Melissa **Kinney**, Ph.D.

Interdisciplinary stem cell engineer & systems biologist

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EDUCATION

2014 **Georgia Institute of Technology & Emory University**
Ph.D., Biomedical Engineering

2008 **Boston University**
B.S., Biomedical Engineering, *Magna Cum Laude*

EXPERIENCE

2019-present **University of Wisconsin-Madison**
Assistant Professor

2014-2018 **Boston Children's Hospital, Harvard Medical School & MIT**
Postdoctoral Research Fellow
advisors: George Daley, M.D., Ph.D. and Douglas Lauffenburger, Ph.D.

2008-2014 **Georgia Institute of Technology**
Graduate Research Assistant
advisor: Todd McDevitt, Ph.D.

2007-2008 **Aspect Medical Systems**
Engineering Research and Development Co-op

RESEARCH FUNDING

2014-2016 **Hematology Postdoctoral Training Grant (T32),** Brigham & Women's Hospital
2012-2014 **Predoctoral Fellowship,** American Heart Association
2009-2012 **Graduate Research Fellowship,** National Science Foundation

HONORS & AWARDS

2016 **Top Poster Award,** Signal Transduction Gordon Research Conference
2015 **Ph.D. Thesis Award,** Georgia Tech Sigma Xi
2013 **Young Investigator Award,** Wake Forest Institute for Regenerative Medicine
2013 **F.L. Bud Suddath Research Award,** Petit Institute for Bioscience and Bioengineering
2012 **Top Poster Award,** SBE Stem Cell Engineering
2010, 2012 **Travel Grant,** Society for Biological Engineering Conference
2010,12-13 **Travel Grant,** Hilton Head Conference for Regenerative Medicine
2004 **Engineering Scholar Award,** Boston University

PUBLICATIONS

Integrative systems analysis uncovers a novel role for ErbB4 in hematopoiesis

Kinney MA, Vo LT, Frame JM, Barragan J, Conway AJ, Li S, Wong K, Collins JJ, Cahan P, North TE, Lauffenburger DA, Daley GQ. in revision.

Optimized beta-globin expression and enucleation from induced red blood cells for in vitro modeling of sickle cell disease

Rosanwo TO, **Kinney MA**, Clark MA, Vo LT, R. Rowe G , Marion W, Barragan J, Capi A, Zhang Y, Mullin N, Shi M, Archer NM, Ducamp S, Shabani E, Heeney MM, Schlaeger T, Bauer DE, Fleming MD, Duraisingh MT, Orkin SH, Brugnara C, North TE and Daley GQ. in preparation.

Lin28 paralogs regulate lung branching morphogenesis

Osborne JK, **Kinney MA**, Han A, Akinnola KE, Vo LT, Yermalovich AV, Pearson DS, Sousa PM, Barragan J, Metzger RJ, Daley GQ. in revision.

Lin28 and let-7 Regulate the Timing of Cessation of Murine Nephrogenesis

Yermalovich A, Osborne Jk, Sousa P, Han A, **Kinney MA**, Chen M, Robinton D, Montie H, Pearson D, Wilson S, Combes A, Little M, Daley GQ. Nature Communications. in press.

Regulation of embryonic haematopoietic multipotency by EZH1

Vo LT, **Kinney MA**, Liu X, Zhang Y, Sousa PM, Barragan J, Jha DK, Cesana M, Shao Z, Orkin SH, Doulatov S, Xu J, Daley GQ. Nature. (7689):506-510 (2018).
https://www.ncbi.nlm.nih.gov/pubmed/29342143

Drug discovery for Diamond Blackfan Anemia using reprogrammed hematopoietic progenitors

Doulatov S, Vo LT, Macari ER, Wahlster L, **Kinney MA**, Taylor AM, Barragan J, Gupta M, McGrath K, Lee H-Y, Humphries JM, DeVine A, Narla A, Alter BP, Beggs AH, Agarwal S, Ebert BL, Gazda HT, Lodish HF, Sieff CA, Schlaeger TM, Zon LI, Daley GQ. Science Translational Medicine. 9:376 (2017).
https://www.ncbi.nlm.nih.gov/pubmed/28179501

Mesenchymal morphogenesis of embryonic stem cells dynamically modulates the biophysical microtissue niche

Kinney MA, Saeed R, McDevitt TC. Scientific Reports. 4 pp. 4290 (2014).
https://www.ncbi.nlm.nih.gov/pubmed/24598818

Temporal modulation of β-catenin signaling by multicellular aggregation kinetics impacts embryonic stem cell cardiomyogenesis

Kinney MA, Sargent CY, McDevitt TC. Stem Cells & Development. 22:19 pp. 2665-77 (2013).
https://www.ncbi.nlm.nih.gov/pubmed/23767804

Spatial pattern dynamics of 3D stem cell loss of pluripotency via rules-based computational modeling

White DE, **Kinney MA**, McDevitt TC, Kemp ML. PLoS Computational Biology. 9:3 pp. e1002952 (2013).
https://www.ncbi.nlm.nih.gov/pubmed/23516345

Systematic analysis of embryonic stem cell differentiation in hydrodynamic environments with controlled embryoid body size

Kinney MA, Saeed R, McDevitt TC. Integrative Biology. 4:6 pp. 641-50 (2012).
https://www.ncbi.nlm.nih.gov/pubmed/22609810

Stiffening of human mesenchymal stem cell spheroid microenvironments induced by incorporation of gelatin microparticles

Baraniak PR, Cooke MT, Saeed R, **Kinney MA**, Fridley KM, McDevitt TC.
Journal of Mechanical Behavior of Biomedical Materials. 11 pp. 63-71 (2012).
https://www.ncbi.nlm.nih.gov/pubmed/22658155

Hydrodynamic modulation of embryoid body differentiation by rotary orbital suspension culture

Sargent CY, Berguig GY, **Kinney MA**, Carpenedo RL, Hiatt LA, Berson RE, McDevitt TC.
Biotechnology and Bioengineering. 105:3 pp. 611-26 (2010).
https://www.ncbi.nlm.nih.gov/pubmed/19816980

REVIEWS & TEXTBOOK CHAPTERS

Pluripotent stem cells

Kinney MA and McDevitt TC. The Biomedical Engineering Handbook, 4th Edition

Engineering three-dimensional stem cell morphogenesis for the development of tissue models and scalable regenerative therapeutics

Kinney MA, Hookway TA, Wang Y, McDevitt TC. Annals of Biomedical Engineering. 42:2 pp. 352-67 (2014).
https://www.ncbi.nlm.nih.gov/pubmed/24297495

Emerging strategies for spatiotemporal control of stem cell fate and morphogenesis

Kinney MA and McDevitt TC. Trends in Biotechnology. 31:2 pp. 78-84 (2013).
https://www.ncbi.nlm.nih.gov/pubmed/23219200

Hydrodynamic modulation of pluripotent stem cells

Fridley KM, **Kinney MA**, McDevitt TC. Stem Cell Research & Therapy. 3:6 pp. 45 (2012).
https://www.ncbi.nlm.nih.gov/pubmed/23168068

The multi-parametric effects of hydrodynamic environments on stem cell culture

Kinney MA, Sargent CY, McDevitt TC. Tissue Engineering Part B: Reviews. 17:4 pp. 249-62 (2011).
https://www.ncbi.nlm.nih.gov/pubmed/21491967

PATENTS

Skin preparation device and biopotential sensor

Cordero RM, Harhen R, Kinney MA, Houtchens G, Davidson M, Brumer R
US Patent 2010/0022864, 2010

ORAL PRESENTATIONS

2017	Biomedical Engineering Society (BMES) Annual Meeting Phoenix, AZ
2014	World Congress of Biomechanics Boston, MA **Invited presentation**
2014	International Conference on Stem Cell Engineering Society for Biological Engineering (SBE) Coronado, CA
2013	Tissue Engineering and Regenerative Medicine International Society (TERMIS) Atlanta, GA
2013	Suddath Symposium Atlanta, GA
2012	Biomedical Engineering Society (BMES) Annual Meeting Atlanta, GA
2012	Bio Industry Symposium Atlanta, GA
2012	Regenerative Medicine and Engineering (REM) Retreat Atlanta, GA
2012	Regenerative Medicine Workshop Hilton Head Island, SC
2011	Biomedical Engineering Society (BMES) Annual Meeting Hartford, CT

2010 Society for Biomaterials (SFB) Annual Meeting
Seattle, WA

POSTER PRESENTATIONS

2016 Gordon Research Conference
Signal Transduction from Engineered Extracellular Matrices
Biddeford, ME
Top poster award

2013 International Society for Stem Cell Engineering (ISSCR) 11th annual meeting
Boston, MA

2013 Regenerative Medicine Workshop
Hilton Head Island, SC

2012 World Congress
Tissue Engineering and Regenerative Medicine International Society (TERMIS)
Vienna, Austria

2012 International Conference on Stem Cell Engineering
Society for Biological Engineering (SBE)
Seattle, WA
Top poster award

2012 Regenerative Medicine Workshop
Hilton Head Island, SC

2010 International Conference on Stem Cell Engineering
Society for Biological Engineering (SBE)
Boston, MA

2010 Regenerative Medicine Workshop
Hilton Head, SC

TEACHING EXPERIENCE

Teaching Assistant
2009 BMED 3610: Quantitative Engineering Physiology Lab II
2010 BMED 3600: Physiology of Cellular and Molecular Systems

2011 **Instructor**, Stem Cell Biology
GEM4 Summer School

2011-2013 **Research Mentor**
Petit Undergraduate Research Scholars

2006-2008 **Tutor**, College of Engineering
Boston University Engineering Resource Center

INVITED WORKSHOPS

2013 NextProf Future Faculty Workshop
University of Michigan

2013 Workshop on Key Challenges in the Implementation of Convergence
National Academy of Sciences

2013 Directions in TERM: Emergence of Stem Cell Engineering
NSF sponsored workshop in Sonoma, CA

LEADERSHIP & SERVICE

2015-2016	**Editorial Board member and reviewer** Tissue Engineering Young Investigator Council
2012-2014	**Bioprocessing sub-group leader** Engineering Stem Cell Technologies Lab
2013	**Peer reviewer** TERMIS-AM annual meeting
2012-2014	**Ad hoc peer reviewer** Journal of Biomedical Materials Research (JBMR): Part A
2012	**Peer reviewer** Biomedical Engineering Society (BMES) annual meeting
2010-2011	**Committee chair** Bioengineering and Bioscience Unified Graduate Students
2009-2011	**Committee leader and volunteer** Georgia Tech BME Department graduate recruitment
2007	**Vice president** Tau Beta Pi Engineering Honor Society
2006	**Secretary** Society of Women Engineers
2007-2008	**Freshman Student Advisor** Boston University College of Engineering
2006-2008	**Dean's Host** Boston University College of Engineering