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.

4 Content Tracks

15+ Hours of 1:1 Meetings

15+ Partners

200+ Attendees

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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

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.

LEARN MORE

DRIVE INNOVATION & ACCELERATE RESEARCH

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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:

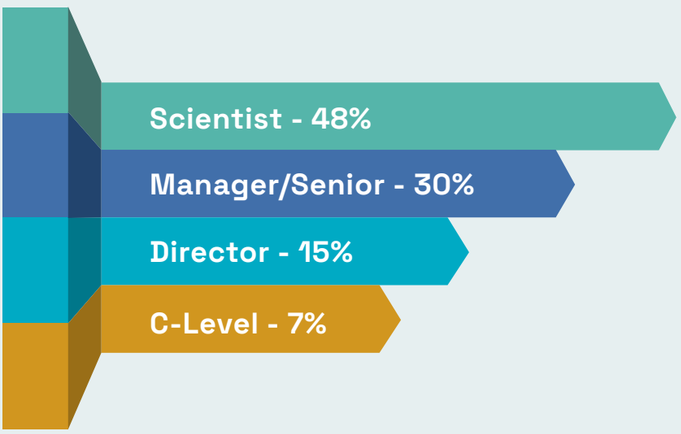
- Tissue Imaging & Prep
- Single Molecule Imaging
- Digital Pathology
- Spatial Imaging Platforms
- Spatial Data Analysis Tools
- Spatial Genomics
- Gene Expression Profiling
- Multiplex Imaging
- High-Resolution Imaging
- RNA Sequencing
- Spatial Proteomics
- Single-Cell Analysis

Attended by these companies & many more:

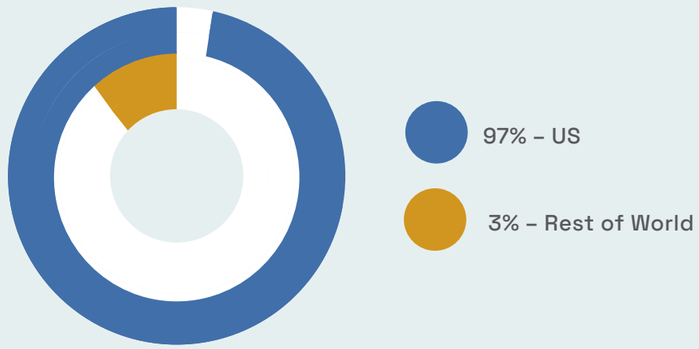
HARVARD MEDICAL SCHOOL · AstraZeneca · NEW YORK GENOME CENTER · abbvie · Boehringer Ingelheim · Juvena THERAPEUTICS · Takeda · Bristol Myers Squibb · McGill UNIVERSITY · Boston University School of Medicine · Lilly · GILEAD

Previous Attendee Profile:

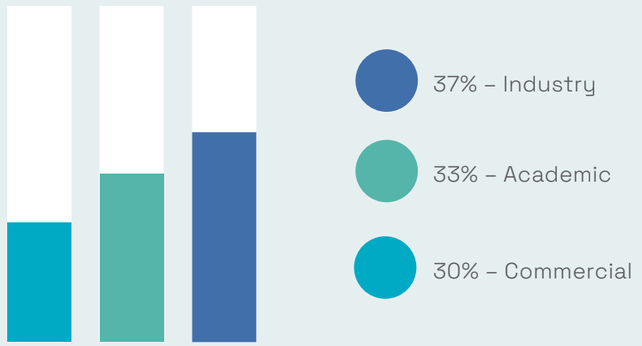
Function



Geography



Sector



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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

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

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

SUMEET PANDEY
Associate Director, Translational Unit, GSK

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

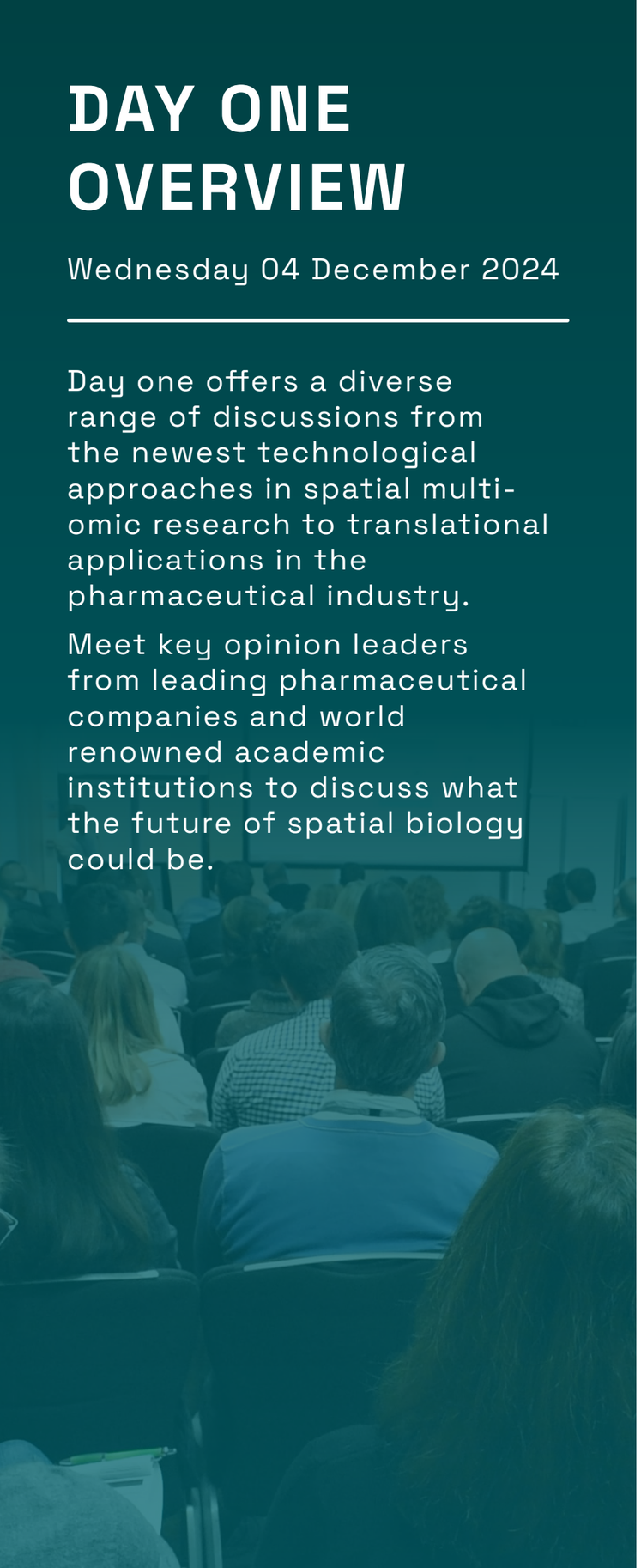
ALEJANDRA URRUTIA
Senior Immunologist, Santa Ana Bio

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

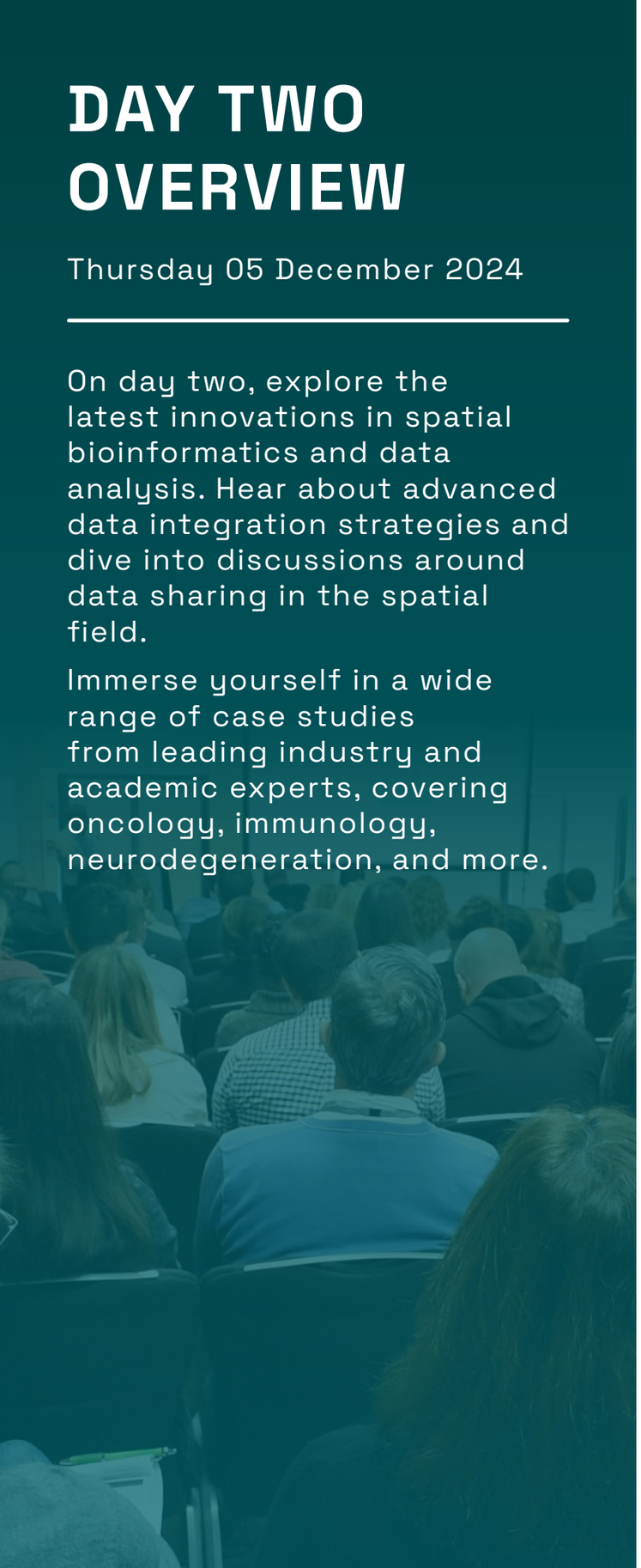
- Diagnostics applications of spatial and multi-omics tissue analysis
- Utilisation of spatial tech in the clinic – case studies
- Spatial technologies for diagnostics

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

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

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

TRACK 1: SPATIAL MULTI OMICS TECHNIQUES & APPROACHES

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

09:00 **Track Keynote Address:** Spatial Tissue Profiling: From A Research Novelty To An Essential Translational And Diagnostic Toolkit

- 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

IOANNIS VLACHOS, Associate Professor,
Harvard Medical School

09:25 **Development And Application Of Spatially Resolved Methods In Neuropsychiatric Disease**

- 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

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

09:50 **The Importance Of Application-Specific Validated Antibodies In Multi-Omic Assays**

- This presentation will focus on the importance of application-specific validation of antibodies to accurately and selectively bind single protein targets in complex matrices
- We will discuss this within the context of multiplex protein biomarker assays; SignalStarTM and InTraSeqTM

GREGORY WARNER, PhD, Senior Field Applications Specialist,
Cell Signalling Technology

Cell Signaling TECHNOLOGY®

10:15 **MORNING BREAK** | 1-2-1 Meetings x3 | Poster Displays

11:15 **Visualize The Broadest Range Of RNA Markers With Proteins: From mRNA To Micro RNA**

- In this presentation we will review the key applications of visualizing rna and protein simultaneously to address vital questions in discovery and translational research
- By using target specific assays such as RNAscope, BaseScope and miRNAscope we can provide true multiomics solutions to:
  - Identify therapeutic targets, diagnostic/ response biomarkers
  - Access therapeutic efficacy and toxicity
  - Uncover molecular pathways underlying pathological conditions

ANUSHKA DIKSHIT, PhD, Senior Manager, Application Science
ACD, a Bio Techne Brand

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11:40 **EpicIF And Cellscape Deliver The Promise Of Approachable, Scalable, Spatial Proteomics**

- Cellscape provides high-parameter, high-resolution, direct mIF data at whole-slide scale using non-proprietary detection chemistry. Here we introduce Cellscape and EpicIF, which advances CellScape beyond fundamental limitations of mIF, further increasing assay flexibility and speed

J SPENCER SCHWARZ, Applications Manager,
Bruker Spatial Biology

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TRACK 2: SPATIAL BIOLOGY IN PHARMA & TRANSLATIONAL DRUG RESEARCH

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

Track Keynote Address: Advanced Spatial Tools To Accelerate Drug Development

- 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

MICHAEL SURACE, Director,
AstraZeneca

Q&A session & transition time between conference rooms

Integration Of Multimodal Spatial '-Omics' In Our Molecular Pathology Lab To Accelerate Immunology Discovery

- Molecular pathology is evolving with the integration of spatial biology approaches in our laboratories. These technologies require investment in capital for most part, personnel and IT infrastructure. Building a team of experts including histotechnologists, pathologists, molecular biology scientists and bioinformaticians is key for developing bench and analytical pipelines that fit your spatial '-omics' needs
- In these talk, I will describe our approach to ensure sample suitability and I will provide an overview of our pilot spatial '-omics' study on rheumatoid arthritis using a combined single cell and bulk spatial transcriptomics as well as proteomics technologies

SÍLVIA SISÒ, Discovery Pathologist,
AbbVie

Q&A session & transition time between conference rooms

Integrated In Situ Multiomics And Next Gen Sequencing With The AVITI24

- Discover how the AVITI24™ combines best-in-class sequencing and in situ multiomics to unlock targeted profiling with Teton™ CytoProfiling, enabling RNA, protein, and morphology analysis from a single sample
- Profile up to 2 million cells with next-day results and prepare for expanded capabilities in 2025

SHAWN LEVY, PhD - Chief Scientific Officer and SVP of Applications,
Element Biosciences

Element Biosciences

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

- 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

NICOLE JAYMALIN, PhD Science & Technology Advisor,
10x Genomics

10x GENOMICS

Q&A session & transition time between conference rooms

Unlocking Tissue Complexity: High-Dimensional Spatial Imaging And Analysis With Standard Biotools XTi Imaging Platform

- Recent advances in spatial biology enhance our ability to study tissue structures and cellular interactions
- Learn how Standard BioTools' imaging platform, with high-dimensional analysis and cutting-edge techniques, can improve your research accuracy and insights

WENDELL SMITH, PhD,
Senior Field Application Scientist,
Standard BioTools

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DAY ONE: 04 DECEMBER 2024

TRACK 1: SPATIAL MULTI OMICS TECHNIQUES & APPROACHES

TRACK 2: SPATIAL BIOLOGY IN PHARMA & TRANSLATIONAL DRUG RESEARCH

Q&A session & transition time between conference rooms

12:05

Implementation Of Spatial Transcriptomics Methods In A Core Facility Setting

- 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

12:30

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 monoplex 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

12:55

LUNCH BREAK & REFRESHMENTS | 1-2-1 Meetings x4 | Poster Displays

14:10

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

14:35

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**

15:00

Panellists:
ESPERANZA ANGUIANO, Director, Global Pharma and CRO Business Strategy, **Brucker Spatial Biology**
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**
SUMEET PANDEY, Associate Director, Translational Unit, **GSK**

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 slection 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

15:25

AFTERNOON BREAK & REFRESHMENTS | 1-2-1 Meetings x3 | Poster Displays

DAY ONE: 04 DECEMBER 2024

TRACK 1: SPATIAL MULTI OMICS TECHNIQUES & APPROACHES

Sponsored Workshop: Exploring The Cellular Universe: Transformative Frontiers In Spatial Multiomics

16:25 **Industry-Leading Spatial Solutions for High-Plex Multiomic Tissue Exploration and Discovery**

ANKUSH TYAGI, M.S., Field Application Scientist, **Bruker Spatial Biology**

16:50 **Single-Cell Spatial Transcriptomic Analyses Of Human Post-Reperfusion Kidney Allograft Biopsies Reveal Molecular Pathways Associated With Delayed Graft Function**

YONGHENG WANG, Ph.D., Postdoctoral Fellow, **University of California, Davis**

Improving Early Phase Drug Development With Spatial Biology

KIRSTEEN MACLEAN, Ph.D. Principal Scientist, **NeoGenomics Laboratories**

Industry Panel Discussion:
17:15 Moderated by ESPY ANGUIANO, Ph.D., Director, Pharma & CRO Business Strategy, **Bruker Spatial Biology**

Panellists:
ANKUSH TYAGI, M.S., Field Application Scientist, **Bruker Spatial Biology**
YONGHENG WANG, Ph.D., Postdoctoral Fellow, **University of California, Davis**
KIRSTEEN MACLEAN, Ph.D. Principal Scientist, **NeoGenomics Laboratories**

17:40

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TRACK 2: SPATIAL BIOLOGY IN PHARMA & TRANSLATIONAL DRUG RESEARCH

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

18:05 **End of Day One & Drinks Reception**

NETWORKING DINNER

Networking Dinner

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DAY TWO: 05 DECEMBER 2024

TRACK 1: SPATIAL BIOINFORMATICS, DATA ANALYTICS AND INTERPRETATION

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

TRACK 2: APPLICATIONS OF SPATIAL RESEARCH & TECHNOLOGIES IN BIOLOGY

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

08:30

Track Keynote Address: Advancing Spatial Biology With Engineered DNA Probes

- 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

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

Analysis Of Human Primary Sensory Neuron Populations Using Spatial Transcriptomic Technologies

- Our understanding of the diverse nature of sensory perceptions depends on the understanding of neurons that have their cell bodies in the primary ganglia such as the dorsal root ganglia (DRGs). In this project we aim to study these cells and their genomic capabilities with unprecedented depth and detail, including the application of STOmics technology
- The data collected with various single cell and spatial genomics technologies can clearly demonstrate the advantages of each technique while combined, this multimodal dataset can serve as a valuable source for target identification and validation in several fields of research

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

Q&A session & transition time between conference rooms

08:55

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

- 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.

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

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

- 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

PRIYANK PATEL, Senior Scientist,
Boehringer Ingelheim

Q&A session & transition time between conference rooms

09:20

Improving Data Interpretation For High Resolution Spatial Omics Using Computational Approaches

- 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

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

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

- 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

DANIELLE J. TAN, Senior Scientist I,
BioMarin Pharmaceuticals

Q&A session & transition time between conference rooms

09:45

AI Assisted Image-Based High Throughput Cell Classification And Isolation

- 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?

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

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

- 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

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

10:10

MORNING BREAK | 1-2-1 Meetings x3 | Poster Displays

11:10

Accelerating Data To Insight With High-Fidelity Single-Cell Spatial Transcriptomics

- As a data scientist specializing in CosMx SMI at Bruker Spatial Biology, Evelyn Metzger empowers researchers to extract valuable insights from their spatial data. Her expertise lies in analyzing CosMx SMI data, creating custom AtoMx SIP modules, and developing tools and plugins for visualizing complex datasets
- She also shares her knowledge through "CosMx Analysis Scratch Space," an open-source blog she manages, offering practical resources to the scientific community. Evelyn received her MS in Biology at the University of Central Florida and her PhD in Bioinformatics and Computational Biology from the University of Idaho

EVELYN METZGER, Data Scientist II,
Bruker Spatial Biology

Spatial Imaging And Analysis Of Neuronal Tissue With The MACSima™ Platform

- Creation of a high-plex neurobiologically relevant antibody panel
- Implementation of advanced analysis methods using MACS® iQ View
- Quantitative comparison of Alzheimer's and normal hippocampus tissue

CHRISTOPHER SPLAINE, PhD, Applications Development Scientist,
Miltenyi BioTec

Q&A session & transition time between conference rooms

DAY TWO: 05 DECEMBER 2024

TRACK 1: SPATIAL BIOINFORMATICS, DATA ANALYTICS AND INTERPRETATION

TRACK 2: APPLICATIONS OF SPATIAL RESEARCH & TECHNOLOGIES IN BIOLOGY

11:35

High-Throughput In Situ Multiomic Profiling At Subcellular Resolution With The G4X

- Performance characterization of the G4X Spatial Sequencer for the simultaneous in-situ detection of RNA transcripts, proteins, and H&E staining across FFPE tissues for utilization in large-scale translational immuno-oncology studies

ELI GLEZER, PhD, Cofounder & CSO,
Singular Genomics

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

- 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

12:00

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

- 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**

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

- 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

12:25

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

- Single-cell technologies have revealed important cell heterogeneity across the human brain. In the context of neurological diseases, the relationship between different cell subpopulations and pathological features can be crucial for their understanding. However, the combination of spatial, single-cell, and high-plex protein information together with analytical tools for the accurate segmentation of ramified cells remains a challenge to address in neuroscience. Here, we have developed CODEX-CNS, a modification of CO-Detection by indEXing (CODEX) technology for its use in human brain tissues.
- As proof-of-principle, we were able to detect the different parenchymal brain cells and their cytoarchitecture, as well as blood- brain barrier and meningeal components with a 32-plex antibody panel. More specifically, we used CODEX-CNS in human brain samples of healthy and Alzheimer's disease donors to study microglial phenotypes in relationship to their spatial context. Applying a novel cell segmentation algorithm and clustering analysis, we identified diverse microglial subpopulations differentially distributed between brain areas and according to their distance to amyloid-b plaques. These data provide a new approach for the neuroscience community that allows the characterization of microglial subpopulations at the finest detail.

BAHAREH AJAMI, Assistant Professor of Immunology at OHSU
Ariadne.ai

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

- 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 | Poster Displays

Attendees are welcome to join co-located sessions

14:05

Revolutionizing Spatial Biology: Molecular Barcoding And mIF For Precision Medicine

- Cameron Smurthwaite from Akoya Biosciences will discuss how the PhenoCycler-Fusion for high-plex spatial discoveries and PhenoImager HT for rapid spatial signature development are advancing spatial biology from drug discovery to clinical applications
- Attendees will gain insights into how multiplex immunofluorescence (mIF) can support precision medicine and companion diagnostics, offering transformative potential for clinical trial outcomes and patient care

Cameron Smurthwaite, Sr. Strategic Account Executive, Biopharma,
Akoya Biosciences

Q&A session & transition time between conference rooms

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DAY TWO: 05 DECEMBER 2024

TRACK 1: SPATIAL BIOINFORMATICS, DATA ANALYTICS AND INTERPRETATION

TRACK 2: APPLICATIONS OF SPATIAL RESEARCH & TECHNOLOGIES IN BIOLOGY

14:30

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

14:55

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

15:20

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

15:45

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

16:10 **End of Conference**

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& to receive more information on
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