



جامعة الملك عبد الله
للعلوم والتقنية
King Abdullah University of
Science and Technology

ORGANIZED IN COLLABORATION WITH
KAUST BESE AND BIOSCIENCE CORE LAB

SPATIAL OMICS

WORKSHOP

ORGANIZING COMMITTEE:

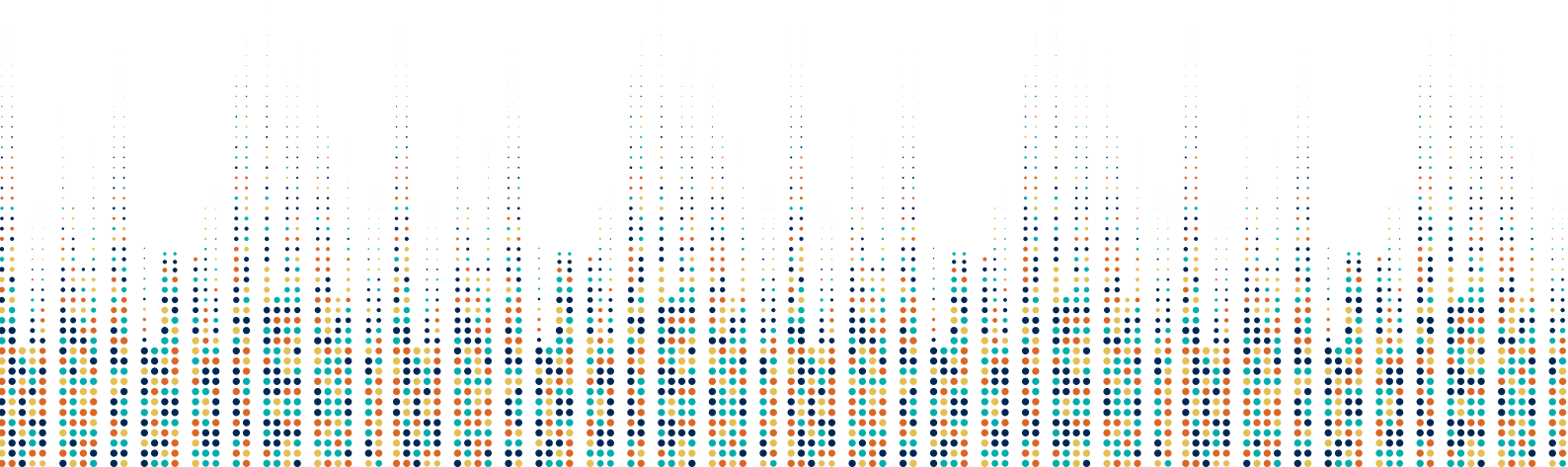
PROF. VALERIO ORLANDO

PROF. IKRAM BLILOU

PROF. DAVID GOMEZ-CABRERO

DR. EMANUELE PALESCANDOLO

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INTRODUCTION

The Spatial Omics Workshop aims to share omics technologies for understanding the multilayer nature of “genotype to phenotype” along with their potential applications. Presenters include representatives from leading companies in the field, faculty from the [KAUST Biological and Environmental Science and Engineering Division](#) and other divisions, and potential stakeholders from the Kingdom.

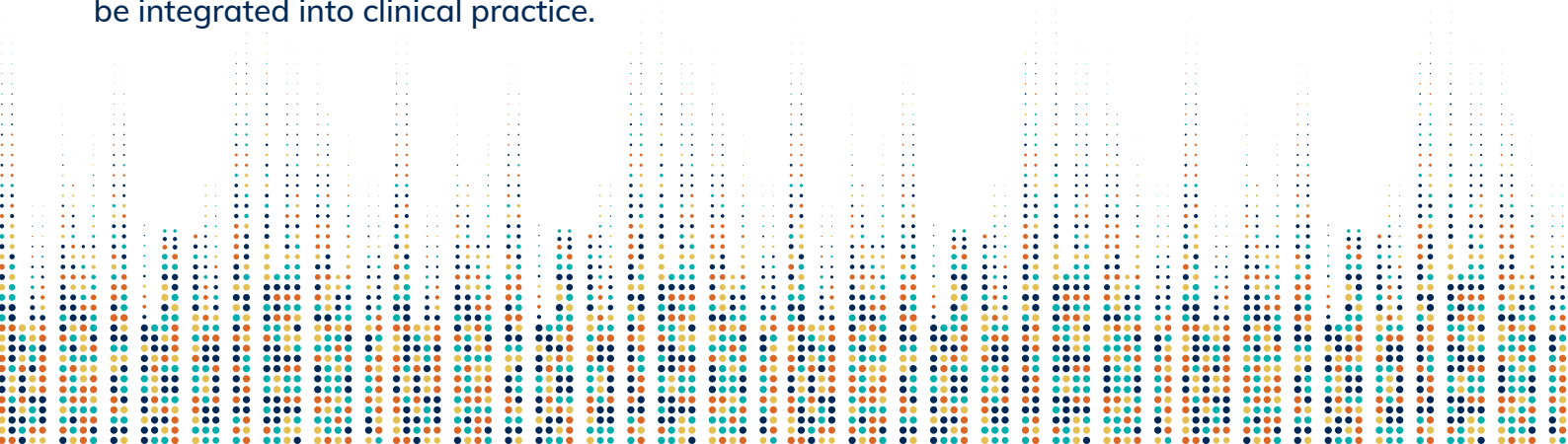
The event is a collaboration between BESE and the [Bioscience Core Lab](#). It aims to inform about the significance and impact of spatial Omics technologies and be a basis for the possible acquisition of these technologies to support strategic initiatives like KAUST Smart Health and other BioBigData-based projects.

During the past two decades, significant progress in genomics technologies has advanced understanding of the complexity of phenotypes at the molecular level, especially of multicellular organisms. The omics revolution has tackled this complexity by integrating multilayer levels of information on DNA, RNA, proteins and metabolites. Moreover, single-cell analysis has allowed the ultimate level of resolution, identifying markers to assign molecular identities to individual cells. These novel methodologies are overcoming previous limitations that restricted spatial analysis to the investigation of a single molecular species, either proteins or RNAs.

However, despite this progress, several issues remain unsolved. In this context came the second revolution, spatial omics, which is aimed at combining omics with the 3D nature, the physically and temporally dynamic interactome, of different cell populations composing tissues in vivo.

The advent and rapid expansion of spatial omics technologies are opening the possibility to simultaneously study a plethora of targets in the physical context of the tissue.

The in-situ detection of multiple RNAs and proteins is now possible and will eventually be integrated into clinical practice.



Introducing these technologies in the context of the [Smart Health Initiative](#) will significantly broaden ongoing and future research projects and create the first spatial omics reference center for the Kingdom. **It will also place KAUST at the forefront of key emerging biomedical disciplines, lay the foundation in the Kingdom for these disciplines, and establish important bridges with international consortia.**

FORMAT:
VIRTUAL
DATE : APRIL 21ST

- **TWO SESSIONS**
- **ONE AFTERNOON** (1-5:30 PM KSA, 12-4:30 PM CET)
- **20MIN TALKS**
- **FINAL SESSION Q&A**
- **TOTAL TIME: 4H** (INCLUDING BREAK)

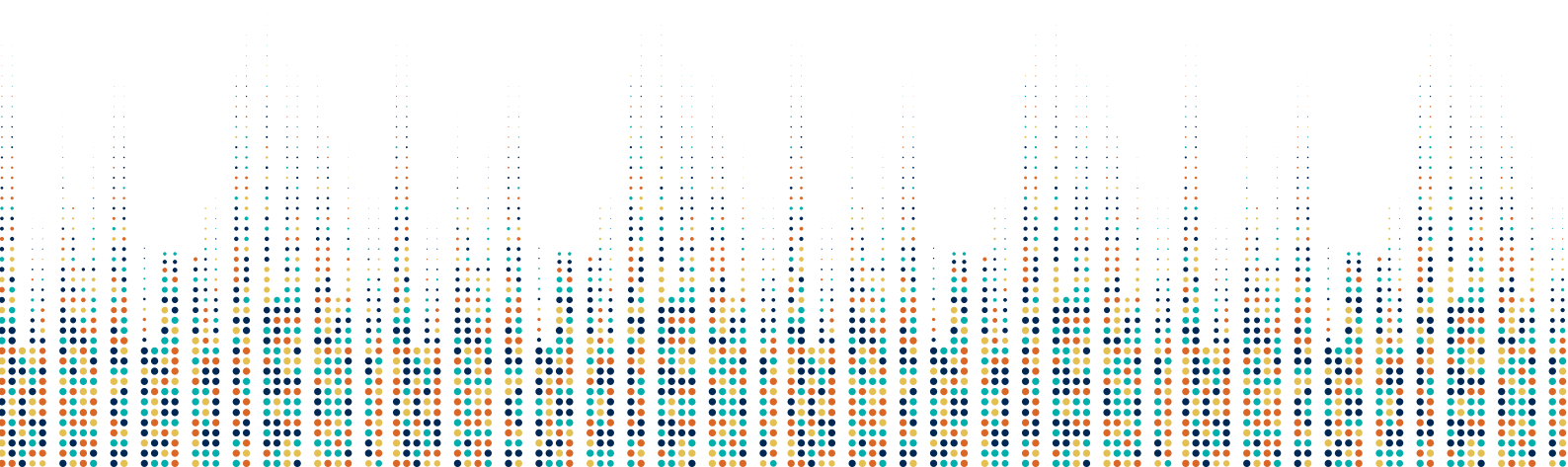
INVITED SPEAKERS:

COMPANIES:

- Johanna Stergiadou, 10X Genomics
- Edward Weinstein, Canopy Biosciences
- Niccolò Mariani, Nanostring Technologies
- Corinna Henkel , Bruker Spatial Metabolomics
- Gary Kruppa, Bruker, Single Cell Proteomics
- Tarif Awad, Rebus Biosystems, Spatial Omics
- Beren Atac Wagegg, TissUse GmbH, Human-on-a-Chip

RESEARCHERS:

- Charlotte Stadler Spatial Omics National Service KTH
- Ikram Blilou, KAUST BESE, “Spatial Omics”: promising approaches towards understanding developmental biology, response to pathogens and abiotic stresses”.
- David Gomez-Cabrero, KAUST BESE “Understanding the infarcted mouse through single-cell and spatial profiling”.
- Dana Alsulaiman KAUST PSE, “Spatially resolved and multiplexed detection of microRNA detection with hydrogel biosensors”.



1ST SESSION CHAIR: EMANUELE PALESCANDOLO

13:00	WELCOME AND OPENING REMARKS VALERIO ORLANDO	VALERIO ORLANDO PROFESSOR, KAUST
13:15	RESOLVING SPATIAL HETEROGENEITY USING NANOSTRING'S HIGH PRECISION AND SINGLE-CELL PROFILING PLATFORMS	NICCOLO MARIANI TECHNICAL SALES SPECIALIST, NANOSTRING TECHNOLOGIES
13:35	SPATIALLY-RESOLVED AND MULTIPLEXED DETECTION OF MICRORNA CANCER BIOMARKERS FROM TISSUE SAMPLES	DANA ALSULAIMAN ASSISTANT PROFESSOR, KAUST
13:55	55 SPATIAL MULTIPLEXING FOR QUANTITATIVE SINGLE-CELL PROFILING WITH CHIPCYTOMETRY	EDWARD WEINSTEIN PRESIDENT, CANOPY BIOSCIENCES
14:15	MULTI-ORGAN-CHIPS TOWARDS PATIENT-ON-A-CHIP	BEREN ATAC WAGEGG SENIOR SCIENTIST, TISSUSE
14:35	DEEP TISSUE PROTEOMICS ON THE TIMSTOF PRO 2 TO COMPLEMENT TISSUE IMAGING	GARY KRUPPA VP, PROTEOMICS, BRUKER DALTONICS
14:55	BREAK	

2ND SESSION CHAIR: DAVID GOMEZ-CABRERO

15:25	MORE THAN JUST A DUAL SOURCE INSTRUMENT: INTRODUCING NEW POWERFUL TOOLS ON TIMSTOF FLEX	CORINNA HENKEL APPLICATION SPECIALIST MALDI IMAGING, BRUKER DALTONICS
15:45	PROMISING APPROACHES TOWARD UNDERSTANDING DEVELOPMENTAL BIOLOGY, RESPONSE TO PATHOGENS AND ABIOTIC STRESSES	IKRAM BLILOU PROFESSOR, PLANT SCIENCE CHAIR, PLANT SCIENCE PROGRAM, KAUST
16:05	IMAGE BASED SPATIAL PROTEOMICS IN CELLS AND TISSUES	CHARLOTTE STADLER CO-DIRECTOR SPATIAL AND SINGLE CELL BIOLOGY PLATFORMS, SCILIFELAB KTH
16:25	UNDERSTANDING THE ACTIVATION OF CARDIAC FIBROBLASTS AFTER MYOCARDIAL INFARCTION AT SINGLE CELL AND SPATIAL RESOLUTION	DAVID GOMEZ-CABRERO ASSISTANT PROFESSOR, KAUST
16:45	REBUS ESPER: TECHNOLOGY AND APPLICATIONS OF AN INTEGRATED SPATIAL OMICS PLATFORM WITH ADVANCED OPTICS, AUTOMATED FLUIDICS, AND FLEXIBLE ASSAY CHEMISTRY	TARIF AWAD VP, SCIENTIFIC AFFAIRS, REBUS BIOSYSTEMS
17:05	TRAILBLAZING THE FUTURE OF SPATIAL BIOLOGY WITH VISIUM	JOHANNA STERGIADOU 10X
17:25	CLOSING REMARKS / QA	SAMIR HAMDAN, DEAN BESE, KAUST DANIEL ACEVEDO-FELIZ EXECUTIVE DIRECTOR CL, KAUST