savage, PC Roberts, EM Schmelz, **RV Davalos**. Sphingolipid metabolites modulate cells dielectric characteristics in a mouse ovarian cancer progression model. *Integrative Biology (cover)*, vol 5(6), pp 843–852, 2013. **(IF 4.509)**
42. RE Neal, JH Rossmeisl, JL Robertson, CB Arena, EM Davis, RN Singh, J Stallings, **RV Davalos**. Improved local and systemic anti-tumor efficacy for irreversible electroporation in immunocompetent versus immunodeficient mice, *PLoS ONE*, vol 8(5), e64559:1-10, 2013. **(IF 4.537)**
43. CB Arena, RL Mahajan, MN Rylander, **RV Davalos**. An experimental and numerical investigation of phase change electrodes for therapeutic irreversible electroporation, *ASME Journal of Biomechanical Engineering*, vol 135(11), pp 111009:1-9, 2013. **Editor's Choice Paper, Richard Skalak Award (IF 1.519)**
44. MB Sano, RC Gallo-Villanueva, BH Lapizco-Encinas **RV Davalos**. Simultaneous electrokinetic flow and dielectrophoretic trapping using perpendicular static and dynamic electric fields. *Microfluidics and Nanofluidics*, vol 15(5), pp 599-609, 2013. **(IF 3.503)**
45. SY Xiao, JJ Charonko, XP Fu, A Salmanzadeh, **RV Davalos**, PP Vlachos, CV Finkielstein, DGS Capelluto. Structure, Sulfatide-binding Properties, and Inhibition of platelet aggregation by a disabled-2-derived peptide, *Journal of Biological Chemistry*, vol 287(45), pp 36791-37702, 2013. **(IF 5.117)**
46. A Salmanzadeh, MB Sano, RC Gallo-Villanueva, PC Roberts, EM Schmelz, **RV Davalos**. Investigating dielectric properties of different stages of syngeneic murine ovarian cancer cells. *Biomicrofluidics*, vol 7(1), pp 0118094:1-12, 2013. **(IF 3.896) Featured article in special issue in Biomicrofluidics on Cancer**
47. RE Neal II, RL Smith, H Kavnoudias, F Rosenfeldt, R Ou, CA Mclean, **RV Davalos**, KR Thomson. The effects of metallic implants on electroporation therapies: Feasibility of irreversible electroporation

for brachytherapy salvage, *CardioVascular and Interventional Radiology*, vol 36(6) pp 1638-1645, 2013. **(IF 2.09)**

48. JH Rossmeis, PA Garcia, JL Roberston, TL Ellis, **RV Davalos**, Pathology of non-thermal irreversible electroporation (N-TIRE)-induced ablation of the canine brain, *Journal of Veterinary Science*, vol 14(4) pp 433-440, 2013. **(IF 0.93)**
49. CB Arena, RL Mahajan, MN Rylander, **RV Davalos**. Towards the development of latent heat storage electrodes for electroporation-based therapies, *Applied Physics Letters*, vol 101(8), pp 83902:1-4, 2012. **(IF 3.844)**
50. CB Arena, CB Szot, PA Garcia, MN Rylander, **RV Davalos**. A three-dimensional *in vitro* tumor platform for modeling therapeutic irreversible electroporation, *Biophysical Journal*, vol 103(9), pp 2033-2042, 2012. **(IF 3.653)**
51. A Salmanzadeh, L Romero, H Shafiee, RC Gallo-Villanueva, MA Stremmer, SD Cramer, **RV Davalos**. Isolation of prostate tumor initiating cells (TICs) through their dielectrophoretic signature. *Lab on a Chip*, vol 12, pp 182-189, 2012. **(IF 6.342)**
52. A Salmanzadeh, H Kittur, MB Sano, PC Roberts, EM Schmelz, **RV Davalos**. Dielectrophoretic differentiation of mouse ovarian surface epithelial cells, macrophages and fibroblasts using contactless dielectrophoresis (cDEP). *Biomicrofluidics*, vol 6, pp 024014:1-13, 2012. **(IF 3.896)**  
**Featured in *Virtual Journal of Biological Physics Research***
53. PA Garcia, JH Rossmeis, JL Robertson, JD Olson, AJ Johnson, TL Ellis, **RV Davalos**. 7.0-T magnetic resonance imaging characterization of acute blood-brain-barrier disruption achieved with intracranial irreversible electroporation. *PLoS ONE*, vol 7(11), pp e50482:1-7, 2012 **(IF 4.537)**
54. RE Neal II, PA Garcia, JL Robertson, **RV Davalos**. Experimental characterization and numerical modeling of tissue electrical conductivity during pulsed electric fields for irreversible electroporation treatment planning. *IEEE Transactions on Biomedical Engineering*, vol 59(4), pp 1077-1085, 2012. **(IF 2.154)**
55. MB Sano, A Salmanzadeh, **RV Davalos**. Multilayer contactless dielectrophoresis: Theoretical considerations. *Electrophoresis (Invited paper for Special Issue on Miniaturization)*, vol 33(13), pp 1938-1946, 2012. **(IF 3.569)**
56. RE Neal II, JH Rossmeis Jr, PA Garcia, O Lantz, N Henao-Guerrero, **RV Davalos**. Successful treatment of a large soft-tissue sarcoma with irreversible electroporation. *Journal of Clinical Oncology*, vol 29(13), pp 372-377, 2011. **(IF 17.793)**
57. MB Sano, E Henslee, E Schmelz, **RV Davalos**. Contactless dielectrophoretic spectroscopy: Examination of the dielectric properties of cells found in blood. *Electrophoresis, Special Issue on Miniaturization*, vol 32(22), pp 3164-3171, 2011. **(IF 3.569)**
58. MB Sano, JL Caldwell, **RV Davalos**. Modeling and development of a low frequency contactless dielectrophoresis (cDEP) platform to sort cancer cells from dilute whole blood samples. *Biosensors and Bioelectronics*, vol 30(1), pp 13-20, 2011. **(IF 5.429)**

59. A Salmanzadeh-Dozdabi, H Shafiee, **RV Davalos**, MA Stremmler. Mixing enhancement in microfluidic devices utilizing contactless dielectrophoresis (cDEP). *Electrophoresis (cover)*, vol 32(8), pp 2569-2578, 2011. **(IF 3.569)**
60. EA Henslee, MB Sano, AD Rojas, **RV Davalos**. Selective concentration of human cancer cells using contactless dielectrophoresis (cDEP). *Electrophoresis*, vol 32(8), pp 2523-2529, 2011. **(IF 3.569)**
61. CB Arena, MB Sano, JH Rossmeisl, JL Caldwell, PA Garcia, MN Rylander, **RV Davalos**. High-frequency irreversible electroporation (H-FIRE) for non-thermal ablation without muscle contraction. *Biomedical Engineering Online*, vol 10(10), 2011. **Highly Accessed Distinction. (IF 1.639)**
62. RC Gallo, VH Perez-Gonzalez, **RV Davalos**, BH Lapizco-Encinas. Separation of mixtures of particles in a multipart microdevice employing insulator-based dielectrophoresis. *Electrophoresis*, vol 32 (8), pp 2456-2465, 2011. **(IF 3.569)**
63. CB Arena, MB Sano, MN Rylander, **RV Davalos**. Theoretical considerations of tissue electroporation with high frequency bipolar pulses. *IEEE Transactions on Biomedical Engineering*, vol 58(5), pp 1474-1482, 2011. **(IF 2.154)**
64. PA Garcia, T Pancotto, JH Rossmeisl Jr, N Henao-Guerrero, NR Gustafson, GB Daniel, JL Robertson, TL Ellis, **RV Davalos**. Non-thermal irreversible electroporation (N-TIRE) and adjuvant fractionated radiotherapeutic multimodal therapy for intracranial malignant glioma in a canine patient. *Technology in Cancer Research and Treatment*, vol 10(1), pp 73-83, 2011. **(IF 2.032)**
65. TL Ellis, PA Garcia, JH Rossmeisl Jr, NH Guerrero, J Robertson, **RV Davalos**. Non-thermal irreversible electroporation (N-TIRE) for intracranial surgical applications. *Journal of Neurosurgery*, vol 114(3), pp 681-688, 2011. **(IF 2.594)**
66. JD Welsh, JJ Charonko, A Salmanzadeh, KE Drahos, H Shafiee, MA Stremmler, **RV Davalos**, DGS Capelluto, PP Vlachos, CV Finkielstein. Disabled-2 modulates homotypic and heterotypic platelet interactions by binding to sulfatides. *British Journal of Hematology*, vol 154(1), pp 122-133, 2011. **(IF 4.597)**
67. PA Garcia, JH Rossmeisl, RE Neal II, TL Ellis, **RV Davalos**. A parametric study delineating irreversible electroporation from thermal damage based on a minimally invasive intracranial procedure. *Biomedical Engineering Online*, vol 10:34, 2011. **Highly Accessed Distinction. (IF 1.639)**
68. MB Sano, RE Neal II, PA Garcia, D Gerber, J Robertson, **RV Davalos**. Towards the creation of organ constructs using irreversible electroporation and active mechanical perfusion. *Biomedical Engineering Online*, vol 9(83), 2010. **Highly Accessed. (IF 1.639)**
69. H Shafiee, MB Sano, E Henslee, JL Caldwell, **RV Davalos**. Selective isolation of live-dead cells using contactless dielectrophoresis (cDEP). *Lab on a Chip (cover)*, vol 10, pp 438-445, 2010. **(IF 6.342)**
70. RE Neal II, R Singh, H Hatcher, S Torti, **RV Davalos**. Treatment of breast cancer through the application of irreversible electroporation using a novel minimally invasive single needle electrode. *Breast Cancer Research and Treatment*, vol 123, pp 295-301, 2010. **(IF 4.696)**

71. MB Sano, A Rojas, P Gatenholm, **RV Davalos**. Dielectrophoretic microweaving: Biofabrication of aligned bacterial cellulose nanofibrils. *Annals of Biomedical Engineering*, vol 38(8), pp 2475-2484, 2010. **(IF 2.409)**
72. PA Garcia, JH Rossmesl, RE Neal II, TL Ellis, J Olson, N Henao-Guerrero, J Robertson, **RV Davalos**. Intracranial non-thermal irreversible electroporation: In vivo analysis, *Journal of Membrane Biology*, vol 236(1), pp 127-136, 2010. **(IF 2.189)**
73. H Shafiee, JL Caldwell, **RV Davalos**. A microfluidic system for biological particle enrichment utilizing contactless dielectrophoresis (cDEP) (invited paper). *Journal of the Association for Laboratory Automation (JALA)*, vol 15(3), pp 224-232, 2010. **(IF 1.420)**
74. RE Neal II, **RV Davalos**. The feasibility of irreversible electroporation for the treatment of breast cancer and other heterogeneous systems. *Annals of Biomedical Engineering*, vol 37(12), pp 2615-2625, 2009. **(IF 2.409)**
75. H Shafiee, JL Caldwell, MB Sano, **RV Davalos**. Contactless dielectrophoresis for particle manipulation on-chip. *Biomedical Microdevices*, vol 11(5), pp 997-1006, 2009. **(IF 3.323)**
76. H Shafiee, PA Garcia, **RV Davalos**. Delineation of irreversible electroporation (IRE) from Joule heating effects using the arrhenius equation. *ASME Journal of Biomechanical Engineering*, vol 131(7) pp 074509:1-074509:5, 2009. **(IF 2.657)**
77. P Sabounchi, AM Morales, P Ponce, LP Lee, BA Simmons, **RV Davalos**. Sample concentration and impedance detection on a microfluidic polymer chip. *Biomedical Microdevices*, vol 10(5), pp 661-670, 2008. **(IF 3.323)**
78. **RV Davalos**, GJ McGraw, TI Wallow, AM Morales, KL Krafcik, GJ Fiechtner, Y Fintschenko, EB Cummings, BA Simmons. Performance impact of dynamic surface coatings on polymeric insulator-based dielectrophoretic particle separators. *Analytical and Bioanalytical Chemistry (cover)*, vol 390(3), pp 847-855, 2008. **(IF 3.480)**
79. CD James, N Reuel, ES Lee, **RV Davalos**, SS Mani, A Carroll-Portillo, R Rebeil, A Martino, CA Apblett. Impedimetric and optical interrogation of single cells in a microfluidic device for real-time viability and chemical response assessment. *Biosensors and Bioelectronics*, vol 23 pp 845–851, 2008. **(IF 5.429)**
80. **RV Davalos**, B Rubinsky. Temperature considerations during irreversible electroporation. *ASME International Journal of Heat and Mass Transfer*, vol 51(23-24), pp 5617-5622, 2008. **(IF 1.947)**
81. B Al-Sakere, C Bernat, F André, E Connault, P Opolon, **RV Davalos**, B Rubinsky, LM Mir. Tumor ablation with irreversible electroporation. *PLoS One*, vol 2(11), pp 1-8, 2007. **(IF 4.351)**
82. D Robinson, ES Lee, Z Iqbal, JL Rognlien, **RV Davalos**. Reinforced vesicles withstand rigors of microfluidic electroporation. *Sensors and Actuators: B Chemical*, vol 125, pp 337-342, 2007. **(IF 3.083)**

83. JF Edd, **RV Davalos**. Mathematical modeling of irreversible electroporation for treatment planning. *Technology in Cancer Research and Treatment*, vol 6(4), pp 275-286, 2007. **(IF 2.032)**
84. B Al-Sakere, C Bernat, F André, E Connault, P Opolon, **RV Davalos**, LM Mir. A study of the immunological response to tumor ablation with irreversible electroporation. *Technology in Cancer Research and Treatment*, vol 6(4), pp 301-306, 2007. **(IF 2.032)**
85. ES Lee, D Robinson, JL Rognlien, CK Harnett, BA Simmons, CRB Ellis, **RV Davalos**. Robust giant lipid vesicles and micro-electroporation technology for controllable manipulation of picoliter volumes on-chip. *Bioelectrochemistry*, vol 69, pp 117-125, 2006. **(IF 2.652)**
86. JF Edd, L Horowitz, **RV Davalos**, LM Mir, B Rubinsky. In-vivo results of a new focal ablation technique: Irreversible electroporation. *IEEE Transactions on Biomedical Engineering*, vol 53(5), pp 1409-1415, 2006. **(IF 2.154)**
87. BH Lapizco-Encinas, **RV Davalos**, BA Simmons, EB Cummings, Y Fintschenko. An insulator-based (electrodeless) dielectrophoretic concentrator for microbes in water. *Journal of Microbiological Methods*, vol 62, pp 317-326, 2005. **(IF 2.427)**
88. **RV Davalos**, LM Mir, B Rubinsky. Tissue ablation with irreversible electroporation. *Annals of Biomedical Engineering*, vol 33(2), pp 223-231, 2005. **(IF 2.409)**
89. **RV Davalos**, DM Otten, LM Mir, B Rubinsky. Electrical impedance tomography for imaging tissue electroporation. *IEEE Transactions on Biomedical Engineering*, vol 51(5), pp 761-767, 2004. **(IF 2.154)**
90. **RV Davalos**, B Rubinsky. Electrical impedance tomography of cell viability in tissue with application to cryosurgery. *ASME Journal of Biomechanical Engineering*, vol 126(2), pp 305-309, 2004. **(IF 2.657)**
91. **RV Davalos**, B Rubinsky, LM Mir. Theoretical analysis of the thermal effects during in vivo tissue electroporation. *Bioelectrochemistry*, vol 61(1-2), pp 99-107, 2003. **(IF 3.520)**
92. **RV Davalos**, DM Otten, B Rubinsky. A feasibility study for electrical impedance tomography as a means to monitor tissue electroporation for molecular medicine. *IEEE Transactions on Biomedical Engineering*, vol 49(4), pp 400-403, 2002. **(IF 2.154)**
93. **RV Davalos**, Y Huang, B Rubinsky. Electroporation: Bio-electrochemical mass transfer at the nano scale. *Nanoscale and Microscale Thermophysical Engineering*, vol 4(3), pp 147-159, 2000. **(IF 1.900)**
94. B Rubinsky, **RV Davalos**. The use of evolutionary-genetic analogy in numerical analysis. *Communications in Numerical Methods in Engineering*, vol 14(2), pp 151-160, 1998. **(IF 0.595)**
95. **RV Davalos**, B Rubinsky. An evolutionary-genetic approach to heat transfer analysis. *ASME Journal of Heat Transfer*, Transactions of the ASME, vol 118(3), pp 528-532, 1996. **(IF 0.959)**

#### **BOOK CHAPTERS AND REVIEW ARTICLES**

1. A Rolong, **RV Davalos**, B Rubinsky. History of electroporation. In. *Irreversible Electroporation in Clinical Practice*. pp 13-37, Edited by M Meijerink, H Scheffer, G Narayanan, Springer Nature, Switzerland, 2018.



2. DC Sweeney, RE Neal, **RV Davalos**. Multi-scale biophysical principles in clinical Irreversible Electroporation. In. *Irreversible Electroporation in Clinical Practice*. pp 41-66, Edited by M Meijerink, H Scheffer, G Narayanan, Springer Nature, Switzerland, 2018.
3. MF Lorenzo, CA Arena, **RV Davalos**. Irreversible Electroporation and High-Frequency Irreversible Electroporation for the Eradication of Glioblastoma, In *Glioblastoma*, pp 373-393, Edited by De Vleeschouwer S, Codon, Australia, 2017.
4. TJ O'Brien, CA Arena, **RV Davalos**. Thermal considerations with tissue electroporation. In Handbook of Thermal Sciences and Engineering, Section Heat Transfer in Biology and Biological Systems, pp 1-31, Edited by R Devireddy, Springer, Cham, 2018.
5. J Ivey, M Bonakdar, A Kanitkar, **RV Davalos**, SS Verbridge. Improving cancer therapies by targeting physical and chemical hallmarks of the tumor microenvironment – mini review. *Cancer Letters*, vol 380(1), pp 330-339, 2016. **(IF 5.992)**
6. J Cemazar, A Ghosh, **RV Davalos**. Electrical Manipulation and Sorting of Cells. Chapter 3 In: *Microtechnology for Cell Manipulation and Sorting*, pp 57-92. Edited by W Lee, P Tseng, D Di Carlo. Springer International Publishing, Switzerland, 2017.
7. K Yano, L Rems, T Kotnik, D Miklavcic, JC Weaver, KC Smith, RS Son, TR Gowrishankar, PT Vernier, ZA Levine, MP Rols, J Teissie, LM Mir, AG Pakhomov, P Nick, W Frey, DA Dean, K Morotomi-Yano, RE Neal II, S Bhonsle, **RV Davalos**, SJ Beebe. Ch 4: Biological Responses. In: *Bioelectrics*, pp. 155-274, Edited by H Akiyama, R Heller, Springer, Japan, 2017.
8. R Heller, J Teissie, MP Rols, J Gehl, G Sersa, LM Mir, RE Neal II, S Bhonsle, **RV Davalos**, S Beebe, B Hargrave, R Nuccitelli, C Jiang, M Cemazar, Y Tamzali, N Tozon. Ch 5: Medical Applications. In: *Bioelectrics*, pp. 275-388, Edited by H Akiyama, R Heller, Springer, Japan, 2017.
9. EM Wasson, TA Douglas, **RV Davalos**. Mechanical and electrical principles for separation of rare cells. Chapter In: *Microfluidic Methods for Biology*, Ch 13, pp 253-294, Edited by C Lu and SS Verbridge, Springer International Publishing, Switzerland, 2016.
10. PA Garcia, JH Rossmeisl, Jr, TL Ellis, **RV Davalos**. Nonthermal irreversible electroporation as a focal ablation treatment for brain cancer. Chapter 15 In: *Tumors of the Central Nervous System*, vol 12, pp 171-182, Edited by MA Hayat, Springer, London, 2015.
11. C Jiang, **RV Davalos**, JC Bischof. A Review of basic to clinical studies of irreversible electroporation Therapy, *IEEE Transactions on Biomedical Engineering*, vol 62(1), pp 4-20, 2014. **(IF 2.233) (cover)**
12. PA Garcia, RE Neal II, **RV Davalos**. Non-thermal irreversible electroporation for tissue ablation. *Electroporation in laboratory and clinical investigations*, NOVA Science Publishers, Inc. New York, USA, 2012 **(cover)**.
13. A Salmanzadeh, **RV Davalos**. Electrokinetics and Rare-Cell Detection. Chapter 3 In: *Microfluidics in Detection Science : Lab-on-a-chip Technologies*, pp 61-83, Edited by FH Labeed and HO Fatoyinbo, Royal Society of Chemistry, United Kingdom, 2015.

14. P Gatenholm, J Berry, A Rojas, MB Sano, **RV Davalos**, K Johnson, L O'Rourke (**cover**). Bacterial nanocellulose biomaterials with controlled architecture for tissue engineering scaffolds and customizable implants, Ch 10 In: Perspectives in Nanotology, Bacterial NanoCellulose: A Sophisticated Multifunctional Material. pp 197-216, Edited by M Gama, P Gatenholm, D Klemm, CRC Press, Boca Raton, FL, 2012.
15. MB Sano, **RV Davalos**. Isolation of rare cells using microfluidics. Ch 12 In: MEMS for Biomedical Applications. Woodhead Publishing Limited, Woodhead Publishing Series in Biomaterials, Number 43, Edited by S Bhansali and A Vasudev, Cambridge, 2012.
16. CB Arena, RE Neal II, **RV Davalos**. Electroporation Therapy, Physical Medicine and Rehabilitation: Principles and Applications Anders Brahme, editor-in-chief. In: Comprehensive Biomedical Physics, vol 10, pp 269-287, Amsterdam: Elsevier, 2014.
17. MV Ortiz, **RV Davalos**. Cell electroporation mechanisms and preclinical foundation for focal therapy. Ch 23 in Imaging and Focal Therapy of Early Prostate Cancer, Current Clinical Urology. Editor Thomas Polascik, pp 309-329, Springer, New York, 2013
18. **RV Davalos**, PA Garcia, JF Edd. Thermal aspects of irreversible electroporation. Irreversible Electroporation, Editor B Rubinsky, Springer-Verlag, Berlin Heidelberg, Germany, pp 123-154, 2010.
19. GJ McGraw, M Kanouff, JT Ceremuga, **RV Davalos**, BH Lapizco-Encinas, P Mela, R Shediach, JD Brazzle, JT Hachman, GJ Fiechtner, EB Cummings, Y Fintschenko, BA Simmons. A comparison of insulator-based dielectrophoretic devices for the monitoring and separation of water-borne pathogens as a function of microlithographic fabrication technique. ACS Symposium Series 2007, 980 (Antiterrorism and Homeland Defense), 133-157, 15 plates. CODEN: ACSMC8 ISSN:0097-6156. AN 2008:346219 CAPLUS, 2008.
20. BA Simmons, GJ McGraw, **RV Davalos**, GJ Fiechtner, Y Fintschenko, EB Cummings. Development of polymeric devices as dielectrophoretic separators and concentrators. MRS Bulletin (**cover**), vol 31, pp 120-124 2006. (**IF 1.879**)

#### PEER-REVIEWED CONFERENCE PROCEEDINGS

1. EM Wasson, MG Simon, ML Moya, **RV Davalos**, EK Wheeler. Encapsulating cancer cells in fibrin microgels for tissue engineering applications. MicroTAS 2018, Kaohsiung, Taiwan, Nov 11-15, 2018.
2. N Beitel-White, S Bhonsle, RCG Martin, **RV Davalos**. Electrical characterization of human biological tissue for irreversible electroporation treatments, IEEE Engineering in Medicine and Biology Conference (EMBC '18), Honolulu, HI, Jul 18-21, pp 4170 - 4173, 2018
3. DC Sweeney, **RV Davalos**. Discontinuous Galerkin model of cellular electroporation, IEEE Engineering in Medicine and Biology Conference (EMBC '18), Honolulu, HI, Jul 18-21, pp 5850 - 5853, 2018.
4. SP Bhonsle, M Bonakdar, SN Goldberg, **RV Davalos**, RE Neal II. Perfused organ model development and evaluation for irreversible electroporation investigations. 11th European Conference on Antennas and Propagation (EuCAP 2017), Paris, France, Mar 19-24 2017.

5. SP Bhonsle, CB Arena, **RV Davalos**. A feasibility study to mitigate tissue-tumor heterogeneity using high frequency bipolar electroporation pulses. 6th European Conference of the International Federation for Medical and Biological Engineering (IFMBE) Proceedings (MBEC 2014), vol 45, pp 565-568, Dubrovnik, Croatia, Sept 7-11, 2014.
6. EL Latouche, **RV Davalos**, RC Martin II. Modeling of Irreversible Electroporation Treatments for the Optimization of Pancreatic Cancer Therapies. 6th European Conference of the International Federation for Medical and Biological Engineering (IFMBE) Proceedings (MBEC 2014), vol 45, pp 801-804, Dubrovnik, Croatia, Sept 7-11, 2014.
7. A Rolong, K Prokop, **RV Davalos**. Impact of nanoparticles on irreversible electroporation treatments: can the lesion be enhanced beyond IRE margin? 6th European Conference of the International Federation for Medical and Biological Engineering (IFMBE) Proceedings (MBEC 2014), vol 45, pp 793-796, Dubrovnik, Croatia, Sept 7-11, 2014.
8. J Rossmesl, P Garcia, J Robertson, **RV Davalos**. Irreversible electroporation for the treatment of brain tumors: Pre-clinical results in a canine model of spontaneous glioma. 6th European Conference of the International Federation for Medical and Biological Engineering (IFMBE) Proceedings (MBEC 2014), vol 45, pp 809-812, Dubrovnik, Croatia, Sept 7-11, 2014.
9. RE Neal II, PA Garcia, H Kavnoudias, F Rosenfeldt, CA McLean, V Earl, J Bergman, **RV Davalos**, KR Thomson. Simulation of in vivo irreversible electroporation renal ablations. 6th European Conference of the International Federation for Medical and Biological Engineering (IFMBE) Proceedings (MBEC 2014), vol 45, pp 813-816, Dubrovnik, Croatia, Sept 7-11, 2014.
10. PA Garcia, **RV Davalos**, D Miklavcic. A numerical evaluation of the cell kill distributions due to thermal damage in electrochemotherapy. 6th European Conference of the International Federation for Medical and Biological Engineering (IFMBE) Proceedings (MBEC 2014), vol 45, pp 817-820, Dubrovnik, Croatia, Sept 7-11, 2014.
11. J Cemazar, LM Anders, SD Cramer, **RV Davalos (invited)**. Contactless dielectrophoresis device for high throughput separation of tumor initiating cells. IEEE Engineering in Medicine and Biology Conference (EMBC `14), Chicago, IL, Aug 26-30, 2014.
12. PA Garcia, CB Arena, RE Neal II, SN Goldberg, E Ben-David, **RV Davalos**. Adapting the cassini curve to approximate in vivo irreversible electroporation ablations in porcine liver. SBC2013-14817, *ASME Summer Bioengineering Conference*, Sun River, OR, June 26-29, 2013.
13. RE Neal II, H Kavnoudias, F Rosenfeldt, R Ou, J Marron, **R Davalos**, K Thompson. In vivo validation of irreversible electroporation electric field threshold for prostate tissue. SBC2013-14425, *ASME Summer Bioengineering Conference*, Sun River, OR, June 26-29, 2013.
14. A Salmanzadeh, MB Sano, H Shafiee, M Stremmler, **RV Davalos**. Isolation of rare cancer cells from blood cells using dielectrophoresis, IEEE Engineering in Medicine and Biology Conference (EMBC `12), San Diego, CA, Aug 28-Sep 1, pp 490-493, 2012.

15. PA Garcia, C Arena, **RV Davalos (invited)**. Towards a predictive model of electroporation-based therapies using pre-pulse electrical measurements, IEEE Engineering in Medicine and Biology Conference (EMBC `12), San Diego, CA, Aug 28-Sep 1, pp 2575-2578, 2012.
16. CB Arena, RL Mahajan, MN Rylander, **RV Davalos**. Phase change electrodes for reducing joule heating during irreversible electroporation. SBC2012-80825, ASME Summer Bioengineering Conference, Fajardo, Puerto Rico, June 20-23, 2012. **1<sup>st</sup> Place PhD Student Paper Competition**
17. A Salmanzadeh, H Kittur, M Sano, M Stremmer, C Roberts, E Schmelz, **RV Davalos**. Investigating dielectrophoretic signatures of mouse ovarian surface epithelial cells, macrophages and fibroblasts. SBC2012-80872, ASME Summer Bioengineering Conference, Fajardo, Puerto Rico, June 20-23, 2012.
18. PA Garcia, J Pearce, **RV Davalos**. A comparison between the pulsed and duty cycle approaches used to capture the thermal response of tissue during electroporation-based therapies. SBC2012-80574, ASME Summer Bioengineering Conference, Fajardo, Puerto Rico, June 20-23, 2012
19. MB Sano, CB Arena, PA Garcia, **RV Davalos**. Irreversible electroporation using the vasculature of an organ as fluid electrodes. SBC2012-80870, ASME Summer Bioengineering Conference, Fajardo, Puerto Rico, June 20-23, 2012.
20. RE Neal II, PA Garcia, J Robertson, **RV Davalos**. Experimental characterization of intrapulse tissue conductivity changes for electroporation. IEEE Engineering in Medicine and Biology Conference (EMBC `11), Boston, MA, Aug 30-Sep 3, pp 5581-5584, 2011.
21. MB Sano, JL Caldwell, **RV Davalos**. A low cost solution for the fabrication of dielectrophoretic microfluidic devices and embedded electrodes. IEEE Engineering in Medicine and Biology Conference (EMBC `11), Boston, MA, Aug 30-Sep 3, pp 8384-8387, 2011.
22. PA Garcia, JH Rossmeisl, J Robertson, **RV Davalos (invited)**. Electrical conductivity changes during irreversible electroporation treatment of brain cancer. IEEE Engineering in Medicine and Biology Conference (EMBC `11), Boston, MA, Aug 30-Sep 3, pp 739-742, 2011.
23. CB Arena, MB Sano, M Rylander, **RV Davalos**. High frequency electroporation for cancer therapy. ASME Summer Bioengineering Conference, Farmington, PA, Jun 22-25, 2011.
24. PA Garcia, JH Rossmeisl, TL Ellis, **RV Davalos**. A method to delineate irreversible electroporation from thermal damage validated ex vivo with real-time temperature. ASME Summer Bioengineering Conference, Farmington, PA, Jun 22-25, 2011.
25. CS Szot, C Arena, PA Garcia, **RV Davalos**, J Freeman, N Rylander. A novel in vitro model for irreversible electroporation based cancer therapies and treatment planning. ASME Summer Bioengineering Conference, Farmington, PA, Jun 22-25, 2011.
26. A Rojas, E Schmelz, **R Davalos**. Separation analysis of breast cancer progression using contactless dielectrophoresis. ASME Summer Bioengineering Conference, Farmington, PA, Jun 22-25, 2011.

27. A Salmanzadeh, H Shafiee, M Stremmler, **R Davalos**. Mixing enhancement in microfluidic devices using contactless dielectrophoresis. ASME Summer Bioengineering Conference, Farmington, PA, Jun 22-25, 2011.
28. A Salmanzahdeh, H Shafiee, M Sano, M Stremmler, **RV Davalos**. Enrichment of cancer cells using a high throughput contactless dielectrophoretic (cDEP) microfluidic device. ASME Summer Bioengineering Conference, Farmington, PA, Jun 22-25, 2011
29. PA Garcia, RE Neal II, JH Rossmeisl Jr, **RV Davalos**. Non-thermal irreversible electroporation for deep intracranial disorders. IEEE Engineering in Medicine and Biology Conference (EMBC `10), Buenos Aires, Argentina, Aug 31-Sep 4, pp 2743-2746, 2010.
30. RE Neal II, PA Garcia, JH Rossmeisl Jr, **RV Davalos**. A study using irreversible electroporation to treat large, irregular tumors in a canine patient. IEEE Engineering in Medicine and Biology Conference (EMBC `10), Buenos Aires, Argentina, Aug 31-Sep 4, pp 2747-2750, 2010.
31. E Henslee, E Schmelz, **RV Davalos**. Isolation of human breast cancer cells by metastatic stage using contactless dielectrophoresis. ASME Summer Bioengineering Conference, Naples, FL, Jun 16-19, pp 22-23, 2010.
32. MB Sano, **RV Davalos**. Continuous separation of particles using contactless dielectrophoresis. ASME Summer Bioengineering Conference, Naples, FL, Jun 16-19, pp 30-31, 2010.
33. PA Garcia, JH Rossmeisl Jr, JL Robertson, TL Ellis, **RV Davalos**. Pilot study of irreversible electroporation for intracranial surgery. IEEE Engineering in Medicine and Biology Conference (EMBC '09), Minneapolis, MN, Sep 2-6, pp 1:6513-6516, 2009. **North American Finalist**
34. CB Arena, MN Rylander, **RV Davalos**. Theoretical study for the treatment of pancreatic cancer using electric pulses. IEEE Engineering in Medicine and Biology Conference (EMBC '09), Minneapolis, MN, Sep 2-6, pp 1:5997-6000, 2009.
35. PA Garcia, S Elankumaran, **RV Davalos**. Pilot study of irreversible electroporation to treat brain cancer. ASME Summer Bioengineering Conference, Lake Tahoe, CA, Jun 17-21, pp 32-33, 2009.
36. CB Arena, MN Rylander, **RV Davalos**. Pilot study on the enhancement of irreversible electroporation (IRE) with carbon nanotubes (CNT). ASME Summer Bioengineering Conference, Lake Tahoe, CA, Jun 17-21, pp 18-19, 2009.
37. RE Neal II, R Singh, S Torti, **RV Davalos**. Feasibility study for applying irreversible electroporation to the treatment of breast cancer. ASME Summer Bioengineering Conference, Lake Tahoe, CA, Jun 17-21, pp 16-17, 2009.
38. H Shafiee, MB Sano, J Caldwell, **RV Davalos**. An alternative technique for dielectrophoretic (DEP) cell manipulation: Contactless DEP. ASME Summer Bioengineering Conference, Lake Tahoe, CA, Jun 17-21, pp 54-55, 2009.

39. MB Sano, **RV Davalos**, P Gatenholm. Dielectrophoretic Microweaving: Biofabrication of aligned bacterial nanocellulose for regenerative medicine. ASME Summer Bioengineering Conference, Lake Tahoe, CA, Jun 17-21, pp 56-57, 2009.
40. P Sabounchi, AM Morales, BA Simmons, **RV Davalos**. Integrated microfluidic sample preconcentrator and impedance detection platform for pathogen monitoring. Royal Society of Chemical Special Publications, 12th International Conference on Miniaturized Systems for Chemistry and Life Sciences, San Diego, CA, Oct 12-16, pp 1051-1053, 2008.
41. PA Garcia, JL Robertson, J Rossmeisl, **RV Davalos**. Irreversible electroporation (IRE) to treat brain cancer. ASME Summer Bioengineering Conference, Marco Island, FL, Jun 25-29, pp 101-102, 2008.
42. H Shafiee, **RV Davalos**. An autonomous cell type selective irreversible electroporation microsystem using insulator-based dielectrophoresis (iDEP). ASME Summer Bioengineering Conference, Marco Island, FL, Jun 25-29, pp 591-592, 2008.
43. P Ponce, BA Simmons, M Khine, **RV Davalos**. A bioparticle detector using integrated insulator-based dielectrophoresis and bioimpedance measurements. Royal Society of Chemical Special Publications, 10th International Conference on Miniaturized Systems for Chemistry and Life Sciences, Tokyo, Japan, Nov 5-9, pp 987-989, 2006.
44. ES Lee, SS Bachelor, ZQ Iqbal, LP Lee, **RV Davalos**. Viability after on-chip single-cell micro-electroporation for the study of macrophage signaling pathways. Royal Society of Chemical Special Publications, 10th International Conference on Miniaturized Systems for Chemistry and Life Sciences, Tokyo, Japan, Nov 5-9, pp 1345-1347, 2006.
45. P Sabounchi, AM Morales, BA Simmons, **RV Davalos**. Autonomous label free optical detection of spores trapping in an insulator-based dielectrophoretic concentrator. Royal Society of Chemical Special Publications, 10th International Conference on Miniaturized Systems for Chemistry and Life Sciences, Tokyo, Japan, Nov 5-9, pp 470-472, 2006.
46. JC Stachowiak, EE Shugard, PF Caton, BP Mosier, RF Renzi, **RV Davalos**, GJ McGraw, BA Simmons, VA Vandernoot, BA Haroldsen. Automated sample preparation system for rapid biological threat detection. ASME Bioengineering Division, ASME International Mechanical Engineering Congress and Exposition, Orlando, FL, Nov 5-11, vol 57, pp 29-30, 2005.
47. GJ McGraw, **RV Davalos**, BM Mittal, SM Ferko, MC Hunter, JD Brazzle, Y Fintschenko, EB Cummings, BA Simmons. Scalability of insulator-based dielectrophoresis (iDEP) and its utilization as a high-throughput particle concentrator. Royal Society of Chemical Special Publications, 9th International Conference on Miniaturized Systems for Chemistry and Life Sciences, Boston, MA, Oct 9-13, pp 705-708, 2005.
48. GJ McGraw, KL Krafcik, TI Wallow, M Hunter, A Morales, **RV Davalos**, Y Fintschenko, EB Cummings, BA Simmons. Effect of surfactants on electroosmotic flow in a polymeric insulator-based dielectrophoretic (iDEP) device. Royal Society of Chemical Special Publications, 9th International Conference on Miniaturized Systems for Chemistry and Life Sciences, Boston, MA, Oct 9-13, pp 748-751, 2005.

49. M Khine, A Lau, CI Zanetti, J Seo, ES Lee, **RV Davalos**, LP Lee. A low-voltage single cell electroporation array for intracellular compound delivery. Royal Society of Chemical Special Publications, 9th International Conference on Miniaturized Systems for Chemistry and Life Sciences, Boston, MA, Oct 9-13, pp 856-858, 2005.
50. ES Lee, D Robinson, JL Rognlien, CK Harnett, BA Simmons, CRB Ellis, PM Dentinger, CM Munoz, **RV Davalos**. Preparation and electrically monitored manipulation of giant lipid vesicles for improved mass transport on-chip. Royal Society of Chemical Special Publications, 9th International Conference on Miniaturized Systems for Chemistry and Life Sciences, Boston, MA, Oct 9-13, pp 445-448, 2005.
51. ES Lee, CM Munoz, BA Simmons, CR Ellis, **RV Davalos**. Feasibility study on the use of temperature-dependent liposomes for variable concentration profiles in drug delivery applications. ASME Heat Transfer Division, ASME International Mechanical Engineering Congress and Exposition, Anaheim, CA, Nov 13-19, vol 375(1), pp 763-766, 2004.
52. **RV Davalos**, BH Lapizco-Encinas, GJ Fiechtner, AK Singh, BA Simmons, Y Fintschenko, EB Cummings. A performance comparison of post- and ridge-based dielectrophoretic particle sorters. Royal Society of Chemical Special Publications, 8th International Conference on Miniaturized Systems for Chemistry and Life Sciences, Malmo, Sweden, Sep 26-30, no 296, pp 650-652, 2004.
53. **RV Davalos**, DM Otten, LM Mir, B Rubinsky. A feasibility study for imaging tissue electroporation with electrical impedance tomography. ASME Bioengineering Division, ASME International Mechanical Engineering Congress and Exposition, New Orleans, LA, Nov 17-22, vol 54, pp 153-154, 2002.

#### CONFERENCE PROCEEDINGS

1. TA Douglas, P Graybill, N Alinezhadbalalami, Balani, J Cemazar, EM Schmelz, **RV Davalos**. Downstream microfluidic collagen culture chamber for advancing mechanistic understanding of dielectrophoretic behavior in cells. MicroTAS. Savannah, GA, Oct 22-26, 2017.
2. PA Garcia, RE Neal, MB Sano, JL Robertson, **RV Davalos (invited)**. An experimental investigation of temperature changes during electroporation. XXX URSI General Assembly and Scientific Symposium, Istanbul, Turkey, Aug 13-20, 2011.
3. H Shafiee, MB Sano, JL Caldwell, **RV Davalos**. A new strategy for sample concentration and enrichment: Contactless Dielectrophoresis. AIChE Annual Meeting, Nashville, TN, Nov 8-13, pp 240g, 2009.
4. AM Morales, BA Simmons, TI Wallow, KJ Campbell, SS Mani, B Mittal, RW Crocker, EB Cummings, **RV Davalos**, LA Domeier, MC Hunter, KL Krafcik, GJ McGraw, BP Mosier, SM Sickafoose. Injection molded microfluidic devices for biological sample separation and detection (invited paper). SPIE Proceedings: MOEMS-MEMS 2006 - Micromachining and Microfabrication Process Technology XI, San Jose, CA, Jan 21-26, vol 6109, pp 610901:1-610901:11, 2006.
5. RG Guerra, **RV Davalos**, PA Garcia, B Rubinsky, MS Berger. A heat transfer model to characterize the focal cooling necessary to suppress spontaneous epileptiform activity (invited paper). SPIE

Proceedings: PW05B Biomedical Optics - Thermal Treatment of Tissue: Energy Delivery and Assessment VI, San Jose, CA, Jan 25-27, vol 5698(23), pp 240-246, 2005.

6. GJ McGraw, **RV Davalos**, JD Brazzle, JT Hachman, MC Hunter, JM Chames, GJ Fiechtner, EB Cummings, Y Fintschenko, BA Simmons. Polymeric insulator-based dielectrophoresis (iDEP) for the monitoring of water-borne pathogens. SPIE Proceedings: MOEMS-MEMS 2005 - Micromachining and Microfabrication Process Technology X, San Jose, CA, Jan 25-27, vol 5715(6), pp 59-68, 2005.
7. **R Davalos**, B Rubinsky. The use of concepts from genetics and evolution to solve problems of heat transfer. The Symposium on Thermal Science and Engineering in Honor of Chancellor Chang-Lin Tien, R Buckius Ed, University of Illinois at Urbana-Champaign, Berkeley, CA, Nov 10-12, pp 541-546, 1995.

#### ABSTRACTS

1. P Graybill, M Bonakdar, **R Davalos**. Modulation of the blood-brain barrier by high-frequency pulsed electric fields using a microfluidic model. SciX2018, Atlanta, GA, Oct 21-26, 2018.
2. K Chatterjee, P Graybill, J Garrett, **R Davalos**, J Socha, A Staples. Insect-inspired flow control in microfluidic networks. 71<sup>st</sup> Annual Meeting of the APS Division of Fluid Dynamics, Atlanta, GA, Nov 18-20, 2018.
3. YW Lee, HJ Cho, SS Verbridge, **RV Davalos**. An *in vitro* 3D brain tissue model mimicking *in vivo*-like pro-inflammatory and pro-oxidative responses. BMES Annual Meeting, Atlanta, GA, Oct 17-20, 2018.
4. IC Allen, VM Ringel-Scaia, S Coutermarsh-Ott, R Brock, M Lorenzo, NB White, KJ Oestreich, SS Verbridge, **RV Davalos**. Utilization of High-Frequency Irreversible Electroporation (H-FIRE) to modulate the tumor microenvironment and promote systemic immune system activation in breast cancer, Immunology 2018, Austin, TX, May 4-8, 2018.
5. **RV Davalos (Invited)**. Irreversible Electroporation for Brain Cancer Treatment. Advances in Electroporation Technology and Devices. Design of Medical Devices (DMD) Conference, Minneapolis, MN, Apr 10-12, 2018.
6. K Chatterjee, P Graybill, A Staples, **R Davalos**. Insect respiratory network-inspired microfluidic devices act as hydrodynamic ratchets. APS March Meeting 2018, Los Angeles, CA, Mar 5-9, 2018.
7. C Clark, C Byron, S Bhonsle, MF Lorenzo, CB Arena, JH Robertson, **RV Davalos**. Safety of next generation high frequency irreversible electroporation (H-FIRE) in a porcine pancreatic cancer treatment model. AHPBA, Miami Beach, FL, USA Mar 29 - Apr 2, 2017.
8. TJ O'Brien, M Passeri, MF Lorenzo, WB Lyman, JH Swet, D Vrochides, EH Baker, IH McKillop, DA Iannitti, **RV Davalos**. Evaluating a single needle High-Frequency Irreversible Electroporation (H-FIRE) probe for pancreatic ablation in vivo. Southern Biomedical Engineering Conference (SBEC), Charlotte, NC, Mar 8-10, 2018.
9. M Passeri, WB Lyman, **T O'Brien**, MF Lorenzo, JH Swet, D Vrochides, EH Baker, JB Martinie, **RV Davalos**, DA Iannitti, IH McKillop. Development and use of a single needle-dual electrode high-



frequency irreversible electroporation (HFIRE) probe for non-thermal hepatic ablation. World Congress of Endoscopic Surgery (WCES), Seattle, WA, Apr 11-14, 2018

10. DC Sweeney, TA Douglas, **RV Davalos**. In vitro validation of asymptotic Smoluchowski model using subpopulations of electropores. BMES Annual Meeting 2017, Phoenix, AZ, Oct 11-15, 2017.
11. SS Verbridge (invited), J Ivey, ELatouche, M Sano, J Rossmeisl, ZSheng, G Lesser, W Debinski, **RV Davalos**. Combinatorial High-frequency irreversible electroporation to enhance targeting of malignant cells based on their altered morphologies. 2<sup>nd</sup> World Congress on Electroporation, Norfolk, VA, Sep 24-28, 2017.
12. JH Rossmeisl (invited), E Latouche, J Ivey, M Sano, C Arena, SS Verbridge, **RV Davalos**. High-frequency irreversible electroporation for treatment of brain tumors. 2<sup>nd</sup> World Congress on Electroporation, Norfolk, VA, Sep 24-28, 2017.
13. DC Sweeney, JC Weaver, **RV Davalos**. Delayed post-pulse permeability change after an electroporation pulse. 2nd World Congress on Electroporation, Norfolk, VA, USA, Sep 24-29, 2017.
14. **RV Davalos (plenary)**, JL Rossmeisl, EL Latouche, JW Ivey, CB Arena, MB Sano, MF Lorenzo, SS Verbridge. High-Frequency irreversible electroporation for brain cancer treatment, XXIV International Symposium on Bioelectrochemistry and Bioenergetics, Lyon, France, Jul 3-7, 2017.
15. TJ O'Brien, PA Garcia, **RV Davalos (invited)**. Irreversible electroporation for the treatment of brain cancer. IEEE 2017 International Microwave Symposium, Honolulu, HI, Jun 4-9, 2017.
16. PA Garcia (**plenary**), EL Latouche, JH Rossmeisl, **RV Davalos**. Irreversible electroporation – advanced techniques for treating deep-seated tumors. BioEM2017, Hangzhou, China, Jun 5-9, 2017.
17. B Kos, P Garcia, JH Rossmeisl, D Miklavcic, **RV Davalos**. Glioma specific cell death model for planning of irreversible electroporation treatments. BioEM2017, Hangzhou, China, Jun 5-9, 2017.
18. M Bonakdar, TJ O'Brien, E Latouche, **RV Davalos**. The development of an intelligent surgical probe for real-time monitoring of electroporation-based treatments. IEEE EMBS Micro and Nano (MNMN 2016), Waikola, HI, Dec 12-16, 2016.
19. **RV Davalos (invited)**, TA Douglas, J Cemazar, EM Schmelz. Contactless dielectrophoresis for the separation of cancer cells at different stages of progression. SciX 2016, Minneapolis, MN, Sep 18-23, 2016.
20. **RV Davalos (invited)**, TA Douglas, J Cemazar. Contactless dielectrophoretic enrichment of tumor initiating cells with enhanced viability via cell-scale microstructures. SciX 2016, Minneapolis, MN, Sep 18-23, 2016.
21. M Bonakdar, E Latouche, **R Davalos**. Monitoring lesion development during irreversible electroporation treatment using electrical impedance spectroscopy, Biophysical Society Annual Meeting, Los Angeles, CA, Feb 27 - Mar 2, 2016.

22. S Verbridge (invited), J Ivey, E Latouche, A Kanitkar, M Sano, Z Sheng, J Rossmeis, **R Davalos**. Toward targeting the physical hallmarks of tumors with pulsed electric field ablation therapy. BMES Annual Meeting, Minneapolis, MN, Oct 5-8, 2016.
23. S Bhonsle, A Rolong, A Safaai-Jazi, C Clark, **R Davalos**. Characterization of the electrical properties of surgically resected human healthy and malignant pancreatic tissue in response to irreversible electroporation for treatment of pancreatic cancer. BMES Annual Meeting, Minneapolis, MN, Oct 5-8, 2016.
24. D Sweeney, T Douglas, **R Davalos**. Unifying cellular bioelectromagnetic phenomena: Dielectrophoresis and electroporation. BMES Annual Meeting, Minneapolis, MN, Oct 5-8, 2016.
25. T Douglas, J Cemazar, E Schmelz, **R Davalos**. Contactless dielectrophoresis for tumor subpopulation separation and enrichment. Dielectrophoresis Conference 2016, MIT, Cambridge, MA, July 13-15, 2016. **Herbert A Pohl Student Presentation Award**
26. M Bonakdar, E Wasson, **RV Davalos (invited)**. Using a microfluidic platform as a miniaturized model of the blood-brain barrier to study molecular uptake due to pulsed electric fields. BioEM2016, Ghent, Belgium, Jun 5-10, 2016.
27. EL Latouche (podium award), M Bonakdar, **RV Davalos**. Smart surgical probe for real-time monitoring of electroporation-based treatments. BMES/FDA Frontiers in Medical Devices Conference scheduled for College Park, MD, May 23-25, 2016.
28. A Baah-Dwomoh, A Rolong, P Gatenholm, **RV Davalos**. Using electric fields to induce pores in bacterial cellulose scaffolds. Society for Biomaterials Annual Meeting, Charlotte, NC, Apr 15-18, 2015.
29. M Bonakdar, E Wasson, **RV Davalos**. Using a microfluidic platform as a miniaturized model of the blood-brain barrier to study molecular uptake due to pulsed electric fields. The ASME 2015 4th Global Congress on NanoEngineering for Medicine and Biology, Minneapolis, MN, Apr 19-22, 2015.
30. E Wasson, M Bonakdar, **RV Davalos**. A microfluidic device to study tight junction disruption in the blood-brain barrier using pulsed electric fields. The ASME 2015 4th Global Congress on NanoEngineering for Medicine and Biology, Minneapolis, MN, Apr 19-22, 2015.
31. D Sweeney, E Latouche, P Robberts, E Schmelz, **R Davalos**. Interdigitated electrode to treat micro-metastases by high-frequency irreversible electroporation. BMES Annual Meeting, San Antonio, TX, Oct 22-25, 2014.
32. JW Ivey, EL Latouche, MB Sano, I Nakano, **RV Davalos**, SS Verbridge. 3D glioma platform for therapy-resistant cell targeting using high frequency electric fields. BMES Annual Meeting, San Antonio, TX, Oct 22-25, 2014.
33. A Rolong, KJ Prokop, PA Garcia, CB Arena, **RV Davalos**. Irreversible electroporation: Prostate and pancreatic cancer cell death threshold characterization. BMES Annual Meeting, San Antonio, TX, Oct 22-25, 2014.

34. J Cemazar, LM Anders, SD Cramer, **RV Davalos**. High throughput microfluidic separation of tumor initiating cells (TICs) using contactless dielectrophoresis. AIChE Annual Meeting, Atlanta, GA, Nov 16-21, 2014.
35. CB Arena, SP Bhonsle, MB Sano, **RV Davalos (invited speaker)**. Clinical Implications of Nanosecond-to-Microsecond Pulse Bursts for Irreversible Electroporation. 11th International Bioelectrics Symposium, Columbia, MO, October 13-16, 2014.
36. A Salmanzadeh, E Savage, PC Roberts, EM Schmelz, **R Davalos**. Studying the effects of Sphingolipid Metabolites on cells' dielectrophoretic properties using contactless dielectrophoresis. AIChE Annual Meeting, San Francisco, CA Nov 3-8, 2013.
37. MB Sano, RV Davalos, Electroporation of cells on chip using high frequency electric fields without electrode-sample contact. AIChE Annual Meeting, San Francisco, CA Nov 3-8, 2013.
38. M Bonakdar, P Garcia, **R Davalos**. Characterization of the permeability of the brain endothelium due to electroporation using a dynamic microengineered model. AIChE Annual Meeting, San Francisco, CA Nov 3-8, 2013.
39. PA Garcia, CB Arena, JH Rossmiesl Jr, **RV Davalos**. Biophysical Effects of Pulsed Electric Fields in the Brain. BMES Annual Meeting, Seattle, WA, Sep 25-28, 2013.
40. A Salmanzadeh, ES Elvington, M Bonakdar, PC Roberts, EM Schmelz, **RV Davalos**. Sphingolipid metabolites affect dielectrophoretic signature of syngeneic murine ovarian cancer cells. BMES Annual Meeting, Seattle, WA, Sep 25-28, 2013.
41. M Bonakdar, PA Garcia, **RV Davalos**. Blood-Brain Barrier on chip, Drug delivery enhancement by electroporation. BMES Annual Meeting, Seattle, WA, Sep 25-28, 2013.
42. LM Reese, P Garcia, **R Davalos**, P Shen, G Mishra, C Williams, L Bickford. Additive manufacture of minimally-invasive medical devices for pancreatic cancer treatment. BMES Annual Meeting, Seattle, WA, Sep 25-28, 2013.
43. MB Sano, CB Arena, PA Garcia, JM Cissell, JL Robertson, **RV Davalos**. Clinical investigation of high frequency irreversible electroporation for skin cancers. BMES Annual Meeting, Seattle, WA, Sep 25-28, 2013.
44. P Kyle, L Anders, J Cemazar, C Roberts, E Schmelz, **R Davalos**. The use of electrokinetic phenomena to characterize malignant cells. BMES Annual Meeting, Seattle, WA, Sep 25-28, 2013.
45. A Salmanzadeh, L Romero, SD Cramer, **RV Davalos (invited speaker)**. Enrichment of cancer stem cell populations based on their dielectrophoretic characteristics. MSB 2013, 29<sup>th</sup> International Symposium on MicroScale Bioseparations, Charlottesville, VA, Mar 10-14, 2013.
46. A Rolong, P Gatenholm, K Rodriguez, **RV Davalos (Invited speaker)**. Electrical manipulation of bacteria to control nanocellulose architecture for biomedical applications, CELL: Division of Cellulose and Renewable Materials - 1st International Symposium on Bacterial Nanocellulose, 245th ACS Annual Meeting, New Orleans, LA, Apr 7-11, 2013.

47. PA Garcia, RV Davalos (**invited**). Clinical progress in the use of irreversible electroporation for cancer therapy. BioEM 2013, Jun 10-14, Thessaloniki, Greece, 2013.
48. A Salmanzadeh, E Savage (speaker), PC Roberts, EM Schmelz, **RV Davalos (invited)**. Effects of non-toxic sphingolipid metabolites on ovarian cancer cells' dielectrophoretic characteristics using a microfluidic platform. Advances in Microfluidics and Nanofluidics 2013 conference (Special Session on Dielectrophoresis), University of Notre Dame, IN, May 24-26, 2013
49. A Salmanzadeh, L Romero, S Cramer, **RV Davalos (Keynote speaker)**. Isolation of Cancer Stem Cells (CSCs) based on their dielectrophoretic signature. 19th international Symposium on Electro- and Liquid Phase-separation Techniques (ITP 2012), Baltimore, MD, USA, Sep 30 – Oct 3, 2012.
50. MB Sano, MR DeWitt, CB Arena, **RV Davalos**. Irreversible electroporation using bursts of sub-microsecond pulses. BMES Annual Meeting, Atlanta, GA, Oct 24-27, 2012.
51. HJ Cho, J Aviles, CB Arena, S Dong, M Roman, **RV Davalos**, YW Lee. Effects of pulsed electric fields on brain microvascular endothelial cell monolayers. BMES Annual Meeting, Atlanta, GA, Oct 24-27, 2012.
52. CB Arena, CS Szot, PA Garcia, MN Rylander, **RV Davalos**. Development of tissue engineered tumors for treatment planning in electroporation-based therapies. BMES Annual Meeting, Atlanta, GA, Oct 24-27, 2012.
53. KR Colacino, A Callo, C Arena, S Dong, M Roman, **R Davalos**, Y Lee. Synergistically enhanced cytotoxic effect on cancer cells by irreversible electroporation and targeted cellulose nanocrystals. BMES Annual Meeting, Atlanta, GA, Oct 24-27, 2012.
54. A Salmanzadeh, M Bonakdar, MB Sano, L Romero, MA Stremmler, SD Cramer, **RV Davalos**. Investigating the Dielectrophoretic properties of human primary prostate cancer cells. BMES Annual Meeting, Atlanta, GA, Oct 24-27, 2012.
55. PA Garcia, CB Arena, CS Szot, **RV Davalos**. Electric field modeling in a 3D tissue engineered tumor treated with irreversible electroporation. BMES Annual Meeting, Atlanta, GA, Oct 24-27, 2012.
56. **RV Davalos (invited speaker)**. Recent advances in the use of irreversible electroporation for the treatment of brain cancer. *Gordon Research Conference on Bioelectrochemistry*, Lucca, Italy, July 1-6, 2012.
57. R Gallo, MB Sano, **RV Davalos**, BH Lapizco-Encinas. Joule heating effects on the dielectrophoretic force for iDEP devices. AIChE 2012 Annual Meeting, Oct 28-Nov 2, 2012 Pittsburgh, PA
58. A Salmanzadeh, M Bonakdar, MB Sano, L Romero, **RV Davalos**, SD Cramer. Investigating the electrical properties of prostate cancer cell lines using contactless dielectrophoresis. AIChE 2012 Annual Meeting, Oct 28-Nov 2, 2012 Pittsburgh, PA (**Poster Award**)

59. A Salmanzadeh, E Savage, MB Sano, MA Stremler, PC Roberts, EM Schmelz, **RV Davalos**. Dielectrophoresis for characterizing electrical properties of mouse ovarian surface epithelial (MOSE) cells. AIChE 2012 Annual Meeting, Oct 28-Nov 2, 2012 Pittsburg, PA
60. E Savage, MB Sano, A Salmanzadeh, EM Schmelz, **RV Davalos**. Multi-layer contactless dielectrophoresis using thin polyimide films, *AIChE 2012 Annual Meeting*, Oct 28-Nov 2, 2012 Pittsburg, PA.
61. MB Sano, **RV Davalos**. Investigation of the thermal and electrical impact of electric fields on mammalian cells manipulated using contactless dielectrophoresis. AIChE 2012 Annual Meeting, Oct 28-Nov 2, 2012 Pittsburg, PA
62. A Salmanzadeh, H Pendar, JJ Socha, MA Stremler, **RV Davalos**. Studying flow control mechanisms in an insect respiratory system. BMES Annual Meeting, Hartford, CT, Oct 12-15, 2011.
63. PA Garcia, RE Neal II, CB Arena, **RV Davalos**. Dynamic conductivity changes due to irreversible electroporation for treatment planning. BMES Annual Meeting, Hartford, CT, Oct 12-15, 2011.
64. RE Neal, PA Garcia, CB Arena, J Robertson, **RV Davalos**. Experimental determination of electroporation conductivity change for cancer treatment planning. BMES Annual Meeting, Hartford, CT, Oct 12-15, 2011.
65. CB Arena, MB Sano, MN Rylander, JH Rossmeisl Jr, **RV Davalos**. Pilot study on irreversible electroporation with high frequency pulse trains. BMES Annual Meeting, Hartford, CT, Oct 12-15, 2011.
66. AD Rojas, E Schmelz, **RV Davalos**. Isolation of breast cancer cells based on metastatic phase using contactless dielectrophoresis. BMES Annual Meeting, Hartford, CT, Oct 12-15, 2011.
67. MB Sano, **RV Davalos**. Development of a three-dimensional contactless dielectrophoresis platform. BMES Annual Meeting, Hartford, CT, Oct 12-15, 2011.
68. A Salmanzadeh, H Kittur, RC Gallo-Villanueva, MB Sano, BH Lapizco-Encinas, MA Stremler, EM Schmelz, **R Davalos**. Dielectrophoretic separation of mouse ovarian surface epithelium cells. AIChE Annual Meeting, Minneapolis, MN, Oct 16-21, 2011.
69. A Salmanzadeh, M Sano, H Shafiee, MA Stremler, **RV Davalos**. Isolating cancer cells from blood using contactless dielectrophoresis (cDEP). AIChE Annual Meeting, Minneapolis, MN, Oct 16-21, 2011.
70. MB Sano, RC Gallo-Villanueva, H Kittur, **R Davalos**. Separation of particles using contactless dielectrophoresis and electrokinetic flow. AIChE Annual Meeting, Minneapolis, MN, Oct 16-21, 2011.
71. RC Gallo-Villanueva, VH Perez-Gonzalez, **R Davalos**, BH Lapizco-Encinas. Dielectrophoretic separation of particles in a multi-section device. AIChE Annual Meeting, Minneapolis, MN, Oct 16-21, 2011.

72. MB Sano, **R Davalos**. Design, development, and analysis of a multilayer contactless dielectrophoresis device to separate cancer cells from blood. AIChE Annual Meeting, Minneapolis, MN, Oct 16-21, 2011.
73. A Salmanzadeh, H Shafiee, M Sano, **R Davalos**. Mixing enhancement in microfluidic devices using contactless dielectrophoresis (cDEP). AIChE Annual Meeting (**Best poster**), Minneapolis, MN, Oct 16-21, 2011.
74. AD Rojas, **R Davalos**. Dielectrophoretic separation of cancer cells based on metastatic stage. AIChE Annual Meeting, Minneapolis, MN, Oct 16-21, 2011.
75. **R Davalos (invited)**, M Sano, A Rojas. Isolation of circulating tumor cells from dilute whole blood using contactless dielectrophoresis. 2011 38th Federation of Analytical Chemistry and Spectroscopy Societies (FACSS) Conference, Reno, NV, Oct 2-6, 2011.
76. BH Lapizco-Encinas, RG Villanueva, H Moncada-Hernandez, VP Gonzalez, JL Baylon-Cariel, **R Davalos (invited)**, Development of insulator-based dielectrophoretic systems for handling bioparticles, 2011 38th Federation of Analytical Chemistry and Spectroscopy Societies (FACSS) Conference, Reno, NV, Oct 2-6, 2011.
77. M Sano, H Shafiee, **RV Davalos**. Entrapment of human leukemia cells from blood using contactless dielectrophoresis. AIChE Annual Meeting, Salt Lake City, UT, Nov 7-12, 2010.
78. RE Neal II, PA Garcia, JH Rossmesl Jr, **RV Davalos**. Irreversible electroporation treatment planning techniques. BMES Annual Meeting, Austin, TX, Oct 6-9, 2010.
79. PA Garcia, JH Rossmesl Jr, **RV Davalos**. Treatment planning of irreversible electroporation for intracranial disorders. BMES Annual Meeting, Austin, TX, Oct 6-9, 2010.
80. MB Sano, E Henslee, H Shafiee, **RV Davalos**. Isolation of Circulating Cancer Cells From Dilute Whole Blood Samples Using Contactless Dielectrophoresis. BMES Annual Meeting, Austin, TX, Oct 6-9, 2010.
81. A Salmanzadeh-Dozdabi, H Shafiee, **RV Davalos**, MA Stremmler. Mixing Enhancement in Microfluidic Devices Utilizing Contactless Dielectrophoresis (cDEP). BMES Conference, Austin, TX, Oct 6-9, 2010.
82. PA Garcia, J Rossmesl Jr, T Ellis, J Robertson, **RV Davalos (invited)**. Non-thermal irreversible electroporation (N-TIRE) for intracranial malignant glioma in a canine patient. Electric Fields Effects in Tumors: Biophysical Foundations and Clinical Experiences. IEEE Engineering in Medicine and Biology Society, Buenos Aires, Argentina, Aug 31- Sep 5, 2010.
83. PA Garcia, **RV Davalos**. Cumulative visualization of a multiple-electrode irreversible electroporation treatment. Gordon Research Conference: Bioelectrochemistry, University of New England, MA, Jul 11-16, 2010.
84. PA Garcia, J Rossmesl Jr, T Ellis, J Robertson, **RV Davalos (invited)**. Non-thermal irreversible electroporation for intracranial disorders. 7th International Bioelectrics Symposium, Norfolk, VA, Jun 24-26, 2010.

85. **RV Davalos (invited)**, AD Rojas, MB Sano, P Gatenholm. Biofabrication with electrical control to create biocompatible materials. 239th ACS National Meeting and Exposition, San Francisco, CA, Mar 21-25, 2010.
86. AD Rojas, MB Sano, P Gatenholm, **RV Davalos**. Electrokinetic biofabrication of microbial cellulose-metal composites. 239th ACS National Meeting and Exposition, San Francisco, CA, Mar 21-25, 2010.
87. RE Neal II, R Singh, S Torti, **RV Davalos**. Tumor treatment using irreversible electroporation with a minimally invasive single needle electrode. Electroporation Based Technologies and Treatments, Ljubljana, Nov 16-21, pp 149, 2009.
88. PA Garcia, JH Rossmeisl Jr, JL Robertson, **RV Davalos**. Intracranial non-thermal irreversible electroporation: Electrical conductivity analysis. Electroporation Based Technologies and Treatments, Ljubljana, Nov 16-21, pp 151, 2009.
89. MB Sano, A Rojas, P Gatenholm, **RV Davalos**. Direct control of biological assembly using electrokinetic forces. AIChE Annual Meeting, Nashville, TN, Nov 8-13, p 72b, 2009.
90. **RV Davalos (invited)**, H Shafiee, JL Caldwell, MB Sano. Dielectrophoretic cell and microparticle manipulation without electrode-sample contact. 2009 36th Federation of Analytical Chemistry and Spectroscopy Societies (FACSS) Conference, Louisville, KY, Oct 18-22, 2009.
91. RE Neal II, R Singh, S Torti, **RV Davalos**. The effect of heterogeneous tissue on electric field distribution when planning irreversible electroporation protocols. Humboldt Kolleg on Nano-Bio: The Next Transformative Convergence, Roanoke, VA, Oct 14-15, 2009.
92. RE Neal II, **RV Davalos**. The effect of heterogeneous tissue on electric field distribution when planning irreversible electroporation protocols. 2009 BMES Annual Meeting, Pittsburgh, PA, Oct 7-10, 2009.
93. MB Sano, **RV Davalos**. Contamination free cell identification and sorting using capacitive dielectrophoresis. 2009 BMES Annual Meeting, Pittsburgh, PA, Oct 7-10, 2009.
94. H Shafiee, JL Caldwell, MB Sano, **RV Davalos**. Contamination free cell identification and sorting using capacitive dielectrophoresis. 2009 BMES Annual Meeting, Pittsburgh, PA, Oct 7-10, 2009.
95. **RV Davalos (invited)**. Irreversible electroporation technology. International Meeting of the Society for CNS Interstitial Delivery of Therapeutics (SCIDOT), Cleveland Clinic, Cleveland, OH, Sep 11-12, 2009.
96. H Shafiee, JL Caldwell, MB Sano, **RV Davalos**. Sample enrichment and cell separation using contactless dielectrophoresis. GEM4 Summer School on Cellular and Molecular Mechanics, Urbana Champaign, IL, Jun 8-19, 2009.
97. **RV Davalos (invited plenary speaker)**. Irreversible electroporation for cancer treatment. 45th Annual Meeting of the Society for Cryobiology, Charlotte, NC, Jul 20-23, Cryobiology vol 57(3), pp 318, 2008.

98. **RV Davalos (invited)**, TI Wallow, AM Morales, K Krafcik, BA Simmons. The application of insulator-based dielectrophoresis polymer microfluidic devices as particle separators and the impact of dynamic surface coatings on performance. ASABE – An International Conference on Biological Sensors: Critical Technologies for Future Biosystems, Minneapolis, MN, Jun 15-17, 2007.
99. BA Simmons, **RV Davalos**, AM Morales, K Krafcik, P Ponce, K Luongo. The application of insulator-based dielectrophoresis polymer microfluidic devices as particle separators and the impact of dynamic surface coatings on performance. 2007 MRS Spring Meeting, San Francisco, CA, Apr 9-13, 2007.
100. AM Morales, BA Simmons, **RV Davalos**, LA Domeier, K Krafcik, B Mosier. Injection molded microfluidic devices for homeland security applications. Sensor Workshop 2007, Livermore, CA, Apr 3-4, 2007.
101. ES Lee, SS Bachelor, ZQ Iqbal, M Khine, **RV Davalos**. Knockdown of macrophage's signaling pathways using on-chip single cell micro-electroporation. Gordon Research Conference: Bioelectrochemistry, Aussios, France, Sep 3-8, 2006.
102. **RV Davalos**, GJ McGraw, Y Fintschenko, EB Cummings, BA Simmons. Insulator-based dielectrophoretic polymer microfluidic devices for particle separation and concentration. Gordon Research Conference: Bioelectrochemistry, Aussios, France, Sep 3-8, 2006.
103. **RV Davalos**, GJ McGraw, P Ponce, P Sabounchi, T Wallow, AM Morales, K Krafcik, GJ Fiechtner, Y Fintschenko, EB Cummings, BA Simmons. Insulator-based dielectrophoretic polymer microfluidic devices for particle separation and enrichment. 2006 Scientific Conference on Obscuration and Aerosol Research, Battelle Eastern Science and Technology Center, Aberdeen, Maryland, Jun 28-29, 2006.
104. **RV Davalos (invited)**, ES Lee, D Robinson, JL Rognlien, CK Harnett, BA Simmons, CRB Ellis. A microfluidic platform for drug screening in a biologically relevant nanoenvironment. Nanotechnology: Commercialization of Drug Discovery, Delivery and Diagnostics, Strategic Research Institute, Cambridge, MA, Oct 3-4, 2005.
105. BA Simmons, Y Fintschenko, EB Cummings, **R Davalos**, GJ Fiechtner, GJ McGraw. Polymeric substrates for high-throughput separation and concentration of biological agents. Abstracts of Papers, 230th ACS National Meeting, Washington, DC, Aug 28-Sep 1, 2005.
106. EB Cummings (invited), BA Simmons, **RV Davalos**, GJ McGraw, BH Lapizco-Encinas, Y Fintschenko. Fast and selective concentration of pathogens by insulator-based dielectrophoresis. Abstracts of Papers, 230th ACS National Meeting, Washington, DC, Aug 28-Sep 1, 2005.
107. GJ McGraw, **RV Davalos**, JD Brazzle, J Hachman, M Hunter, J Chames, GJ Fiechtner, EB Cummings, Y Fintschenko, BA Simmons. Polymeric insulator-based dielectrophoresis (iDEP) for the monitoring of water-borne pathogens. ASPE, Columbus, OH, Apr 18-19, 2005.



108. GJ McGraw, **RV Davalos**, EB Cummings, Y Fintschenko, GJ Fiechtner, BA Simmons. Scalability of insulator-based dielectrophoresis (iDEP) and its utilization as a high-throughput particle concentrator. *Polymer Preprints - ACS Division of Polymer Chemistry*, vol 46(2), pp 1208, 2005.
109. Y Fintschenko, BH Lapizco-Encinas, EB Cummings, **RV Davalos**, BA Simmons. Microfluidic approaches to sample concentration. Joint International Meeting - 206th Meeting of the Electrochemical Society/2004 Fall Meeting of the Electrochemical Society of Japan, Honolulu, HI, Oct 3-8, pp 2475, 2004.
110. PF Caton, GS Chirica, BL Haroldsen, SA Pizarro, **RV Davalos**, BA Simmons, EB Cummings. Rapid automated sample preparation for biological sensors and analysis systems. *Sample Processing Workshop*, Williamsburg, VA, Sep 1, 2004.
111. **RV Davalos**, DM Otten, LM Mir, B Rubinsky. Molecular medical imaging through electrical impedance tomography of electroporation. *Gordon Research Conference: Bioelectrochemistry*, New London, CT, Jul 25-30, 2004.
112. **RV Davalos**, B Rubinsky. Real-time evaluation of cryosurgery through electrical impedance tomography. *XVIIth International Symposium on Bioelectrochemistry and Bioenergetics*, Florence, Italy, Jun 19-24, 2003.

#### **SELECTED PATENTS (22 ISSUED)**

1. **RV Davalos**, PA Garcia, JH Rossmeisl. Immunotherapeutic methods using irreversible electroporation. US Application 15/881,414 Filed 1/26/18 To be Issued.
2. **RV Davalos**, B Rubinsky. Tissue ablation with irreversible electroporation. US Application 14/639,632 Filed 12/24/04 Issued 11/6/18 Patent No 10,117,701.
3. **RV Davalos**, T Douglas, J Cemazar. Contactless dielectrophoresis device with cell-size diameter insulating pillars. US Application 62/278,485. Filed: 1/14/16 Pending.
4. **RV Davalos**, H Shafiee, MB Sano, JL Caldwell. Devices and methods for contactless dielectrophoresis for cell or particle manipulation. US Application 14/636,646 Filed: 3/3/15, Issued 9/18/18 Patent No 10,078,066.
5. MB Sano, **RV Davalos**, JL Robertson, PA Garcia, RE Neal. Irreversible Electroporation using tissue vasculature to treat aberrant masses or create tissue scaffolds. US Application 13/985,175 Filed 11/23/11 Issued 1/16/18 Patent No 9,867,652.
6. **RV Davalos**. Irreversible electroporation for tissue scaffolds. Provisional Application 61/125,840. Provisional Filed: 4/29/08, US Application 12/432,295 Issued 3/21/17 Patent No 9,598,691.
7. RE Neal, PA Garcia, **RV Davalos**, J Rossmeisl, JL Robertson. Treatment planning for electroporation-based therapies. Filed 10/18/10 US Application 12/906,923 Issued 12/1/15 Patent No 9,198,733.
8. **RV Davalos**, PA Garcia, JH Rossmeisl. Methods of blood-brain barrier disruption using electrical energy. US Application 15/424,335 Filed 2/13/17 To be Issued.

9. **RV Davalos**, M Bonakdar, E Latouche, RL Mahajan, JL Robertson, CB Arena, MB Sano. Devices, system, and methods for real-time monitoring of electrophysical effects during tissue treatment. US Application 15/536,333. PCT/US2015/065792. Provisional Filed: 12/15/14, Filed 12/15/15, Pending.
10. PA Garcia, **RV Davalos**. System and method for estimating a treatment volume for administering electrical energy based therapies. US Application 14/012,832 Filed 8/28/13 Issued 3/15/16 Patent No 9,283,051.
11. **RV Davalos**, B Rubinsky. Tissue ablation with irreversible electroporation. US Application 10/571,162 Filed 12/24/04 Issued 4/14/15 Patent No 9,005,189.
12. **RV Davalos**, CB Arena, JL Caldwell. Integration of very short electric pulses for minimally to noninvasive electroporation. US Application 12/757,901 Filed 4/9/10 Issued 1/6/15 Patent No 8,926,606.
13. CB Arena, **RV Davalos**, MB Sano. High frequency electroporation for cancer therapy. US Application 13/332,133 PCT/US2011/066239. Filed 12/20/11 To be Issued.
14. MB Sano, **RV Davalos**, P Gatenholm. Advanced nanomaterials and a technology platform for biofabricating them. US Application 61/166,508 Provisional Filed: 4/3/09 Pending.
15. MB Sano, **RV Davalos**, JL Robertson, RE Neal, PA Garcia. Irreversible electroporation using tissue vasculature to treat aberrant cell masses or create tissue scaffolds. US Application PCT/US2011/062067. Filed 11/23/11 Issued 1/16/18 Patent No 9,867,652.
16. **RV Davalos**, PA Garcia, JL Robertson, JH Rossmeisl, RE Neal. Irreversible electroporation to treat aberrant cell masses. US Application 12/491,151 Filed 6/24/09 Issued 3/28/15 Patent No 8,992,517.
17. MB Sano, JL Caldwell, **RV Davalos**. Devices and methods for contactless dielectrophoresis for cell or particle manipulation, PCT Application No.: PCT/US2011/055381, Filed 10/7/11 Pending.
18. P Gatenholm, H Backdahl, TJ Tzavaras, **RV Davalos**, MB Sano. Three dimensional bioprinting of biosynthetic cellulose (BC) implants and scaffolds for tissue engineering. US Application 61/246,210. PCT/US2010/050460. Provisional Filed: 9/28/09, Filed 9/28/10 US Application 13/498,657 Filed 3/28/12 Issued 4/8/14 Patent No 8,691,974.
19. **RV Davalos**, H Shafiee, MB Sano, JL Caldwell. Devices and methods for contactless dielectrophoresis for cell or particle manipulation. US Application 61/158,553 Filed 3/9/10, Issued 3/3/15 Patent No 8,968,542.
20. **RV Davalos**, MN Rylander, CB Arena. Irreversible electroporation using nanoparticles. US Application 12/609,779. PCT/US2009/062806. Provisional Filed: 3/5/09, Filed: 10/30/09, Issued 6/18/13 Patent No 8,465,484.
21. **RV Davalos**, MN Rylander, CB Arena, YW Lee. Irreversible electroporation using nanoparticles. US Application 12/609,779. PCT/US2009/062806. Filed 10/30/09 Issued 8/26/14 Patent No 8,814,860.

22. P Gatenholm, **RV Davalos**, MB Sano. Electromagnetic controlled bio-fabrication for manufacturing biocompatible materials. US Application 61/131,017. Provisional Filed 6/4/08 Pending.
23. **RV Davalos**, CRB Ellis. Vesicle-based method and apparatus for collecting, manipulating and chemically processing trace macromolecular species. US Application 10/914,991 Filed 8/9/04 Issued 8/17/10 Patent No 7,776,357.
24. **RV Davalos**, BA Simmons, RW Crocker, EB Cummings. Insulator-based DEP with impedance measurements for analyte detection. US Application 11/556,685. Filed: 11/3/06 Issued 3/16/10 Patent No 7,678,256.
25. **RV Davalos**, B Rubinsky. Tissue ablation with irreversible electroporation. US Application 13/237,199. Filed: 9/20/11, Issued 10/9/12 Patent No 8,282,631.
26. **RV Davalos**, B Rubinsky. Tissue ablation with irreversible electroporation. US Application 10/571,162. Filed: 12/24/04 Issued 11/1/11 Patent No 8,048,067.
27. **RV Davalos**, CRB Ellis. Vesicle-based method and apparatus for collecting, manipulating and chemically processing trace macromolecular species. US Application 10/914,991. Filed: 8/9/04 Issued 3/4/08 Patent No 7,338,796.

#### **GRADUATE STUDENTS AND SELECTED AWARDS**

1. **Paulo Garcia** (PhD BME, Fall 2010)  
 Research Scientist, MIT, 16 - present  
 Post-doc, Harvard-MIT, Prof. Cullen Buie, 13 - 15  
 Virginia Tech KnowledgeWorks awards Tech Transfer Challenge prize, 12  
 Paul E. Torgersen Student Research Excellence Award: Best PhD Presentation, 10  
 26th Annual Research Symposium and Exposition Oral Competition: Second Place, 10  
 SBES 9th Annual Graduate Student Research Symposium: Best Presentation, 10  
 IEEE EMBS Student Paper Competition: **North American Finalist**, 09
2. **Hadi Shafiee** (PhD ESM, Fall 2010)  
 Assistant Professor, Harvard Medical School  
 Post-doctoral, Harvard-MIT, Prof. Utkan Demirci, 11 - 14  
 F32 NIH Postdoctoral Fellowship, 12  
 Paul E. Torgersen Student Research Excellence Award: PhD Finalist, 10  
 26th Annual Research Symposium and Exposition Poster Competition: First Place, 10  
 Liviu Librescu Memorial Scholarship, 09  
 GEM<sup>4</sup> - Cellular and Molecular Mechanics: U Illinois – Urbana Champaign: Best Poster, 09
3. **John Caldwell** (MS EECS, Spring 2010)  
 Texas Instruments National Design Competition: First Place, 09  
 Engineer, Leadership Development Program, Texas Instruments, 10-present
4. **Erin Henslee** (MS BME, Spring 2010)  
 Assistant Professor, BME, Wake Forest University, 2018 - present  
 Whitaker International Foundation Fellowship, 10-11  
 Ph.D. University of Surrey, Biomedical Engineering  
 Advisor: Prof. Michael P. Hughes
5. **Mike Sano** (MS ESM, Spring 2009, PhD SBES, Summer 2012)  
 Assistant Professor, UNC – NC State, 17 - present

- Post-doc, Stanford University, 14 – 17  
DoD post-doctoral Fellowship, 15  
Virginia Tech KnowledgeWorks awards Tech Transfer Challenge prize, 12  
CEO, VoltMed LLC, Blacksburg, VA, 12-present  
Paul E. Torgersen Graduate Student Research Excellence Award, 09
6. **Andrea Rojas** (MS MSE, Spring 2012)  
Initiative for Maximizing Student Diversity (IMSD) NIH Fellowship, 10-11  
Product Development, Terumo Medical Corporation, Elkton, MD, 16-present  
Engineer, W.L. Gore & Associates, Elkton, MD, 12-15
  7. **Robert Neal II** (PhD SBES, Fall 2011)  
Virginia Tech Outstanding Dissertation Award, 12  
Whitaker International Foundation Fellowship, 11  
Paul E. Torgersen Student Research Excellence Award: Best Poster, 11  
Post-doctoral, The Alfred Hospital, Melbourne Australia, Dr. Ken Thomson
  8. **Elizabeth Savage** (MS BME, Spring 2013)  
MultiSTEPS IGEP Fellowship, 11-12  
Interdisciplinary Research Symposium Poster Award, 12  
Spotlight Speaker Chair, Interdisciplinary Research Honors Society, 12-13  
Consultant, Poly-Med, Inc. in Anderson, SC 13-present
  9. **Chris Arena** (PhD SBES, Spring 2013)  
Collegiate Assistant Professor, BME, Virginia Tech, 17 – present  
Assistant Professor, Elon University, 15 – 17  
Post-doctoral Fellow, Biomedical Engineering, University of North Carolina, 13 – 15  
Richard Skalak Award, ASME Journal of Biomechanical Engineering, 14  
College of Engineering Graduate Student of the Year, 13  
1st Place Podium Ph.D. Student Paper Competition, *ASME Summer Bioengineering Conference*, 12.  
1st Place Virginia Tech KnowledgeWorks Tech Transfer Challenge, 12  
Virginia Tech Graduate Student Assembly Travel Fund Program Award, 12  
NSF John Chato Memorial Symposium Travel Award, 11  
3rd Place Podium Ph.D. Student Paper Competition, *ASME Summer Bioengineering Conference*, 11
  10. **Alireza Salmanzadeh** (PhD ESM, Spring 2013)  
Senior Engineer, BD Biosciences, San Jose, 16-present  
Post-doc, University of California, Berkeley (Luke Lee), 14-15  
Paul E. Torgersen Student Research Excellence Award: Best PhD Presentation, 13  
Amir Chand and Dewki Bai Batra Scholarship, 13  
Virginia Tech Graduate Man of the Year, 12  
Outstanding Graduate Student Leader Award, 12  
American Electrophoresis Society: Poster Award, 12  
American Electrophoresis Society: Poster Award, 11  
Virginia Tech Cancer Symposium: Co-Chair, 11  
Manual Stein Scholarship, 10
  11. **Eduardo Latouche** (MS ESM, Spring 2016)  
Paul E. Torgersen Student Research Excellence Award: Best MS Presentation, 15  
BMES-FDA Frontiers in Medical Devices Conference: First runner up podium, 16  
Senior Engineer, VoltMed, Blacksburg, VA 16 – present
  12. **Matt DeWitt** (PhD SBES (Co-advisor), Summer 2016)  
Senior R&D Engineer, Abbott, Charlottesville, VA, 17 -Present  
Cunningham Doctoral Fellowship: 11-16

- ASME Heat Transfer Conference: Invited Panelist on Thermal Medicine, 14  
National Science Foundation (NSF) Graduate Research Fellowship(GRFP), 12-15
13. **Suyashree Bhonsle** (PhD ECE, Fall 2017)  
Electrical Engineer II, Abbott (St Jude Medical Division), Sunnyvale, CA, 18 - Present  
David W. Francis and Lillian Francis Research Fellowship, 16-17  
Ellen E. Wade Graduate Studies Fellowship, 14
  14. **Mohammad Bonakdar** (PhD ME, Spring 2016)  
Senior Engineer, Amgen, Cambridge MA, 18 - present  
Paul E. Torgersen Student Research Excellence Award: Best PhD Presentation, 16
  15. **Elisa Wasson** (PhD ME, Fall 2018)  
Gold Poster Presentation, VT-GSA Symposium 18  
NanoEngineering for Medicine and Biology Conference (NEMB), Honorable Mention (Poster), 15  
Lawrence Livermore Graduate Scholar, 2018  
Lawrence Livermore Student Intern Symposium, 1st Place (Poster), 18  
Walts Fellowship, 17-18  
National Science Foundation (NSF) Fellowship, 13-18  
GEM University Fellow, 13-18  
New Horizon Graduate Scholar, 13-18  
ICTAS Doctoral Scholarship, 13-15
  16. **Alexandra Hyler** (PhD BME (Co-advisor), Spring 2018)  
Lead Research Scientist, CytoRecovery, Inc, Blacksburg, VA, 18-Present  
Virginia Tech Graduate Student of the Year, 18  
1st Place Talk Award, SBES Symposium, VT-WFU, 18  
Gold Agent of Change Oral Presentation Award, GSA Symposium, 18  
VT College of Engineering Diversity Fellow, 16-17  
Fulbright Fellowship to Denmark, 15-16  
Gold Poster Award, GSA Symposium, 15  
NSF IGERT MultiSTEPS Program Trainee, 13-15
  17. **Andrea Rolong** (PhD BME, Spring 2018)  
MultiSTEPS NSF IGERT Traineeship, 13-15
  18. **Dan Sweeney** (PhD BME, Spring 2018)  
Postdoctoral Research Associate, UNC Eshelman School of Pharmacy, Chapel Hill, NC 18-Present  
MultiSTEPS NSF IGERT Traineeship, 13-15
  19. **Melvin Lorenzo** (PhD BME, Spring 2020)  
Pratt Fellow, 16  
Cunningham Fellowship, 16-20
  20. **Temple Douglas** (PhD BME, Spring 2019)  
Herbert A Pohl Student Presentation Award, 16  
MultiSTEPS NSF IGERT Traineeship, 14-16  
New Horizons Graduate Scholar, 16-18
  21. **Adwoa Baah-Dwomoo** (PhD MSE (Co-advisor), Spring 2018)  
Lead Engineer, W.L. Gore & Associates, Newark, DE, 18 - present  
MultiSTEPS NSF IGERT Traineeship, 12-15  
Edward A. Bouchet Graduate Honor Society Inductee, 18  
Black Female Graduate Student of the Year, 18  
Outstanding Student Leader of the Year, 18
  22. **Timothy O'Brien** (PhD BME, Spring 2019)  
PhD Paper Competition Finalist, World Congress of Biomechanics, 18

Paul E. Torgersen Student Research Excellence Award: Best MS Poster Presentation, 15  
Paul E. Torgersen Student Research Excellence Award: 2<sup>nd</sup> Place Oral Presentation, 14

#### **INTERNATIONAL DOCTORAL STUDENT EXCHANGES**

1. Roberto Gallo-Villaneuva (2011, Advisor: Blanca Lapizco-Encinas) Tecnológico de Monterrey, Mexico
2. Bor Kos PhD (2014, Advisor: Damijan Miklavcic) University of Ljubljana, Slovenia
3. Tomi Murovec PhD (2014, Advisor: Christian Brosseau) Universite de Brest, Brest, France
4. Claudia Irene Trainito PhD (2015, Advisor: Bruno Le Pioufle) Ecole Normale Supérieure de Cachan
5. Carlos Romero MS (2016, Advisor: Ruben Diaz) University of Puerto Rico at Mayaguez, United States
6. Yajun Zhao PhD (2016, Advisor: Chenguo Yao) Chongqing University, China
7. Borja Mercadal PhD (2018, Advisor: Antoni Ivorra) Universitat Pompeu Fabra, Barcelona, Spain
8. Adriana Leticia Vera (2018, Advisor: Arturo Hernandez) Instituto Politécnico Nacional, Mexico

#### **INTERNATIONAL DISSERTATION COMMITTEE**

1. Dennis Pavilha (2012, Advisor, Damijan Miklavcic), University of Ljubljana, Slovenia
2. Mette Linnert Jensen (2013, Advisor: Julie Gehl) Copenhagen University Hospital Herlev, Denmark
3. Giacomo Bruno (2017, Advisors: Demarchi and Grattoni) Houston Methodist & Politecnico di Torino
4. Quim Castellei (2017, Advisors: A. Ivorra, B. Bijens) Universitat Pompeu Fabra, Barcelona (Chair)