



RAM V. DEVIREDDY, Ph.D.

DESOTO PARISH CHAPTER UNIVERSITY ALUMNI PROFESSOR
LOUISIANA LAND & EXPLORATION COMPANY ENDOWED CHAIR PROFESSOR
MECHANICAL ENGINEERING, LOUISIANA STATE UNIVERSITY

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EDUCATION

Ph.D. University of Minnesota - Minneapolis, MN

Department of Mechanical Engineering - 1999

Dissertation Title: Measurement of Freezing Processes in Biological Systems

M.S. University of Colorado - Boulder, CO

Department of Mechanical Engineering – 1995

Major: Thermal-Fluid Sciences

B.S. University of Madras - INDIA

Mechanical Engineering - 1993

RESEARCH AND TEACHING INTERESTS

Bitransport, bioheat transfer, thermodynamics, cryopreservation of cells and tissues, tissue engineering, reproductive cell cryobiology, thermo-electric materials, Bio-MEMs, chemical diffusion, stem cells.

PROFESSIONAL APPOINTMENTS

Louisiana State University – Baton Rouge, LA

Professor: Department of Mechanical and Industrial Engineering, 2013 – present

Associate Professor: Department of Mechanical Engineering, 2007 – 2013

Assistant Professor: Department of Mechanical Engineering, 2001 – 2007

Yokohama National University – Yokohama, Japan

Visiting Fellow: Department of Chemical Engineering Science, 02/16 – 03/16

Université Catholique de Louvain – Brussels, Belgium

Visiting Research Scientist: Faculté de Médecine, 05/09 – 08/09

University of Minnesota – Minneapolis, MN

Post-doctoral Researcher: Department of Chemical Engineering, 06/00 – 08/01

Post-doctoral Researcher: Medical School, 01/00 – 08/01

COURSES TAUGHT

Undergraduate Courses: Thermodynamics, Fluid Mechanics, Heat Transfer, Thermal Science Laboratory, Thermal Systems Laboratory, Advanced Engineering Thermodynamics.

Graduate Courses: Advanced Heat Transfer I (Conduction & Radiation), Advanced Heat Transfer II (Convection), Advanced Fluid Mechanics, Advanced Boundary Layer Theory.

New Courses Developed: Biological Fluid Flow & Heat Transfer, Biological Thermodynamics, Principles of Tissue Engineering.



SELECTED HONORS AND AWARDS

Undergraduate Teaching Award: LSU Tiger Athletic Foundation Teaching Award, 2016
JSPS Fellowship (¥1,000,000): Invited Fellow Japan Society for Promotion of Science, 2016
University Alumni Professorship: DeSoto Parish Chapter University Alumni Professor, 2015
Faculty Excellence Award: LSU Alumni Association Faculty Excellence Award, 2013
Best Paper Award: Cells, 2013
Dow Chemical Teaching Award: LSU Department of Mechanical Engineering, 2012
LSU Today: Featured Flagship Faculty, 2012
ASME Fellow: American Society of Mechanical Engineers, 01/05/2012
Endowed Chair: Louisiana Land & Exploration Company Endowed Chair in Mechanical Engineering, 2012
Back Cover Artwork: Journals of Materials Chemistry, 2011
Golden Screw Award: ASME student chapter most demanding professor, 2010, 2012, 2016
Cover Article: Tissue Engineering (Part C: Methods), 2010
Brains (back) to Brussels Fellowship (€10,000): Invited Research Scientist, 2009
Featured Researcher: FOREVER LSU Advertisement, 2008
NIH Workshop: Invited Participant “High Throughput Germplasm Cryopreservation”, 2007
Undergraduate Teaching Award: LSU Tiger Athletic Foundation Teaching Award, 2007
Ribbon Award: Materials Research Society (MRS) Fall Meeting, 2003
Whitaker Foundation: Biomedical Engineering Research Grant, 2003
Travel Grant for Emerging Faculty: Louisiana Board of Regents, 2002 & 2005
ASME Best Paper Award: ASME Journal of Heat Transfer, 2002
McBride Award: Mid-West Thermal Analysis Forum, 1999
Crystal Award: Society of Cryobiology, Best Student Paper, 1998
Doctoral Studies Fellowship: University of Minnesota, Minneapolis, 1995 – 1996
Graduate Fellowship: University of Colorado, Boulder, 1993 – 1994
Outstanding Graduating Student: University of Madras, India, 1993

SELECTED INVITED TALKS

Invited Seminar: Yokohama National University, Yokohama, Japan 2016
Invited Seminar: Kyushu University, Fukuoka, Japan 2016
Invited Talk: Royal Free Hospital, London, UK 2015
Invited Talk: King’s College Hospital, London, UK 2015
Invited Speaker: INDO-US Workshop on “Nano-Engineering in Medicine”, India 2014
Invited Seminar: Institut National la Recherche Agronomique, Paris, France 2014
Invited Seminar: Tulane University - New Orleans 2013
Invited Speaker: 3rd International Congress on Controversies in Cryopreservation of Stem cells, Reproductive cells, Tissue and Organs, Berlin, Germany 2013
Invited Speaker: 4th International Conference on Drug Discovery and Therapy, Dubai 2012
Invited Speaker: Bioprocessing Summit, Boston, 2011
Invited Speaker: International Stem Cell Summit, India 2008
Invited Seminar: University of California, Riverside, 2006
Invited Seminar: Clarkson University, Potsdam, 2005
Invited Seminar: RUTGERS – State University of New Jersey, New Brunswick, 2004



Invited Seminar: Audubon Center for Research in Endangered Species, New Orleans, 2004

Invited Speaker: NATO Advanced Study Institute on Low Temperature and Cryogenic Refrigeration, Izmir, Turkey 2002

Invited Seminar: University of New Orleans, New Orleans, USA 2002

Invited Seminar: Massachusetts General Hospital & Harvard Medical School, Boston, 1999

APPOINTMENTS AND ACTIVITIES

Member: American Society of Mechanical Engineers, 1998 – present

Member: Society of Cryobiology, 1998 – present

Member: Materials Research Society, 2003 – 2009

Member: American Association for Advancement of Science, 2002 – 2006

OUTREACH AND PROFESSIONAL SERVICE

Book Section Editor: Section on “Heat Transfer in Biology and Biological Systems” in the “Handbook of Thermal Science and Engineering” to be published by Springer.

Member: ASME BED Y.C. Fung Young Investigator Award Committee, 2016 – present

Technical Program Chair: ASME Summer Bioengineering Conference, 2013

Associate Editor: ASME Journal of Biomechanical Engineering, 2013 – present

Chair: ASME BED Biotransport Committee, 2010 – 2012

Chair: ASME HTD Heat and Mass Transfer in Biotechnology Committee, 2010 – 2013

Member: Technical Program Committee ASME Summer Bioengineering Conference, 2011 – 2012

Vice Chair: ASME BED Biotransport Committee, 2008 – 2010

Vice Chair: ASME HTD Heat and Mass Transfer in Biotechnology Committee, 2008 – 2010

Acting Liaison: ASME HTD K-17 committee and ASME BED Biofluids Committee, 2005 – 2007

Acting Liaison: ASME HTD K-17 committee and ASME BED Design & Rehabilitation Committee, 2005 – 2007

Editorial Board: Cryobiology: The International Journal of Low Temperature Medicine and Biology, 2007 – present

Editorial Board: Open Biotechnology Journal, 2007 – present

Editorial Board: Journal of Bioengineering and Biomedical Science, 2007 – present

Scientific Program Committee Member: ISHMT-ASME Conference, 2006 & 2013

Calendar Editor: ASME Journal of Biomechanical Engineering, 2005 – 2013

Session Chair:

ASME Summer Bioengineering Conference, Biopreservation, 2008

ASME IMECE Biotechnology III & IV, 2007

ASME Summer Bioengineering Conference, Biological Flows and Biopreservation, 2006

ASME Summer Bioengineering Conference, Computational Bioheat and Mass Transfer, 2005

ASME Summer Bioengineering Conference, Thermal Therapies, 2003

ASME IMECE, Heat Transfer in Medicine & Biology - I, 2002

ASME IMECE, Heat Transfer in Medicine & Biology - II, 2002

ASME IMECE, Thermal Injury and Treatment - I, 2001

ASME IMECE, Thermal Injury and Treatment - II, 2001



Session Co-Chair:

ASME NEMB, BioMEMS and Biofabrication for Development of Cellular Systems, 2013
ASME NEMB, Cancer Detection and Diagnostics, 2013
ASME IMECE Biotechnology - II, 2007
ASME Summer Bioengineering Conference, Thermal/Chemical Processes and Mass Transport in Biosystems, 2006
HEFAT, Mathematical Modeling of Turbines, Compressors, Intakes & Engines, 2005
HEFAT, Experimental Incompressible Flow, 2005
ASME IMECE, Thermal Aspects of Molecular Surgery, 2004

Symposium/Workshop Chair:

ASME Summer Bioengineering Conference, Tour of Commercial Manufacturing Plants in Puerto Rico, 2012
ASME Summer Bioengineering Conference, Prof. John Chato Memorial, 2011
ASME Summer Bioengineering Conference, Biotransport Education, 2011
HEFAT, Mathematical Modeling of Turbines, Compressors, Intakes & Engines, 2005
ASME IMECE, Thermal Aspects of Molecular Surgery, 2004

Track Chair:

ASME NEMB, Nano/Microfluidics in Biology and Medicine, 2013
ASME IMECE, Heat and Mass Transfer in Biotechnology, 2013
ASME Summer Bioengineering Conference, Biotransport, 2012
ASME Summer Heat Transfer Conference, Bio-Heat and Mass Transfer, 2012
ASME Summer Bioengineering Conference, Biotransport, 2011
World Congress on Biomechanics, Biotransport, 2010
ASME Summer Bioengineering Conference, Biotransport, 2010
ASME IMECE, Heat and Mass Transfer in Biotechnology, 2010

Track Co-Chair:

ASME Summer Heat Transfer Conference, Nano Thermal Medicine, 2013
ASME IMECE, Biomedical and Biotechnology, 2012
ASME IMECE, Biomedical and Biotechnology, 2011
ASME Summer Bioengineering Conference, Biotransport, 2009
ASME IMECE, Heat and Mass Transfer in Biotechnology, 2009
ASME Summer Bioengineering Conference, Biotransport, 2008
ASME IMECE, Heat and Mass Transfer in Biotechnology, 2008
ASME Summer Bioengineering Conference, Thermal/Chemical Processes and Mass Transport in Biosystems, 2006

Judge: ASME Summer Bioengineering Conference, Student Poster Competition, 2008 – 2012
ASME NEMB, Student Poster Competition, 2015

Peer Reviewer: American Journal of Transplantation, AIChE J, Annals of Biomedical Engineering, Asian Journal of Andrology, ASME Journal of Biomechanical Engineering, ASME Journal of Heat Transfer, ASME Journal of Medical Devices, ASME Journal of Electronic Packaging, Biology of Reproduction, Biopreservation and Biobanking, Biotechnology Progress, Cell Preservation Technology, Chemistry of Materials, Cryobiology, Cryo-Letters, Fertility and Sterility, Human Reproduction, IEEE Transactions on Biomedical Engineering, International Journal of Heat and Mass Transfer, International Journal of



Power and Energy Systems, Journal of Aquatic Ecology, Journal of Biological Physics, Journal of Burn Care and Rehabilitation, Lab on a Chip, Lasers in Surgery and Medicine, Macromolecular Bioscience, Molecular Reproduction and Development, Medical Engineering and Physics, Physics in Medicine and Biology, PLOS One, Reproduction, Sensors and Actuators B: Chemical, Surgical Oncology, Theriogenology, Thermochemica Acta, Veterinary Surgery, Yonsei Medical Journal.

External Reviewer: Reference/Tenure/Promotion/Professorships letters for Virginia Tech, Tulane University, University of Kansas, Northeastern University, Purdue University, University of Minnesota (Minneapolis) and Iowa State University 2011 – present.

Review Panel: National Institutes of Health, 2009 - present

National Science Foundation, 2010 – present

H2020 European Commission, 2014 – present

National Science Center, Poland, 2016

Research Council of Norway, 2015

University of California, Discovery Grant and Proof of Concept program, 2011 & 2013

National Research Council Romania, 2012

NSERC, Canada, 2006, 2008, 2010 & 2011

US Armed Medical Research & Material Command, 2007, 2009, 2010 & 2011

Georgia National Science Foundation, 2008 & 2009

University of Missouri, Internal Seed Grant Program, 2003 & 2007

Netherlands Organization of Scientific Research, 2003

USDA, National Research Initiative Competitive Grants Program, 2003

INTERNAL SERVICE AND DIVERSITY INITIATIVES

Member: College of Engineering, Policy Committee, 2015 – present

Institutional Co-Ordinator: Louisiana Space Consortium (LaSPACE) programs, 2014 – present

Member: Mechanical Engineering Undergraduate Curriculum Revision & Advancement Committee, 2014 – 2016

Member: LSU Faculty Senate Internationalization Committee, 2014 – 2015

Judge: Annual Phi Zeta Research Day - LSU School of Veterinary Medicine, 2005 – 2013

Promotion & Tenure Committee Member: Mechanical Engineering, 2013 – present

Member: Mechanical Engineering, Western European Outreach Ambassador, 2013 – present

Université Claude Bernard Lyon 1, France, 2013 – present

Politecnico di Torino, Italy, 2013

Keynote Presentation: Louisiana Junior Science and Humanities Symposium, 2013

Participant: CxC (Communication across the Curriculum) Faculty Summer Institute, 2013

Group Leader: Mechanical Engineering, Thermal-Fluid Science Faculty, 2012 – present

Member: Nuclear Research Commission Faculty Search Committee, 2012 – 2015 (Hired: Dr. Fengyuan Lu and Dr. Manas Gartia)

Participant: Eng² Project Faculty Development Program, 2012 & 2013

Member: LSU PS-69 Ethics Investigative Committee, 2010

Member: Mechanical Engineering, Undergraduate Studies Committee, 2009 – present

Faculty Advisor: Mechanical Engineering Graduate Students, 2004 – 2011



Member: Mechanical Engineering, Graduate Studies Committee, 2004 – 2009

Member: Governor's Biotechnology Initiative Faculty Search Committee, 2003 – 2004 (Hired: Dr. Sunggook Park)

Seminar Co-ordinator: Mechanical Engineering, 2003 – 2005

LSU SUPPLEMENTAL INSTRUCTIONAL ACTIVITIES

New Laboratory Manuals: Thermal-Fluid Science Experiments, 2015

Internal Combustion Engine

Heating, Ventilation and Air Conditioning Experiment

Rankine Power Cycle

Faculty Advisor: Senior Design Projects in Mechanical Engineering as *listed below*

Sump Debris Removal (2016 – 2017)

Lightweight Automated Canned Pet Food Dispenser (2015 – 2016)

The Perfect Crawfish? (2015 – 2016)

A Closed-Loop, Low-Speed Wind-Tunnel for the ME Thermal Science Lab (2015 – 2016)

Reclaim Hopper Dust Control (X2) and Water Tank Fill Control (2015 – 2016)

Auto Range Hood (2014 – 2015)

Dust Suppression Hopper Installation (2014 – 2015)

Mechanical Operation of the FMC Choke Throttle Valve (2014 – 2015)

Dual System: Clean Water and Power (2013 – 2014)

Adjustable Stereographic Microscope Stand (2013 – 2014)

Challenges to Subsea Systems due to Marine Growth and Calcification (2012 – 2013)

Design and Construction of a Cost Effective Net Zero HVAC System for a Residential Application in South Louisiana (2012 – 2013)

Biodiesel Education and Engagement Program (2012 – 2013)

Portable Cryostorage System (2011 – 2012)

A Walk on the Beach: Therapeutic? (2005 – 2006)

REDHANDED: Assault Alert/Marking System (2004 – 2005)

Continuous Acoustic Wave Flow Meter Test Stand (2003 – 2004)

Faculty Mentor: Howard Hughes Medical Institute Program, 2005 – 2007 (D. Henderson)

Faculty Advisor: Louisiana Biomedical Research Network Program, 2004 – 2011 (K. Huckaby, R. Gade, C. Lambert, G. Calderon)

Faculty Advisor: Special Projects for Graduate Students, 2011 (A. Zanetti, DVM MVSc)

Faculty Advisor: Louisiana Alliance for Simulation-Guided Materials Applications Research Experience for Undergraduate (REU) Program, 2012 – 2015 (A. Reed, E. Joshi)

Faculty Mentor: Chancellor's Future Leaders in Research Program, 2002 – present (C.L. Duet, R. Gilmore, R. Roland, R. Baniewicz, J. Carriere, K. Lambert, K. Edwards and R. Warne)

Faculty Advisor: LSU Distinguished Communicator Students, 2012 – present (K. Clement, K. Louth, B. Travis)

Faculty Advisor: ME 3903 – Special Projects for Undergraduates 2010 – present (J. LaFountain*, F. Breeden, S. Linares, K. Louth)

ME UG Honors Thesis Committee Member: 2015-2016 (K. Carr)

*First place oral presentation prize in the Technology & Engineering category at the 2010 annual statewide Triple Ex Undergraduate Research Symposium (<http://www.i3.lsu.edu/TripleEx>).



EXTERNAL GRANTS (>\$12M Total, >\$2M PI Share)

National Institutes of Health – Research Grants

- **1R01-DE24790-01:** Spatiotemporal Modulation of Osteogenesis in a 3-D Stromal/Stem Cell Model, 2015 – 2020, \$1,783K (**Co-PI**, 35% F&A project credit)
- **1R21-DK091852-02:** Assessing a Novel Paradigm of Inducing Cryotolerance, 2012 – 2014, \$370K, (**PI**, 100% F&A project credit)
- **5R03EB005985-02:** Ice Nucleation in Biological Tissues – Implications to Cryopreservation, 2006 – 2008, \$147K, (**PI**, 100% F&A project credit)

National Science Foundation – Research Grants

- **EPS-1003897:** Louisiana Alliance for Simulation-Guided Materials Applications: Leveraging Next Generation Supercomputing for the Study of Complex Multiscale Phenomena in Materials, 2010 – 2015, \$20,000K (\$9,123K at LSU; **Co-PI**, 4% F&A project credit)
- Towards Petascale Computing of Transport Processes in Biological Systems, 2007 – 2010, \$1,000K (\$523K at LSU; **Co-PI**, 30% F&A project credit)

The Brussels Institute for Research and Innovation - Brains (back) to Brussels Program

- Human Ovarian Tissue Freezing, 2009, \$22K (**PI**)

Whitaker Foundation – Biomedical Engineering Research Grant

- Rational Design of *Macaca Mulatta* Ovarian Tissue Cryopreservation Protocols, 2003 – 2006, \$231K (**PI**, 100% F&A project credit)

NASA – STTR Proposal

- Non-Intrusive Continuous Wave Acoustic Flowmeter, 2003 – 2004, \$100K (\$25K at LSU; **Co-PI**, 100% F&A project credit)

National Institutes of Health – Education/Conference Grants

- Summer Bioengineering Conference, 2013 – 2014, \$10K (**Co-PI**)

National Science Foundation – Education/Conference Grants

- Summer Bioengineering Conference, 2013 – 2014, \$20K (**Co-PI**)
- NEMB 2013: Nano-/Microfluidics in Biology and Medicine: Analysis, Diagnostics and Therapeutics, 2013, \$6K (**PI**)
- Symposium: Prof. John Chato Memorial Symposium on Progress and Challenges in Biotransport at 2011 Summer Bioengineering Conference in Farmington, Pennsylvania, 2011, \$9K (**PI**)
- Workshop on Biotransport Education during Summer Bioengineering Conferences, 2011 – 2013, \$18K (**Co-PI**)

Participating Member – Clinical Nutrition Research Unit (CNRU) at the Pennington

- Biomedical Research Center (PBRC), LSU. The CNRU {Center Grant # 1P30 DK072476} is funded by the National Institutes of Diabetes and Digestive and Kidney Diseases (NIDDK), of the National Institutes of Health (PI: E. Ravussin), \$5,500K



INTERNAL (LOUISIANA/LSU) COMPETITIVE GRANTS

Louisiana State Board of Regents Traditional Enhancement Program

- Learn by Doing – Additive Manufacturing Protocol, 2015 – 2016, \$195K **(Co-PI)**
- Biocompatible Coating (Parylene) - Deposition System, 2006 – 2007, \$100K **(Co-PI)**
- Imaging Based Diagnostic Systems for Micro/Nano Research, 2005 – 2006, \$81K **(Co-PI)**
- Enhancement of Mammalian Cell Culture Facilities at LSU-BR, 2005 – 2006, \$90K **(PI)**
- Integration of Biomechanics into Equine and Comparative Biomedical and Orthopedic Research, 2004 – 2005, \$170K **(Co-PI)**
- An Infra-Red Thermography System for Mechanical Engineering Research and Education, 2003 – 2004, \$39K **(Co-PI)**

Audubon Center for Research in Endangered Species (ACRES) – LSU System Proposals

- Designing Cryopreservation Protocols for Feline Sperm, 2016 – 2017, \$47K **(PI)**
- An Ultra-Rapid Freezing Technique Utilizing Lasers and Liquid Nitrogen: A Proof of Concept Study, 2014 – 2015, \$53K **(PI)**
- Assessing the Impact of the Warming Rate on Post Freeze-thaw Functionality of Oocytes , 2011 – 2012, \$58K **(PI)**
- Reverse Engineering the Cryopreservation Protocols for Heterogeneous Ovarian Tissue Section, 2010 – 2011, \$100K **(PI)**
- Biophysics of Freezing Feline Sperm, 2009 – 2010, \$85K **(PI)**
- Sensitivity of Spermatozoa from Mice of Different Strains to Cryopreservation, 2008 – 2009, \$28K **(Co-PI)**
- Vitrification of Sperm Cells from Endangered Species, 2007, \$19K **(PI)**

LSU Economic Development Fellowship

- Louisiana Initiative For Engineered Preservation Of Reproductive Tissue (LIFE PORT), 2011 – 2015, (Student: H. Chinnasami), \$100K **(PI)**
- Microfabricated Arrays of Thermoelectric Sensors and Actuators 2005 – 2009 (Student: D. Pinisetty), \$100K **(PI)**
- Fundamental Cryobiology of Human Adipose Tissue Derived Adult Stem Cells, 2004 – 2007, (Student: S. Thirumala), \$75K **(PI)**

Louisiana State University Faculty Research Grant Program

- Cryobiology of Adult Stem Cells in the Presence of Nanoparticles, 2007 – 2008, \$10K **(PI)**
- *In Vitro* Assessment of Cryopreserved Ovarian Tissues – Impact of a Novel Freezing Procedure, 2005 – 2006, \$10K **(PI)**
- Vitrification As An Alternative Process to Cryopreservation of Genetic Material, 2004, \$10K **(PI)**

Louisiana State University Council on Research Summer Stipend Program

- Microscale Heat Transfer in Biological Systems During Phase Change, 2007, \$5K **(PI)**
- Modeling of Loading and Unloading of Cryoprotective Agents in Native Biological Tissues and Engineered Tissue-Equivalents, 2002, \$5K **(PI)**

Louisiana State Board of Regents Support Fund

- Conservation of Endangered Species using Sperm Freezing, 2002 – 2005, \$128K **(PI)**



BOOK CHAPTERS and TRADE/POPULAR ARTICLES

1. Heat and Mass Transfer Models and Measurements for Low Temperature Storage of Biological Systems S. Shaik and **R.V. Devireddy**. In: *"The Handbook of Thermal Science and Engineering"*, edited by F. Kulacki. Springer International Publishing. In Press.
2. Cryopreserved Adipose Tissue-Derived Stromal/Stem Cells: Potential for Applications in Clinic and Therapy. F. Zanata, S. Shaik, L. M. Ferreira, **R.V. Devireddy** and J.M. Gimble. In: *"Biobanking in the 21st Century: Applications"*, Advances in Experimental Medicine and Biology, Vol. 951, edited by F. Karimi-Busheri and M. Weinfeld. Springer International Publishing. In Press. DOI 10.1007/978-3-319-45457-3_11
3. Methylcellulose Based Thermally Reversible Hydrogels. A. Forghani and **R.V. Devireddy**. In: *"Adipose-Derived Stem Cells: Methods and Protocols"*, edited by J.M. Gimble and B.A. Bunnell. *Methods in Molecular Biology Series*, Humana Press, USA. In Press.
4. Cryopreservation Protocols for Human Adipose Tissue Derived Adult Stem Cells. S. Shaik and **R.V. Devireddy**. In: *"Adipose-Derived Stem Cells: Methods and Protocols"*, edited by J.M. Gimble and B.A. Bunnell. *Methods in Molecular Biology Series*, Humana Press, USA. In Press.
5. Microscale Thermoelectric Devices for Use with Biosystems. D. Pinisetty and **R.V. Devireddy**. In: *"Multiscale Technologies for Cryomedicine: Implementation from Nano to Macroscale"*, edited by X. He, and J.C. Bischof. *Frontiers in Nanobiomedical Research Series*, World Scientific Publishing Corporation, USA. Vol.5, pp. 173-220 (2016). <http://www.worldscientific.com/worldscibooks/10.1142/9870>
6. **Trade Article** in: "Mechanical Engineering: The Magazine of ASME".
MEs in Nanomedicine: In the Mechanics of Medical Treatment, Nanotechnology has Lived up to Much of its Early Promise. G.M. Genin and **R.V. Devireddy**. American Society of Mechanical Engineers, New York, NY. Vol. 134/No. 6, pp. 36-41 (2012).
7. The Use of Calorimetry for Subzero Cryobiological Measurements. **R.V. Devireddy**. In: *"Cryopreservation in Aquatic Species, 2nd Edition"*, edited by T.R. Tiersch and P.M. Mazik, World Aquaculture Society, Baton Rouge, LA. pp. 325-335 (2011).
8. Preservation Protocols for Human Adipose Tissue Derived Adult Stem Cells. **R.V. Devireddy** and S. Thirumala. In: *"Adipose-Derived Stem Cells: Methods and Protocols"*, edited by J.M. Gimble and B.A. Bunnell, Humana Press, Springer Science, New York, NY. *Methods Molecular Biology*, Vol. 702, pp. 369-394 (2011).
9. Recent Advances in Cryobiology Using Calorimetry. **R.V. Devireddy** and J. C. Bischof. In: *"Low Temperature and Cryogenic Refrigeration"*, edited by S. Kakaç, H.F. Smirnov and M.R. Avelino, Kluwer Academic Publishers, Dordrecht, The Netherlands. pp. 265-294 (2003).



PEER-REVIEWED JOURNAL ARTICLES (Cited > 1600 times with h-index 25)

1. Inducing Heat Shock Proteins Enhances the Stemness of Frozen-Thawed Adipose Tissue Derived Stem Cells. S. Shaik, D. Hayes, J. Gimble and **R.V. Devireddy**. *Stem Cells and Development* In Review. **(IF: 3.78)**
2. Effect of Cryopreservation on Human Adipose Tissue and Isolated Stromal Vascular Fraction Cells: *In vitro* and *in vivo* analyses. F. Zanata, A. Bowles, T. Frazier, L. Curley, A. Tucker, B. Bunnell, X. Wu, J. Wade, **R.V. Devireddy**, L. M. Ferreira and J.M. Gimble. *Tissue Engineering* In Review. **(IF: 2.99)**
3. Fabrication and Characterization of Cell Sheets using Methylcellulose and PNIPAAm Thermoresponsive Polymers: A Comparative Study. A. Forghani, L. Kreigh, K. Hogan, C. Chen, G. Brewer, **R.V. Devireddy**, and D. Hayes. *J. Biomedical Materials Research – Part B*, In Review. **(IF: 3.37)**
4. Cell Attachment to Thiol-Acrylate Materials without using Cell Adhesive Moieties. L. Garber, A. Forghani, C. Chen, H. Buller, **R.V. Devireddy**, J.A. Pojman and D. Hayes. *J. Biomedical Materials Research – Part B*, In Review. **(IF: 3.37)**
5. Design and Fabrication of a Low Cost Three-Dimensional Bioprinter with Inline Light Activation. C. McElheny, D. Hayes and **R.V. Devireddy**. *ASME Journal of Medical Devices*, In Review. **(IF: 0.42)**
6. Porous PLLA Scaffolds Fabricated using Organic Solvent Mixtures and Controlled Cooling Rates: Part I: Structure-Property Relations. H. Chinnasami, D. Hayes, J. Gimble and **R.V. Devireddy**. *ASME J. Biomechanical Engineering*. In Review. **(IF: 1.79)**
7. Porous PLLA Scaffolds Fabricated using Organic Solvent Mixtures and Controlled Cooling Rates: Part II: Osteogenesis of Adult Stem Cells. H. Chinnasami, D. Hayes, J. Gimble and **R.V. Devireddy**. *ASME J. Biomechanical Engineering*. In Review. **(IF: 1.79)**
8. Uni-Directional Freezing of Adult Stem Cells: The Effect of Varying Supra- and Sub-Zero Cooling Rates. J. LaFountain and **R.V. Devireddy**. *Biopreservation and Biobanking*. In Review. **(IF: 1.34)**
9. The Relative Functionality of Freshly Isolated and Cryopreserved Human Adipose Derived Stromal/Stem Cells. F.S. Shah, J. Li, F. Zanata, J.L. Curley, E.C. Martin, X. Wu, M. Dietrich, **R.V. Devireddy**, J.W. Wade and J.M. Gimble. *Cells Tissues Organs*. 201: 436-444 (2016) **(IF: 2.14)**
10. A Review of Biotransport Education in the 21st Century: Lessons Learned from Experts. R. Banerjee, G.A. D'Souza, C. Rylander and **R.V. Devireddy**. *ASME Journal of Biomechanical Engineering*. 136: 110401-8 (2014). **(IF: 1.78)**
11. Successful Vitrification and Autografting of Baboon (*Papio anubis*) Ovarian Tissue. C.A. Amorim, S. Jacobs, R.V. Devireddy, A. van Langendonck, J. Vanacker, J. Jaeger, J. Luyckx and J. Donnez. *Human Reproduction*. 28:2146-2156 (2013). **(IF: 4.57)**
12. **Review Article:** Biopreservation: Heat/Mass Transfer Challenges and Biochemical/Genetic Adaptations in Biological Systems. **R.V. Devireddy**. *Heat Transfer Research*, 44:245-272 (2013). **(IF: 0.48)**



13. Momentum and Heat Transfer in Laminar Flow Past a Circular Cylinder with Slip and Temperature Jump Boundary Conditions. E. Maghsoudi, **R.V. Devireddy** and M. J. Martin. *Journal of Thermophysics and Heat Transfer*, 27: 607-614 (2013). **(IF: 0.83)**
14. Design of a New Portable Cryostorage Device. F. Breeden, J. LaFountain, M. Laurent, J. Robert and **R.V. Devireddy**. *ASME Journal of Medical Devices*, 7: 014501 (2013). **(IF: 0.42)**
15. Methylcellulose Based Thermally Reversible Hydrogel System for Tissue Engineering Applications. S. Thirumala, J. Gimble and **R.V. Devireddy**. *Cells*, 3: 460-475 (2013).
16. **Editorial:** Thermodynamic Analysis of Biological Systems. **R.V. Devireddy**. *Journal of Thermodynamics and Catalysis*, 3:e101. doi:10.4172/2157-7544.1000e101 (2012).
17. A Molecular Dynamics Study of DMPC Lipid Bilayers Interacting with Dimethylsulfoxide-Water Mixtures. D. Pinisetty, R. Alapati and **R.V. Devireddy**. *Journal of Membrane Biology*, 245: 807-814 (2012). **(IF: 2.46)**
18. Calorimetric Measurement of Water Transport and Intracellular Ice Formation During Freezing in Cell Suspension. S. Mori, J. Choi, **R.V. Devireddy**, J. C. Bischof. *Cryobiology*, 65:242-255 (2012). **(IF: 1.59)**
19. **Editorial:** Tissue Engineering with Adult Stem Cells. **R.V. Devireddy**. *Journal of Bioengineering and Biomedical Science*, 2:e106. doi:10.4172/2155-9538.1000e106 (2012).
20. A Novel Experimental Device for Seebeck Coefficient Measurements of Bulk Materials, Thin Films and Nanowire Composites. D. Pinisetty, N. Haldolaarachchiq, D.P. Young and **R.V. Devireddy**, *ASME Journal of Nanotechnology in Engineering and Medicine*, 2: 011006 (2011). **(IF: N/A)**
21. Characterization of Electrodeposited Bismuth-Tellurium Nanowires and Nanotubes. D. Pinisetty, D. Davis. E.J. Podlaha-Murphy, M.C. Murphy, A.B. Karki, D.P. Young and **R.V. Devireddy**. *Acta Materialia*, 59:2455-2461 (2011). **(IF: 4.47)**
22. Fabrication and Characterization of Electrodeposited Antimony Telluride Nanowires and Nanotubes. D. Pinisetty, M. Gupta, A.B. Karki, D.P. Young and **R.V. Devireddy**. *Journal of Materials Chemistry*, 21:4098-4107 (2011). **Back Cover Artwork. (IF: 7.44)**
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PEER REVIEWED CONFERENCE PROCEEDINGS

1. Proliferation of Human Adipose Derived Adult Stem Cells Cultured on Porous Poly (L-lactic acid) Scaffolds Prepared by Thermally Controlled Method. H. Chinnasami and **R.V. Devireddy**. *Summer Biomechanics, Bioengineering and Biotransport Conference*, Washington, D.C., CD-ROM Publication (2016).
2. Enhancement of Cryopreservation Outcome of Adipose Tissue Derived Adult Stem Cells by Thermal Strss. M. Shaik, J. Gimble and **R.V. Devireddy**. *Summer Biomechanics, Bioengineering and Biotransport Conference*, Washington, D.C., CD-ROM Publication (2016).
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5. Osteogenic Induction of Human Adipose Derived Stem Cells on Poly (L-Lactic Acid) Scaffolds Prepared By Thermally Induced Phase Separation Method. H. Chinnasami, D. Hayes and **R.V. Devireddy**. *Summer Biomechanics, Bioengineering and Biotransport Conference*, Snow Bird, Utah, CD-ROM Publication (2015).
6. Effect of Periodic Heat Shock Treatment on Adult Stem Cell Freezing. S.M. Shaik, J. Gimble and **R.V. Devireddy**. *Summer Biomechanics, Bioengineering and Biotransport Conference*, Snow Bird, Utah, CD-ROM Publication (2015).
7. Heat Shock Protein Expression and Post-Thaw Viability of Adipose Tissue Derived Adult Stem Cells. S.M. Shaik, J. Gimble and **R.V. Devireddy**. *ASME IMECE*, Houston, CD-ROM Publication (2015).
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 12. Influence of Freezing (Thermal) Profiles on the Morphology and Mechanical Properties of Poly (L-lactic Acid) Scaffolds. H. Chinnasami, F. Breeden, D. Hayes and **R.V. Devireddy**. *ASME Summer Bioengineering Conference*, Puerto Rico, CD-ROM Publication (2012).
 13. Directional Solidification Stage with Dynamically Variable Speeds: Assessment of Cell Viability After Interrupted Cooling. J. LaFountain and **R.V. Devireddy**. *ASME Summer Bioengineering Conference*, Farmington, CD-ROM Publication (2011).
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 29. Measurement of Ice Nucleation in Cell Suspensions Using Cryomicroscopy and Calorimetry. T. Acharya and **R.V. Devireddy.** *ASME IMECE*, Seattle, CD-ROM Publication (2007).
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43. Theoretical Prediction of Optimal Cooling Rates for Human Adipose Derived Adult Stem (ADAS) Cells. S. Thirumala, S. Zvonic, E. Floyd, J. Gimble and **R.V. Devireddy**. *ASME Summer Bioengineering Meeting*, Vail, CD-ROM Publication (2005).
44. Predictive Equations of Phase Change in Homogenous Media With and Without Heat Generation. M. Crochet and **R.V. Devireddy**. *4th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics*, Cairo, CD-ROM Publication (2005).



45. Numerical Simulations of Freezing in Biological Tissues With Multiple Discrete Source Terms. D. Kandra and **R.V. Devireddy**. *4th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics*, Cairo, CD-ROM Publication (2005).
46. Numerical Investigation of a Novel Method to Vitrify Biological Tissues using Pulsed Lasers and Cryogenic Temperatures. D. Kandra, T. Charalampopoulos and **R.V. Devireddy**. *ASME National Heat Transfer Conference*, Charlotte, CD-ROM Publication (2004).
47. Fabrication of Micro Scale Arrays of Thermoelectric Sensors and Actuators for Cryobiological Applications. A. Cygan, A. Prabhakar, E.J. Podlaha-Murphy, M.C. Murphy and **R.V. Devireddy**. *ASME IMECE*, Anaheim, CD-ROM Publication (2004).
48. On The Possibility of Using Microscale Thermocouples to Measure Intracellular Ice Formation in Cells Embedded in an Extracellular Matrix. D. Kandra and **R.V. Devireddy**. *ASME IMECE*, Anaheim, CD-ROM Publication (2004).
49. A Graphical Method For Determining The Optimal Cryopreservation Rate Of An Arbitrary Biological System. S. Thirumala and **R.V. Devireddy**. *ASME Summer Bioengineering Meeting*, Key Biscayne, CD-ROM Publication (2003).
50. Numerical Modeling Of Coupled Solute And Solvent Transport In Tissue Systems. Y. He and **R.V. Devireddy**. *ASME Summer Bioengineering Meeting*, Key Biscayne, CD-ROM Publication (2003).
51. Phase Change Behavior of Biomedically Relevant Solutions. B. Han, **R.V. Devireddy** and J.C. Bischof. *ASME IMECE*, New Orleans, CD-ROM Publication (2002).
52. Effect of Microscale Phenomena on Phase Change in Tissues. **R.V. Devireddy**, D.J. Smith and J.C. Bischof. *ASME 35th National Heat Transfer Conference*, Anaheim, CA, CD-ROM Publication (2001).
53. Effect of Freezing on Cell Viability and Mechanical Strength of Bioartificial Tissues. **R.V. Devireddy**, M.R. Neidert, J.C. Bischof and R.T. Tranquillo. *ASME IMECE*, New York, CD-ROM Publication (2001).
54. Measurement and Modeling of Latent Heat Release During Freezing of Aqueous Solutions in a Small Container. **R.V. Devireddy**, J.C. Bischof, P.H. Leo and J.S. Lowengrub. *ASME IMECE HTD 368/BED 47*: 23-31 (2000).
55. Prediction of Thermal History and Interface Propagation During Freezing of Biological Systems - Latent Heat and Temperature-Dependent Property Effects. D. J. Smith, **R.V. Devireddy** and J.C. Bischof. *5th ASME/JSME Joint Thermal Engineering Conference*, San Diego, CD-ROM Publication (1999).
56. The Effect of Extracellular Ice on the Water Permeability Parameters of Mouse Sperm Plasma Membrane During Freezing. **R.V. Devireddy**, D.J. Swanlund and J.C. Bischof. *5th ASME/JSME Joint Thermal Engineering Conference*, San Diego, CD-ROM Publication (1999).
57. Latent Heat Release in Solute Laden Solutions - Cryobiological Effects. **R.V. Devireddy** and J.C. Bischof. *ASME IMECE HTD 362/ BED 40*: 159-161 (1998).



58. Measurement of Water Transport During Freezing Using a Differential Scanning Calorimeter. **R.V. Devireddy**, D. Raha and J.C. Bischof. *ASME IMECE HTD 37/BED 34*: 37-42 (1996).

CONFERENCE ABSTRACTS

1. Encapsulated Human Adipose Derived Stem Cells in an Injectable Thiol-Acrylate based Scaffold for Bone Tissue Engineering. A. Forghani, L. Garber, C. Chen, J. Pojman, D. Hayes and **R.V. Devireddy**. *International Federation for Adipose Therapeutics and Science*, New Orleans, LA, CD-ROM Publication (2015).
2. Effect of Thermal Pre-conditioning of Adipose Tissue Derived Adult Stem Cells on Cryopreservation. S.M. Shaik, J. Gimble and **R.V. Devireddy**. *International Federation for Adipose Therapeutics and Science*, New Orleans, LA, CD-ROM Publication (2015).
3. Three Dimensional Cell Proliferation and Osteogenesis of Human Adipose Stem Cells on Poly (L-lactic Acid) Scaffolds Prepared by Thermally Controlled Methods. H. Chinnasami and **R.V. Devireddy**. *International Federation for Adipose Therapeutics and Science*, New Orleans, LA, CD-ROM Publication (2015).
4. Effect of Heat Shock on Cryopreservation of Adipose Tissue Derived Adult Stem Cells. S.M. Shaik, J. Gimble and **R.V. Devireddy**. *ASME 4th Global Congress on Nanoengineering for Medicine and Biology*, Minneapolis, CD-ROM Publication (2015).
5. Expression of Heat Shock Stress Proteins in Human Adipose-Tissue Derived Adult Stem Cells. S. M. Shaik, J. Gimble and **R.V. Devireddy**. *ASME 3rd Global Congress on Nanoengineering for Medicine and Biology*, San Francisco, CD-ROM Publication (2014).
6. Investigating the Osteoinductability of Poly (L-Lactic Acid) Polymer Utilizing Human Adipose-Tissue Derived Adult Stem Cells. H. Chinnasami, S. M. Shaik and **R.V. Devireddy**. *ASME 3rd Global Congress on Nanoengineering for Medicine and Biology*, San Francisco, CD-ROM Publication (2014).
7. *In situ* Polymerization of Thiol-acrylate Nanocomposite Foam for Bone Defects. A. Forghani, C. Chen, M. Smoak, D. Hayes and **R.V. Devireddy**. *7th World Congress of Biomechanics (WCB 2014)*, Boston, CD-ROM Publication (2014).
8. Characterization of Poly (l-lactic acid) (PLLA) Scaffolds. H. Chinnasami, D. Hayes, J. Gimble and **R.V. Devireddy**. *ASME 2nd Global Congress on Nanoengineering for Medicine and Biology*, Boston, CD-ROM Publication (2013).
9. Cryopreservation of PLLA Scaffolds with Adult Stem Cells. H. Chinnasami, D. Hayes, J. Gimble, and **R.V. Devireddy**. *ASME National Heat Transfer Conference*, Minneapolis, *Technical Presentation* (2013).
10. Osteogenic Potential of Fresh and Cryopreserved Adult Stem Cells in PLLA Scaffolds. H. Chinnasami, D. Hayes, J. Gimble, and **R.V. Devireddy**. *ASME IMECE*, San Diego, *Technical Presentation* (2013).



11. Serum Free Cryopreservation of Adult Stem Cells. J. Medhi, J. Gimble, and **R.V. Devireddy**. *ASME IMECE*, San Diego, *Technical Presentation* (2013).
12. Relating the Porosity of Poly (L-lactic Acid) Scaffolds to Unidirectional Freezing (Thermal Profiles). H. Chinnasami, F. Breeden, D. Hayes and **R.V. Devireddy**. *Tissue Engineering International and Regenerative Medicine Society – North America*, Houston, CD-ROM Publication (2011).
13. Molecular Dynamics Simulation Study of Structural Changes and Pore Formation in Phospholipid Bilayers in the Presence of Dimethylsulfoxide. D. Moldovan. R. Alapati, J. Lin, B. Novak and **R.V. Devireddy**. *March Meeting of the American Physical Society*, Portland (2010).
14. Cellular Biophysics During Freezing of Rat and Mouse Sperm. **R.V. Devireddy**, J. H. Choi, M. Hagiwara, W. Wolkers, K.P. Roberts and J.C. Bischof. *Cryobiology*, 57: 322 (2008).
15. The Protective Effects of Polyvinylpyrrolidone (PVP) in the Cryopreservation of Human Adipose Derived Adult Stem Cells (huASCs). S. Thirumala, J.M. Gimble and **R.V. Devireddy**. *Tissue Engineering International and Regenerative Medicine Society – North America*, Toronto, CD-ROM Publication (2007).
16. Atomistic Investigations of Spontaneous Unstable Pore Formation in DMPC Lipid Bilayers due to the Presence of DMSO. D. Pinisetty, D. Moldovan and **R.V. Devireddy**. *Cryobiology*, 55: 375-376 (2007).
17. Chilling Injury of Mammalian Gametes and Embryos. S.P. Leibo and **R.V. Devireddy**. *Cryobiology*, 55: 325 (2007).
18. Freezing Characteristics of Macaque and Equine Ovarian Tissue Sections in Mixtures of Dimethylsulfoxide and Ethylene Glycol. A. Kardak, S.P. Leibo and **R.V. Devireddy**. *Cryobiology*, 53: 415-416 (2006).
19. Calculated Permeability Coefficients For Water and Cryoprotective Additives for Ovine Primordial Follicles at Suprazero Temperatures. **R.V. Devireddy** and S.P. Leibo. *Cryobiology*, 53: 416-417 (2006).
20. Osteogenic Potential of Frozen-Thawed Adipose Derived Adult Stem Cells. S. Thirumala, B. Goh, J.M. Gimble and **R.V. Devireddy**. *International Fat Applied Technology Society*, Baton Rouge, CD-ROM Publication (2006).
21. Molecular Dynamic Simulations of Water Permeation Through Biological Membranes in the Presence and Absence of Cryoprotective Agents and Sugars. **R.V. Devireddy** and D. Moldovan. *Second USNCB Symposium on Frontiers in Biomechanics*, Vail, CO (2005).
22. Freezing Storage of Adult Stem Cells. S. Thirumala, J.M. Gimble and **R.V. Devireddy**. *Cryobiology*, 51: 393 (2005).
23. Drying Storage of Adipose Derived Adult Stem Cells. S. Mittal, D. Pinisetty and **R.V. Devireddy**. *Cryobiology*, 51: 401-402 (2005).
24. Design of an Ultrasound Sensor to Measure Water Loss During Drying of Cells. S. Mittal and **R.V. Devireddy**. *Cryobiology*, 51: 410-411 (2005).



25. Effect of DMSO on POPC and DMPC Lipid Bilayers: An Atomistic Investigation. D. Pinisetty, D. Moldovan and **R.V. Devireddy**. *Cryobiology*, 51: 413-414 (2005).
26. Improvement of Sperm Recovery Rates After Centrifugation of Stallion Semen. M.S. Ferrer, D.L. Paccamonti, B.E. Eilts, S.K. Lyle and **R.V. Devireddy**. *Proc Society for Theriogenology Annual Conference and SFT/ACT Symposium*, Lexington, KY, p. 7 (2004).
27. The Effect of Collection and Cooling Conditions on Water Transport Characteristics of Equine Spermatozoa. **R.V. Devireddy**, D.J. Swanlund, A.S. Alghamdi, M.H.T. Troedsson, J.C. Bischof and K.P. Roberts. 8th International Symposium on Equine Reproduction, *Theriogenology*, 58:233-236 (2002).
28. Effect of Freezing on Mechanical Strength and Cell Viability in Engineered Tissue Equivalents. **R.V. Devireddy**, M.R. Neidert, J.C. Bischof and R.T. Tranquillo. Industrial Partnership in Interfacial and Material Engineering (IPRIME), University of Minnesota, Minneapolis, MN (2001).
29. Cryopreservation of Stallion Sperm: Optimal Cooling Rates In The Presence Of Extracellular Ice and Cryoprotective Agents. **R.V. Devireddy**, D.J. Swanlund, A.S. Alghamdi, M.H.T. Troedsson, J.C. Bischof and K.P. Roberts. *Cryobiology*, 43:367-368 (2001).
30. Numerical Modeling of Freezing in Tissues: The Effect of Cell Level Processes on the Macroscale Freezing Problem. **R.V. Devireddy**, D.J. Smith and J.C. Bischof. *Cryobiology*, 43:344 (2001).
31. Cryopreservation of Bioartificial Tissues: Optimization of Post-Thaw Cell Viability and Mechanical Properties. **R.V. Devireddy**, M.R. Neidert, R.T. Tranquillo and J.C. Bischof. *Cryobiology*, 43:351 (2001).
32. Cryopreservation of Human Sperm: The Effect of Extracellular Ice and Cryoprotective Agents on the Membrane Permeability Parameters. **R.V. Devireddy**, D.J. Swanlund, K.P. Roberts, J.L. Pryor and J.C. Bischof. {Abstract # 4392} *Annual American Urologic Conference* (2000).
33. Cryopreservation of Stallion Sperm: Determination of Membrane Permeability Parameters In The Presence Of Extracellular Ice. **R.V. Devireddy**, D.J. Swanlund, T. Olin, W. Vincente, M. Troedsson, K.P. Roberts and J.C. Bischof. *Cryobiology*, 41:345-346 (2000).
34. Effect Of Microscale Mass and Heat Transport On Phase Change in Tissues and Tissue Engineered Equivalents. D.J. Smith, **R.V. Devireddy** and J.C. Bischof. {Abstract # T12.44} *Annals of Biomedical Engineering*, 28 (Supp. 1), S-124 (2000).
35. Determination of Loading and Unloading of Cryoprotective Agents in Tissues and Tissue-Equivalents. **R.V. Devireddy**, S. Bhowmick, M.R. Neidert, R.T. Tranquillo and J.C. Bischof. {Abstract #T12.43} *Annals of Biomedical Engineering*, 28 (Supp. 1), S-124 (2000).
36. Web/Internet based Cryobiology Modeling Tutorial. D.J. Smith, **R.V. Devireddy**, W. Messner and J.C. Bischof. *Cryobiology*, 37:406 (1998).



37. Prediction of Thermal Profiles and Interface Propagation during Freezing of Biological Systems - Latent Heat Effects. D.J. Smith, **R.V. Devireddy** and J.C. Bischof. *Cryobiology*, 37:380 (1998).
38. Water Permeability Parameters of Mouse Sperm during Freezing in the Presence of Extracellular Ice and Glycerol. **R.V. Devireddy**, D.J. Swanlund and J.C. Bischof. *Cryobiology*, 37:416-417 (1998).
39. Freezing Characteristics in Liver of the Freeze-Tolerant Wood Frog. P.R. Barratt, **R.V. Devireddy**, K.B. Storey and J.C. Bischof. *Cryobiology*, 37:432-433 (1998).
40. Measured Dehydration in AT-1 Rat Tumor Tissue During Freezing. **R.V. Devireddy** and J.C. Bischof. *Cryobiology*, 35:323-324 (1997).
41. Differential Scanning Calorimetry: Thermal Analysis of Cells and Tissues at Subzero Temperatures to Measure the Biophysical Parameters of Water Transport. **R.V. Devireddy**, D. Raha and J.C. Bischof. *Cryobiology*, 33:638-639 (1996).

GRADUATE STUDENT & POST-DOCTORAL SUPERVISION:

1. **Dr. Cong Chen** Post-Doctoral Scholar, 2015 – 2016; currently at PSU.
2. **Dr. Jean-Baptiste Decombe**, Post-Doctoral Scholar, 2015 – present
3. **Harish Chinnasami** Doctoral Candidate, 2010 – present
4. **Shahensha Shaik** Doctoral Candidate, 2013 – present
5. **Jishnu Medhi M.S. (non-thesis project)** Modeling of Thermal Stresses during Freezing, 2013 –2016
6. **Anoosha Forghani M.S.** Thiol-Acrylate *in situ* Polymerization for Bone Defects, 2013 – 2016
7. **Colton McElheny M.S.** Development of a Three-Dimensional Bio-Printer with Inline Light Activation for Bone Tissue Engineering, 2013 – 2015
8. **George Idicula M.S.** Synthesis of Poly (L-Lactic Acid) Scaffolds From Dioxane/Ethanol Using Control Rate Freezing and Study of it's Microstructural Properties, 2011 – 2013. *Current Position:* CB&I, Houston, TX
9. **Dipon Chanda M.S.** Liposomal Uptake of Gold and Silver Nanoparticles, 2010 – 2013. *Current Position:* Engineer, Delphi, IN
10. **Dinesh Pinisetty Ph.D.** Fabrication, Characterization, Modeling and Testing of a Nanostructured Bulk Thermoelectric Cooler, 2005 – 2011, *Current Position:* Asst. Prof. California Maritime Academy, Vallejo, CA
11. **Raghava Alapati M.S.** Atomistic Simulations of Dimethylsulfoxide Interactions with Lipid Bilayers, 2007 – 2009. *Current Position:* Engineer, Ternium, LA
12. **Sreedhar Thirumala Ph.D.** Cryopreservation of Adult Stem Cells in Suspension and in Multi Dimensional Sheets, 2004 – 2009. *Current Position:* Senior Scientist, Cook General, IN
13. **Avishek Guha M.S.** Mitigation of the Damaging Effects of Intracellular Ice Formation in Adult Stem Cells by Polyvinylpyrrolidone, 2007 – 2009. *Current Position:* Senior Engineer, Air Products, PA



14. **Tat Acharya M.S.** Freezing Processes in Cell Suspensions Evaluated Using Cryomicroscopy, 2006 – 2008. *Current Position:* Engineer, Houston, TX
15. **Ajay Kardak M.S.** Fabrication of Micro Bumps for Micro Scale Thermal Management, 2005 – 2008. *Current Position:* Engineer, ANSYS, PA
16. **Phani Mylavarapu Ph.D.** Ultrasonic Characterization of Composite Structures, 2001 – 2006 (minor advisor). *Current Position:* Senior Scientist, DRDO, India.
17. **Aparna Prabhakar M.S.** Modeling, Fabrication and Characterization of a Bio-Micro-Thermoelectric Device for Highly Localized Temperature Control, 2003 – 2006
Current Position: Technology Innovation Program Manager, IBM, NY
18. **Adam Cygan M.S.** Modeling and Fabrication of a Microthermocouple Array, 2003 – 2006, *Current Position:* Industry, Houston, TX
19. **Guanglei Li M.S.** Cryopreservation of Reproductive Cells and Tissues, 2004 – 2005, *Current Position:* Senior Project Manager, China
20. **Surbhi Mittal M.S.** Modeling and Experimentation of Drying of Adipose Derived Adult Stem Cells, 2003 – 2005, *Current Position:* Failure Analysis Engineer, IBM, NY
21. **Dinesh Pinisetty M.S.** Molecular Dynamic Simulations of Biological Membranes in the Presence of Cryoprotectants, 2003 – 2005, *Current Position:* Asst. Prof. California Maritime Academy, Vallejo, CA
22. **Deepak Kandra M.S.** Tissue Interactions with Lasers and Liquid Nitrogen – A Novel Cryopreservation Method? 2002 – 2004, *Current Position:* Senior Engineer, Arup, NY
23. **Yimeng He M.S.** Numerical and Experimental Investigation of Transport Processes in Biological Systems, 2001 – 2004, *Current Position:* ATS, China
24. **Sreedhar Thirumala M.S.** Optimal Rate of Freezing Biological Systems, 2001 – 2004, *Current Position:* Senior Scientist, Cook General, IN

SELECTED STUDENT AWARDS:

Y. He: Finalist Student Paper Competition ASME Summer Bioengineering Conference (2003)

S. Mittal: Materials Research Society Ribbon Best Poster Award (2003)

A. Cygan: NSF Graduate Fellow (2003 – 2006)

G. Li: Top 10 most downloaded articles in Molecular Reproduction & Development (2007)

S. Thirumala:

LSU Economic Development Assistant Fellowship (2004 – 2007)

Best presentation LSU ME Graduate Student Conference (2004 & 2007)

Best presentation IFATS (2006)

LSU Dissertation Fellowship (2007 – 2008)

LSU Office of Research & Development Student Travel award (2009)

College of Engineering Best PhD Dissertation Award (2009)

Tissue Engineering Cover Article (2010)

Cells Best Paper Award (2013)

Organizing Committee, Society for Cryobiology Annual Meeting (2015)

T. Acharya:

Best presentation LSU ME Graduate Student Conference (2009)

LSU Office of Research & Development Student Travel award (2008)



D. Kandra:

Design Engineer

Crenshaw/LAX Transit Corridor in Los Angeles

The Second Avenue Subway and the World Trade Center Transit Hub

I-90 Two Way Transit project in Seattle

Arup Associate (2015)

A. Kardak: Best Teaching Assistant LSU Mechanical Engineering (2008)

A. Guha: ISHMT-ASME Conference Best poster Award (2010)

D. Pinisetty:

LSU Economic Development Assistant Fellowship (2005 – 2009)

Best presentation LSU ME Graduate Student Conference (2008)

LSU Office of Research & Development Student Travel award (2010)

LSU Dissertation Fellowship (2009 – 2010)

MRS Spring Meeting Finalist best presentation (2010)

College of Engineering Finalist PhD Dissertation Award (2011)

Journal of Materials Chemistry Back Cover Art Work (2011)

Post-doctoral at NYU (2011 – 2013)

Asst. Prof. California Maritime Academy (2014 – present)

A. Prabhakar:

IBM China Engineering Solutions Team Lead (>\$400 M/year)

Technology Innovation Program Manager at IBM Corporate Strategy (2006 – present)

Women of Color STEM Technology Rising Star Award (2015)

H. Chinnasami:

Finalist best poster ASME 3rd Global Congress on Nanoengineering for Medicine and Biology meeting (2013)

Finalist best paper Tissue Engineering International and Regenerative Medicine Society meeting(2011)

A. Forghani:

LSU LA-SiGMA Travel Award, ASME SB3C conference (2015)

LSU Office of Research & Development Student Travel award (2014)

S. Shaik:

Finalist best poster ASME 4th Global Congress on Nanoengineering for Medicine and Biology meeting (2015)



TEACHING EVALUATIONS - Results of Student Evaluation on a 0 to 4.0 Scale

Semester {Course #} Course Title	Responses (Class Size)	Instructional Technique	Instructional Support/Effort	Overall Effectiveness
Fall 2001 {ME 7863} Fluid Dynamics	6 (13)	3.000	3.292	2.833
Spring 2002 {ME 7853} Advanced Boundary Layer Theory	10 (11)	3.617	3.425	3.400
Fall 2002 {ME 4383} Thermal System Design	16 (19)	3.646	3.734	3.750
Fall 2002 {ME 4933} Biological Fluid Flow and Heat Transfer	12 (12)	3.764	3.702	3.833
Spring 2003 {ME 3333} Thermodynamics for Non-MEs	42 (69)	3.588	3.617	3.690
Fall 2003 {ME 2334} Thermodynamics for MEs	46 (87)	3.536	3.500	3.739
Spring 2004 {ME 2334} Thermodynamics for MEs	58 (97)	3.830	3.819	3.897
Fall 2004 {ME 7433} Advanced Heat Transfer I: Conduction & Radiation	23 (33)	3.833	3.852	4.000
Spring 2005 {ME 4353} Advanced Engineering Thermodynamics	11 (15)	3.879	3.886	3.909
Spring 2005 {ME 4933} Principles of Tissue Engineering	11 (16)	3.844	3.773	3.818
Fall 2005 {ME 7433} Advanced Heat Transfer I: Conduction & Radiation	9 (12)	3.944	3.972	4.000
Spring 2006 {ME 4433} Heat Transfer	43 (63)	3.365	3.322	3.651
Spring 2006 {ME 4611} Thermal Systems Lab	Supervision Only (9 sections with 117 students)			
Fall 2006 {ME 4621} Thermal Science Lab	Supervision Only (9 sections with 116 students)			
Spring 2007 {ME 2334} Thermodynamics for MEs	45 (65)	3.730	3.839	3.911
Spring 2007 {ME 4621} Thermal Science Lab	9 (9)	3.796	3.833	3.889
Fall 2007 {ME 2334} Thermodynamics for ME Majors	28 (65)	3.899	3.884	4.000



Semester {Course #} Course Title	Responses (Class Size)	Instructional Technique	Instructional Support/Effort	Overall Effectiveness
Spring 2008 {ME 4933} Biological Thermodynamics	5 (6)	3.600	3.550	3.800
Fall 2008	Sabbatical Leave: Lifeline Hospitals, India			
Spring 2009 {ME 2334} Thermodynamics for ME Majors	61 (110)	3.516	3.440	3.797
Fall 2009 {ME 2334} Thermodynamics for MEds	32 (80)	3.609	3.680	3.844
Spring 2010 {ME 7443} Advanced Heat Transfer II: Convection	8 (8)	3.766	3.774	4.000
Fall 2010 {ME 3834} Fluid Mechanics	126 (177)	3.366	3.352	3.600
Spring 2011 {ME 3333} Thermodynamics for Non-MEds	16 (29)	3.896	3.938	4.000
Fall 2011 {ME 3834} Fluid Mechanics	135 (160)	3.481	3.411	3.652
Spring 2012 {ME 7443} Advanced Heat Transfer II: Convection	12 (13)	4.000	4.000	4.000
Fall 2012 {ME 2334} Thermodynamics for ME Majors	51 (116)	3.711	3.749	3.749
Fall 2012 {ME 4621} Thermal Science Lab	Supervision Only (9 sections with 121 students)			
Spring 2013	No Teaching Duties (Technical Program Chair for the ASME Summer Bioengineering Conference)			
Fall 2013 {ME 4433} Heat Transfer	12 (16)	3.875	4.000	4.000
Spring 2014 {ME 7443} Advanced Heat Transfer II: Convection	7 (8)	3.833	3.857	3.833
Spring 2014 {ME 4611} Thermal System Lab	Supervision Only (9 sections with 120 students)			
Fall 2014 {ME 3834} Fluid Mechanics	95 (168)	3.760	3.671	3.766
Fall 2014 {ME 4621} Thermal Science Lab	Supervision Only (9 sections with 120 students)			



Semester {Course #} Course Title	Responses (Class Size)	Instructional Technique	Instructional Support/Effort	Overall Effectiveness
Spring 2015 {ME 7443} Advanced Heat Transfer II: Convection	8 (8)	3.905	3.964	4.000
Spring 2015 {ME 4611} Thermal System Lab	Supervision Only (9 sections with 117 students) (Developed protocols and manuals for 3 new experiments)			
Fall 2015 {ME 2334} Thermodynamics for ME Majors	55 (151)	3.694	3.627	3.836
Spring 2016	Sabbatical Leave: Yokohoma National University, Japan			
Fall 2016 {ME 3834} Fluid Mechanics	** (177)	* .****	* .****	* .****

NEW COURSES DEVELOPED

Biological Fluid Flow and Heat Transfer: Senior/First year graduate student level course on fluid mechanics of time dependent flows in the human circulatory system; momentum, heat and mass transfer principles at the cellular, organism, and system level; heat exchange between the biological system and its environment; and mass transfer in biological organelles and membranes.

Principles of Tissue Engineering: Senior/First year graduate student level course introduces the field of tissue engineering, including cell biology, molecular biology, material science and their relationship towards developing novel materials.

Biological Thermodynamics: Senior/First year graduate student level course on the basic laws of classical thermodynamics with illustrations of their biological application; the Gibbs Free Energy, chemical potential and interfacial thermodynamics; the electrochemical potential and its application to membrane transport; statistical and non-equilibrium thermodynamics applied to membranes, polymers, liquid crystals, nanoscale devices, DNA and evolution.