HSC CORE FACILITIES
CELL IMAGING CORE
THE UNIVERSITY OF UTAH

HSC Cell Imaging Core Newsletters Aug 2023

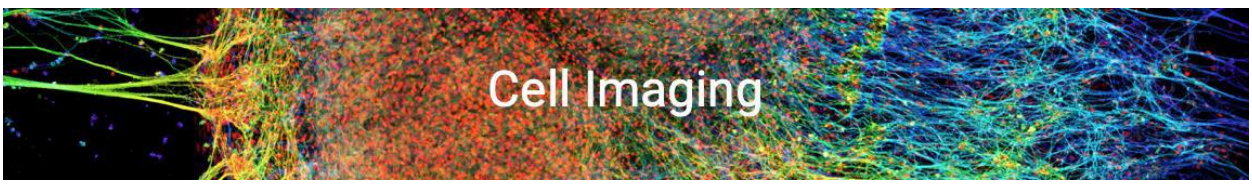
Contents:

1. Personnel Changes

1. Welcome, Dr. Anton Classen!

We are happy to announce that Dr. Anton Classen joined our team recently. Before this position, he has been a postdoc at Texas A&M University, AgriLife, College Station, TX. He got his Ph.D. in Physics at Friedrich-Alexander-University (FAU) Erlangen-Nürnberg, Erlangen, Germany. Below is his brief experience.

My name is Anton Classen. I am a scientist at heart and have always been driven by curiosity to know more and to help people. My background is in physics and optics with a focus on imaging and microscopy (brightfield, immunofluorescence, widefield, confocal, two-photon, super-resolution, …), as well as data collection and analysis. I also have experience in sample preparation and mounting. I look forward to contributing to the continued successful operation of the Cell Imaging core facility, providing training and imaging services to users, and discussions on your research projects.



2. Farewell Dr. Mike Bridge!

It is with mixed emotions that we share the news of Mike Bridge's upcoming departure from our HSC core. After more than 13 years of dedicated service, Mike will be embarking on a new journey at the Washington University Center for Cellular Imaging in St. Louis, Missouri. His invaluable contributions to our core have left a lasting impact on countless users. Many have experienced the benefits of his passion for this position and have greatly benefitted from his wealth of knowledge and expert advice on acquiring microscope data, imaging analysis, and sample preparation.

Mike's dedication to his work and unwavering commitment to helping others have been truly remarkable. As he moves forward to embrace new opportunities, we express our heartfelt gratitude for his exceptional contributions to the HSC Cell Imaging Core. We wish him a bright and successful future in his new role.

For those who would like to bid farewell to Mike, we invite you to stop by the HSC anytime before August 16th, which will be his last day in this position. It's a wonderful opportunity to express your appreciation and best wishes for his journey ahead.

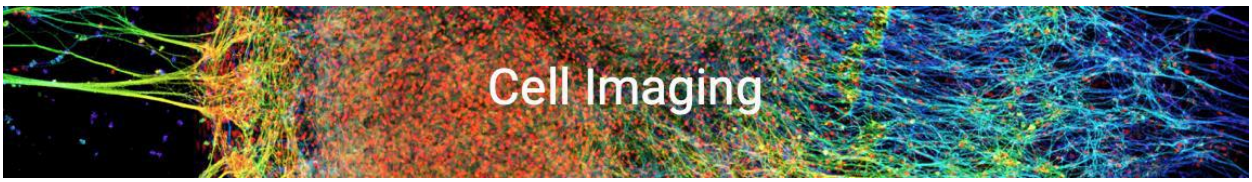
2. New Nano-String CosMx Spatial Molecular Imager will be installed in HSC location RM 59.

Many thanks to Dr. Jessica Osterhout from the Department of Neurobiology and Dr. Alessandro Venosa from the Department of Pharmacology and Toxicology for their enthusiastic commitment to integrating the CosMx Spatial Molecular Imager from Nano-String into our core. Their willingness to collaborate and share the usage of this advanced technology with our research community is truly commendable. This marks the second successful collaboration between our core and principal investigators this year.

Let us extend a round of applause to exceptional PIs like Dr. Jessica Osterhout, Dr. Alessandro Venosa, Dr. Yang Liu, and others who have generously contributed to our society by supporting and enriching our core with their expertise and cutting-edge equipment. Their invaluable contributions have had a significant positive impact on our research community, providing invaluable opportunities for groundbreaking discoveries and advancements. We are truly grateful for their dedication and collaboration, as they continue to elevate the possibilities within our research community.

1. Instrument Introduction:

“CosMx SMI is the first high-plex in situ analysis platform to provide spatial multiomics with formalin-fixed paraffin-embedded (FFPE) and fresh frozen (FF) tissue samples at cellular and subcellular resolution. CosMx SMI enables rapid quantification and visualization of up to 1,000 RNA and 64 validated protein analytes. It is the flexible, spatial single-cell imaging platform that will drive deeper insights for cell atlasing, tissue phenotyping, cell-cell interactions, cellular



processes, and biomarker discovery." Cited from https://nanostring.com/products/cosmx-spatial-molecular-imager/single-cell-imaging-overview/

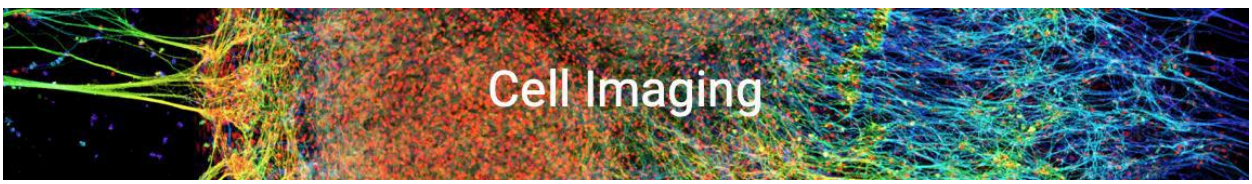
CosMx SMI will be installed in HSC RM 59 around the middle of the Aug. The opening to public time will be updated once our core members are trained.

2. Introduction to Dr. Jessica Osterhout and Dr. Alessandro Venosa

Dr. Jessica Osterhout

Dr. Jessica Osterhout joined the Department of Neurobiology in the summer of 2022. Prior to arriving at the University of Utah, Dr. Osterhout completed her postdoctoral studies at Harvard University where she developed her research expertise. Her interests lie in the field of neuroimmunology and specifically, how the immune system alters animal behavior and physiology. She has already received recognition for this work, through several postdoctoral fellowships, an NIH Pathway to Independence award and a first author publication in Nature.

Currently her lab focuses on investigating how the brain senses an immune state and responds to generate sickness symptoms. She employs cutting-edge approaches to understanding the molecular, cellular and circuit mechanisms underlying these processes. Of particular interest is her work using spatial transcriptomics, which utilizes RNA expression patterns and spatial organization to identify cell types and molecular mechanisms of cell-cell communication. To learn more about Dr. Osterhout's accomplishments and ongoing research, please visit her website: https://Osterhoutlab.com.



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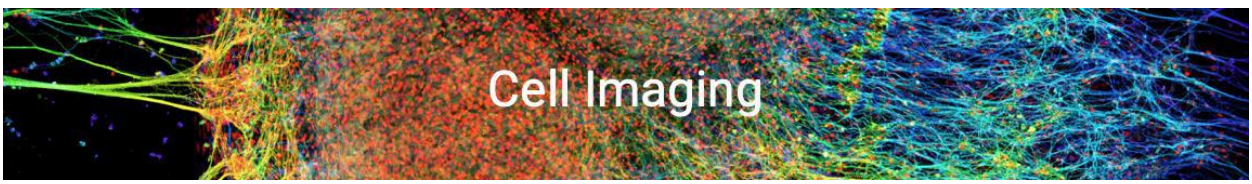
Dr. Alessandro Venosa

Dr. Alessandro Venosa is an Assistant Professor in the Department of Pharmacology and Toxicology at the University of Utah. After receiving his Pharm.D. degree at Universita' degli Studi di Urbino (Italy), Dr. Venosa expanded his pharmacology training towards immunotoxicology at Rutgers University. During this time, he studied myeloid cell dynamics in chemical-induced pulmonary fibrosis. He then moved to the Division of Pulmonary, Allergy and Critical Care at the University of Pennsylvania for his postdoctoral training. This work resulted in the development of a murine model of inflammatory exacerbations of pulmonary fibrosis, driven by alveolar epithelial stress.

As an Assistant Professor at the University of Utah, Dr. Venosa is now combining his training in lung epithelial biology, pharmacology, toxicology and immunology to investigate the aberrant responses of the immune system in susceptible populations, namely the elderly and individuals with preexisting conditions (fibrosis). His research program specifically investigates three main areas: 1) aberrant cell communication (epithelial-immune and mesenchymal-immune) during chemical/environmental challenges in the aged lung; 2) biology of pulmonary fibrosis; and 3) the exacerbating effects of ozone exposure in the fibrotic lung (currently funded by the NIEHS Oustanding New Environmental Scientist Award). Avenues of planned/future research and potential collaborations include the examination of spatiotemporal heterogeneity in pulmonary disease and the integration of these datasets with a variety of high throughput techniques (bulk and single-cell RNA-sequencing, metabolomics, lipidomics).

To learn more about Dr. Venosa's accomplishments and ongoing research, please visit his website: https://pharmacy.utah.edu/pharmtox/faculty/current-faculty/alessandro-venosa



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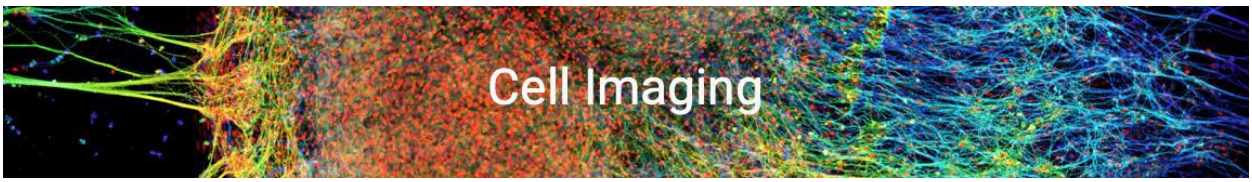
3. New Zeiss Axioscan 7 will be installed in HCI North Research building RM 1470.

The introduction of our new Slide Scanner marks a significant update from our ten-year-old Zeiss Axio Scan.Z1. This state-of-the-art scanner boasts a range of exciting features and improvements that elevate the imaging experience for our users including but not limited to the enhanced acquisition speed, increased number of channels, the incorporation of OPAL dyes measurement capabilities, and standalone analysis software packages and workstation.

The tentative installation schedule is at the end of Aug and an announcement will be released once it's ready to use to the public.

Highlighted Features:

- High End Brightfield imaging with Axiocam 705 color camera for high-resolution color acquisition
- High End Fluorescence imaging with Orca Flash monochrome camera for high sensitivity fluorescence acquisition
- 100 slide capacity magazine plus Continuous Loading capability
- High Performance Objectives: 5x, 10x/.45, 20x /.8, 40x/.95
- Colibri 7 LED light source with continuous brightness adjustment for imaging of up to 7 channels:
- Excitation Wavelengths: 385nm, 430nm, 475nm, 555nm, 590nm, 630nm, 735nm
- 10 Position Filter Turret
- High Efficiency Multi-band Filter Sets 112 and 110 for FAST imaging of:
  DAPI, GFP, Cy3, mCherry, Cy5, Cy7, and similar dyes (Alexa 488, 555/568, 594, 647, 750)
- High Efficiency Single-band Filter Sets 38, 43, 50, and 96 for specific imaging of:
  DAPI, GFP, Cy3, Cy5 and similar dyes (Alexa 488, 555/568, 647)
- X-Cite Xylis FL Illumination source
- 6 Position Fast Filter Wheel
- High Efficiency Filter Set 122 for imaging of OPAL dyes
- Premium HP Z6 Workstation for large data handling
- ZEN Blue 3.7 Slidescan software
- ZEN Desk 3.7 with 2D Toolkit and Bio Apps



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4. Nikon A1R confocal microscope at HSC RM 54 is back online.

Our Nikon A1R laser launching system has been fixed and now A1R confocal microscope is fully back online. If you have any questions about this instrument, please let us know.

5. New Rate charge table

A new rate table for the core instruments will be implemented starting from July 2023, which is the beginning of the fiscal year 2024.

Instrument / Service	Regular Hours 9 a.m. - 5 p.m.	After Hours & Weekends	Commercial
Consultation / Training	$44 / hr	N/A	$120 / hr
Prairie Multi-Photon Confocal	$44 / hr	$22 / hr	$120 / hr
Prairie Ultima InVivo 2 Photon	$44 / hr	$22 / hr	$120 / hr
Leica SP8 Confocal	$40 / hr	$20 / hr	$120 / hr
Leica SP8 Confocal White Light Laser	$40 / hr	$20 / hr	$120 / hr
Leica Spinning Disk	$40 / hr	$20 / hr	$120 / hr
Axioscan Slide Scanner	$40 / hr	$40 / hr	$120 / hr
Zeiss 880 Airy Scan	$40 / hr	$20 / hr	$120 / hr
StedyCon Super Resolution	$40 / hr	$20 / hr	$120 / hr
Olympus FV1000	$34 / hr	$17 / hr	$120 / hr
DeltaVision Widefield	$34 / hr	$17 / hr	$120 / hr
Zeiss 700 Confocal	$34 / hr	$17 / hr	$120 / hr
Nikon A1R Confocal	$34 / hr	$17 / hr	$120 / hr
Nikon Automated Widefield	$26 / hr	$15 / hr	$120 / hr
EVOS Auto Color and Fluor	$17 / hr	$12 / hr	$120 / hr
Workstation/Imaris	$17 / hr	$17 / hr	$120 / hr
Workstation/Nikon Elements	$5 / hr	$ 5 / hr	$120 / hr
Nikon Ring-TIRF/Spinning Disk	$40 / Hr	$ 20 / Hr	$120 / hr

6. Nikon Spinning Disk Confocal+TIRF is ready to train.

We are happy to announce that we are ready to train users to use the new Nikon Spinning Disk Confocal with additional Total Internal Reflection Fluorescence (TIRF) function microscope. Please consult with Xiang for the information and arrange training.