Exponent®
Engineering & Scientific Consulting

Sarah Somers, Ph.D.

Senior Associate | Biomedical Engineering and Sciences
Philadelphia
+1-215-594-8910 | ssomers@exponent.com

Professional Profile

Sarah Somers specializes in characterization of biomedical devices and tissue engineered products. Her training spans the fields of mechanical engineering and biomedical engineering which includes the application of mechanical testing techniques and image capture and analysis for understanding product performance.

Since joining Exponent, Sarah has performed biomedical device wear and material characterization through wear testing, microCT analysis, and mechanical testing of materials.

Prior to joining Exponent, Sarah completed her PhD at Johns Hopkins University in Biomedical Engineering where she implemented custom bioreactor designs for regenerative medicine applications in the skeletal muscle field. She also used the bioreactor systems to perform hydrated scaffold mechanics studies. From her doctoral research, she has experience in soft tissue histology, in vitro cell differentiation, immunofluorescent staining, electrospinning, and image analysis.

Academic Credentials & Professional Honors

Ph.D., Biomedical Engineering, Johns Hopkins University, 2021

B.S., Bioengineering, Penn State University, 2014

Schreyer Honors College Scholar (Penn State)

Big Ten Distinguished Scholar (Penn State)

Siebel Scholar Class of 2021 (Johns Hopkins)

Academic Appointments

Instructor, Biomedical Engineering, JHU, 2018

Teaching Assistant, Biomedical Engineering, JHU 2017

Teaching Assistant, Biomedical Engineering, JHU 2016

Publications

Somers S, Grayson W. Protocol for the use of a novel bioreactor system for hydrated mechanical testing, strained sterile culture, and force of contraction measurement of tissue engineered muscle constructs.

Frontiers in Cell and Developmental Biology 2021; 9: 815.

Yerrabelli R, Somers S, Grayson W, Spector A. Modeling the mechanics of fibrous-porous scaffolds for skeletal muscle regeneration. Medical & Biological Engineering & Computing 2021; 59(1): 131-142.

Gilbert-Honick J, Iyer S, Somers S, Takasuka H, Lovering R, Wagner K, Mao HQ, Grayson W. Engineering 3D skeletal muscle primed for neuromuscular regeneration following volumetric muscle loss. Biomaterials 2020; 255: 120154.

Morrissette-McAlmon J, Ginn B, Somers S, Fukunishi T, Thanitcul C, Rindone A, Hibino N, Tung L, Mao HQ, Grayson W. Biomimetic model of contractile cardiac tissue with endothelial networks stabilized by adipose-derived stromal/ stem cells. Scientific Reports 2020; 10(1): 1-12.

Guo Y, Gilbert-Honick J, Somers S, Mao HQ, Grayson W. Modified cell-electrospinning for 3D myogenesis of C2C12s in aligned fibrin microfiber bundles. Biochemical and Biophysical Research Communications 2019; 516(2): 558-564.

Somers S, Zhang N, Morrissette-McAlmon J, Tran K, Mao HQ, Grayson W. Myoblast maturity on aligned microfiber bundles at the onset of strain application impacts myogenic outcomes. Acta Biomaterialia 2019; 94: 232-242.

Gilbert-Honick J, Iyer S, Somers S, Lovering R, Wagner K, Mao HQ, Grayson W. Engineering functional and histological regeneration of vascularized skeletal muscle. Biomaterials 2018; 164: 70-79.

Yuan D, Somers S, Grayson W, Spector A. A poroelastic model of a fibrous-porous tissue engineering scaffold. Scientific Reports 2018; 8(1): 1-10.

Morrissette-McAlmon J, Blazeski A, Somers S, Kostecki G, Tung L, Grayson W. Adipose-derived perivascular mesenchymal stromal/ stem cells promote functional vascular tissue engineering for cardiac regenerative purposes. Journal of Tissue Engineering and Regenerative Medicine 2018; 12(2): e962-e972.

Somers S, Spector A, DiGirolamo D, Grayson W. Biophysical stimulation for engineering functional skeletal muscle. Tissue Engineering Part B: Reviews 2017; 23(4): 362-372.

Cook C, Huri P, Ginn B, Gilbert-Honick J, Somers S, Temple J, Mao HQ, Grayson W. Characterization of a novel bioreactor system for 3D cellular mechanobiology studies. Biotechnology and Bioengineering 2016; 113(8): 1825-1837.

Presentations

Somers S*, Gilbert-Honick J*, Choi IY, Lim HT, Mao HQ, Lee G, Grayson W. Electrospun microfiber fibrin fiber bundles for maturation of hPSC-derived myoblasts towards a tissue engineered skeletal muscle construct for the treatment of VML. Oral presentation, World Biomaterials Congress, Glasgow, Scotland, 2020.

Somers S, Yuan D, Gilbert-Honick J, Mao HQ, Spector A, Grayson W. Biphasic poroelastic fibrin fiber scaffolds for stem cell differentiation. Oral presentation, World Congress of Biomechanics, Dublin, Ireland, 2018.

Somers S, Gilbert-Honick J, Kabir R, Grayson W. Evaluating cyclic vs static uniaxial strains for engineering functional skeletal muscle grafts. Poster Presentation, TERMIS AM, Charlotte, NC, 2017.