



SBME ANNUAL SYMPOSIUM

Trainee Poster List

June 4, 2024 | 12:00 pm - 2:00 pm

*Poster Presentation Generously
Sponsored by:*

Medtronic
Engineering the extraordinary

	POSTER TITLE	PRESENTER	SUPERVISOR
1	Evidence of widespread homology based leakage in genome trained sequence-to-expression models and mitigation strategies	Abdul Muntakim Rafi	Carl de Boer
2	Electrogenic Dynamics of Biofilm Formation: Correlation Between Genetic Expression and Electrochemical Activity in Bacillus subtilis	Adel Yavarinasab	Carolina Tropini
3	In Vivo Angiography and Multimodal Endobronchial Optical Coherence Tomography	Adrian Tanskanen	Pierre Lane
4	Microbial intestinal dysbiosis drives long-term allergic susceptibility by sculpting an ILC2-B1 cell-innate IgE axis.	Ahmed Kabil	Kelly McNagny
5	Photoacoustic needle tip localization during ultrasound biopsy procedures	Antonio Pinos Benitez	Engineers in Scrubs
6	A Gelatin Scaffold Crosslinked with Visible Light to Support Neurite Outgrowth after Spinal Cord Injuries	Alex Pieters	Karen Cheung
7	Clinical Congruence Score: A Semantic Bridge Between Large Language Models and Large Vision Models in Digital Pathology	Ali Khajegili Mirabadi	Ali Bashashati
8	A Combined Synthetic Biology and Mathematical Modeling Approach for the Large-Scale Supply of Human Pluripotent Stem Cells	Ali Shahdoost	Nika Shakiba
9	3D & 2D generation of multi-species PSC-derived retinal graft for use in retinal cell therapy for treating blindness	Ali Otadi	Laver Group
11	Microscale Molecular Gradients on Open Biological Surfaces for Tumor Modelling	Alisa Da Silva	Govind Kaigala
12	The inconsistencies in spinal cord injury mechanical parameters in porcine models	Amirhossein Borjali	Peter Cription
13	Towards Mitigating Intimate Partner Violence - development of a neck cuff for animal modelling of non-fatal strangulation	Angela Li	Peter Cripton Cheryl Wellington
14	Applying Near-Infrared Imaging Intraoperatively to Assess Transplant Kidney Quality and Metabolic Function	Arshdeep Khurana	Babak Shadgan



	POSTER TITLE	PRESENTER	SUPERVISOR
15	Decoding Cancer Promoter Regulatory Logic through Random Mutagenesis Using CRISPR-Cas9 Base Editors	Asfar Lathif Salaudeen	Carl de Boer
16	Step Aside: Understanding Collision Avoidance Strategies in Children with and without Developmental Coordination Disorder	Beatrice Gonzales	Timothy Bhatnagar
17	Studies of supercoiling-induced denaturation within DNA plasmids using single-molecule Convex Lens-induced Confinement microscopy	Bianca Caminada	Sabrina Leslie
18	A scalable computing framework for whole-body mouse cell lineage reconstruction	Brett Kiyota	Nozomu Yachie
19	Myocardial infarction scar cell dynamics in a hyper-regenerative model: identification of new therapeutic targets	Bruce Lin	Fabio Rossi
20	Investigating the Effect of Invariant Natural Killer T Cell Receptor on T Cell Development and Function from Human Pluripotent Stem Cells	Charles Lau	Peter Zandstra
21	3D bioprinting retinal graft to create multi-layer, custom patterned implants for the treatment of retinal-based blindness	Christopher Laver	Laver Group
22	Characterization of DPP4+ fibroadipogenic progenitors in skeletal muscle	Chun Wai Cheung	Fabio Rossi
23	Quantifying multi-layer retinal graft stratification across multiple imaging modalities to enhance cell therapy development for blindness	Corey Kelly	Laver Group
24	Symmetry-breaking, scaling and growth control in adherent pluripotent stem cell-derived developmental organoids	Daniel Aguilar Hidalgo	Peter Zandstra
25	Multiplexable production of monoclonal pseudoviruses for high-throughput viral variant screening	David Mackay	Nozomu Yachie
26	Studying knee cartilage mechanics using the MRI magnetisation transfer ratio	Edward Hoptioncann	David Wilson
27	A soft and implantable device for bladder management	Elham Mohseni	Dena Shahriari
28	Aggregate size determines lineage competence in iPSC-derived blood differentiation	Elizabeth Castle	Peter Zandstra



	POSTER TITLE	PRESENTER	SUPERVISOR
29	Identifying prophylactic implant designs and features to increase predicted femur force and prevent hip fracture in a fall	Emily Bliven	Orthopaedic and Injury Biomechanics Group
30	Intracellular Dynamics of LNP-mediated mRNA Delivery: A Single-Cell Exploration Toward Enhanced Therapeutics and Vaccine Developments	Eric Boateng	Sabrina Leslie
31	Engineering CAR-expressing innate lymphoid cells (ILCs) from human pluripotent stem cells (hPSCs) for cancer immunotherapy	Grace Kuo	Kelly McNagny
32	Uncovering Heterogeneity in Beta Cell Differentiation	Hourieh Movasat	Nika Shakiba
33	Cellular Societies: Balancing Individual Goals with Collective Viability in Embryo Development	Ipek Egilmez	Nika Shakiba
34	Photocrosslinkable GelMA hydrogels support neurite outgrowth in a microscale in vitro spinal cord injury model	Iryna Liubchak	Karen Cheung
35	Does Inhibitory Repetitive Transcranial Magnetic Stimulation Modulate Heart Rate Variability in Depression?	Jaeyoon Kim	Fidel Vila-Rodriguez (NINET Lab)
36	Dynamics of Player Movements in Female Soccer: Implications for ACL Injury Risk	Jason Fu	Human Motion Biomechanics Lab (HuMBL)
37	Multipath Contrast Imaging for Oral Cancer Management	Jeanie Malone	Pierre Lane
38	Comparison Analysis of SPLICS and MCS-DETECT for Detecting Mitochondria-ER Contact Sites (MERCs)	Jieyi Zheng	Ivan Robert Nabi
39	Temporal effects of chimeric antigen receptor (CAR) intracellular domain combinations in T cell development from iPSCs.	Jiyoung Yun	Peter Zandstra
40	Investigating the Role of Intercellular Mitochondrial Transfer in Cell Competition of Human Embryonic Stem Cells	Joshua De Guzman	Nika Shakiba



	POSTER TITLE	PRESENTER	SUPERVISOR
41	The Detection of Cardiac Fibrosis from ECG and the Role of Machine Learning: A Review of Existing Literature and Future Directions	Julia Handra	Roger Tam
42	Towards Personalized Pressure Injury Prevention in SCI: Soft Sensing Technology & Data-Driven Algorithms	Justin Wyss	John Madden & Babak Shadgan
43	Video based estimation of efforts in stationary cycling using computer vision and machine learning	Ka Chun (Kelvin) Lee	Pawel Kudzia
44	Investigation of Local Effects of Transposable Elements in Preimplantation Embryos	Kai Wei Chang	Nika Shakiba
45	Invariant Natural Killer (iNKT) Cell Expansion and Functionality Testing	Karina Akhmedova	Peter Zandstra
46	Computational Investigation of the Developmental Pathways of Stem-cell Derived Islet Cells	Katarina Zosel	Francis Lynn
47	Considerations for Biomedical Engineering Applications in Cardiovascular Surgery	Ke Xin (Katie) Chen	Scientists' Immersion in Medicine (SIIM)
48	Neurologist on Wheels	Keely Shay Maki	St. Paul's Neurology
49	Allogeneic regulatory T cell therapy to treat chronic inflammation	Kevin Salim	Megan Levings
50	Microfluidic integration with silicon photonic biosensors: challenges and future directions	Kowsar Heydari	Karen Cheung
51	Sex-biased thymus architecture guides T cell development through spatially defined niches	Laura Stankiewicz	Peter Zandstra Fabio Rossi
52	Humanized DRAGA mouse model recapitulates human T-cell differentiation in the mouse thymus with HLA-matched donors	Laura Gonzalez	Connie Eaves Peter Zandstra



	POSTER TITLE	PRESENTER	SUPERVISOR
53	Developing surface functionalization strategies for robust point-of-care silicon photonic biosensors	Lauren Puumala	Karen Cheung
54	Generating CD4+ Helper T cells from Human Pluripotent Stem Cells	Lauren Durland	Peter Zandstra
55	Association between Long Range Temporal Correlations in Functional MRI BOLD Signal and the Excitatory/Inhibitory Ratio	Lydia Sochan	Alexander Weber
56	Narrowing the Window of Opportunity: The Impact of Early-Life Microbial Dysbiosis on Immune Development and Susceptibility to Allergic Disease	Maggie Chopra	Kelly McNagny
57	Generation of T-cell-derived-iPSC retinal pigment epithelium (RPE) graft for treating common forms of blindness	Margaret Javier	Laver Group
58	The cell-type-specific spatial organization of the anterior thalamic nuclei in the mouse brain	Margarita Kapustina	Mark Cembrowski
59	iPSC-derived myogenic progenitors deliver in vivo cell therapeutics	Mark Hamer	Fabio Rossi
60	Enhancing iPSC-derived CAR-T Cell production via small molecule inhibition of Lin28B	Matthew Chan	Peter Zandstra
61	Engineering immune cell interactions to study their responses to drugs and cytokines within the tumor microenvironment	Megha Srinivas	Govind Kaigala
62	Adverse Event Prediction in Transvenous Lead Extraction Through AI-Based Preoperative Screening	Michael Diaz Stewart	Ali Bashashati
63	Identification Of Gene Regulatory Networks Essential For Hematopoietic progenitor cell And T cell Emergence From Human Pluripotent Stem Cell Via CRISPR Screens	Mona Siu	Peter Zandstra
64	Cell 2 Spec: Spatio-temporally resolved sparse-cell proteomics	Nadège Oger	Govind Kaigala
65	High-content cell lineage tracing of mouse embryogenesis	Nanami Masuyama	Nozomu Yachie



	POSTER TITLE	PRESENTER	SUPERVISOR
66	We Don't Talk Anymore: Disruptions to the Lacunocanalicular Network in Prostate Cancer Bone Metastasis	Naomi Jung	Rizhi Wang
67	Bile acid metabolites moderate pathogenic ILC3/Th17 cell-driven intestinal fibrosis by restraining ROR-dependent IL-17 production	Natalia Nayyar	Kelly McNagny
68	A 3D synthetic microfluidic retina for rapid iteration of regenerative retinal cell therapies.	Nathan Howerton	Laver Group
69	Generation of T-Cell-Derived-HIPSC Photoreceptor Graft for Treating Common Forms of Blindness	Noah Tourigny	Laver Group
70	Development of a novel retinal-graft migration & synaptogenesis assay using GelMA-coated custom 3D-printed microwells	Owen Liu	Laver Group
71	Computational investigation of impact of gyral geometry on low-intensity transcranial focused ultrasound neuromodulation for a standardized target in the left dorsolateral prefrontal cortex	Parsa Tadayon	Fidel Vila-Rodriguez
72	Building gene regulatory networks of a human gastrulation model using scRNA-seq data	Pattarin Blanchard	Nika Shakiba
73	Implantation and Assessment of a Ventral Microelectrode Stimulator for Spinal Cord Injury Treatment	Paul Juralowicz	Bio MEMs
74	Estimating Biomechanical Forces From Video Using Computer Vision and Machine Learning	Pawel Kudzia	SBME Faculty Member
75	Exploring the therapeutic capacity of mRNA and saRNA LNP formulations	Petya Popova	Anna Blakney
76	The effects of denosumab on bone mineralization in the treatment of giant cell tumors of the spine	Robyn Birch	Rizhi Wang
77	A novel in-house virtual surgical planning system for mandibular reconstruction - a clinical case series	Rohan Birk	Eitan Prisman
78	Engineered, clinically-relevant production of helper (CD4+) T cells from pluripotent stem cells	Ross Jones	Peter Zandstra



	POSTER TITLE	PRESENTER	SUPERVISOR
79	Spatial DNA Barcoding Assisted by Microfluidics for Quantification of Intratumor Heterogeneity	Ruth Yu	Govind Kaigala
80	Design and Development of a Low-Cost Modular Simulator for Training in the Surgical Management of Jejunoileal Atresia	Ryan Yeung	Shahzad Joharifard and Roger Tam
81	Quantitative visualization of lipid nanoparticle fusion as a function of formulation and process parameters	Sadie Graves	Sabrina Leslie
82	Variant Effect Prediction using Deep Neural Network in Autoimmune Disease	Sambina Islam Aninta	Carl de Boer
83	Simultaneous, single-particle measurements of size and loading give new insights into the structure of drug-delivery nanoparticles	Shagun Kothari	Sabrina Leslie
84	Fully implantable, flexible optical probes for neuromodulation of the spinal cord	Shahriar Shalileh	Dena Shahriari
85	Spatiotemporal sampling of Pancreatic cancer cells for profiling cellular plasticity in collective migration processes	Sharvari Somayaji	Govind Kaigala
86	Integrated Metabolic and Macromolecular Profiling to Enhance Quality Control in Human Pluripotent Stem Cell Expansion	Shreyas Rangan	Shakiba Lab
87	Modeling functional evolutionary trajectories of protein-coding sequences by high-dimensional genotype-fitness landscapes	Sofia Romero	Nozomu Yachie
88	Sketch-Treat-Etch: Microfluidic Technology for Spatial Investigation into Rare Tumor Cell Populations	Sofia Graham	Govind Kaigala
89	A multi-kingdom genetic barcoding system for precise target clone isolation	Soh Ishiguro	Nozomu Yachie
90	LuxNFlow: Direct-Light Projection on a Chip for Dynamic Flow Patterning	Sridaran Rajagopal	Govind Kaigala
91	What does the emptiness of lipid nanoparticles mean for mRNA therapeutics?	Suiyang Liao	Anna Blakney
92	Hic1 in the maintenance of lung CD4+ T cells (TRM) in allergic asthma	Sze Lok Ng	Peter Zanstra



	POSTER TITLE	PRESENTER	SUPERVISOR
93	Hic1 in the maintenance of lung CD4+ T cells (TRM) in allergic asthma	Taehyun Kim	Kelly McNagny
94	Visible Light Crosslinkable GelMA Hydrogels for Injection into Spinal Cord Lesions	Tanya Bennet	Karen Cheung
95	Development of a High-Throughput Platform for Transcription Factor Characterization	William Cheney	Carl de Boer
96	Engineering Novel Collective Cancer Migration Models	Yara Nasrallah	Govind Kaigala
97	Alignment of Magnetic Microstructures in an Injectable Spinal Cord Injury Treatment: Simulation and Generation of Configurable Magnetic Fields	Yas Oloumi Yazdi	Karen Cheung
98	The effect of suspension culture parameters on the growth and pluripotency of wild type and genetically variant human pluripotent stem cells	Yeganeh Dorri Nokoarani	Nika Shakiba
99	Beyond Conventional Parametric Modeling: Data-Driven Framework for Estimation and Prediction of Time Activity Curves in Dynamic PET Imaging	Zakariaei Niloufar	Arman Rahmim
100	Assessing the ability of multiple hydrogels to support in vitro neurite outgrowth in 3D from dorsal root ganglia	Zhuoye Xie	Karen Cheung

