ANDREA MAZZOCCHI

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EDUCATION

Virginia Tech – Wake Forest University School of Biomedical Engineering and Sciences, Wake Forest University, Winston-Salem, NC

Ph.D. in Biomedical Engineering, March 2020
Mike & Lucy Robbins Fellow, Wake Forest Comprehensive Cancer Center
NIH National Institute of Biomedical Imaging and Bioengineering
T32 Predoctoral Training Grant Fellow

Rochester Institute of Technology, Rochester, NY

B.Sc. in Biomedical Engineering, May 2016

RESEARCH EXPERIENCE

2016 – 2020 **Graduate Research Assistant**
Wake Forest Institute for Regenerative Medicine (WFIRM), Winston- Salem, NC
Advisors: Shay Soker, Ph.D. & Aleksander Skardal, Ph.D.
Key Projects: Tumor microenvironment and extracellular matrix modeling (hepatocellular carcinoma), biomaterials development

2012 – 2016 **Undergraduate Research Assistant**
Dept of Biomedical Engineering, Rochester Institute of Technology, Rochester, NY
Advisor: Thomas Gaborski, Ph.D.
Key Projects: Differentiation and angiogenesis models utilizing ultrathin membranes

OTHER EXPERIENCE

2020 – Present **Adjunct Lecturer**, EGR 333 Tissue Engineering, Wake Forest University, Winston-Salem, NC

2019 – Present **Elpha Community Manager**, Remote

2015 **Combination Product & Drug Delivery Systems Co-op**, Johnson & Johnson, Spring House, PA

2012 – 2014 **Teaching Assistant**, Rochester Institute of Technology, Rochester, NY
Quantitative Organ System Physiology, Intro to Biomaterials, Into to BME Seminar

2013 **MRI Research & Development Co-op,** General Electric Healthcare, Florence, SC

2012 **Marketing Analyst Co-op**, General Electric Transportation, Erie, PA

SPECIALIZATION & SKILLS

Specializations: Tumor microenvironments, extracellular matrix modeling**,** disease modeling**,** drug screening**,** biomaterials & bioprinting**,** materials characterization

Laboratory Skills: Primary cell culture, 2D & 3D organoid culture, ELISA and agent-based assays, microscopy (confocal, SEM etc.), histological staining, rheology

Analytical Skills: Statistical analysis, Prism, SAS, VisioPharm, ImageJ, MATLAB, Python, GitHub

HONORS & AWARDS

2019 *Alumni Student Travel Award,* Wake Forest School of Medicine Graduate Program

2018 *Alumni Student Travel Award,* Wake Forest School of Medicine Graduate Program

2017 *Student Scientist Award*, Tissue Engineering and Regenerative Medicine International Society – Americas Conference

2017 *Alumni Student Travel Award*, Wake Forest School of Medicine Graduate Program

2017 *Top 5 Poster Finalist*, Society for Laboratory Automation and Screening Annual Meeting
2017 *Tony B. Academic Travel Award*, Society of Lab Automation and Screening Annual Meeting
2016 *RIT Biomedical Engineering Graduation Delegate*, selected by department faculty
2015 *Undergraduate Student Design & Research Award*, Biomedical Engineering Society Annual Meeting
2015 *Undergraduate Student Travel Award*, Biomedical Engineering Society Annual Meeting

MENTORSHIP

2018 *Summer Student Mentor*, Lillian E. Ekem, Yale University Undergraduate Biomedical Engineering Student, NSF Imaging and Mechanics-based Projects on Accidental Cases of Trauma (IMPACT) Research Experience for Undergraduates (REU)
2017 *Summer Student Mentor*, Darryl Kalil, Wake Forest School of Medicine Medical Student, Clinical and Translational Science Institute (CTSI) Medical Student Research Program (MSRP)

LEADERSHIP & SERVICE

VT-WF School of Biomedical Engineering and Sciences (VT-WF SBES)
2019 *Council Member*, WFU Graduate School Honor Code
2019 *Program Founder*, Wake Forest Biomedical Engineering Peer Mentorship
2018 – 2019 *President,* Biomedical Engineering Society
2018 *Coordinator,* VT-WF SBES Annual Symposium (175 guests, 10 sponsors)
2017 – 2018 *Vice President,* Biomedical Engineering Society
Wake Forest Institute for Regenerative Medicine (WFIRM)
2019 *Committee Member,* WFIRM High School Summer Student Selection
2018 – 2019 *Panel Organizer,* Regenerative Medicine Essentials Course Industry Career Perspectives
Rochester Institute of Technology
2012 – 2015 *Treasurer,* Chapter Co-Founder – Biomedical Engineering Society
Extramural
2018 – 2019 *Facilitator*, Girls Who Code Club (Malloy/Jordan Library, Winston-Salem, NC)

ADDITIONAL PROFESSIONAL ACTIVITIES

Journal Reviewer
2019 Tissue Engineering Part A (IF: 3.6)
2019 Tissue Engineering Part B (IF: 6.5)
2019 Bioprinting (IF: 2.5)
2019 Biomedical Materials (IF: 2.9)
Continued Education
2017 - 2019 WFIRM – Regenerative Medicine Essentials Course Attendee
2018 VisioPharm Beginner Workshop
2018 Rice University Tissue Engineering Short Course Attendee
2018 National Institute of Health National Institute of Biomedical Imaging and Bioengineering Training Grantees Bi-Annual Meeting Attendee

PUBLICATIONS

14. Dominijanni, A., **A. Mazzocchi**, S. Forsythe, E. Shelkey, and S. Soker. "Bioengineered Tumor Organoids." Current Opinions of Biomedical Engineering, in review.
13. **Mazzocchi, A.**, A. Dominijanni, and S. Soker. "Pleural Effusion Aspirate for use in 3D Lung Cancer Modeling and Chemotherapy Screening." In: Ossandan M., editor. Bioengineering Technologies, accepted.
12. Maloney, E., C. Clark, H. Sivakumar, K.M. Yoo, J. Aleman, S. Forsythe, **A. Mazzocchi**, A. Laxton, S. Tatter, R. Strowd, K. Votanopoulos, and A. Skardal. " Immersion Bioprinting of Tumor Organoids in Multi-Well Plates for Increasing Chemotherapy Screening Throughput." Micromachines, February 2020. DOI: 10.3390/mi11020208
11. Votanopoulos, K., S. Forsythe, H. Sivakumar, **A. Mazzocchi**, J. Aleman, L. Miller, E. Levine, P. Triozzi, and A. Skardal. "Model of Patient-Specific Immune Enhanced Organoids for Immunotherapy Screening: Feasibility Study." Annals of Surgical Oncology, December 2019. DOI: 10.1245/s10434-019-08143-8
10. **Mazzocchi, A.**, M. Devarasetty, S. Herberg, L. Miller, F. Marini, G. Kucera, W.J Petty, A. Skardal, and S. Soker. "Pleural effusion aspirate for use in 3D lung cancer modeling and chemotherapy screening."ACS Biomaterials Sciences & Engineering, March 2019. DOI: 10.1021/acsbiomaterials.8b01356
9. **Mazzocchi, A.**, S. Soker, and A. Skardal. "3D Bioprinting for high-throughput screening: drug screening, disease modeling, and precision medicine." Applied Physics Reviews, Jan 2019. DOI: 10.1063/1.5056188
    Featured on the cover of Applied Physics Reviews, Volume 6 Issue 1
8. Votanopoulos, K.I, **A. Mazzocchi**, H. Sivakumar, S. Forsythe, J. Aleman, E. Levine, and A. Skardal. "Appendiceal cancer patient-specfic tumor organoid model for predicting chemotherapy efficacy prior to initiation of treatment: a feasability study." Society of Surgical Oncology, Jan 2019. DOI: 10.1245/s10434-018-7008-2
7. **Mazzocchi, A**., M. Devarasetty, R. Huntwork, S. Soker, and A. Skardal. "Optimization of collagen type I-hyaluronan bioink for 3D bioprinted liver microenvironments." Biofabrication, Oct 2018. DOI: 10.1088/1758-5090/aae543
6. **Mazzocchi, A.**, K. Votanopoulos, and A. Skardal. "Personalizing cancer treatments empirically in the laboratory: Patient-specific tumor organoids for optimizing precision medicine." Current Stem Cell Reports, June 2018. DOI: 10.1007/s40778-018-0122-z
5. Devarasetty M., **A. Mazzocchi**, and A. Skardal. "Application of bioengineered 3D tissue and tumor organoids in drug development and precision medicine: current and future." BioDrugs, Feb 2018. DOI: 10.1007/s40259-017-0258-x
4. **Mazzocchi A.,** S. Rajan, K. Votanopoulos, A. Hall, and A. Skardal. "In vitro patient-derived 3D mesothelioma tumor organoids facilitate patient-centric therapeutic screening." Scientific Reports, Jan 2018. DOI: 10.1038/s41598-018-21200-8
3. **Mazzocchi A.**, S. Soker, A. Skardal. "Biofabrication Technologies for Developing In Vitro Tumor Models". In: Soker S, Skardal A, editors. Tumor Organoids. Berlin, Germany: Springer Nature; 2017. DOI: 10.1007/978-3-319-60511-1_4
2. Carter, R.N., S.M. Casillo, **A. Mazzocchi**, J.P.S DesOrmeaux, J.R. Roussie, and T.R Gaborski. "Ultrathin transparent membranes for cellular barrier and co-culture models." Biofabrication, Feb 2017. DOI: 10.1088/1758-5090/aa5ba7
1. **Mazzocchi, A.**, A.J. Man, J.P.S. DesOrmeaux, and T.R. Gaborski. "Porous Membranes Promote Endothelial Differentiation of Adipose-Derived Stem Cells and Perivascular Interactions." Journal of Cellular and Molecular Bioengineering, Sept 2014. DOI: 10.1007/s12195-014-0354-7

ORAL PRESENTATIONS

4. **Mazzocchi, A.,** K.M. Yoo, S. Soker, and A. Skardal. "Hyaluronic Acid Based Hydrogel for the Study of RGD Impact on Hepatic Stellate Cells." Wake Forest Institute for Regenerative Medicine Annual Retreat. Pinehurst, NC. 23 Jan 2020.
3. **Mazzocchi, A.,** K.M. Yoo, S. Soker, and A. Skardal. "Hyaluronic Acid-ECM Biomimic Peptide Hydrogel for the Study of Liver Fibrosis." Biofabrication. Columbus, OH. 20 Oct 2019.
2. **Mazzocchi, A.,** S. Rajan, K. Votanopoulos, A. Hall, and A. Skardal. "Primary Patient Mesothelioma Organoids for Genetic Mutation-Driven Experimental 3-Deazaneplanocin A Treatment." Tissue Engineering and Regenerative Medicine – Americas. Charlotte, NC. 5 Dec 2017.
1. **Mazzocchi, A.**, R. Huntwork, S. Soker, and A. Skardal. "Hyaluronan-Collagen Type I Hybrid Bioink for 3D Printed Microenvironments." Tissue Engineering and Regenerative Medicine International Society - Americas. Charlotte, NC. 4 Dec 2017.

POSTER PRESENTATIONS

17. **Mazzocchi, A.,** K.M. Yoo, S. Soker, and A. Skardal. "Hyaluronic Acid-ECM Biomimic Peptide Hydrogel for the Study of Liver Microenvironments." Tissue Engineering and Regenerative Medicine – Americas Annual Meeting. Orlando, FL. 4 Dec 2019.
16. **Mazzocchi, A.,** K.M. Yoo, S. Soker, and A. Skardal. "Hyaluronic Acid-ECM Biomimic Peptide Hydrogel for the Study of Liver Microenvironments." Biomedical Engineering Society Annual Meeting. Philadelphia, PA. 17 Oct 2019.
15. **Mazzocchi, A.,** H. Sivakumar, K. Enck, J. Aleman, S. Soker, and A. Skardal. "Universal Bioink for Support of Multiple Type 2 Diabetes Specific Tissues." Wake Forest Institute for Regenerative Medicine Retreat. Pinehurst, NC. 28 Jan 2019.
14. **Mazzocchi, A.**, A. Skardal, and S. Soker. "Primary Patient Lung Cancer Model for Study of Disease and Drug Response." Biomedical Engineering Society Annual Meeting. Atlanta, GA. 19 Oct 2018.
13. **Mazzocchi, A.**, A. Skardal, and S. Soker. "Patient Derived Lung Cancer Model for the Study of Disease and Drug Response." NIH NIBIB Training Grantees Meeting. Bethesda, MD. 21-22 June 2018.
12. **Mazzocchi, A.**, A. Skardal, and S. Soker. "Characterization of Laminin and Fibronectin Driver Matrix Remodeling Kinetics in Liver Models." SBES Symposium. Winston-Salem, NC. 9 May 2018.
11. **Mazzocchi, A.**, A. Skardal, and S. Soker. "Characterization of Laminin and Fibronectin Driver Matrix Remodeling Kinetics in Liver Models." Society for Biomaterials. Atlanta, GA. 13-14 Apr 2018.
10. **Mazzocchi, A.**, K. Votanopoulos, S. Soker, and A. Skardal. "Primary Patient Tumor Organoids for Personalized Drug Treatment." Tissue Engineering and Regenerative Medicine International Society – Americas. Charlotte, NC. 3 Dec 2017.
9. **Mazzocchi, A.**, K. Votanopoulos, S. Soker, and A. Skardal. "Primary Patient Tumor Organoids for Personalized Drug Treatment." North Carolina Tissue Engineering and Regenerative Medicine Society. Winston-Salem, NC. 10 Nov 2017.
8. **Mazzocchi, A.**, K. Votanopoulos, S. Soker, and A. Skardal. "Primary Patient Tumor Organoids for Personalized Drug Treatment." Biomedical Engineering Society Annual Meeting. Phoenix, AZ. 12 Oct 2017.
7. **Mazzocchi, A.**, R. Huntwork, S. Soker, and A. Skardal. "Collagen-I Hybrid Bioink for 3D Printed Microenvironments." Biomedical Engineering Society Annual Meeting. Phoenix, AZ. 12 Oct 2017.
6. **Mazzocchi, A.**, S. Soker, and A. Skardal. "3D Cancer Organoids for High Throughput Drug Screening." VT-WFU SBES Symposium. Blacksburg, VA. 9 May 2017.
5. **Mazzocchi, A.**, S. Soker, and A. Skardal. "3D Cancer Organoids for High Throughput Drug Screening." Society for Laboratory Automation and Screening. Washington, DC. 5 Feb 2017.
4. **Mazzocchi, A.**, M. Devarasetty, A. Skardal, and S. Soker. "Mesenchymal Stem Cell Supported Pancreatic Tumor Growth in 3D Culture." Biofabrication Conference. Winston-Salem, NC. 29 Oct 2016.
3. **Mazzocchi, A.**, M. Devarasetty, A. Skardal, and S. Soker. "Mesenchymal Stem Cell Supported Pancreatic Tumor Growth in 3D Culture." North Carolina Tissue Engineering and Regenerative

Medicine Society. Chapel Hill, NC. 27 Oct 2016. Biofabrication Conference. Winston-Salem, NC. 29 Oct 2016.

2. **Mazzocchi, A**., S.M. Casillo, R.N. Carter, and T.R. Gaborski. "Fabrication and Characterization of Ultrathin Transparent Glass Membranes for Cell Culture." Biomedical Engineering Society Annual Meeting. Tampa, FL. 9 Oct 2015.
1. **Mazzocchi, A**., S.M. Casillo, and T.R. Gaborski. "Investigation of Adult Stem Cells on Porous Membranes." Rochester Institute of Technology Undergraduate Symposium. Rochester, NY. 8 Aug 2014.