



4TH ANNUAL

Minnesota
Organoid
Symposium

Building Complexity. *Simplifying Discovery.*

September 30, 2026 / 7:45 AM – 5:30 PM

R&D Systems HQ
614 McKinley Place NE, Minneapolis, MN 55413

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Welcome to the 4th Annual Minnesota Organoid Symposium

What began as an effort to connect organoid researchers across the University of Minnesota and Mayo Clinic has grown into a thriving community that brings together academic, clinical, and industry leaders. Over the past three years, the symposium has explored the potential of organoids in discovery, disease modeling, biomanufacturing, and translational research. This year, we build on that momentum by focusing on a key question: How can we create organoid models that are more biologically relevant, rigorously characterized, and impactful for advancing human health?

The 2026 program reflects the rapid evolution of the field, with sessions covering immune cell integration, technologies for assessing organoid complexity, advanced disease modeling, and emerging federal initiatives supporting New Approach Methodologies (NAMs).

The agenda also features trainee lightning talks, poster presentations, and dedicated opportunities for networking, discussion, and collaboration.

We are especially proud that this fourth annual symposium continues the partnership between the University of Minnesota, Mayo Clinic, and R&D Systems by Bio-Techne, exemplifying the collaborative spirit that has defined this event from the beginning.

We hope today's discussions showcase innovative science, spark meaningful connections, and inspire new ideas that help move organoid technologies from promising research tools to reproducible, scalable platforms with broad scientific and clinical impact.

Thank you for joining us and for contributing your expertise, enthusiasm, and insights to this growing organoid community.

Conference Co-Chairs

Brenda Ogle, PhD, University of Minnesota

Chuck Howe, PhD, Mayo Clinic

Evey Hegewisch, PhD, R&D Systems by Bio-Techne

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Program Schedule

7:45 AM Doors Open

7:45 – 8:30 AM Breakfast

8:30 – 8:35 AM **Introduction**
 Brenda Ogle, PhD
 Professor, Department of Biomedical Engineering
 Professor, Department of Pediatrics, University of Minnesota
 Charles Howe, PhD
 Professor, Neurology & Neuroscience, Mayo Clinic

8:35 – 9:15 AM **Keynote**
 Alex Shalek, PhD
 J.W. Kieckhefer Professor & Director, Institute for Medical Engineering & Science, MIT

9:15 – 10:35 AM **Adding Immune Complexity**
 Moderator: Quinn Peterson, PhD, Mayo Clinic
 Lonnie Shea, PhD
 Steven A Goldstein Collegiate Professor, Biomedical Engineering, University of Michigan
 Ankur Singh, PhD
 Carl Ring Family Endowed Professor
 Director, Center for Immunoengineering, Georgia Institute of Technology
 Andrew Khalil, PhD
 Assistant Professor, Department of Biomedical Engineering, University of Minnesota
 Mike Kattah, MD, PhD
 Senior Associate Consultant, Division of Gastroenterology and Hepatology,
 Department of Internal Medicine, Mayo Clinic

10:35 – 11:00 AM Coffee Break—Sponsored by MO:RE

11:00 – 12:15 PM **Technologies to Evaluate Organoid Complexity**
 Moderator: Andrew Khalil, PhD, University of Minnesota
 Beau Webber, PhD
 Associate Professor, Department of Pediatrics, University of Minnesota
 Art Beyder, MD, PhD
 Associate Professor of Medicine & Physiology, Mayo Clinic
 Pradipta Ghosh, MD
 Professor, Department of Medicine & Cellular & Molecular Medicine, UCSD

12:15 – 12:30 PM	MO:RE Presentation —Diamond Sponsor
12:30 – 1:15 PM	Lunch
1:15 – 2:35 PM	Augmenting Disease Models Moderator: Dave McKenna, PhD, University of Minnesota Shannon Mumenthaler, PhD Chief Translational Research Officer, USC / Ellison Institute for Transformative Medicine Nikki Lytle, PhD Assistant Professor, Department of Surgery, Medical College of Wisconsin Paolo Provenzano, PhD Professor, Biomedical Engineering, University of Minnesota Brooke Druliner, PhD Assistant Professor of Biochemistry and Molecular Biology Assistant Professor of Medicine, Mayo Clinic
2:35 – 3:35 PM	Poster Session 1
3:35 – 4:05 PM	Federal Agency Avenues Future of NAMs Srivatsan Kidambi, PhD Director, Standardized Organoid Modeling (SOM) Center, National Institute of Health (NIH)
4:05 – 4:30 PM	Future of NAMs Panel Moderator: Charles Howe, PhD, Mayo Clinic Alex Shalek, PhD J.W. Kieckhefer Professor & Director, Institute for Medical Engineering & Science, MIT Srivatsan Kidambi, PhD Director, Standardized Organoid Modeling (SOM) Center, National Institute of Health (NIH) Pradipta Ghosh, MD Professor, Department of Medicine & Cellular & Molecular Medicine, UCSD Lukas Gaats, PhD CEO at MO:RE Hannah Maple, PhD Director Product Management, Organoids at R&D Systems
4:30 – 5:30 PM	Poster Session 2 & Happy Hour

Speakers



Dr. Brenda Ogle is a Professor of Biomedical Engineering at the University of Minnesota whose research focuses on cardiac tissue engineering, regenerative medicine, and advanced 3D bioprinting technologies. Her laboratory develops innovative biomaterials and stem cell-based approaches to create functional heart tissues and cardiac models for studying disease, evaluating therapies, and advancing regenerative treatments. Her work has helped pioneer the use of bioprinted cardiac structures and engineered heart tissues to better understand and restore heart function.

Dr. Brenda Ogle, PhD
University of Minnesota



Dr. Charles L. Howe, Ph.D. is Professor of Neurology and Neuroscience at Mayo Clinic and serves as Director of Research for the Center for Multiple Sclerosis and Autoimmune Neurology. A leading expert in neuroimmunology, his research focuses on understanding how immune responses contribute to neurological diseases and injuries, with the goal of developing therapies that protect and restore nervous system function. His work spans multiple sclerosis, epilepsy, neuromyelitis optica, and other neuroinflammatory disorders, with a particular emphasis on translational approaches that can improve patient outcomes.

Dr. Charles Howe, PhD
Mayo Clinic



Dr. Alex K. Shalek is the Director of the Institute for Medical Engineering & Science (IMES) and the Health Innovation Hub at MIT, J.W. Kieckhefer Professor in IMES and Chemistry, and an Extramural Member of MIT's Koch Institute. He is also an Institute Member of the Broad Institute, a Member of the Ragon Institute, and an Instructor in Health Sciences & Technology at Harvard Medical School. Dr. Shalek received his B.A. from Columbia University and Ph.D. in chemical physics from Harvard University, followed by postdoctoral training at the Broad Institute and MIT. His research focuses on developing and applying innovative tools to uncover cellular and molecular mechanisms underlying human health and disease. His honors include the NIH New Innovator Award, Beckman Young Investigator Award, Searle Scholar Award, Pew-Stewart Scholar Award, NIDA Avant-Garde (DP1 Pioneer) Award, Alfred P. Sloan Research Fellowship, MIT's Harold E. Edgerton Faculty Achievement Award, and the HMS Young Mentor Award.

Dr. Alex Shalek, PhD
Massachusetts Institute of Technology (MIT)



Dr. Lonnie Shea is the Steven A. Goldstein Collegiate Professor in the Department of Biomedical Engineering at the University of Michigan (U-M), which is joint between the College of Engineering and the School of Medicine. His research lies at the interface of regenerative medicine and immune engineering, whose focus is on preventing tissue degeneration or promoting tissue regeneration. His projects include islet transplantation for diabetes therapies, nerve regeneration for treating paralysis, and diagnostics and therapeutics for immune dysfunction in cancer and autoimmunity.

Dr. Lonnie Shea, PhD
University of Michigan



Dr. Ankur Singh is the Carl Ring Family Professor at Georgia Tech, with a joint appointment in Mechanical Engineering and Biomedical Engineering. He is the Director of the Georgia Tech Center for Immunoengineering. His lab develops human immune organoids and immune-competent systems to study immune cells and therapeutics. A Fellow of the American Institute for Medical and Biological Engineering, he has published over 85 articles in journals including Nature Materials, Nature Nanotechnology, and Nature Biomedical Engineering, and received many awards. He has led foundational immunoengineering initiatives within scientific societies, including the Society for Biomaterials and the Controlled Release Society, and serves on the Scientific Advisory Board of the Chan Zuckerberg Initiative Chicago Biohub.

Dr. Ankur Singh, PhD
Georgia Institute of Technology



Dr. Andrew Khalil is an Assistant Professor at the Department of Biomedical Engineering at the University of Minnesota. Dr. Khalil's lab seeks to leverage human pluripotent stem cells, genetic engineering, and gene therapy technologies to create functional immune cells with novel capabilities and drive transformative advances in immunoengineering and cell therapies for cancer, metabolic disorders, and age-related conditions. The lab also employs these technologies to develop innovative models of human diseases in a dish to help better understand the immune system's role in disease states as well as its capacity for tissue regeneration and repair. The overarching aim of the Khalil lab is to harness the immune system's potential to eliminate pathogenic cells, enhance tissue regeneration, and ultimately improve human health and longevity.

Dr. Andrew Khalil, PhD
University of Minnesota



Michael G. Kattah, M.D., Ph.D., is a board-certified gastroenterologist at Mayo Clinic who cares for people in Rochester, Minnesota, and from all around the world. He specializes in inflammatory bowel disease (IBD), including Crohn's disease, ulcerative colitis, and microscopic colitis. Dr. Kattah provides comprehensive care for adults and young adults transitioning from pediatric to adult gastrointestinal care, offering individualized treatment plans that emphasize long-term health and quality of life. His multidisciplinary approach includes collaboration with oncology for immunotherapy-related colitis and team-based care across pharmacy, nutrition, dermatology, and colorectal surgery.

Dr. Michael Kattah, MD, PhD
Mayo Clinic



Dr. Beau Webber is an Associate Professor in the Department of Pediatrics, Division of Hematology and Oncology at the University of Minnesota. He graduated from the University of Wisconsin-LaCrosse in 2007 with a BS in Cellular and Molecular Biology and conducted his PhD studies at the University of Minnesota where he studied the embryonic development of hematopoietic stem cells. As a postdoctoral fellow in the Hematology, Oncology, and Transplantation program at the University of Minnesota, Dr. Webber developed advanced strategies for genetic modification of human lymphohematopoietic and pluripotent stem cells for cancer immunotherapy and correction of inherited diseases. Dr. Webber joined the Department of Pediatrics Faculty as an Assistant Professor in 2017.

Dr. Beau Webber, PhD
University of Minnesota



Dr. Arthur Beyder, M.D., Ph.D., is a gastroenterologist and internist at Mayo Clinic in Rochester, Minnesota. He is a consultant in the Division of Gastroenterology and Hepatology and has a joint appointment in the Department of Physiology and Biomedical Engineering. Dr. Beyder is board-certified in internal medicine and gastroenterology and is an Associate Professor of Medicine and Physiology at Mayo Clinic.

Dr. Arthur Beyder, MD, PhD
Mayo Clinic



Dr. Pradipta Ghosh, M.D. is Professor of Medicine and Cellular & Molecular Medicine and Founding Director of the Institute for Network Medicine at UC San Diego. A physician-scientist, she is known for foundational discoveries in signal transduction at the intersection of trimeric GTPase switches and growth-factor signaling, including the discovery of Guanine-nucleotide Exchange Modulators (GEMs), which established a new paradigm in eukaryotic cell signaling. Motivated by the translational needs emerging from these discoveries, she built interdisciplinary programs integrating patient data, AI and computational biology, patient-derived organoids, quantitative technologies, and predictive modeling. Pertinent to this symposium, she founded HUMANOID™, UC San Diego's human organoid center, in 2019, with a distinctive emphasis on prospective biobanking and linking patient-derived models to longitudinal clinical outcomes. Her work asks a central question for complex human model systems: not simply whether we can recreate human biology, but how confidently those models predict what matters in patients.

Dr. Pradipta Ghosh, MD
University of California San Diego



Dr. Shannon Mumenthaler, PhD, is the Chief Translational Research Officer for the Ellison Medical Institute, where she has significant experience overseeing and developing interdisciplinary translational research programs. She helps shape the Institute's scientific direction, ensures research teams have the resources they need to advance their work, and contributes to strategic planning for partnerships and long-term goals. Dr. Mumenthaler applies a unique multidisciplinary approach toward her research program, partnering with mathematicians, clinicians, and engineers to explore critical areas in cancer. She uses quantitative cell biology and systems biology approaches to understand cancer progression and treatment response. By developing and leveraging advanced tumor models, including organoids and organ-on-chip systems, she investigates how the physical and cellular microenvironment shapes cancer behavior and therapeutic outcomes.

Dr. Shannon Mumenthaler, PhD
University of Southern California



Dr. Nikki Lytle is an Assistant Professor at the Medical College of Wisconsin. She completed her graduate training at UC San Diego, where she identified key regulators of pancreatic cancer initiation, therapy resistance, and metastasis, contributing to the discovery of Musashi, ROR-gamma, and LIF as therapeutic targets. She completed her postdoctoral fellowship at the Salk Institute, studying how tissue injury drives cell state instability, tumor initiation, and metastatic progression. Named a Hope Funds for Cancer Research Fellow in 2019, Dr. Lytle joined the Medical College of Wisconsin in 2022. Her research focuses on intrinsic and microenvironmental factors that drive pancreatic and breast cancer progression to identify new therapeutic targets for preventing metastasis.

Dr. Nikki Lytle, PhD
Medical College of Wisconsin



Dr. Paolo P. Provenzano is a Professor at the University of Minnesota with appointments in Biomedical Engineering, Hematology/Oncology, and the Masonic Cancer Center. He serves as Co-Director of the UMN Cancer Bioengineering Initiative and Director of the NCI U54 Center for Multiparametric Imaging of Tumor Immune Microenvironments (C-MITIE). Trained in mechanical engineering, biomedical engineering, and quantitative cancer biology, his research focuses on the interface of cancer biology and engineering. Prior to joining UMN, he held research positions at the University of Wisconsin and Fred Hutchinson Cancer Research Center, where he helped pioneer cancer mechanobiology, live tumor imaging, and therapies targeting the physical properties of tumors.

Dr. Paolo Provenzano, PhD
University of Minnesota



Dr. Brooke Druliner is an Assistant Professor at Mayo Clinic where her research focuses on the molecular mechanisms of healthy and disrupted epigenetic memory programs in the context of chromatin that regulate intestinal stem cell function. Dr. Druliner's laboratory combines chromatin and stem cell biology approaches and organoid models of stem cells. She uses these approaches to study intestinal stem cell regulation across multiple disease contexts. Dr. Druliner also studies advanced technologies, including genome engineering and single-cell multiomics.

Dr. Brooke Druliner, PhD
Mayo Clinic



Dr. Srivatsan (Sri) Kidambi is the Director of the NIH Standardized Organoid Modeling (SOM) Center and Scientific Program Director within the NIAID Division of Intramural Research/Research Technology Branch, where he leads NIH-wide efforts to establish standardized, AI-enabled human organoid platforms that accelerate translational research, precision medicine, and regulatory science. He also leads the Human DataCube–Organoid Infectious Disease (HDC-OID), CUBE-OMICS, and Bio Genesis Autonomous Human Biology Laboratory initiatives, advancing next-generation platforms that integrate organoids, AI, automation, and multi-omics to transform biomedical discovery, and medical countermeasure development. With more than 20 years of leadership experience spanning academia, industry, and government, Dr. Kidambi has published over 80 peer-reviewed publications, holds six patents, and serves in leadership roles with the ISSCR Consortium and ISO to advance global standards for human-relevant New Approach Methodologies (NAMs) and organoid technologies.

Dr. Srivatsan Kidambi, PhD
National Institute of Health (NIH)

Steering Committee

The Minnesota Organoid Symposium is guided by a multidisciplinary steering committee of researchers and leaders from the University of Minnesota, Mayo Clinic, and R&D Systems, working together to advance innovation in organoid and regenerative medicine research.

University of Minnesota: Brenda Ogle, PhD / Andrew Khalil, PhD / James Dutton, PhD / Timothy O'Brien, PhD
David McKenna, PhD / John Bischof, PhD / Elica Gardne

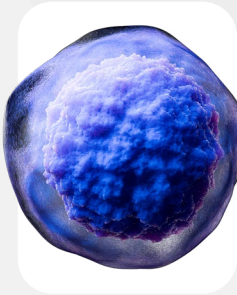
Mayo Clinic: Charles Howe, PhD / Brooke Druliner, PhD / Peter Lucas, MD/PhD / Quinn Peterson, PhD

R&D Systems by Bio-Techne: Evey Hegewisch Solloa, PhD / Brandon Ross / Jessica Wanamaker, MBA

Comprehensive Organoid Solution Portfolio

From Culture to Characterization

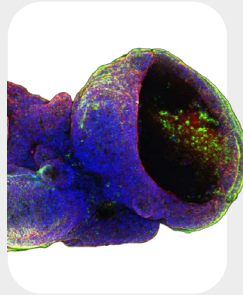
Organoid Culture



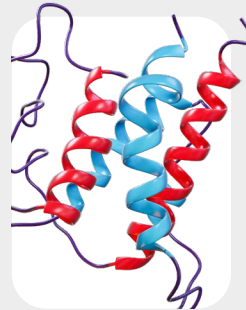
Pala™ Single Cell Isolation



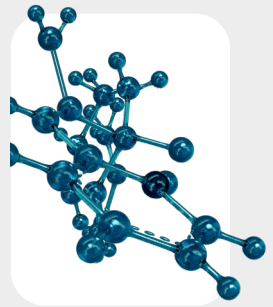
Media & Supplements



Cultrex ECMs



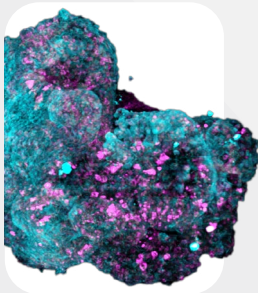
Cytokines & Growth Factors



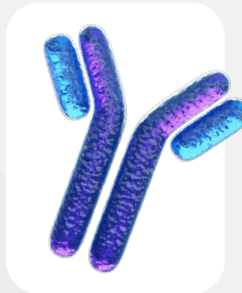
Tocris™ Small Molecules

R&D systems™
by biotechne

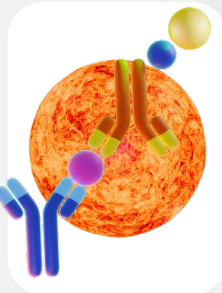
Organoid Analysis



Cultrex Organoid Harvesting



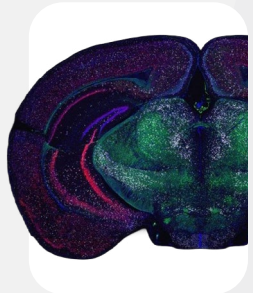
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Simple Western



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Notes

Adding Immune Complexity to Organoid Systems

Notes

Augmenting Disease Models in Organoid Systems

New Approach Methodologies

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