CURRICULUM VITAE

Emmanuel (Manolis) S. Tzanakakis

Professor
Chemical and Biological Engineering, Tufts University,
Cell, Molecular and Developmental Biology, Tufts University,
Clinical and Translational Science Institute, Tufts Medical Center

EDUCATION/DEGREES

Dates attended	Institution and Location	Degree conferred
1995 – 2001	University of Minnesota, Department of Chemical Engineering and Materials Science, Minneapolis, MN	Ph.D. Thesis: *Self-assembly of hepatic tissue equivalents and improvement of their function through gene delivery,* Thesis Advisor: Prof. Wei-Shou Hu
1990 – 1995	Aristotle University of Thessaloniki, Department of Chemical Engineering, Thessaloniki, Greece	Diploma (5-year curriculum, GPA: 9.15/10) Thesis: *Experimental study and modeling of xanthan gum production by genetically optimized strains of X. campestris in bioreactors*

PROFESSIONAL EXPERIENCE

2020 – present	Professor, Cell, Molecular & Developmental Biology, Graduate School of Biomedical Sciences, Tufts School of Medicine
2019 – present	Professor, Chemical & Biological Engineering, Tufts University
2019 – present	Professor, Tufts Clinical & Translational Science Institute (CTSI)
2014 – 2019	Associate Professor, Chemical & Biological Engineering, Tufts University
2015 – 2019	Associate Professor, Tufts CTSI
2012 – 2014	Associate Professor, Biomedical Engineering, SUNY-Buffalo
2010 – 2014	Director, Stem Cell Culture, Banking & Training Facility (SCCF), Western New York Stem Cell Culture & Analysis Center, SUNY-Buffalo
2010 – 2014	Associate Professor, Chemical & Biological Engineering, SUNY-Buffalo
2004 – 2010	Assistant Professor, Chemical & Biological Engineering, SUNY-Buffalo
2002 – 2003	Postdoctoral fellow (Prof. Matthias Hebrok), Diabetes Center, Medical School, University of California-San Francisco (UCSF)
2001 – 2002	Postdoctoral fellow (Prof. Catherine M. Verfaillie), Stem Cell Institute, Medical School, University of Minnesota

HONORS AND AWARDS

- Outstanding Faculty Contribution to Graduate Education Award, Graduate Student Council, Tufts University, 2019
- James D. Watson Investigator Award (New York State Office of Science, Technology and Academic Research-NYSTAR), 2006-08
- Juvenile Diabetes Research Foundation (JDRF) Post-doctoral Fellowship, 2003-05
- National Institutes of Health (NIH) Biotechnology Program Traineeship, 1998-2000
- Award of Excellence from the Technical Chamber of Greece (TEE) (awarded to engineering students graduating with the highest distinctions on a national level), 1995
- Fellowship from National Fellowship Foundation of Greece (IKY) (Rank: top 1%, annually), 1991-95

PROFESSIONAL ACTIVITIES

Organization of Conferences and Symposia

- Chair: "Optogenetic Technologies and Applications" Conference, Society for Biological Engineering (SBE)/American Institute for Chemical Engineers (AIChE), Boston, 2019
- Chair: "Cell Therapy Bioprocessing – Challenges and Advances" session, 2018 Biomanufacturing Summit, Boston, 2018
- Organizer, Symposium in honor of Prof. Wei-Shou Hu's contributions to Cell Culture Engineering on the occasion of his 65th birthday: "In Honor of Wei-Shou Hu – 30 Years of Mammalian Cell Culture Engineering for Biologics Manufacturing", AIChE Annual Meeting, Minneapolis, 2017
- Chair: "In Honor of Wei-Shou Hu II – 30 Years of Mammalian Cell Culture Engineering for Biologics Manufacturing", AIChE 2017 Annual Meeting, Minneapolis, 2017
- Co-organizer (with Prof. Wei-Shou Hu of the Univ. of MN): "Cellular Bioprocess Technology Short Course", Tufts University, Medford, 2016
- Chair: Stem cell session at the 3rd International Conference on Stem Cell Engineering organized by the SBE, Seattle, 2012
- Area Coordinator: "Stem Cells, Regenerative Medicine and Tissue Engineering" area, 243rd American Chemical Society (ACS) National Meeting, San Diego, 2012
- Chair: "Engineering of Stem Cell Expansion and Differentiation" session, 243rd ACS National Meeting and Exposition, San Diego, 2012
- Chair: "Stem Cells in Tissue Engineering I" session, 2011 Annual AIChE Meeting, Minneapolis, 2011
- Chair: "Stem Cells in Tissue Engineering II" session, Annual AIChE Meeting, Minneapolis, 2011
- Chair: "Tissue Engineering and Regenerative Medicine" plenary session at the NYSTEM 2011 Meeting, New York, 2011
- Chair: "Emerging Technologies: Advances in Cell-based Therapeutics" session at the 241st ACS National Meeting and Exposition, Anaheim, 2011
- Chair: "Disease Therapies" session, Annual AIChE Meeting, Salt Lake City, 2010
- Co-Chair: "Bioreactors in Tissue Engineering" session, Annual AIChE Meeting, Salt Lake City, 2010
- Chair: "Emerging Technologies: Advances in Cell-based Therapeutics" session at the 239th ACS National Meeting and Exposition, San Francisco, 2010
- Chair: Poster session at the 239th ACS National Meeting, San Francisco, 2010
- Co-Chair: "Bioreactors in Tissue Engineering" sessions I and II, Annual Meeting of the AIChE, Nashville, 2009
- Chair: "Stem Cells in Tissue Engineering" sessions I and II, Annual Meeting of the AIChE, Nashville, 2009
- Co-Chair: "Biomaterials, Tissue Engineering and Regenerative Medicine" sessions I and II at the 8th World Conference of Chemical Engineering, Montreal, 2009
- Chair: "Metabolic engineering" sessions I and II at the 8th World Conference of Chemical Engineering, Montreal, 2009
- Co-chair: "Engineering the Stem Cell Niche" session, Annual AIChE Meeting, Philadelphia, 2008
- Co-chair: "Stem Cells in Tissue Engineering" session, Annual AIChE Meeting, Philadelphia, 2008
- Chair: "Stem Cells: Stem Cell-based Tissue Engineering" session, 236th ACS National Meeting, Philadelphia, 2008
- Chair: "Stem Cells in Tissue Engineering" session, Annual AIChE Meeting, Salt Lake City, 2007
- Co-Chair: "Tissue Engineering" session II, Annual AIChE Meeting, Salt Lake City, UT, 2007
- Chair: "Tissue Engineering: Biomaterial-cell interactions in tissue engineering" sessions I and II, Annual AIChE Meeting, San Francisco, 2006
- Co-Chair: "Tissue Engineering: Bioreactor studies" session, Annual AIChE Meeting, San Francisco, 2006

- Co-Chair: "Advances in Gene Delivery and Vaccines" session, Annual AIChE Meeting, Austin, 2004

Editorial Board Member

- American Institute of Mathematical Sciences (AIMS) Bioengineering – Editorial Board Member, September 2018 – present
- Cytotechnology – Editorial Board Member, July 2017 – present
- Frontiers in Genetics – Stem Cell Research Section – Associate Editor, October 2015 – present
- Frontiers in Cell and Developmental Biology – Stem Cell Research Section – Associate Editor, October 2015 – present

***Ad hoc* Reviewer for Scientific Journals including:**

Applied Biochemistry and Biotechnology, Biochemical Engineering Journal, Biofabrication, Biomaterials, Biotechnology & Bioengineering, Cytotherapy, Experimental Biology and Medicine, Expert Opinion on Biological Therapy, Integrative Biology, Journal of Biotechnology, Lab on a Chip, Nature, Nature Protocols, PLoS One, Scientific Reports, Stem Cells, Tissue Engineering, Trends in Biotechnology

Guest Editor: *Biotechnology Advances* – 2011, Special issue on Stem Cell Engineering

Other Professional Activities

- *Ad hoc* grant reviewer for the National Science Foundation (NSF) for the Biotechnology, Biochemical and Biomass Engineering (CBET) division programs, 2005 – present
- *Ad hoc* grant reviewer for the National Institutes of Health (NIH) for special emphasis panels and study sections including the Modeling and Analysis of Biological Systems (MABS), and Cardiovascular Disease and Development (CDD), 2009 – present
- Grant reviewer for the American Heart Association (AHA) and the W.M. Keck Foundation
- *Ad hoc* grant reviewer for international funding agencies including the: Italian Ministry of Health (IMH), Canada Foundation for Innovation/Fondation Canadienne pour l'Innovation (CFI), Natural Sciences and Engineering Research Council of Canada (NSERC), Alberta Innovates, Fundação para a Ciência e a Tecnologia (FCT – Portugal), Greek Ministry of Education, Religious Affairs, Culture and Sports, Croatian Science Foundation (HRZZ – Croatia), National Research Foundation (NRF) of Singapore, Strasbourg Institute for Advanced Study, and the Israel Science Foundation (ISF – Israel)

Professional Society Affiliations

- American Institute of Chemical Engineers (AIChE)
- American Chemical Society (ACS)
- Biomedical Engineering Society (BMES)
- International Society for Stem Cell Research (ISSCR)
- Sigma Xi Society

SERVICE TO UNIVERSITY

University at Buffalo (2004-14)

- Advisor, Student Chapter of the AIChE, 2005-08
- Member, Organizing Committee for the CBE Graduate Student Research Open House, 2004-14
- Member, Graduate Integrity Committee, 2006-2014
- Member, Undergraduate Studies Committee, 2008-14
- Alternate member, CBE tenure committee, 2010-14
- Safety coordinator, CBE, 2011-14

- Member of review panel for the UB Office of the Vice President for Research and Economic Development, 2012-14

Tufts University (2014-present)

- Member, Faculty search committees, ChBE Dept., 2014-20
- Member, Undergraduate curriculum development committee, ChBE Dept., 2015-present
- Member, Public Relations committee, ChBE Dept., 2015-present
- Member, *Ad hoc* Tenure and Promotion Committee, School of Engineering, 2015
- Reviewer for *Tufts Collaborates* Seed Grant Program, 2016
- Co-chair, Strategic Plan with emphasis on Research, School of Engineering (SoE), 2017-18
- Member, School of Engineering Study Abroad committee, 2017-present
- Advisor, Tufts Biotechnology Certificate Program, 2017-present
- Advisor, Tufts Biotechnology Major/Minor, 2017-present
- Member, Curriculum Task Force, School of Engineering, 2018-present
- Member, Tufts Faculty Research Support Advisory Committee, 2020-21
- Member, Small Task Force, International Academic Partnership Program (IAPP), 2020-present

TEACHING ACTIVITIES

Courses Taught

University at Buffalo (2004-14)

CE 408: Chemical Plant Design (2004-11); *CE 404*: Product Design (2011-12); *CE 500*: Advanced Bioengineering (2005); *CHE 516J*: Course for the Research Institute for Biomedical Materials Science & Engineering (RIBSE; 2005-07); *CE548/448*: Cellular and Molecular Bioengineering (2006); *CE 212*: Fundamentals of Chemical Engineering (2006-10); *CE 317*: Transport Processes I (Fall 2013); *CE 512/449*: Biosystems Engineering (2007-08); *CE 449 - BE 406*: Biosystems Engineering (2012-14); *CE 447*: Biological Transport and Kinetics (2009); *CE 517*: Bioengineering Principles (2010); *CE 630*: Research Methods (2011).

Tufts University (2014-present)

ChBE 39: Applied Numerical Methods for Chemical and Biological Engineering (2015-present); *ChBE 166*: Cell/microbial cultivation (2016-present); *BioE 291*: Bioengineering Seminar I (2017- present).

Post-doctoral Trainees

Sinae Kim	PhD in Molecular Developmental Biology – Ponchon CHA University, Seoul, Korea (2003-07); Postdoctoral Research Fellow, Emory University, Atlanta, GA (2008-11).
2011-12	Current position: Korea
Ivanna Ihnatovych	PhD: Neuroscience, Charles University of Prague, Czech Republic (1998-2002); Postdoctoral Associate: Depts. of Physiology and Biophysics, Obstetrics and Gynecology, University of Illinois, Chicago (2003-08), Dept. of Physiology and
2012-14	Biophysics, SUNY-Buffalo (2008-12) Current position: Post-doctoral associate, Dept. of Neurology, SUNY-Buffalo
Jincheng Wu	PhD: SUNY-Buffalo (2009-14), Chemical Engineering
2014-15	Current position: Investigator III, Novartis (NIBR), Cambridge, MA

Current Graduate Students

Preeti Ashok	ChBE; **Ph.D.** candidate
Zijing (Sylvia) Chen	ChBE; **Ph.D.** candidate • 2018 Robert P. Guertin Student Leadership Award; 2018 Outstanding Graduate Student Organization Award

Demetrios Stoukides	ChBE, **Ph.D.** candidate
Konstantinos Chatziantoniou	ChBE, **Ph.D.** candidate
Omar Abdillahi	BioE, **M.S.** candidate
Jiaxi Xiao	BioE; **M.S.** candidate

Former Graduate Students

Elena F. Jacobson — **Ph.D.**, Chemical and Biological Engineering (ChBE), 2020, Thesis: *Developing a scalable process for expansion and differentiation of human pluripotent stem cells into pancreatic cells for diabetes therapies*
Current position: CRISPR Therapeutics, Cambridge, MA

Fan Zhang — **Ph.D.**, ChBE, 2019, Thesis: *Optogenetic regulation of intracellular cyclic adenosine monophosphate and glucose-stimulated insulin secretion in pancreatic beta cells*
Current position: Scientist, Simcere Pharmaceuticals, Cambridge, MA

Mahboubeh R. Rostami — **Ph.D.**, ChBE, 2017, Thesis: *Investigation of stem cell population heterogeneity using single cell analysis and computational modeling*
Current position: Postdoctoral fellow, Cornell Weill Medical School, NY

Yongjia Fan — **Ph.D.**, ChBE, 2015, Thesis: *Scalable xeno-free expansion of human pluripotent stem cells in stirred-suspension vessels and their differentiation into pancreatic progenitor cells*
Current position: Senior Scientist II, WuXi AppTec, Wuxi, China.
- Chemical and Biological Engineering Open House for Graduate Research - UB: Best poster, 1st prize (Nov. 2012)

Jincheng Wu — **Ph.D.**, ChBE, 2014, Thesis: *Multiscale stochastic modeling and experimental analysis of self-renewing and differentiating human pluripotent cell populations*
Current position: Investigator III, Novartis, Cambridge, MA
- Mark Diamond Research Grant 2013

Abhirath Parikh — **Ph.D.**, ChBE, 2014, Thesis: *Engineering cardiomyocytes from diverse pluripotent stem cell lines with optimized cell yield and efficiency*.
M.S., ChBE, 2009, Thesis: *Directed differentiation of mouse embryonic stem cells to cardiomyocytes in a scalable culture system*
Current position: Senior Engineer, Kite Pharma, Santa Monica, CA
- Mark Diamond Research Grants, 2008 and 2010

Lye T. Lock — **Ph.D.**, ChBE, 2010, Thesis: *Expansion & directed differentiation of human pluripotent stem cells to insulin-producing cells in a stirred-suspension microcarrier system*
Current position: Director of PD, Atara Biotherapeutics, San Diego, CA
- Best poster award at the 2008 AIChE National Meeting; Best poster award at the Sigma Xi Research Symposium, 2010

Donghui Jing — **Ph.D.**, ChBE, 2010, Thesis: *Investigation of the cardiogenic differentiation of human pluripotent stem cells in static cultures and stirred-suspension bioreactors.*
Current position: CEO President and Founder, HaoLing Cell Technologies Corporation, Tianjin, China
- Mark Diamond Research Grant, 2008

Daniel E. Kehoe — **Ph.D.**, ChBE, 2009, Thesis: *Embryonic stem cell self-renewal and differentiation in a scalable bioprocess*
Current position: Senior Process Engineer – Sanofi Genzyme, Framingham, MA.
- Graduate Student Excellence in Teaching Award, 2007; ChBE Open House for Graduate Research: 1st prize, 2008; SUNY-Buffalo Graduate Student Association President (2008-09); Delivered the Salutation of the Commencement of the School of Engineering and Applied Sciences, 2009; Tau Beta Pi New York Nu chapter

	recognition as Teaching Assistant of the year, 2009; Mark Diamond Research Grant, 2007
Shawna Downing	**M. S.**, Bioengineering (BioE), 2018, Thesis: *Regulation and signaling of the Regenerating gene (Reg) protein in the pancreas* Current position: Process Development Associate II, MassBiologics, Fall River, MA
Ketaki Nade	**M. Eng.**, Biomedical Engineering (BME), 2016 (carried out research for credit) Current position: Process Development Engineer, Vedanta Biosciences, Cambridge, MA
Prathiba Sampath	**M.S.**, ChBE, 2013, Thesis: *Population balance modeling of embryonic stem cell aggregates.* Current position: Bioprocess Specialist, Jacobs, San Francisco, CA
Anne F. Stephan	**M.S.**, BME, 2012, Thesis: *Study of Reg signaling in mouse cardiac tissue* Current position: Co-founder and CEO, Jack'n'Ferdi
Michael Hsiung	**M.S.**, ChBE, 2012, Thesis: *Scalable Cultivation of Human Pluripotent Stem Cells on chemically defined surfaces* Current position: Senior Process Engineer, Kite Pharma, Santa Monica, CA
Krishna N. Gopal	**M.S.**, ChBE, 2012, Thesis: *Scaling up of Bioreactor towards Directed Differentiation of Human Embryonic Stem Cells* Current position: Process Development Engineer, Pfanstiehl Inc., Waukegan, IL
Diana C. Olaya	**M.S.**, ChBE, 2011, Thesis: *Oxygen transfer and population balance models in bioreactors of mouse and human embryonic stem cell aggregates* Current position: Staff Engineer, ATSI, Inc., Orchard Park, NY • Mark Diamond Research Grant, 2010
Nicholas Tojek	**M. Eng.**, ChBE, 2011 Current position: The Goodyear Tire & Rubber Company, Buffalo, NY
Suyog U. Pol	**M.S.**, ChBE, 2011, Thesis: *Genomic analysis of the human glial progenitor development* (PhD SUNY – Buffalo) Current position: Post-doctoral Fellow – Dept. of Neurology - SUNY-Buffalo
Li Lu	**M. Eng.**, ChBE, 2007 Current position: Unknown
Richa Mittal	**M.S.**, ChBE, 2009, Thesis: *Photoactivable enhancement of insulin secretion by pancreatic beta-cells* (PhD, University of California – Irvine) Current position: Research Scientist, University of Michigan
Pradeep Nagaraja	**M. Eng.**, ChBE, 2009 Current position: Unknown
Chin Fan Tee	**M. Eng.**, ChBE, 2006 Current position: Product Engineer, BEMIS – Asia Pacific (Malaysia)

Research training for undergraduate and high school students, including minority students

At least one undergraduate student has carried out research under my supervision each semester since establishing my laboratory. Almost half of the undergraduate trainees are female. In addition, my laboratory provided research training to groups of undergraduate and high school students under various programs including: (i) NIH/NIDDK-supported 10-week summer training (2005-2007), (ii) Collegiate Science and Technology Entry Program (CSTEP; NY State Department of Education) for talented minority students in STEM disciplines and health-related professions (2010-11), (iii) Buffalo-Area Engineering Awareness for Minorities (BEAM) program (2008-12) for minority high school students and, (iv) NSF-funded REU program at Tufts (2017-present), (v) McNair and GEM programs.

RESEARCH SUPPORT

Current Grant Support

1. NSF, CBET-2015849: "Collaborative Research: Near-infrared light-controlled beta-cells", Role: PI (co-PI: Mark Gomelsky, University of Wyoming), 07/01/2020-06/30/2023
2. NSF, CBET-1743367: "Collaborative Research: Bioprocess development for the generation of functional pancreatic islet cells from human pluripotent stem cells", Role: PI (co-PI: Matthias Hebrok, University of California – San Francisco); 09/01/2017- 08/31/2020
3. NSF, CBET-1951104: "Optogenetic and biosensing technologies for a bioartificial pancreas platform", Role: PI (co-PI: S. Sonkusale, ECE – Tufts), 03/15/2020-02/28/2023
4. NIH, 1R01HL141805, "A genetically engineered human fetal liver niche as a universally common platform for biomanufacturing of hematopoietic stem cells". Role: co-Investigator; PI: Mo Ebhrahimkhani, University of Pittsburgh, 7/01/2019-06/30/2023

Past Grant Support

1. US Department of Defense, W81XWH-16-1-0304: "Development of cardiac extracellular matrix – silk based engineered cardiac tissue repair of congenital heart defects in pediatric patients". Role: Co-Investigator (PI: L. Black, Tufts University); 09/01/2016-08/31/2019
2. NSF, MCB-1945804: "Optogenetic Technologies and Applications", conference grant, Role: PI (co-PIs: G. Levesque-Tremblay (AIChE), M. Gomelsky (U of Wyoming)), 12/2019
3. NSF, CBET-1603524: "Identification and Characterization of Matrikines for Cardiac Differentiation and Regeneration", Role: co-PI (co-PI: L. Black, Tufts University), 07/01/2016-06/30/2019
4. NSF, CBET-1547785: "EAGER: Biomanufacturing: Development of a quantitative framework of directed stem cell differentiation in scalable bioreactors", Role: PI (co-investigator: S. Murthy, Northeastern University), 09/01/2015-08/31/2017
5. NIH, 1R01HL103709-01A1: "Bioprocess for cardiac cell generation from human induced pluripotent stem cells", Role: PI (co-investigators: J. Li, R. Rasmusson, SUNY-Buffalo) 04/06/2011-12/31/2015.
6. New York Stem Cell Science (NYSTEM), C026714: "Western New York Stem Cell Culture and Analysis Center", Role: Co-PI (PI: R.M. Gronostajski), 08/01/2011-07/31/2015
7. NYSTEM, C026415: "INFS – a new module for stem cell transcription programming", Role: Co-PI (PI: M.K. Stachowiak), 09/01/10-08/31/12
8. NYSTEM, C024355: "Scalable expansion and directed differentiation of human embryonic stem cells to pancreatic progeny", Role: PI (Co-Investigator: S.G. Laychock) 01/01/09-12/31/12
9. NIH, 1R21HL092398-01A1: "Scalable bioprocess for cardiomyocyte generation from human embryonic stem cells", Role: Sole PI, 08/15/08-06/30/11
10. NIH, 3R21HL092398-01A1S1: "Scalable bioprocess for cardiomyocyte generation from human embryonic stem cells", Role: PI, 7/15/09-6/30/10
11. NYSTAR, J.D. Watson Award: "Scalable culture system for stem cell expansion and differentiation", Role: PI, 06/01/06-05/30/08

PUBLICATIONS

Refereed Journal Articles (Underlined names denote students under the PI's supervision)

1. Jacobson, E.F., Nair, G.G., Hebrok, M., **Tzanakakis, E.S.**, "Non-xenogeneic expansion and definitive endoderm differentiation of human pluripotent stem cells in an automated bioreactor", (in review), 2020
2. Ashok, P., Parikh, A., Du, C., **Tzanakakis, E.S**., "Xenogeneic-free system for biomanufacturing of cardiomyocytes from human pluripotent stem cells", (in review), 2020
3. Nair, G.G., **Tzanakakis, E.S.**, Hebrok, M., "Emerging routes to the generation of functional β-cells for diabetes mellitus cell therapy", *Nat. Rev. Endocrinol.*, (accepted; PMID:32587391), 2020
4. Chen, Z., Downing, S., **Tzanakakis, E.S.**, "Four decades after the discovery of regenerating islet-derived (Reg) proteins: Current understanding and challenges", *Front. Cell Dev. Biol.*, 7:235, 2019
5. Zhang, F., **Tzanakakis, E.S.**, "Amelioration of diabetes in a murine model upon transplantation of pancreatic β-cells with optogenetic control of cyclic AMP", 8:2248-55, 2019

6. Downing, S.*, Zhang, F.*, Chen, Z., **Tzanakakis, E.S.**, "MicroRNA-7 directly targets *Reg1* in pancreatic cells", *Am. J. Physiol. Cell Physiol.*, 317(2):C366-C374, 2019 **equal contribution*
7. Jacobson, E.F., **Tzanakakis, E.S.**, "Who will win: Induced pluripotent stem cells versus embryonic stem cells for beta-cell replacement and diabetes disease modeling?", *Curr. Diab. Rep.* 18:133, 2018 ** invited submission*
8. Zhang, F., **Tzanakakis, E.S.**, "Optogenetic regulation of insulin secretion in pancreatic β-cells", *Sci. Rep.*, 7(1):9357, 2017
9. Jacobson, E.F., **Tzanakakis, E.S.**, "Human pluripotent stem cell differentiation to functional pancreatic cells for diabetes therapies: Innovations, challenges and future directions", *J. Biol. Eng.*, 11:21, 2017
10. Fan, Y., Zhang, F., **Tzanakakis, E.S.**, "Engineering xeno-free microcarriers with recombinant vitronectin, albumin and UV irradiation for human pluripotent stem cell bioprocessing", *ACS Biomater. Sci. Eng.*, 3(8):1510-18, 2017
11. Ashok, P., Fan, Y., Rostami, M.R., **Tzanakakis, E.S.**, "Aggregate and microcarrier cultures of human pluripotent stem cells in stirred-suspension systems", *Methods Mol. Biol.*, 1502:35-52, 2016.
12. Parikh, A., Wu, J., Blanton, R.M., **Tzanakakis, E.S.**, "Signaling pathways and gene regulatory networks in cardiomyocyte differentiation", *Tissue Eng. Part B, Reviews,* 21(4):377-92, 2015
13. Rostami, M.R., Wu, J., **Tzanakakis, E.S.**, "Inverse problem analysis of pluripotent stem cell aggregation dynamics in stirred-suspension cultures", *J. Biotechnol.*, 208:70-9, 2015
14. Terranova, C., Narla, S., Lee, Y.-W., Bard, J., Parikh, A., Stachowiak, E.K., **Tzanakakis, E.S**., Buck, M., Birkaya, B., Stachowiak, M.K., "Global developmental gene programing involves a nuclear form of Fibroblast Growth Factor Receptor-1 (FGFR1)", *PLOS One*, 10(4):e0123380, 2015
15. Fan, Y., Wu, J., Ashok, P., Hsiung, M., **Tzanakakis, E.S.**, "Production of human pluripotent stem cell therapeutics under defined xeno-free conditions: Progress and challenges", *Stem Cell Rev.,* 11(1):96-109, 2015
16. Wu, J., Fan, Y., **Tzanakakis, E.S.**, "Increased culture density is linked to decelerated proliferation, prolonged G_1 phase and enhanced propensity for differentiation of self-renewing human pluripotent stem cells", *Stem Cells Dev.,* 24(7):892-903, 2014
17. Wu, J., Rostami, M.R., Cadavid Olaya, D.P., **Tzanakakis, E.S.**, "Oxygen transport and stem cell aggregation in stirred-suspension bioreactor cultures", *PLOS One,* 9(7): e102486, 2014
18. Fan, Y., Hsiung, M., Cheng, C., **Tzanakakis, E.S.**, "Facile engineering of xeno-free microcarriers for the scalable cultivation of human pluripotent stem cells in stirred suspension", *Tissue Eng. Part A*, 20:588-99, 2014
19. Chen, C.K., Law, W.C., Aalinkeel, R., Yu, Y., Nair, B., Wu, J., Mahajan, S., Reynolds, J.L., Li, Y., Lai, C.K., **Tzanakakis, E.S.**, Schwartz, S.A., Prasad, P.N., Cheng, C., "Biodegradable cationic polymer nanocapsules for overcoming multidrug resistance and enabling drug-gene co-delivery to cancer cells", *Nanoscale*, 6(3):1567-72, 2014
20. **Tzanakakis, E.S.**, Hu, W.S., "Stem cell science has made major strides in the last few years. Introduction", *Biotechnol. Adv.*, 31(7): 993, 2013
21. Wu, J., **Tzanakakis, E.S.**, "Deconstructing stem cell population heterogeneity: Single-cell analysis and modeling approaches", *Biotechnol. Adv.*, 31(7): 1047-62, 2013
22. Bett, G.C.L., Kaplan, A.D., Lis, A., Cimato, T., **Tzanakakis, E.S.**, Zhou, Q., Morales, M.J., Rasmusson, R.L., "Electronic 'expression' of the inward rectifier in cardiomyocytes derived from human induced pluripotent stem cells", *Heart Rhythm* 10(12):1903-10, 2013
23. Wu, J., **Tzanakakis, E.S.**, "Distinct allelic patterns of Nanog expression impart embryonic stem cell population heterogeneity", *PLOS Comp. Biol.*, 9(7): e1003140, 2013
24. Wu, J., Rostami, M.R., **Tzanakakis, E.S.**, "Stem cell modeling: from gene networks to cell populations", *Curr. Opin. Chem. Eng.*, 2(1):17-25, 2013 ** invited submission*
25. Mann, J., Wood, J., Stephan, A., **Tzanakakis, E.S.**, Ferkey, D., Park, S., "Epitope-guided engineering of protein binders for in vivo inhibition of ERK2 signaling", *ACS Chem. Biol.*, 8:608-16, 2013

26. Stachowiak, M.K., Kucinski, A., Curl, R., Syposs, C., Yang, Y., Narla, S., Terranova, C., Prokop, D., Klejbor, I., Bencherif, M., Birkaya, B., Corso, B., Parikh, A., **Tzanakakis, E.S.**, Wersinger, S., Stachowiak, E.K., "Schizophrenia: A neurodevelopmental disorder - integrative genomic hypothesis and therapeutic implications from a transgenic mouse model", *Schizophr. Res.*, 143:367-76, 2013
27. Wu, J., **Tzanakakis, E.S.**, "Contribution of stochastic partitioning at human embryonic stem cell division to NANOG heterogeneity", *PLoS ONE*, 7(11): e50715, 2012
28. Lee, Y.W., Terranova, C., Birkaya, B., Narla, S., Kehoe, D., Parikh, A., Dong, S., Ratzka, A., Brinkmann, H., Aletta, J.M., **Tzanakakis, E.S.**, Stachowiak, E.K., Claus, P., Stachowiak, M.K., "A novel nuclear FGF Receptor-1 partnership with retinoid and Nur receptors during gene programming of embryonic stem cells", *J. Cell Biochem.*, 113(9):2920-36, 2012
29. Patil, S.A., Chandrasekaran, E.V., Matta, K.L., Parikh, A., **Tzanakakis, E.S.**, Neelamegham, S., "Scaling down the size and increasing the throughput of glycosyltransferase assays: Activity changes on stem cell differentiation", *Anal. Biochem.*, 425(2):135-144, 2012
30. Parikh, A., Stephan, A.F., **Tzanakakis, E.S.**, "Regenerating proteins and their expression, regulation and signaling", *Biomol. Concepts*, 3(1):57-70, 2012
31. Lock, L.T., Laychock, S.G., **Tzanakakis, E.S.**, "Pseudoislets in stirred-suspension culture exhibit enhanced cell survival, propagation and insulin secretion", *J. Biotechnol.*, 151(3):278-86, 2011
32. Jing, D., Parikh, A., **Tzanakakis, E.S.**, "Cardiac Cell Generation from Encapsulated Embryonic Stem Cells in Static and Scalable Culture Systems", *Cell Transplant.*, 19(11):1397-1412, 2010
33. Jing, D., Kehoe, D.E., **Tzanakakis, E.S.**, "Expression of Reg Family Proteins in Embryonic Stem Cells and its Modulation by Wnt/β-catenin signaling", *Stem Cells Dev.*, 19(9):1307-19, 2010
34. Kehoe, D.E., Jing, D., Lock, L.T., **Tzanakakis, E.S.**, "Scalable Stirred-suspension Bioreactor Culture of Human Pluripotent Stem Cells", *Tissue Eng. Part A*, 16:405-21, 2010
35. Lock, L.T., **Tzanakakis, E.S.**, "Expansion and differentiation of human embryonic stem cells to endoderm progeny in a microcarrier stirred-suspension culture", *Tissue Eng. Part A*, 15:2051-63, 2009
36. Jing, D., Parikh, A., Canty, J.M., **Tzanakakis, E.S.**, "Stem cells for heart cell therapies", *Tissue Eng. Part B*, 14(4):393-406, 2008
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