Curriculum Vitae

Derek M. Doroski, Ph.D.

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Publications

1. DM Doroski, How *Humanae vitae* has advanced reproductive health. The Linacre Quarterly. 2014; 81(3): 286-294.
2. DM Doroski, ME Levenston, JS Temenoff. Cyclic tensile culture promotes fibroblastic differentiation of marrow stromal cells encapsulated in poly(ethylene glycol)-based hydrogels. Tissue Eng Part A. 2010 Jul 28; 16(11):3457-66.
3. DM Doroski, KS Brink, JS Temenoff. Techniques for characterization of tissue-engineered tendon and ligament. Biomaterials. 2007 Jan; 28(3):187-202.

Posters and Presentations

1. EM Hernandez, AE Babcock, CK Lochner, DM Doroski. Novel Cellular Adhesion Properties on Poly(ethylene glycol) Dimethacrylate Hydrogels, Poster Presentation, BMES, Minneapolis, MN, October 2016.
2. EK Luciano, EM Elliott, MJ Mosimann, LA Mitzel, IJ Sanford, DM Doroski. Types of Stem Cells Used in US-Based Clinical Trials Between 1999 and 2004, Poster Presentation, BMES, Minneapolis, MN, October 2016.
3. EM Elliott, MJ Mosimann, EK Luciano, LA Mitzel, MG Barrozo, DM Doroski. Prevalence of Stem Cell Types in Clinical Trials: Adult Stem Cells are Dominant, Oral Presentation, SCSS, Steubenville, OH, October 2015.
4. J McGee, R Asawa, H Baca, D Schmitt, M Watry, D Doroski. Transient Mesenchymal Stem Cell Adhesion to Poly(ethylene glycol) Dimethacrylate Hydrogels, Poster Presentation, BMES, Tampa, Florida. October 2015.
5. R Asawa, J McGee, D Schmitt, H Baca, M Watry, D Doroski. Stem Cell Delivery from Poly(ethylene glycol) Dimethacrylate Hydrogels – A Band-Aid Approach, Poster Presentation, BMES, Tampa, Florida. October 2015.
6. CE Guy, ME Beigel, E Cunningham, D Doroski. Myostatin's Effect on Adipose-Derived Mesenchymal Stem Cell Gene Expression, Poster Presentation, TERMIS, Washington, D.C., December 2014.
7. R Asawa, J McGee, D Schmitt, H Baca, D Doroski, M Watry. Presentation of the peptide sequence, RGD, (arginine, glycine, aspartic acid) tethered to polyethylene glycol hydrogels as examined by VSFG spectroscopy, Poster Presentation, American Chemical Society: Northeast regional meeting, Pittsburgh, PA, October, 2014.
8. R Asawa, J McGee, H Baca, D Schmitt, M Watry, D Doroski. Delivering Adult Stem Cells via Hydrogels, Oral Presentation, Franciscan Institute for Science and Health Research Symposium, Steubenville, OH, September, 2014.

9. DM Doroski, JS Temenoff. MMP-Degradable Carriers Promote Gene Upregulation & Production of Ligament ECM by Mesenchymal Stem Cells, Poster Presentation, Society for Biomaterials, Orlando, FL, April 2011.
10. DM Doroski, JS Temenoff. Human MSCs Produce Collagenous Extracellular Matrix in Matrix Metalloproteinase-Degradable Hydrogels, Oral Presentation, International Symposium on Ligaments and Tendons XI, Long Beach, CA, January 2011.
11. DM Doroski, ME Levenston, JS Temenoff. Encapsulated MSCs Respond to Cyclic Tensile Strain, Poster Presentation, Orthopaedic Research Society, New Orleans, LA, March 2010.
12. DM Doroski, ME Levenston, JS Temenoff. Novel 3D Tensile Culture System for Ligament Tissue Engineering with Mesenchymal Stem Cells, Oral Presentation, International Symposium on Ligaments and Tendons IX, Las Vegas, NV, February 2009.
13. DM Doroski, BH Nguyen, JS Temenoff. Modulation of Cellular Adhesion by Changing Substrate Thickness and Adhesive Peptide Concentration, Oral Presentation, Society for Biomaterials, Atlanta, GA, Sept. 2008.
14. PJ Yang, BH Nguyen, DM Doroski, KS Brink, JL Lim, ME Levenston, JS Temenoff. 3D Co-culture System for Tissue Engineering of Ligament Insertion Points, Oral Presentation, Regenerative Medicine: Advancing to Next Generation Therapies, Hilton Head, SC, March 2008.
15. JS Temenoff, ME Levenston, PJ Yang, BH Nguyen, DM Doroski, KS Brink. Novel Co-Culture System to Examine Ligament Regeneration via Progenitor Cell Transplantation, Poster Presentation, Orthopaedic Research Society, San Francisco, CA, March 2008.
16. DM Doroski, PJ Yang, BH Nguyen, JS Temenoff. A model system for progenitor cell differentiation at the bone-ligament interface, Poster Presentation, 9th International Conference on the Chemistry and Biology of Mineralized Tissues, Austin, TX, November 2007.
17. DM Doroski, BH Nguyen, KS Brink, JS Temenoff. Effect of Adhesive Ligand Presentation on Ligament Fibroblast Attachment to Fumarate Based Hydrogels, Poster Presentation, Biomedical Engineering Society, Los Angeles, CA, September 2007.
18. BH Nguyen, DM Doroski, ME Levenston, JS Temenoff. Degradation of Laminated Fumarate-Based Hydrogels Under Tensile Stress, Biomedical Engineering Society, Poster Presentation, Los Angeles, CA, September 2007.
19. DM Doroski, BN Srikanchana, KS Brink, ME Levenston, JS Temenoff. Fibroblast and Marrow Stromal Cell Encapsulation for Ligament Tissue Engineering, Poster Presentation, Arthritis Foundation Conference, Stone Mountain, Ga, April 2007.
20. KS Brink, JJ Lim, JD Weaver, DM Doroski, JS Temenoff. Incorporation of Bioactive Moieties into Fumarate-Based Hydrogels for Tendon/Ligament Tissue Engineering, Poster Presentation, Arthritis Foundation Conference, Stone Mountain, GA, April 2007.
21. KS Brink, JJ Lim, JD Weaver, DM Doroski, JS Temenoff. Characterization of Aggrecan Retention in Fumarate-Based Hydrogels for Orthopaedic Tissue Engineering, Oral Presentation, Society for Biomaterials, Chicago, IL, April 2007.
22. DM Doroski, KS Brink, BH Nguyen, BN Srikanchana, ME Levenston, JS Temenoff. Fibroblast and Marrow Stromal Cell Encapsulation for Ligament Tissue Engineering, Poster Presentation, Engineering Tissues Conference, Hilton Head, SC, March 2007.
23. KS Brink, JJ Lim, JD Weaver, DM Doroski, JS Temenoff. Incorporation of Bioactive Moieties into Fumarate-Based Hydrogels for Tendon/Ligament Tissue Engineering, Poster Presentation, Engineering Tissues Conference, Hilton Head, SC, March 2007.
24. KS Brink, JJ Lim, JD Weaver, DM Doroski, JS Temenoff. Biohybrid Aggrecan-Containing Hydrogels for Ligament Tissue Engineering, Oral Presentation, International Symposium for Ligaments and Tendons VII, San Diego, CA, February

Publications in Writing

1. RR Asawa, JC McGee, DD Schmidt, EM Hernandez, AE Babcock, CE Lochner, IS Steffes, JJ VanSteenburg, KE Diaz, HN Baca, DM Doroski. Superficial Stem Cell Delivery: A Band-Aid Concept. 2017 (In writing).
2. EM Elliott, MJ Mosimann, LA Mitzel, IJ Sanford, DM Doroski. Types of Stem Cell Used in US-Based Clinical Trials Between 1999-2014. 2017 (In writing).
3. EM Elliott, MJ Mosimann, LA Mitzel, IJ Sanford, DM Doroski. Types of Stem Cell Used in Clinical Trials Outside the US Between 1999-2014. 2017 (In writing).
4. R Hershenov, DM Doroski. Twin Inc. 2017 (In writing).

Education

Georgia Institute of Technology and Emory University, 2004-2011

- Program: Biomedical Engineering, PhD (May 2011).
- Advisor: Johnna S. Temenoff, Associate Professor.
- Minor: Life Science.
- Graduate PhD Thesis: The Effects of Tensile Loading and Extracellular Environmental Cues on Fibroblastic Differentiation and Extracellular Matrix Production by Mesenchymal Stem Cells.
    - See research experience (below).

Pennsylvania State University, 2000-2004

- Major: Engineering Science, B.S.
- Minor: Biomedical Engineering.
- Undergraduate Thesis: Scanning Acoustic Microscopy of Biological Tissues and Cells.
    - See research experience (below).

Teaching Experience

Assistant Professor of Biology at Franciscan University of Steubenville, 2011-present

- Classes taught at Franciscan University of Steubenville
    - Survey of biology
    - Human biology
    - Anatomy and physiology I
    - Anatomy and pnysiology II
    - Human embryology
    - Developmental anatomy
    - Nutrition
    - Rigid Body Dynamics

Invited Talks/Articles

- DM Doroski. Reproductive Anatomy and Fertility, FUS Catechetical Institute, Steubenville, OH, June 2016.
- DM Doroski. Fertility Control vs. Fertility Awareness, FUS Catechetical Institute, Steubenville, OH, June 2016.

- DM Doroski. The Science of Stem Cells, Steubenville Diocesan Respect Life Conference, Cambridge, OH, Oct 2016.
- DM Doroski. Answering Common Embryonic Stem Cell Arguments, Steubenville Diocesan Respect Life Conference, Cambridge, OH, Oct 2016.
- DM Doroski. The Science of Stem Cells, Steubenville Diocesan Respect Life Conference, Cambridge, OH, Oct 2016.
- DM Doroski. The Culture of Life in Your Vocation: Advancing the Culture of Life in Families, Medical Professions, and Other Disciplines Through Biology, Franciscan University of Steubenville Students for Life, Steubenville, OH, Nov 2015.
- DM Doroski. Bioethics: What Every Catholic Should Know About Fertility Care, Steubenville Respect Life Conference, Steubenville, OH, Oct 2015.
- DM Doroski. How *Humanae Vitae* Has Advanced Reproductive Health, Franciscan University of Steubenville Science and Faith Conference, Steubenville, OH, Sept 2015.
- D Asci, P Lee, DM Doroski, Bioethics Panel, St. Richard Catholic Church Youth Group, Gibsonia, PA, March 2015.
- DM Doroski. Empowering Women, Men, Girls and Boys to Optimum Reproductive Health Through Knowledge-Based Fertility Awareness, Franciscan University of Steubenville Students for Life, Steubenville, OH, March 2015.
- DM Doroski. Stem Cells, Marquette University, Milwaukee, WI, Apr 2014.
- DM Doroski. NaPro vs. IVF: Which is More Effective?, "Creighton Fertility Care Seminar", Franciscan University of Steubenville, Steubenville, OH, Mar 2014.
- DM Doroski. Response to "Scientific, Spiritual, and Marital Dynamics of Natural Family Planning", Oral Presentation, "*Humanae Vitae* at 45: Life, Liberty, and the Pursuit of Holiness", Franciscan University of Steubenville, Steubenville, OH, Sept 2013.
- DM Doroski. Embryonic Stem Cells: The Science and Ethics, Oral Presentation, Holy Family Catholic Church Pro-life Group, Steubenville, OH, Sept 2012.
- DM Doroski. The Unity of Faith and Science. Oral Presentation, Riverview Methodist Church, Toronto, OH, October 2011.
- DM Doroski. Embryonic Stem Cells: The Science and Ethics, Oral Presentation, Auburn University Catholic Center, Auburn, AL, April 2011.
- DM Doroski. Embryonic Stem Cells: The Science and Ethics, Oral Presentation, St. Mary's Parish, Rome, Ga, May 2010.
- DM Doroski. Embryonic Stem Cells: The Science and Ethics, Presentation for Respect Life Leaders, Archdiocese of Atlanta Catholic Center, Atlanta, Ga, March 2010.
- DM Doroski. Who Will Be the Superhero of the 21st Century: Adult, iPSCs, or Embryonic Stem Cells?, Georgia Right to Life e-news article,< http://georgialife.wordpress.com/2009/11/>, Nov 2009.
- DM Doroski. Embryonic Stem Cells: The Science and Ethics, Georgia Tech Statewide Pro-Life Conference, Atlanta, Ga, Oct 2009.
- DM Doroski. Embryonic Stem Cells: The Science and Ethics, Oral Presentation, St. Thomas More Church, Oct 2008.

- DM Doroski. Embryonic Stem Cells: The Morality, Science, and Ethics, Oral Presentation, Cathedral of Christ the King, Atlanta, Ga, June 2008.

Consulting

- Consultation to archdiocese of Atlanta Respect Life Director, Feb 2013
    - Regarding definitions for a bill banning cloning and human-animal hybrids in GA

Classes Taught at Georgia Tech

- Introduction to Bioengineering. Guest Lecturer on Orthopedic Tissues, Oct 8, 2009.
- Biomechanics Recitation Section. Teaching Assistant, Spring 2006 and Fall 2006.
    - Focused on physics concepts of statics, dynamics, and strength of materials
- Biomechanics. Guest Lecturer, December 2006.
- Biomechanics. Guest Lecturer, March 2006.

Mentoring

- Research mentor of undergraduate students, 2006-2009.
    - Supervised laboratory work.
    - Developed research objectives.

Volunteer Teaching/Education Outreach

- Developed four year cycle of study group material for GT Students for Life (pro-life), 2008-2009.
    - Led sessions in spring 2008 and fall of 2009.
- Induced pluripotent stem cell presentation for Cathedral of Christ the King Church pro-life committee, Feb 2008.
- Georgia Tech/Emory Center (GTEC) Buzz on Biotechnology volunteer, Oct 2007, 2006, 2005.
    - Large event designed to get local middle and high school students interested in science.
    - Coordinated and planned event as Education Outreach co-chair in 2006.
- Organized 2-day Bioengineering camp for kids ranging from 5-9 years old, June 2007.
- Center for Education Integrating Science, Mathematics, and Computing (CEISMC) 8th and 9th grade biosciences camp volunteer, June 2007.
- Organized and coordinated GTEC Morehouse Medical Post Program, Feb 2007.
    - Expanded size of program from previous year by 50%.
- Organized and coordinated Kennedy Middle School bioscience visit, Feb 2007.
- GTEC McNair High School education outreach event volunteer, Nov 2006.
- GTEC Education Outreach committee co-chair, Fall 2006.
- GTEC KIPPP Harlem college-preparatory school education outreach volunteer, June 2006.
- GTEC Morehouse Medical Post Program volunteer, Mar 2006.
- Taught review sessions and tutored students on partial differential equations, 2004-2006.
    - Requested in 2005 and 2006 due to recommendations from previous students.
    - Created study guide that has been passed down by students for several years.

Research Experience

Undergraduate research advisor, 2013-Present

- Mentoring undergraduate research students in stem cell research

Graduate Research Assistant, Georgia Institute of Technology and Emory University: 2004-present

- Graduate PhD Thesis: The Effects of Tensile Loading and Extracellular Environmental Cues on Fibroblastic Differentiation and Extracellular Matrix Production by Mesenchymal Stem Cells.
    - Investigated biomechanical regimens for fibroblastic differentiation of mesenchymal stem cells.
    - Developed a biologically degradable stem cell carrier for promotion of extracellular matrix production.
    - Currently combining biomechanical and biomaterial stimuli to elucidate effects of discrete mechanical stimulation on stem cells.
- Initiated graduate research meetings.
    - Provided forum for discussion of research obstacles.
    - Facilitated sharing and development of scientific expertise.
- Aided in setting up new lab.
- Established ordering, research technique, and lab duties protocols.
- Coordinated consumption and purchasing of shared lab supplies.

Undergraduate bioengineering thesis, Penn State University, University Park, PA: Spring 2004

- Performed histological analysis.
- Compared multiple microscopic modalities.
- Used ultrasonic insult to mimic injury and model wound healing.
- Coordinated work between various labs.

Engineering Intern, Ultrasonics Lab, Penn State University, University Park, PA: Summer 2002

- Studied ultrasonic defect detection in steel pipes around an elbow.
- Investigated weld detection in a Navy submarine liner.
- Prepared initial data for further analysis.
- Organized and maintained lab and off site testing area.

Fellowships, Grants and Honors

- George Fellow, 2009-2010.
- Arthritis Foundation travel award, 2007.
- Honored on The Chancellor's List 2006.
- Graduated with distinction (top 12% of engineering class), 2004.
- Schreyers honors college scholar, 2004.
- Consistent recognition on Dean's list at Penn State for 7 out of 8 semesters, 2000-2004.
- Vernon Neubert Dynamics Award winner, 2003.

Memberships

- National Catholic Bioethics Center, 2009-present.
- Society for Biomaterials, 2008-09, 2011-12.
- Biomedical Engineering Society, 2008-2009.
- Georgia Tech Students for Life (pro-life), 2008-2011.
    - Secretary, 2009-2010.