

SPATIAL BIOLOGY WEST COAST US 2024

BY OXFORD GLOBAL

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04 - 05 December 2024 | San Diego, CA

Join over 200+ leaders, experts, and researchers at our Spatial Biology US West Coast Congress all showcasing the most transformative spatial tools and their diverse applications, from target identification & biomarker discovery to translational research and data analytics. This event will equip you with the information and tools to utilise spatial biology in drug development.

20+ Industry-Leading Speakers Including...



KOICHI HASHIKAWA, Principal Computational Scientist, Johnson & Johnson Innovative Medicine



MICHAEL SURACE, Director, AstraZeneca



SRIPAD RAM, Digital Pathology & Image Analysis Group Leader, Pfizer



PREMI HAYNES, Senior Principal Scientist, Bristol Myers Squibb



STEPHEN BYERS, Professor and Associate Director, Georgetown University



ANOJA PERERA, Director, Sequencing and Discovery Genomics, Stowers Institute



SILAS MANIATIS, Associate Director, Technology Innovation, New York Genome Centre



STEPHEN WONG, Chair Professor, Houston Methodist Hospital and Weill Cornell Medicine



DANIELLE J. TAN, Senior Scientist, BioMarin Pharmaceuticals



4 Content Tracks



15+ Hours of 1:1 Meetings



15+ Partners



200+ Attendees

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WELCOME TO Spatial Biology West Coast US 2024

Committed to helping you facilitate breakthrough in developing the latest safe and effective therapeutics across a wide range of disease indications, Spatial Biology US West Coast provides meaningful networking opportunities and pioneering content from across the diverse field of spatial multi-omics.

The field of spatial biology has revolutionized our understanding of the spatial organization and interactions within human cells, tissues, and organs, offering profound insights into human health and disease. By mapping the precise locations of biological molecules, spatial biology provides a detailed picture of cellular processes and their environments. However, significant challenges remain to transition spatial biology research into clinical applications, ensuring its potential is fully realized in developing precise and effective diagnostics and treatments.

Spatial Biology US West Coast features engaging presentations from leading pharmaceutical and biotech companies, as well as world leading academic institutions, all exploring innovations in spatial biology research from applications in a diverse range of therapeutic

areas (including neurobiology, immunology & oncology) through to data analytics, clinical development, and beyond. The event includes a range of interactive panel discussions aiming to drive interdisciplinary collaboration & drive transformative change in biomedical research.



Freya Royan,
Senior Conference Producer, Oxford Global



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WHAT'S NEW

Benefits Of Attending

Why Attend?

- ✔ **Hear from and meet with the key innovators in spatial biology.** 2024 includes: Director, AstraZeneca, Digital Pathology & Image Analysis Group Leader, Pfizer, & Senior Principal Scientist, Spatial AI in Pathology, Genentech
- ✔ **Discuss the latest innovations in spatial multi omics techniques & approaches.** Presentations will delve into translating spatial imaging techniques & approaches into the clinic, multi-modality processing & case studies from various spatial omics
- ✔ **Explore new innovations in spatial bioinformatics, data analytics & interpretation.** Key opinion leaders will be providing insights into data sharing and reproducing, AI assisted classification & integrative analysis of the transcriptome & proteome
- ✔ **Gain comprehensive insights into utilising spatial biology in pharma.** Hear about spatial research & spatial technologies in pharma R&D & also using the technology for diagnostics purposes & clinical development use cases
- ✔ **Join a series of panel discussions.** Interactive sessions will include 'Addressing The Future Needs Of Spatial Omics'; 'Moving Towards Clinical Trial & Discovery Phases' & many more



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WHY PARTNER WITH OXFORD GLOBAL?

At Oxford Global, our mission is to curate personalized experiences that foster community and inspire innovation.

We believe in the power of networking, connection, and knowledge to deliver quality products and services that exceed expectations. Partnering with Oxford Global means having a dedicated team committed to helping you achieve your goals and navigating the industry's ever-changing landscape.

✓ Arrange 1-1 Meetings

Benefit from guaranteed one-to-one face time with your key prospects, with detailed pre-meeting information provided to enable effective and productive conversations.

✓ Speaking Opportunities

Showcase your company's recent work to a relevant and highly engaged audience.

✓ Host Panel & Roundtable Discussions

Feature alongside key opinion leaders to discuss current hot topics and highlight your company's expertise.

✓ Organise Workshops

Demonstrate best practice within the industry in front of your peers with case studies from your clients.

✓ Exhibit your Products & Solutions

Promote your offerings and ensure delegates know where to find you with a prominent brand presence in the exhibition hall.

✓ Digital Marketing & Lead Generation

Accessing the Oxford Global database, amplify your thought leadership and branding messaging through a post-event case study e-Book.

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NETWORK & KNOWLEDGE-SHARE

Attendees

200+ VPs, Directors & Senior Managers will be attending on-site and online, coming from leading healthcare, biotech, pharma & research institutions in the following fields & more

- Spatial Transcriptomics
- Spatial Proteomics
- Single-Cell Analysis
- Spatial Bioinformatics
- Multi-omics
- Data Integration
- Multiplex Imaging
- Spatial Genomics
- Functional Genomics
- Machine Learning in Spatial Biology
- Tissue Imaging & Prep

Formal & informal meeting opportunities offer delegates the chance to discuss key solutions with leading service providers. Formal 1-2-1 meetings will be available to arrange prior to the event which take place during the dedicated networking breaks covering:

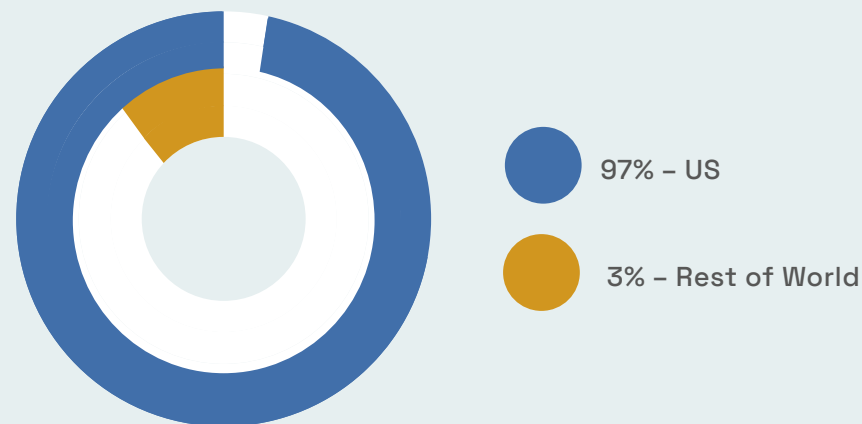
- Tissue Imaging & Prep
- Single Molecule Imaging
- Digital Pathology
- Spatial Imaging Platforms
- Spatial Data Analysis Tools
- Spatial Genomics
- Gene Expression Profiling
- Multiplex Imaging
- High-Resolution Imaging
- RNA Sequencing
- Spatial Proteomics
- Single-Cell Analysis

Previous Attendee Profile:

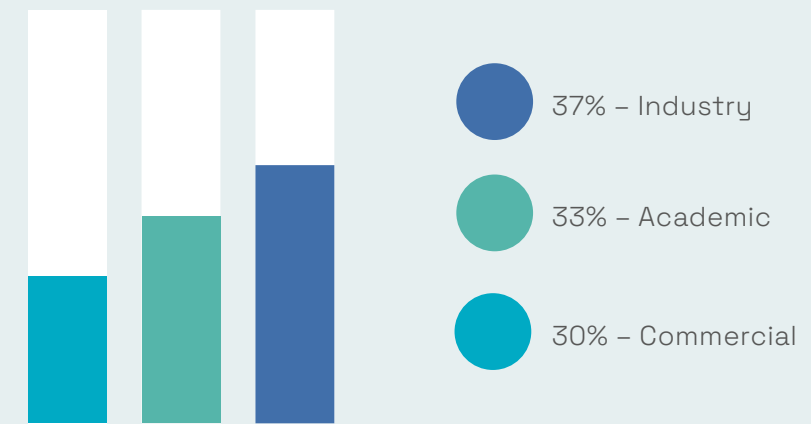
Function

- Scientist - 48%
- Manager/Senior - 30%
- Director - 15%
- C-Level - 7%

Geography



Sector



Attended by these companies & many more:





GAIN EXPERTISE FROM THOUGHT LEADERS

Confirmed Speakers

KEY SPEAKERS



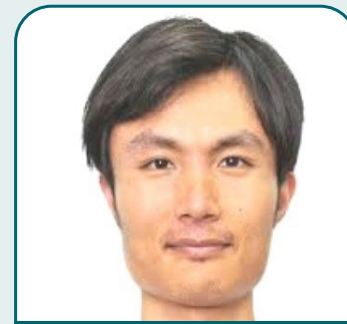
Day One | 09:00

MICHAEL SURACE,
Director,
AstraZeneca



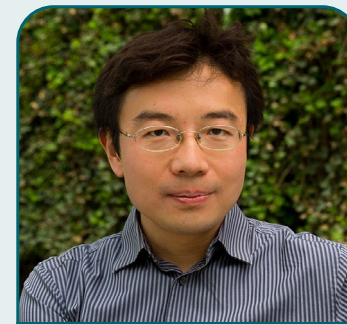
Day One | 12:25

ANOJA PERERA, Director,
Sequencing and Discovery
Genomics, Stowers Institute



Day One | 15:00

KOICHI HASHIKAWA,
Principal Computational
Scientist, Johnson & Johnson
Innovative Medicine



Day Two | 08:30

PENG YIN, Professor of
Systems Biology, Harvard
Medical School, Wyss
Institute,
Harvard University



Day Two | 09:20

DANIELLE J. TAN,
Senior Scientist I, BioMarin
Pharmaceuticals

LEI LI

Lead Bioinformatics Research Scientist, Center for Applied Bioinformatics, St. Jude Children's Research Hospital

MICHAEL SURACE

Director, AstraZeneca

SRIPAD RAM

Digital Pathology & Image Analysis Group Leader, Pfizer

PREMI HAYNES

Senior Principal Scientist, Bristol Myers Squibb

JOAO COSTA

Scientific Associate Director, Takeda

KOICHI HASHIKAWA

Principal Computational Scientist, Johnson & Johnson Innovative Medicine

DANIELLE J. TAN

Senior Scientist I, BioMarin Pharmaceuticals

CARTER ALLEN

Research Scientist - Discovery Statistics & Bioinformatics, Eli Lilly and Company

SÍLVIA SISÓ

Discovery Pathologist, AbbVie

SEAN HOUGHTON

Senior Bioinformatics Analyst, Weill Cornell Medicine

BRITTANY ADAMS

Spatial Profiling Hub Lab Manager, Nebraska Biobank, University of Nebraska Medical Center

HATEF MEHRABIAN

Senior Research Scientist, Pathobiology, Gilead Sciences Inc.

GREGORY SCHWARTZ

Assistant Professor, Princess Margaret Cancer Centre, University of Toronto

STEPHEN BYERS

Professor and Associate Director, Georgetown University

PRIYANK PATEL

Senior Scientist, Boehringer Ingelheim

ANOJA PERERA

Director, Sequencing and Discovery Genomics, Stowers Institute

SILAS MANIATIS

Associate Director, Technology Innovation, New York Genome Centre

STEPHEN WONG

Chair Professor, Houston Methodist Hospital and Weill Cornell Medicine

IOANNIS VLACHOS

Associate Professor, Director of Spatial Technologies, Harvard Medical School

LEONARDO COLLADO-TORRES

Principal Investigator, Lieber Institute for Brain Development

PENG YIN

Professor of Systems Biology, Harvard Medical School, Wyss Institute, Harvard University

GUOLAN LU

Assistant Professor, Urology, Stanford Medicine

YUAN (KAREN) MEI

Molecular Neuroscientist and Bioinformatician, UCSD Institute for Genomic Medicine

IOANNIS RAGOUSSIS

Head of Genome Sciences, Professor, Department of Human Genetics, McGill Genome Centre

YUPING ZHANG

Assistant Professor, Department of Statistics, University of Connecticut

ZHENGQING OUYANG

Associate Professor of Biostatistics, UMass Amherst School of Public Health and Health Sciences

YU-HWA LO

Professor, Electrical and Computer Engineering, The University Of California

YESIM GOKMEN-POLAR

Associate Professor & Associate Director of Pathology Cancer Center, Emory University School of Medicine

CHARLES WANG

Director, Center for Genomics, Loma Linda University School of Medicine

ALEJANDRA URRUTIA

Senior Immunologist, Santa Ana Bio

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DAY ONE OVERVIEW

Wednesday 04 December 2024

Day one offers a diverse range of discussions from the newest technological approaches in spatial multi-omic research to translational applications in the pharmaceutical industry.

Meet key opinion leaders from leading pharmaceutical companies and world renowned academic institutions to discuss what the future of spatial biology could be.



EXPLORE CURATED & INSIGHTFUL CONTENT

Agenda At A Glance

Track 1: Spatial Multi Omics Techniques & Approaches

- Translating spatial imaging techniques & approaches into clinics
- Transcriptomics, metabolomics & proteomics: techniques & approaches
- Single-cell transcriptome imaging
- Multi-modality processing

Track 2: Spatial Biology in Pharma & Translational Drug Research

Part 1 – Pharma R&D

- Accelerating drug discovery & development processes with advanced spatial tools
- Personalised medicine
- Biomarker identification
- Adoption of translational drug research
- Spatial multiplexed imaging for disease characterization
- Feasibility & scalability of various platforms
- Adoption and utilization of AI/ML for spatial analysis in pharma R&D

Part 2 – Spatial Technologies for Clinical Development

- Diagnostics applications of spatial and multi-omics tissue analysis
- Utilisation of spatial tech in the clinic – case studies
- Spatial technologies for diagnostics

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DAY TWO OVERVIEW

Thursday 05 December 2024

On day two, explore the latest innovations in spatial bioinformatics and data analysis. Hear about advanced data integration strategies and dive into discussions around data sharing in the spatial field.

Immerse yourself in a wide range of case studies from leading industry and academic experts, covering oncology, immunology, neurodegeneration, and more.



EXPLORE CURATED & INSIGHTFUL CONTENT

Agenda At A Glance

Track 1: Spatial Bioinformatics, Data Analytics, and Interpretation

- Utilizing spatial data in biology
- Cell-cell interactions
- Overcoming the challenges in spatial data analysis
- Data integration & visualisation
- Spatial transcriptomic datasets
- Data access & standardization
- How do you translate AI/ML approaches into clinical trials
- Data handling / generating insights

Part 2: – Image Analysis, AI Powered Imaging, & Digital Pathology for Spatial Biology

- Label free imaging technologies – imaging mass spec
- Accelerating the discovery of novel biomarkers and drug targets using spatial imaging
- Tissue imaging and analysis using advanced spatial profiling techniques
- Algorithm design for spatial data
- Imaging data analysis / how to set a spatial experiment
- Relevant spatial parameters in different model systems

Track 2: Applications of Spatial Research & Technologies in Biology

- Case studies from the areas of:
 - » Cardiovascular diseases
 - » Regenerative medicine
 - » Oncology
 - » Neurobiology & neurodegenerative diseases
 - » Infectious diseases
 - » Immunological diseases

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DAY ONE: 04 DECEMBER 2024

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07:45 **Registration Opens & Welcome Refreshments**

08:45 **Oxford Global's Welcome Address**

Welcome

TRACK 1: SPATIAL MULTI OMICS TECHNIQUES & APPROACHES

TRACK 2: SPATIAL BIOLOGY IN PHARMA & TRANSLATIONAL DRUG RESEARCH

Benefits of Attending

Track Chair: IOANNIS VLACHOS, Associate Professor, **Harvard Medical School**

Track Chair: KOICHI HASHIKAWA, Senior Scientist, Computational Biology, **Johnson & Johnson Innovative Medicine**

Track Keynote Address: Spatial Tissue Profiling: From A Research Novelty To An Essential Translational And Diagnostic Toolkit

Track Keynote Address: Advanced Spatial Tools To Accelerate Drug Development

- Evolution of spatial tissue profiling from an experimental technique to a key tool in diagnostics and translational research
- Highlights the impact of spatial profiling on advancing tissue-based insights for medical applications

- How advanced spatial technologies enable precise mapping of molecular interactions within tissues, providing deeper insights into drug effects and disease mechanisms
- Using spatial tools to streamline drug development

IOANNIS VLACHOS, Associate Professor, **Harvard Medical School**

MICHAEL SURACE, Director, **AstraZeneca**

Sponsors

Q&A session & transition time between conference rooms

Development And Application Of Spatially Resolved Methods In Neuropsychiatric Disease

Application of Spatial Multiomics In Discovery and Development In Immunology

- Looking at spatial methods to provide detailed mapping of molecular changes in brain disorders
- These techniques reveal specific brain regions and pathways involved in neuropsychiatric diseases, guiding potential therapies

- Looking at how spatial multiomics accelerates finding new biomarkers and therapeutic targets in immune-related diseases
- Advancing Immunology drug discovery with spatial multi-omics

SILAS MANIATIS, Associate Director, Technology Innovation, **New York Genome Centre**

SÍLVIA SISÒ, Discovery Pathologist, **AbbVie**

Attendees

Confirmed Speakers

Q&A session & transition time between conference rooms

The Importance Of Application-Specific Validated Antibodies In Multi-Omic Assays

Solution Provider Presentation

Gregory Warner, Senior Field Applications Specialist
Cell Signalling Technology

Senior Representative,
Element Biosciences



Session Topic Areas

Agenda: Day One

MORNING BREAK



1-2-1 Meetings x3



Poster Displays

Agenda: Day Two

Solution Provider Presentation

Enter A New Era Of Spatial Discovery With Visium HD & Xenium In Situ

Senior Representative,
ACD, a Bio Techne Brand

Jason Kim, Manager, Science & Technology Advisors,
10x Genomics



- Building a complete understanding of the vast complexities of biology, from single cells to tissues and beyond, requires multiomic approaches. At 10x Genomics, we provide single cell, spatial, and in situ technologies that fuel scientific discoveries and drive exponential progress. Join us at our presentation to learn about the new spatial products that have been developed to enable your research discoveries
- This innovative set of technologies will help you uncover molecular insights, dissect cell-type differences, detect novel cell subtypes and biomarkers, define gene regulatory interactions, and decipher spatial gene expression patterns. Insights from these spatial techniques can be combined with single cell data to bring greater resolution and enable a deeper understanding of gene expression patterns, helping researchers develop and refine hypotheses. Join us to see biology in new ways with the most comprehensive spatial resolution and scale

Venue Information

Oxford Global Plus Pass

Q&A session & transition time between conference rooms

Solution Provider Presentation

Solution Provider Presentation

Senior Representative,
Canopy Biosciences

Senior Representative,
Standard BioTools



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TRACK 1: SPATIAL MULTI OMICS TECHNIQUES & APPROACHES

TRACK 2: SPATIAL BIOLOGY IN PHARMA & TRANSLATIONAL DRUG RESEARCH

Using Non-Standard Models In Spatial Research

- Selecting the right spatial instrument for your research
- Considerations when setting up spatial workflows
- Adoption of spatial transcriptomics to support basic research in a core facility setting

ANOJA PERERA, Director, Sequencing and Discovery,
Stowers Institute

Integrating Spatial Biology and Computational Systems for Precision Medicine In Drug Discovery

- Integrating spatial biology with computational biology enhances our understanding of complex biological systems and accelerate targeted drug discovery
- This talk will present such an integrative pipeline and showcase applications in drug discovery for cancer, fibrotic diseases, and Alzheimer's disease

STEPHEN WONG, Chair Professor
Houston Methodist Hospital and Weill Cornell Medicine

Q&A session & transition time between conference rooms

The Business Of Spatial Biology

- We are now in the Single Cell and Spatial Biology Era-Measure and localize "everything" and look for patterns
- Many investigators turn to institutional or regional core facilities as costs are prohibitive for most individual labs
- Core Laboratory Considerations
- What's Next?

STEPHEN BYERS, Professor and Associate Director,
Georgetown University

Application Of Spatial Technologies In Oncology Translational Research

- Application of multiplex IHC and multiplex IF assays to investigate expression of pharmacodynamic biomarkers with spatial context in solid tumor
- Utilizing GeoMx Digital Spatial Profiling to explore Tumor vs TME with a highplex Whole transcriptome panel in solid tumor
- Evaluating cellular neighborhoods to investigate tumor suppressive microenvironment using CosMx SMI in solid tumor

PREMI HAYNES, Senior Principal Scientist,
Bristol Myers Squibb

LUNCH BREAK & REFRESHMENTS



1-2-1 Meetings x4



Poster Displays

When RNA Meets Protein: Fully-Automated Spatial Multi-Omics

- Here, we present an innovative spatial multiomics workflow for the detection of proteins and RNA targets at the single-cell level
- Our approach offers in-depth characterization of tissues, facilitating the discovery of critical biomarkers and therapeutic targets

Eirini Lampraki, Product Marketing Manager
Lunaphore Technologies



Solution Provider Presentation

Senior Representative,
Vizgen



Q&A session & transition time between conference rooms

Panel Discussion: Addressing The Future Needs Of Spatial Multi-Omics

- Future of spatial biology
- Moving towards the practical implementation of spatial findings
- How to translate into precision medicine

Moderator: GUOLAN LU, Assistant Professor, Urology, **Stanford Medicine**

Panellists:
YESIM GOKMEN-POLAR, Associate Professor & Associate Director of Pathology Cancer Center, **Emory University School of Medicine**
STEPHEN WONG, Chair Professor, **Houston Methodist Hospital and Weill Cornell Medicine**
CHARLES WANG, Director, Center for Genomics, **Loma Linda University School of Medicine**

Establishment Of Computational Workflow To Analyze Spatial Transcriptomic Data From The Identifications Of Cell Types To Spatial Architecture For Drug Development Research

- Spatial omics data generated using rich 6k panel (NanoString/Bruker) allowed the identification of granular sub cell-types in each compartment
- Signature gene expressions from sub cell-types are concordant between spatial and scRNAseq data
- Transcriptionally determined lining fibroblasts, indeed, exhibit a lining pattern of spatial distributions
- Distinct niches (spatial neighborhood) are observed between IBD and health conditions
- Transcriptional states of the certain cell types is determined by the niches where they reside, implying that the molecular status is modulated by local cell-cell interactions

KOICHI HASHIKAWA, Principal Computational Scientist
Johnson & Johnson Innovative Medicine

Q&A session & transition time between conference rooms

Location, Location Location: The Importance Of Powerful ROI Selection On The GeoMx

- ROI selection during a GeoMx experiment can make or break the experiment
- We will look at ways to optimize cell selections markers, as well as options when cell markers do not work

BRITTANY ADAMS, Research Manager, Nebraska Biobank, Spatial Profiling Hub,
University of Nebraska Medical Center

AFTERNOON BREAK & REFRESHMENTS



1-2-1 Meetings x3



Poster Displays

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TRACK 2: SPATIAL BIOLOGY IN PHARMA & TRANSLATIONAL DRUG RESEARCH

Workshop

Panel Discussion: Moving Towards Clinical Trial And Discovery Phases

- Integration of spatial tech in the clinic
- Methods, strategies & future directions
- Utility of spatial technologies in discovery

Moderator: CARTER ALLEN, Research Scientist - Discovery Statistics & Bioinformatics, **Eli Lilly and Company**

Panellists:
 KOICHI HASHIKAWA, Principal Computational Scientist, **Johnson & Johnson Innovative Medicine**
 PREMI HAYNES, Senior Principal Scientist, **Bristol Myers Squibb**
 STEPHEN WONG, Chair Professor, **Houston Methodist Hospital and Weill Cornell Medicine**

Q&A session & transition time between conference rooms

Attendees are welcome to join co-located sessions

Q&A session & transition time between conference rooms

Attendees are welcome to join co-located sessions



End of Day One & Drinks Reception

NETWORKING DINNERS

Networking Dinner 1



Networking Dinner 2

*Private invite-only hosted dinner.
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TRACK 1: SPATIAL BIOINFORMATICS, DATA ANALYTICS AND INTERPRETATION

TRACK 2: APPLICATIONS OF SPATIAL RESEARCH & TECHNOLOGIES IN BIOLOGY

Track Chair: NICHOLAS DOVE, Bioinformatician Data Scientist, **Mayo Clinic**

Track Chair: GUOLAN LU, Assistant Professor, Urology, **Stanford Medicine**

Track Keynote Address: Advancing Spatial Biology With Engineered DNA Probes

Track Keynote Address: Integration of Single Cell and Spatial Transcriptomics

- Using engineered DNA probes to improve accuracy in mapping biological molecules within tissues
- These probes enable detailed visualization of complex cellular interactions in spatial biology

- Integrating single-cell and spatial transcriptomics reveals gene activity at the individual cell level within tissue context
- Looking at how this approach provides a detailed view of cellular organization and function, advancing insights into complex biological systems

PENG YIN, Professor of Systems Biology, Harvard Medical School, Wyss Institute, **Harvard University**

IOANNIS RAGOSSIS, Head of Genome Sciences, Professor, Department of Human Genetics, **McGill Genome Centre**

Q&A session & transition time between conference rooms

Lessons From Working On The Edge Of Human Brain Spatially-Resolved Transcriptomics

Generating Pseudo-Time Progression Of Mucosal Inflammation During Inflammatory Bowel Disease Using Spatially Resolved Multi-Omics Data

- In Feb 2020 we posted the first pre-print using Visium by 10x Genomics for spatially-resolved transcriptomics. Since then, we have continued analyzing data and using tools developed by others.
- However, challenges remain with scaling up analysis of this type of data, and some of the lessons we learned could help you save time or avoid some of the same issues.

- We devised a strategy to identify distinct cellular and molecular niches present within FFPE tissues of IBD patients
- We characterized various pathologies of mucosal inflammation
- We then performed trajectory inference and pseudo-time analysis to study the epithelial barrier function during IBD

LEONARDO COLLADO-TORRES, Principal Investigator, **Lieber Institute for Brain Development**

PRIYANK PATEL, Senior Scientist, **Boehringer Ingelheim**

Q&A session & transition time between conference rooms

Improving Data Interpretation For High Resolution Spatial Omics Using Computational Approaches

Spatial Proteomic Approach For Exploratory Neurobiology: Assessing The Biodistribution Of Viral Gene Therapy After CNS Delivery

- Advanced spatial omics techniques, like Stereo-seq, enable high-resolution single-cell localization but often suffer from reduced gene expression quality per bin
- We present solutions, including spatial information for expression correction and alternative normalization methods, to overcome these challenges and improve the interpretation of high-resolution data

- We have developed a novel neural antibody panel for use on FFPE mouse brains, and applied it in a spatial proteomic approach for exploratory neurobiology
- This talk will cover 3 use example use-cases for this approach: i) cellular phenotyping for cell-type distribution of tool reporter AAV, ii) regional quantification of neuronal activation following chemically-induced seizure, and iii) using spatial proteomics to "decode" capsid pools

LEI LI, Lead Bioinformatics Research Scientist Center for Applied Bioinformatics, **St. Jude Children's Research Hospital**

DANIELLE J. TAN, Senior Scientist I, **BioMarin Pharmaceuticals**

Q&A session & transition time between conference rooms

AI Assisted Image-Based High Throughput Cell Classification And Isolation



Complementary Spatial Biology For Pre-Clinical Alzheimer's Disease Research

- How can AI assisted cell image recognize features human experts cannot recognize?
- How are these AI recognized image features connected to cell genomics and proteomics?
- How can AI assisted cell images predict cell fate and tell cell history?

- Spatial biology is a powerful tool for pre-clinical biopharmaceutical research
- Lilly has applied complementary spatial omics platforms to understand mechanisms of neurovascular damage in Alzheimer's disease
- A Spatially informed differential expression, tissue organization, and cell-cell communication analyses are showcased

YU-HWA LO, Professor, Electrical and Computer Engineering, **The University Of California**

CARTER ALLEN, Research Scientist - Discovery Statistics & Bioinformatics, **Eli Lilly and Company**

10:10 **MORNING BREAK** |  1-2-1 Meetings x3 |  Poster Displays

Solution Provider Presentation

Solution Provider Presentation

Senior Representative, **NanoString**

Senior Representative, **Miltenyi BioTec**



Q&A session & transition time between conference rooms

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TRACK 2: APPLICATIONS OF SPATIAL RESEARCH & TECHNOLOGIES IN BIOLOGY

Solution Provider Presentation

Accelerating Data And Throughput In Spatial Imaging: A Core Facility Perspective

11:35

Senior Representative,
Singular Genomics



- Lessons from integrating multiplexing into a busy histology laboratory
- Tips for the addition of custom biomarkers for multiplex experiments
- Importance of sample quality for proper immunostaining results

Zbigniew Mikulski, PhD, Director of Microscopy & Instructor,
La Jolla Institute for Immunology



Q&A session & transition time between conference rooms

Panel Discussion: Data Sharing And Reproducing Analyses In The World Of Spatial Transcriptomics

Panel Discussion: Exploring Novel Application Areas In Therapeutics For Spatial Technologies

12:00

- How to share images for reuse of data
- Establishing a set of primary data
- Use for reproducing analyses and facilitation of computational method development
- Different Pitfalls

Moderator: LEONARDO COLLADO-TORRES, Principal Investigator, Lieber Institute for Brain Development

Panellists:
GREGORY SCHWARTZ, Scientist, Princess Margaret Cancer Centre, Assistant Professor, University of Toronto
SEAN HOUGHTON, Senior Bioinformatics Analyst, Weill Cornell Medicine
LEI LI, Lead Bioinformatics Research Scientist Center for Applied Bioinformatics, St. Jude Children's Research Hospital

- Existing therapeutics approaches: challenges and limitations
- Making spatially targeted therapeutics more precise
- Case studies of technology application

Moderator: IOANNIS RAGOUSSIS, Head of Genome Sciences, Professor, Department of Human Genetics, McGill Genome Centre

Panellists:
DANIELLE J. TAN, Senior Scientist I, BioMarin Pharmaceuticals
ALEJANDRA URRUTIA, Senior Immunologist, Santa Ana Bio

Q&A session & transition time between conference rooms

Identification Of Microenvironment-Dependent Myeloid Cell Heterogeneity In Alzheimer's Disease Human Brain Using Spatial Proteomic Analysis

Finding "The One": How Microdissection Uncovers The Hidden World Of Single Cells

12:25

Bahareh Ajami, Assistant Professor of Immunology at OHSU
Ariadne.ai



- Laser microdissection (LMD) technology has been a proven way of isolating select single cells from tissue and living specimens with both high efficiency and accuracy in numerous research fields. From proteomic studies to plant virus tests, LMD is able to give researchers an avenue of collecting data with increased efficacy. However, technology does differ among brands and some have given mixed results, lost samples, and other headaches to researchers looking to improve their research workflow
- Molecular Machines and Industries (MMI) CellCut system is a leader in the LMD market with its caplift technology and fine point, high pulse laser. Their technology has been proven to collect samples from thin tissue, to more challenging samples such as marine life and bone with near 100% efficiency, allowing researchers to proceed with confidence in their studies
- Come learn more about how the MMI's CellCut system may fit into your research and improve your results

Ashley Remy, Regional Sales Manager for USA West
Molecular Machines & Industries



12:50

LUNCH BREAK



1-2-1 Meetings x4



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14:05

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Senior Representative,
Akoya Biosciences



Q&A session & transition time between conference rooms

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TRACK 1: SPATIAL BIOINFORMATICS, DATA ANALYTICS AND INTERPRETATION

TRACK 2: APPLICATIONS OF SPATIAL RESEARCH & TECHNOLOGIES IN BIOLOGY

Translocation Detection From Hi-C Data Via Scan Statistics

- Recent Hi-C technology enables more comprehensive chromosomal conformation research, including the detection of structural variations, especially translocations
- We formulate the interchromosomal translocation detection as a problem of scan clustering in a spatial point process. We then develop TranScan, a new translocation detection method through scan statistics with the control of false discovery
- Both the simulation and real data analysis indicate that TranScan has great potentials in interchromosomal translocation detection using Hi-C data

YUPING ZHANG, Assistant Professor, Department of Statistics,
University of Connecticut

A Quantitative Metric To Characterize Immune-Cell Infiltration In Human And Murine Tumor Specimens

- We present a novel metric to quantify the spatial biodistribution of cellular/subcellular targets in 2D and 3D histology specimens
- We present two applications of the metric to characterize immune cell infiltration patterns in human breast cancer and spatiotemporal biodistribution of nanoparticles in murine tumors

SRIPAD RAM, Digital Pathology & Image Analysis Group Leader,
Pfizer

Q&A session & transition time between conference rooms

Statistical & Biological Challenges Emerging In 3D Genomes

- Analyzing 3D genome data requires complex statistical models to capture spatial gene interactions accurately
- Understanding 3D genome organization to reveal intricate gene regulation processes, posing unique biological challenges

ZHENGQING OUYANG, Associate Professor of Biostatistics,
UMass Amherst School of Public Health and Health Sciences

Integrating Spatial Omics With Drug Imaging To Dissect Mechanisms Of Drug Resistance In Solid Tumors

- Looking at a novel single-cell spatial pharmacology approach to measure in vivo drug-target interactions within the human tumor microenvironment (TME)
- This technique integrates imaging of therapeutic antibodies, spatial proteomics, and spatial transcriptomics, enabling detailed analysis of drug delivery, target engagement, and cellular/extracellular matrix barriers, with significant implications for antibody-based therapies

GUOLAN LU, Assistant Professor, Urology,
Stanford Medicine

Q&A session & transition time between conference rooms

Pass The Baton: Finding Communication Relay Networks In Tissue

- We present a new algorithm to identify spatially-resolved cell-cell communication
- Using a deep-learning architecture, we can detect cellular "relay networks" of communication
- We find tumor-promoting communication unique to different subtypes of pancreatic cancer

GREGORY SCHWARTZ, Scientist, Princess Margaret Cancer Centre, Assistant Professor,
University of Toronto

Integration Of Spatial Transcriptomics & Multiplexed Immunofluorescence Staining To Enable Co-Localized Multi-Omics Analysis In Chronic Liver Disease

- Integrating ST and mIF provides a co-localized view of mRNA and protein expression, highlighting their complementary yet distinct insights into disease biology
- An automated pipeline was developed, enabling accurate image alignment and biomarker classification, and was validated against manual results
- Observed mRNA-protein discrepancies reveal critical spatial variations, informing therapeutic design

HATEF MEHRABIAN, Senior Research Scientist, Pathobiology,
Gilead Sciences Inc.

Q&A session & transition time between conference rooms

Understanding The Molecular And Cellular Spatial Dynamics Of Tracheal Allograft Transplantation

- Analyzes cell and molecular interactions in tracheal transplants
- Explores spatial dynamics to improve transplant success

SEAN HOUGHTON, Senior Bioinformatics Analyst,
Weill Cornell Medicine

Experimental and Computational Analysis In Spatial Biology

- Looking at spatial biology experiments to provide detailed views of cellular interactions within tissues
- Advanced algorithms to interpret complex spatial data, revealing patterns and insights for biological research

YUAN (KAREN), MEI, Molecular Neuroscientist and Bioinformatician,
UCSD Institute for Genomic Medicine

End of Conference

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