

Binata Joddar, PhD
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Current Positions: *Assistant Professor*, Metallurgy, Materials and Biomedical Engineering, UTEP.
Adjunct Faculty, Border Biomedical Research Consortium, UTEP.
Visiting Scientist, Nanomedical Engineering Lab, RIKEN, Japan.

EDUCATION	
2003-2006	PhD in Bioengineering Clemson University, Clemson, SC, USA
1999-2001	Masters in Biomedical Engineering (M.S) Jadavpur University, INDIA
1995-1999	Bachelor of Pharmaceutical Science and Technology (B.S) Pune University, INDIA
RESEARCH/ WORK EXPERIENCE	
Feb 2015~	Visiting Researcher (RIKEN, Japan)
September 2014~CURRENT	Assistant Professor of Metallurgy, Materials Science and Biomedical Engineering at University of Texas at El Paso (UTEP), USA
July 2010 ~April 2014	Foreign Post-Doctoral Researcher (Fellowship) The Institute of Physical and Chemical Research, RIKEN, JAPAN
2007-2010	Post-Doc Research Associate/Engineer at Ohio State University, USA

SELECTED AWARDS/ HONORS

- 2010 **Foreign Post-Doctoral Researcher Fellowship** at RIKEN, JAPAN
 2009 **David & Lindsay Morgenthaler Endowed Fellowship (*finalist*)** at the Cleveland Clinic Foundation, Cleveland, OH, USA.
 2008 **Distinguished Post-Doctoral Fellow Award** at the Dorothy.M.Davis Heart and Lung Research Institute of Ohio State University, Columbus, OH, USA
 2003 **Graduate Research Fellowship** at Clemson University Bioengineering Department, USA.

PEER-REVIEWED PUBLICATIONS

1. N Tasnim, A Kumar, **B Joddar**. Attenuation of the in vitro neurotoxicity of 316L SS by graphene oxide surface coating. *Materials Science and Engineering: C*. 2017.
2. **Binata Joddar**, Eduardo Garcia, Atzimba Casas, Calvin Stewart. Development of functionalized multi-walled carbon-nanotube-based alginate hydrogels for enabling biomimetic technologies. *Nature Sci Rep*. 2016; 6: 32456. Published online 2016 Aug 31. doi: 10.1038/srep32456.
3. Zhou Y., Mao H., **Joddar B.**, et al. The significance of membrane fluidity of feeder cell-derived substrates for maintenance of iPS cell stemness. *Scientific Reports* 5, Nature 2015.

4. **Joddar B.**, Firstenberg M.S., Reen R.K., Gooch K.J. Arterial levels of oxygen stimulate intimal hyperplasia in human saphenous veins via a ROS-and NOS-dependent mechanism. *PloS one* 10 (3), e0120301, 2015.
5. **Joddar B.**, Chieko Nishioka, Eiki Takahashi, Yoshihiro Ito. Chemically fixed autologous feeder cell-derived niche for human induced pluripotent stem cell culture. *Journal of Materials Chemistry B* 3 (11), 2301-2307, 2015.
6. **Joddar B.**, Takashi Hoshiba, Guoping Chen, Yoshihiro Ito. Stem cell culture using cell-derived substrates (*Invited Review*). *Biomaterials Science* 2 (11), 1595-1603, 2014.
7. **Joddar B.**, Adam T. Guy, Hiroyuki Kamiguchi, Yoshihiro Ito. Spatial gradients of chemotropic factors from immobilized patterns to guide axonal growth and regeneration. *Biomaterials* 34 (37), 9593-9601, 2013.
8. **Joddar B.**, Aydin Albayrak, Jeonghwa Kang, Mizuki Nishihara, Hiroshi Abe and Yoshihiro Ito. Sustained release of siRNA from dopamine coated stainless steel surfaces for siRNA-mediated gene silencing. *Acta biomaterialia* 9 (5), 6753-6761, 2013.
9. **Joddar B.** and Yoshihiro Ito. *Invited Article*. Artificial niche substrates for maintenance of undifferentiated state or promoting differentiation of embryonic and induced pluripotent stem cells. *Journal of Biotechnology* 168 (2), 218-228, 2013.
10. **Joddar B.**, Kitajima T., and Ito Y. The effects of covalently immobilized hyaluronic acid substrates on the adhesion, expansion, and differentiation of embryonic stem cells for in vitro tissue engineering. *Biomaterials* 32 (33), 8404-8415, 2011.
11. **Joddar B.** and Ito Y. *Invited Review and feature article*. Biological Modifications of Materials Surfaces with Proteins for Regenerative Medicine. *Journal of Materials Chemistry* 21 (36), 13737-13755, 2011.
12. **Joddar B.**, Reen R.K, Firstenberg Michael.F, Varadharaj Saradhadevi, McCord Joe.M, Zweier Jay.L, Gooch Keith.J. Protandim inhibits the development of intimal hyperplasia in human saphenous veins ex vivo via a catalase dependant pathway. *Free Radical Biology and Medicine* 50 (6), 700-709, 2011.
13. **Joddar B.**, Shaffer RJG, Reen RK, Gooch KJ. Arterial pO₂ stimulates intimal hyperplasia and serum stimulates inward eutrophic remodeling in porcine saphenous veins cultured ex vivo. *Biomechanics and modeling in mechanobiology* 10 (2), 161-175, 2011.
14. **Joddar B.**, Reen.R.K, Firstenberg.M.F, Gooch.K.J. Role of oxygen tension and oxidative stress in modulating the development of neointimal hyperplasia in human saphenous veins. *Circulation* 118 (18 Supplement), S_1017, 2008.
15. Ibrahim S., **Joddar B.**, Craps M. and Ramamurthi A. A surface-tethered model to assess size-specific effects of hyaluronan (HA) on endothelial cells. *Biomaterials* 28 (5), 825-835, 2007.
16. **Joddar B.**, Ibrahim S, Ramamurthi A. Impact of delivery mode of hyaluronan oligomers on elastogenic responses of adult vascular smooth muscle cells. *Biomaterials* 28 (27), 3918-3927, 2007.
17. **Joddar B.**, Ramamurthi A. Fragment size- and dose-specific effects of hyaluronan on matrix synthesis by vascular smooth muscle cells. *Biomaterials* 27 (15), 2994-3004, 2006.
18. **Joddar B.**, Ramamurthi A. Elastogenic effects of exogenous hyaluronan oligosaccharides on vascular smooth muscle cells. *Biomaterials* 27 (33), 5698-5707, 2006.

URL for full published report and citation summary:

<https://scholar.google.co.jp/citations?user=AQo7YOEAAAAAJ&hl=en>

1. **Joddar B.**, Sieminski. A.L, Tennant.C.J, Gooch.K.J. **Comprehensive Biomaterials.** Biomaterials and the Microvasculature. Elsevier. 2011. Edited by David Grainger (Utah).
2. **Joddar B.**, Ito Y. **Functional Hydrogels as Biomaterials.** Hydrogels from decellularized ECM of feeder cells for stem cell culture. Springer 2014. Editors: Jun Li, Yoshihito Osada, Justin Cooper-White.
3. Tasnim, N., Nair, B.G., Sai Krishna, K., Narayan, M., Noveron, J.C., **Joddar, B.** Frontiers in Nano-therapeutics. Springer Singapore 2017. Editors: Tamil S. Subramaniam, Narayanan Karthikeyan, Parasuraman Padmanabhan, Ramasamy Paulmurugan.

PATENTS

1. **Elastogenic cues and methods for using the same.** Ramamurthi A., **Joddar B.**, Kothapalli C. US Patent NO. 8,529,951.

CONFERENCE ABSTRACTS & PROCEEDINGS

1. **Joddar, B.**, and Ramamurthi, A. “Investigation of the efficacy of hyaluronan-induced regeneration of vascular elastin matrix”. BMES Annual Meeting 2004, Philadelphia, PA, **USA.**
2. **Joddar, B.**, and Ramamurthi, A. “Hyaluronan-induced in vitro cellular regeneration of vascular elastin”. NIH Symposium 2004 on Cardiovascular Regenerative Medicine, Bethesda, MD, **USA.**
3. **Joddar, B.**, and Ramamurthi, A. “Fragment size and dose-specific response of vascular cells to hyaluronan (HA)”. Tissue Engineering Society International-European Tissue Engineering Society (TESI-ETES) Annual Conference 2004, Lausanne, **SWITZERLAND.**
4. **Joddar, B.**, and Ramamurthi, A. “In Vitro Regeneration of Elastic Matrices to Treat Vascular Aneurysms” (**Oral**). The Regenerate International Conference and Exposition 2005 by PTEI-WFIRM, Atlanta, **USA.**
5. **Joddar, B.**, and Ramamurthi, A. “Exogenous effects of hyaluronan on matrix synthesis by RASMCs”. 10th biennial meeting 2006 for ISACB, San Diego, **USA**
6. **Joddar, B.**, and Ramamurthi, A., “HA Oligomers: A Useful Tool for Tissue Engineering Elastin Matrices?” 4th European Symposium 2006 on Elastin, Lyon, **FRANCE**
7. **Joddar, B.**, and Ramamurthi, A., “HA Oligomers: A Useful Tool for Tissue Engineering Elastin Matrices” (**Oral**). Vascular Matrix Workshop 2007, Whistler, British Columbia, **CANADA**
8. **Joddar, B.**, and Gooch, K.J, “The role and mechanism of oxygen tension and oxidative stress in regulating the development of intimal hyperplasia in porcine saphenous veins, cultured ex-vivo” (**Oral**). Annual Research Day March 14, 2007 at the Dorothy.M.Davies Heart and Lung Research Institute at the Ohio State University at Columbus, Ohio, **USA.**
9. **Joddar, B.**, and Gooch, K.J, “The role and mechanism of oxygen tension and oxidative stress in regulating the development of intimal hyperplasia in porcine saphenous veins, cultured ex-vivo”. BMES Annual Meeting September 26-28, 2007, LA, California, **USA**
10. **Joddar, B.**, and Gooch, K.J, “The role and mechanism of oxygen tension and oxidative stress in regulating the development of intimal hyperplasia in human saphenous veins, cultured ex-vivo”. BMES Annual Meeting October 26-28, 2008, St. Louis, Missouri, **USA**
11. **Joddar B.**, Reen R.K, Firstenberg M, Gooch. K.J. Role of Oxygen Tension and Oxidative Stress in Human Saphenous Vein Remodeling. Scientific Sessions at the American Heart Association Annual Meeting November 8-12, 2008, New Orleans, LA, **USA.**

12. **Joddar, B.**, and Gooch, K.J, “Mechanosignalling and oxidative stress induced development of intimal hyperplasia in human saphenous veins, cultured ex-vivo” (**Oral**). BMES Annual Meeting October 26-28, 2009, Pittsburgh, Pennsylvania, **USA**.
13. **Joddar, B.**, T.Kitajima, E.Osaki, J.Kang, Y.Ito. Designing Hyaluronic acid substrates for recruitment, expansion, and differentiation of stem cells for tissue engineering (**Oral**). International Conference on Biomaterials Science 2011. March 15 - 18, 2011, Tsukuba, **JAPAN**
14. M. Stevenson, **B. Joddar**, K. Gooch. Modulating cellular morphology in 3D culture by independently controlling the matrix stiffness and binding site density. T2C Comprehensive Wound Care Conference on April 8-9, 2011, Columbus, Ohio, **USA**.
15. **Joddar. B.**, Kitajima T, Ito Y. Investigating the role of varying molecular weight of hyaluronic acid in the proliferation and differentiation of mouse ES cells, EB3 in vitro. ISSCR 9th annual meeting June 15-18, 2011, in Toronto, **CANADA**.
16. **Joddar B.**, Firstenberg M., Gooch K.J. Arterial pO₂ stimulates pathological remodeling in human saphenous veins via an eNOS- and superoxide-dependent pathway (**Oral**). BMES Annual Meeting October 12-15, 2011, Hartford, Connecticut, **USA**.
17. **Joddar B.**, Firstenberg M., Gooch K.J. Progression of intimal hyperplasia and pathological remodeling in human saphenous veins via an eNOS- and superoxide-dependent pathway. TERMIS NA Annual Meeting December 12-14, 2011, Houston, Texas, **USA**.
18. **Joddar. B.**, Kitajima T, Ito Y. Covalently Immobilized Hyaluronic Acid Substrates for Maintaining Pluripotency and Proliferation of Embryonic Stem Cells for In Vitro Tissue Engineering. TERMIS NA annual meeting December 12-14, 2011, Houston, Texas, **USA**.
19. **Joddar B.**, Firstenberg M., Gooch K.J. Clinical Predictors of Early Intimal Hyperplasia in Fresh and Cultured Human Saphenous Veins. American Association for Thoracic Surgery. 92nd Annual Meeting April 28-May 2, 2012, San Francisco, CA, **USA**.
20. **Joddar B.**, Kang J., Abe H., Ito Y. Dopamine immobilization onto stainless steel surfaces for siRNA-mediated gene silencing. **Gordon Research Conference June 24-29, 2012** on Bioinspired Materials, Davidson, NC, **USA**.
21. **Joddar B.**, Ito Y. Micropatterning of biological molecules for cell culture. Tokyo University symposium December 15th, 2012, **Japan**.
22. **Joddar. B.**, et al. Analysis of sensory neuron axon growth on two-dimensional photolithographic gradients of covalently immobilized chemotropic factors. BMES Annual Meeting. Seattle, Sept 25-28, 2013, **USA**.
23. Luis Lazalde, Sai Kolli, Luis Solis, Thomas Boland, **Binata Joddar**. Surface Micro Patterning to Induce Cluster Formation for Cell and Tissue Engineering Applications. UTEP COURI summer symposium 2015.
24. Fabrication of uniform sized alginate hydrogels for cell culture applications. Wenxin Shao, KiraLise Silva, Beu Oropeza, Aleli M. Campbell, Thomas Boland, **Binata Joddar**. UTEP COURI summer symposium 2015.
25. Novel Graphene Oxide biocompatible coatings on 316L Stainless Steel meshes for vascular stent applications. Alexandra Alcántara Guardado, Beu P. Oropeza , M.A.I. Shuvo, Yirong Lin , Deidra Hodges, Binata Joddar. BMES 2015. Tampa, Florida.
26. Fabrication of novel hybrid carbon nanotube-alginate hydrogels for applications in cancer research. Beu P. Oropeza, Eduardo Garcia, Atzimba Casas, Calvin M. Stewart, Binata Joddar. WBC 2016. Montreal, **CANADA**.

INVITED TALKS

- Oct 30th, 2015 Building stem cell bridges to cures. BBRC fall talk series, **UTEP**.
- June 28th, 2015 “Using Materials to Mimic the Stem Cell Niche”, International Conference in Materials Sciences; ICMAT, **Singapore**.
- Feb 17, 2014 “Building stem cell bridges to cures: Exploring the ability of bio-derived substrates to increase stem cell expansion for regenerative medicine” at University of Texas at El Paso, Mechanical Engineering. **USA**.
- July 2, 2012 “Bioinspired materials for drug delivery and tissue engineering” at University of Illinois at Chicago, Bioengineering. **USA**.
- Aug 4, 2010 “Hyaluronan: A scaffold for elastogenesis and useful tool for tissue regeneration” at National Institute for Material Sciences (NIMS), International Center for Materials Nanoarchitectonics (MANA), Tsukuba, **JAPAN**.
- May 19, 2016 Exploring the ability of bio-derived substrates to increase stem cell expansion for regenerative medicine, WBC 2016, Montreal, **CANADA**.

SUPERVISION/ MENTORING EXPERIENCE

Graduate/ Post-Graduate Students prior to UTEP

- 2005 Chermaine Ruth. DDS, senior as a summer intern. MUSC, SC, **USA**.
- 2006 Bryan Thomas. MD/PhD senior, summer intern, MUSC, SC, **USA**.
- 2011 Aydin Albayrak. Post-doc from Biological Sciences & Bioengineering, Sabanci University, Turkey. Visiting Scientist at RIKEN, **JAPAN**.
- 2013 Yue Zhou. PhD candidate from Jilin University, China at RIKEN, **JAPAN**.

Undergraduate Students prior to UTEP

- 2008-11 Brittany Shrefler. Jr. at Ohio State Univ. in the Honors College, Major: BME, **USA**.
- 2013 Siddharth Chadaram. Undergraduate in Biotechnology from Manipal Academy, India at RIKEN, **JAPAN**.

Thesis/Graduate student advising at UTEP

- 2014~ Alexandra Alcantara-Guardado, Master’s Student (ME)
- 2014~ Kiralisa Silva, Master’s Student (ME)
- 2016~ Ivan G Hernandez, Master’s student (BME)
- 2016~ Swadipta Roy, PhD student (MASE)
- 2016~ Shweta Anilkumar, PhD student (MASE)
- 2016~ Nishat Tasnim, PhD student (MASE)
- 2017~ Lola Norton, PhD student (MASE)
- 2017~ Virginia Grande, PhD student (MASE)

Dissertation committee member/ Co-advisor at UTEP

- 2014~ Luis Solis (UTEP: PhD-BME)
- 2015~ Alejandra Garibaldi-Garcia (UTEP: MS-MME)
- 2015~ Aleli Mojica Campbell (UTEP: PhD-BME)
- 2016~ Victor Ornelias (UTEP: MS-MASE)
- 2016 Juan Leal (UTEP: PhD-MASE)
- 2016~ Premanshu Trivedi (UTEP: PhD-MASE)
- 2016~ Sai Venkata Challa (UTEP: PhD-MASE)
- 2016~ Nishat Tasnim (UTEP: PhD-MASE)

2016~ Shweta Anilkumar (UTEP: PhD-MASE)

2016~ Lola Norton (UTEP: PhD-MASE)

Undergraduate Students

Visiting Summer Interns (external)

2015 Sai N. Kolli, Austin College, Biology, Class of 2018 (UTEP COURI)

2015 Luis A. Lazalde, University of Notre Dame, Chemical Engineering, Class of 2017 (UTEP COURI)

2015 Wenxin Shao, Beijing Normal University, Class of 2016 (UTEP COURI)

Visiting Summer Interns (at UTEP)

2015 Lois Mendez, Biochemistry, Senior (co-advised with Mahesh Narayan of Chemistry)

2015 Rebecca A. Soto, RISE Scholar, Chemistry graduate of 2015.

Fulltime UG students (at UTEP via COURI)

2015~ Arlene C. Smith, Metallurgy and Materials Science and Engineering, Junior

2015~ Atzimba Casas, Biology, Junior

2016~ Ana Dominguez, ECEE

2017~ Alfonso Armendariz, MME

TEACHING

2014 BME_5101_16938.201510: Research Seminar I

2014 BME_5102_16939.201510: Research Seminar II

2014 BME_6101_16936.201510: Doctoral Research Symposium I

2014 BME_6102_16937.201510: Doctoral Research Symposium II

2015 MME_5391_28213.201520: Individual Studies

2015 RSRC_4033_35525.201530: Undergraduate Research

2015 MME_3312_25612.201520: Biomat, Biomat Printing & Dev

2015, 2016, 2017 BME_5310_25591.201520: Biomaterials

2015 MECH 5301 001: Mathematical Methods for Mech Eng.

2015, 2016 BME 5313 001: Tissue Engineering

2016 BME 3305: Intro to BME-II

2017 MME1205: Graphics and Fundamentals of computation in Materials Sciences

UNIVERSITY COMMITTEE ASSIGNMENTS

2015 Best Thesis/ Best Dissertation Committee (COE)

2015 Graduate Student Fellowships Committee (COE)

2015 COURI SUMMER symposium- Judge for poster sessions

2016 Conducting workshops for UTEP Graduate School

PROFESSIONAL SERVICE

Ad hoc REVIEWER (Journals)

1. Biomaterials
2. Acta Biomaterialia

3. Tissue engineering
4. Tissue Engineering and Regenerative Medicine
5. International Journal of Nanomedicine
6. Annals of Biomedical Engineering
7. Atherosclerosis, Thrombosis and Vascular Biology (ATVB-AHA)
8. Journal of Pharmacy and Pharmacology
9. Hindawi publishing group journals

EDITOR (Journals)

1. Member of the Editorial Board of Scientific Reports (Nature Publishing): Stem Cells and Development Section
2. Member of the Editorial Board of World Journal of Stem Cells

PROFESIONAL AFFILIATIONS

1. The Tissue Engineering and Regenerative Medicine International Society (TERMIS)
2. The International Society for Stem Cell Research (ISSCR) (Member)
3. The American Heart Association (AHA) (member)
4. The Biomedical Engineering Society (BMES), The Whitaker Foundation (Member)
5. Japanese Society of Regenerative Medicine (Member)

MEDIA PUBLICITY

Date/ (Source)/ Article

- Jan. 4, 2011 (Lifevantage.com) Protandim® Found to Prevent a Process that Causes Blood Vessel Blockage in New Peer-Reviewed Study from The Ohio State University
- Apr. 23, 2015 (News.utep.edu) Discovery Suggests Simpler Method to Grow Stem Cells
- Apr. 24, 2015 (Sciencedaily.com) Dead feeder cells support stem cell growth
- May 22, 2015 (News.utep.edu) Latest Lab Targets Stem Cells
- Sept 6, 2016 (El Paso Herald) UTEP Research aims to ‘Mend Broken Hearts’

RESEARCH SUPPORT

Recently completed:

- UTEP COE Interdisciplinary Research funds (6000\$) (Goals: To use bio-printing as a tool for transfection of Yamanaka factors into adult fibroblasts to make iPS cells).
Role: PI, Co-PI: Thomas Boland, PhD. Period: May 15- Aug 31, 2015.
- UTEP URI research grant (5000\$) Fabrication and characterization of hybrid carbon nanotube-alginate hydrogels for applications in cell therapy and tissue engineering.
Role: PI. Period: Jan~ Aug 2016.
- NIH BUILD Pilot Grant (20,000\$) (Goals: To use chemically fixed ECM matrices to differentiate human mesenchymal stem cells into vascular phenotypes)
Role: PI. Period: ~ Dec 2016
- UTEP COE Interdisciplinary Research funds (14000\$) (Goals: Mechanical testing of novel biomaterial hydrogels and thin film coatings for improving biocompatibility of existing materials surfaces) Co-PI: October 2015- August 2016
PI: Calvin Stewart, PhD (Mechanical Engineering)

- NIH BUILD travel award (2000\$) to B.J to attend and present work at domestic conferences.

Current:

- NIH SCORE SC2 (\$437,700). Role: PI. Bio-printing of human iPSC to facilitate their differentiation, recruitment and strategic assembly to form engineered cardiac patches in vitro. Period: April 2016-2019
- Mini seed grant at Texas Tech University Health Sciences Center (\$5500). A Mesenchymal Stem cell based tissue engineered patch to restore normal gastric histology. Role: PI at UTEP. Period: March-August 2017.
- NSF PREM IRG (\$20,000). Fabrication of Biomimetic, Shapeable Scaffolds for Thick Tissue Engineering. Role: co-PI. Period: March-August 2017.