



Biomedical Engineering Graduate Program & Research Newsletter

School of Science and Engineering | Saint Louis University

Awards

Congratulations to **Dr. Andy Hall** who was the recipient of the 2023 Dr. Thomas A Dooley Award for his service and dedication to MedLaunch (SLU’s medical entrepreneurship program) since its inception.



Congratulations to **Samuel Stealey** from Dr. Silviya Zustiak’s Lab, who passed his Ph.D. defense with distinction on Wed, April 12th. Pictured below is Dr. Zustiak’s lab celebrating.

Congratulations to **Dr. Silviya Zustiak** who was awarded the 2023 Women of the Year in recognition for her history of achievement and service by the SLU Women’s Commission. Dr. Zustiak’s work has encouraged emulation and great appreciation by others. A luncheon celebration was held in honor of this special award.



Congratulations to **David Johnson** (picture of all awardees below), PhD Candidate in Dr. Koyal Garg’s Lab, who won 1st Place for Best Poster Presentation in the Graduate *Physical Sciences* category at the Sigma Xi Symposium.

Congratulations to **Emily Luc** (picture of all awardees below), Master's Candidate in Dr. Silviya Zustiak's lab, who won 2nd Place for Best Poster Presentation in the *Graduate Physical Sciences category* at the Sigma Xi Symposium.



Congratulations to **Samuel Stealey** from Dr. Silviya Zustiak's Lab, who won 1st Place in the *Physical Sciences category* at the Graduate Student Association Symposium.

Meeting Presentations

Dr. Yan Gai presented on "*Spatial Segregation of Sound*" for SLU's Institute for Translational Neuroscience on April 14.

Dr. Yan Gai served as a panelist for Artificial Intelligence in Neuroscience hosted by SLU on April 24.

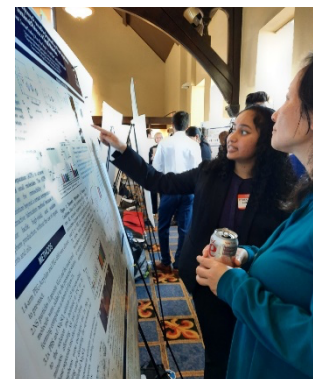


Conference Presentations

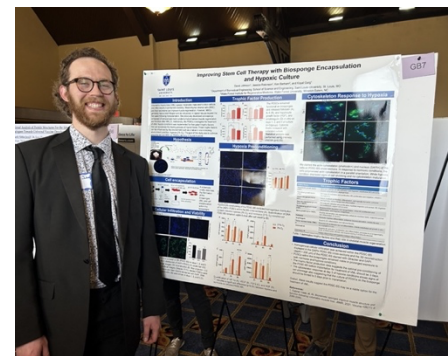
Sigma Xi Symposium

Thank you to everyone who attended and presented at the Sigma Xi Research Symposium held at SLU on April 3, 2023. Please find more information on the presenters below!

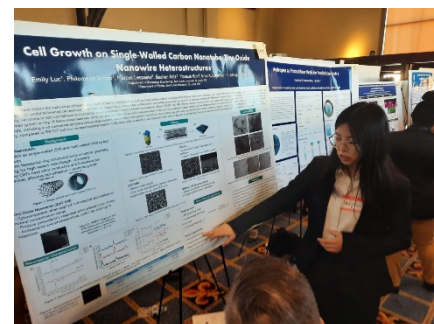
E Dharmesh, S Stealey, MA Salazar, D Elbert, ***SP Zustiak**, "*Nanosilicate-Hydrogel Microspheres Formed by Aqueous Two-Phase Separation for Sustained Release of Small Molecules*".



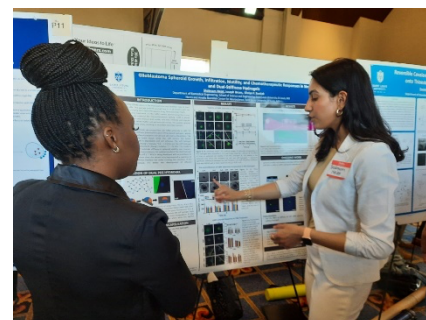
D Johnson¹, K Betram², and ***K Garg**¹, "*Improving Stem Cell Therapy with Biosponge Encapsulation and Hypoxic Culture*". **Won 1st Place for Best Poster Presentation in the Graduate Physical Sciences Category!**



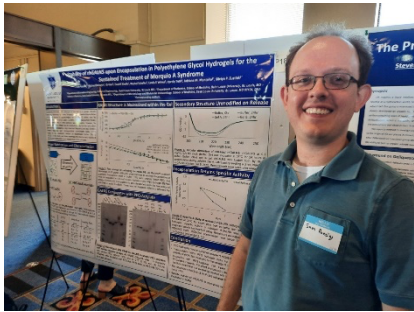
E Luc, Y Kim, P Jombo, M L, B Aziz, ***I Kuljanishvili**, and ***SP Zustiak**, "*Cell Growth on Single-Walled Carbon Nanotube/Zinc Oxide Nanowire Heterostructures*", (Poster). **Won 2nd Place for Best Poster Presentation in the Graduate Physical and Sciences Category!**



S Nejat, J Bruns, ***SP Zustiak**, "*Glioblastoma Spheroid Growth, Infiltration, Motility, and Chemotherapeutic Responses in Single and Dual-Stiffness Hydrogels*".



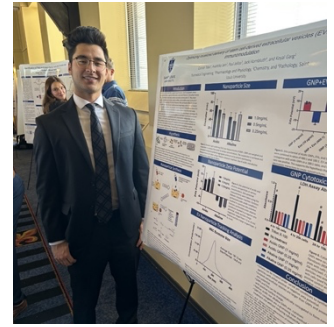
J Orr, *Y Gai, A Novel Spherical Model for Concurrent Sound Localization with Binaural Microphones”.



S Ruesing, M Flanagan, Q Gan, #S Sheth, R Schafer, L Winter, K Toth, *SP Zustiak, *AM Montano,

“Stability of rhGALNS upon encapsulation in polyethylene glycol hydrogels for the sustained treatment of Morquio A Syndrome”.

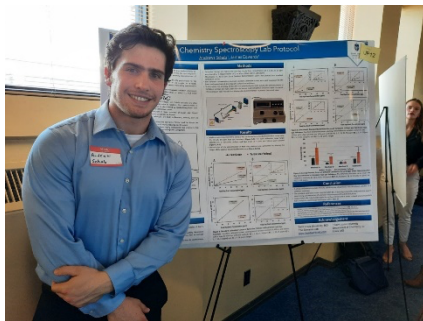
C Tobo¹, A Jain², P Jellis³, J Kornbluth⁴, and *K Garg¹,
“Improving Extracellular Vesicle Stability and Bioavailability through Electrostatic Nanoparticle Encapsulation”.



O Widdoes and *Y Gai, *“Infrared Image Recognition Using Deep-Learning Neural Network”.*

Society for Biomaterials (SfB)

Society for Biomaterials hosted their annual meeting in San Diego, CA from April 19 – 22nd. Eya Ferchichi, PhD Candidate, and Shabnam Nejat, Master’s Candidate, presented their research. Dr. Silviya Zustiak chaired multiple sessions at the meeting. (Exciting pictures at the end).

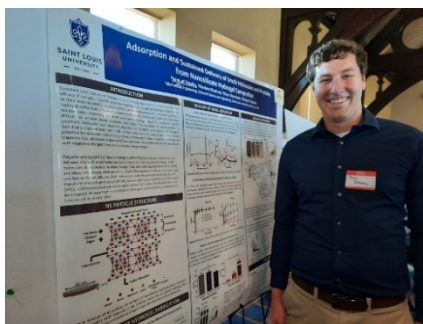


A Schab, G Almgren, M Bhagat, S Stealey, E Ferchichi, * P Jellis, *SP Zustiak,

“Synthesis and optimization of poly-(DMA/SBMA) polymer as a lubricious coating for microgels: towards application in the treatment of knee osteoarthritis”.

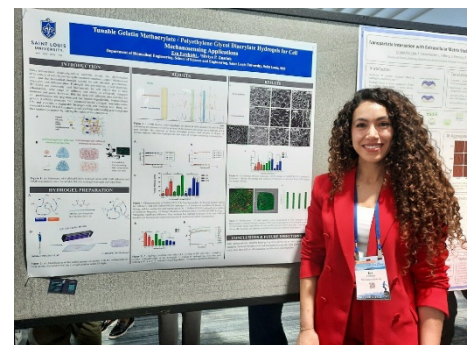
M Samih, T Krieger, Q Chen, *Y Gai, *“Combined EEG and EMG Analysis in Finger Movements Using Machine Learning & Deep Learning Algorithms”.*

E Ferchichi, *SP Zustiak, *“Tunable Gelatin Methacrylate Polyethylene Glycol Hydrogels for Cell Mechanosensing Applications”*, (Oral),



S Stealey, M Khachani, *SP Zustiak, *“Adsorption and Sustained Delivery of Small Molecules and Proteins from Nanosilicate Hydrogel Composites”.*

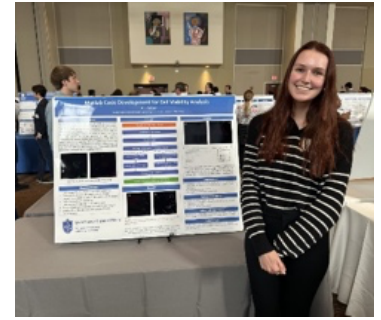
SG Zambuto, E Ferchichi, SP Zustiak, *ML Oyen, *“Systematic evaluation of gelatin bloom strength on gelatin methacryloyl hydrogel properties”*, (Poster).



S Nejat, J Bruns, *SP Zustiak, “*Effect of Hydrogel Matrix Properties and Stiffness on Spheroid Characteristics and Drug Responsiveness*”, (Oral).



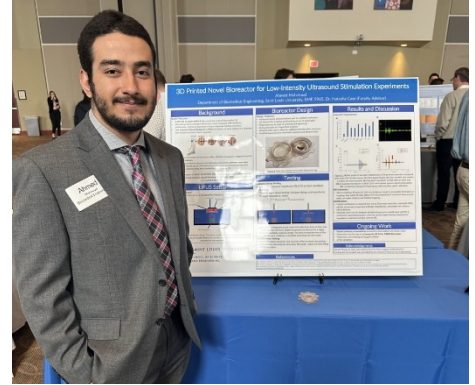
Alli Faber, advisor **Dr. Silviya Zustiak**, presented on a “*Matlab Code Development for Cell Viability Analysis*”.



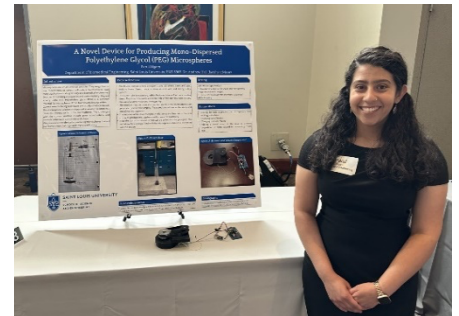
S Stealey, A Gaharwar, *SP Zustiak, “*Adsorption and Sustained Delivery of Small Molecules and Proteins from Nanosilicate Hydrogel Composites*”, (Poster).



Ahmed Mahmoud, advisor **Dr. Natasha Case**, presented on “*3D Printed Novel Bioreactor for Low-Intensity ultrasound Stimulation Experiments*”.



Parul Nigam, advisor **Dr. Andy Hall**, presented on a “*Novel Device for Producing Mono-Dispersed Polyethylene Glycol (PEG) Microspheres*”.



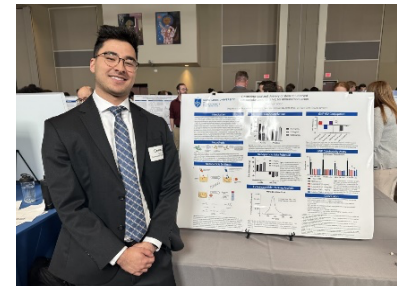
Senior Symposium

The Senior Symposium was held on Wed, April 26 where all senior students presented their projects. The BS/MS graduate students are highlighted below!

Gabbie Coronado, advisor **Dr. Natasha Case**, presented on “*Three-Dimensional Confined bioreactor for Collagen Deposition*”.



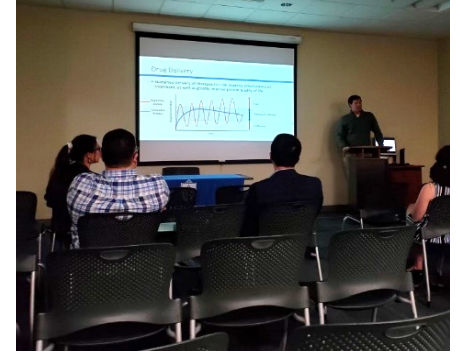
Connor Tobo, advisor **Dr. Koyal Garg**, presented on “*Optimizing Localized Delivery of Stem Cell - Derived Extracellular Vesicles (EVs) for Immunomodulation*”.



Olivia Widdoes, advisor **Dr. Yan Gai,** presented on “*Infrared Image Recognition*”.



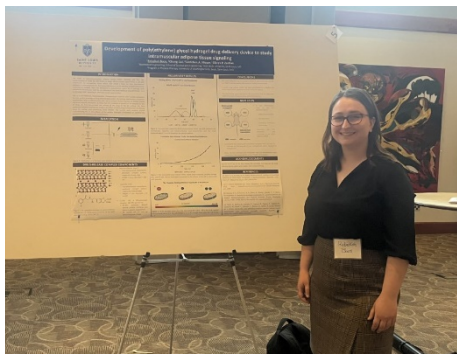
S Stealey, E Dharmesh, MA Salazar, D Elbert, *SP Zustiak, “*Nanosilicate-Hydrogel Microspheres Formed by Aqueous Two-Phase Separation for Sustained Release of Small Molecules*”, (Oral). **Won 1st Place for Best Oral Presentation in the Physical Sciences Category!**



Graduate Student Association

The Graduate Student Association symposium was held at Saint Louis University on April 28th. The BME department was well represented! (Picture of all presenters at the end).

PV Bhagvath¹, Philippe Mercier², and Andrew F. Hall¹, “*Design and Accuracy Assessment of an Automated Image-Guided Robotic Laminectomy System,*” (Poster).



R Boos, G Chang, G Meyer, *SP Zustiak, “*Development of poly(ethylene) glycol hydrogel drug delivery device to study intramuscular*

adipose tissue signaling”, (Poster).



D Johnson¹, Robinson J, K Betram², and *K Garg¹, “*Improving Stem Cell Therapy with Biosponge Encapsulation and Hypoxic Culture*”, (Oral).