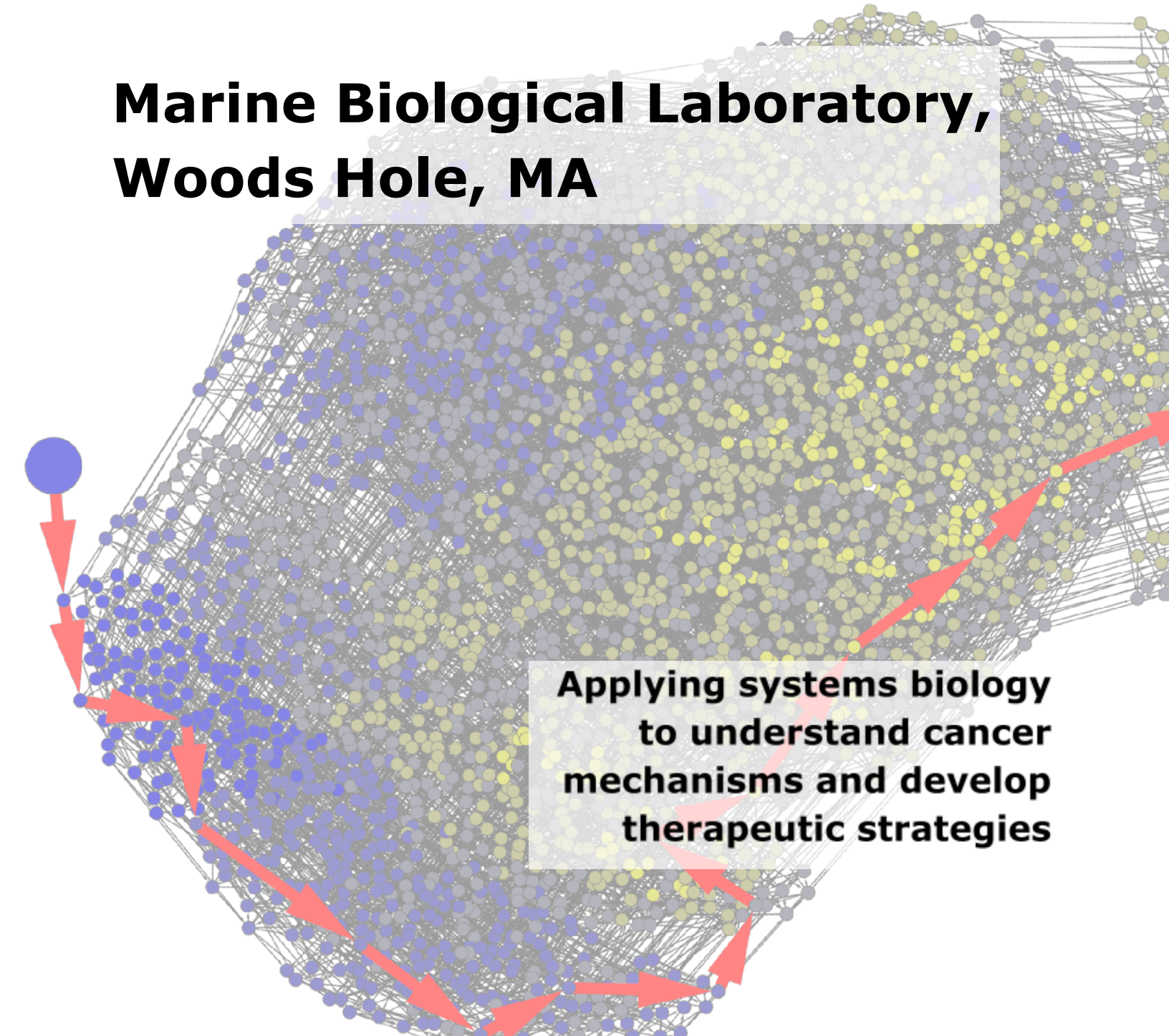
Systems Approaches to Cancer Biology

October 19–22, 2022

Marine Biological Laboratory, Woods Hole, MA



Systems Approaches to Cancer Biology – 2022 Meeting

Sponsored by the

Association of Cancer Systems Biologists

Supported by R13 CA271712 from the

National Cancer Institute of the National Institutes of Health

U. S. Department of Health & Human Services

Conference Chairs

Trachette Jackson, University of Michigan

Andrea Bild, City of Hope

Kevin Janes, University of Virginia

Organizing Committee

James Costello, University of Colorado

Ashlee Ford Versypt, University at Buffalo

Brian Joughin, Massachusetts Institute of Technology

Sara Gosline, Pacific Northwest National Laboratory

Stacey Finley, University of Southern California

Nicholas Graham, University of Southern California

Leonard Harris, University of Arkansas

Jorge Gómez Tejeda Zañudo, Broad Institute of MIT and Harvard

Robert Beckman, Georgetown University

The Association of Cancer Systems Biologists (ACSB)

The mission of the ACSB is to foster, promote and advocate for cancer systems biology and the needs of the researchers in the field. We do so by sharing information about the field and events, and fostering community and collaboration amongst our members. Our current aim is to host a biennial meeting in Cancer Systems Biology. The long-term goal of the ACSB is the development of a Cancer Systems Biology Society.

Please feel free to attend our ACSB Business Meeting on Thursday, October 20th, to learn more about the association and join our effort.

Acknowledgements

The ACSB wishes to thank the following organizations for their generous support:

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NCI's involvement in this activity does not signify endorsement of any fundraising activities in connection with this event. ACSB, not the NCI, sought funds which went solely toward the expenses incurred by ACSB.

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Oral Presentation Abstracts (available online)

sacbmeeting.org/public/OralPresentationAbstracts2022.pdf

Poster Presentation Abstracts (available online)

sacbmeeting.org/public/PosterPresentationAbstracts2022.pdf

Social media hashtag: #SACB2022

Conference agenda

Location

All talks will take place in the Cornelia Clapp (formerly Lillie) Auditorium.

Poster sessions and meals will be held in the Swope Center. Mixers will be held in the Swope Lower Terrace Tent.

Social media sharing policy

Please properly cite authorship when sharing anyone's work and refrain from posting on social media any image of slides or posters labeled "DO NOT POST" by the presenter (See full policy on page 22).

Talk duration

Keynote talks are 60 minutes, including speaker introduction and time for questions. Invited talks will be limited to 30 minutes, plus 5 minutes for questions. Selected talks will be limited to 12 minutes, plus 3 minutes for questions. Poster preview lightning talks will be 2 minutes and meant to be a preview for posters.

Wednesday, October 19, 2022

2:00 – 9:00 pm **Check-in at MBL**

5:30 – 7:00 pm **Dinner**

7:00 – 8:00 pm **Opening Keynote**

Introduction by Trachette Jackson, PhD (University of Michigan)

- Kornelia Polyak (Dana-Farber Cancer Institute)
  Immune escape in breast cancer

8:30 – 10:30 pm **Networking Mixer**

Thursday, October 20, 2022

7:30 – 8:20 am **Breakfast**

8:20 – 8:30 am **Opening remarks by Trachette Jackson**

8:30 – 10:10 am **Session #1: Tumor Heterogeneity and Metastasis**

Chaired by Leonard Harris (University of Arkansas) and Stacey Finley (University of Southern California)

- Mohammad Fallahi-Sichani (University of Virginia)
  AP-1 transcription factor network explains diverse patterns of cellular plasticity in melanoma
- Ivana Bozic (University of Washington)
  Evolutionary dynamics of tumor progression

- Geena Ildefonso (University of Southern California)
  Towards cancer resistance: A biochemical model of necroptosis explains cell type-specific responses to cell-death cues
- MA Masud (Korea Institute of Science and Technology)
  Preexisting resistance and its spatial allocation modulate therapy outcome

10:10 – 10:20 am Lightning talks from selected posters

- Bishal Paudel (University of Virginia)
  Divergent nucleocytoplasmic transport via double-negative feedback facilitates escape from DCIS-state in breast epithelia
- Stephanie Kapsetaki (Arizona State University)
  Life history, the immune system, and cancer prevalence across vertebrates
- Megan Honeywell (UMASS School of Medicine)
  Removal of p53 causes the mechanism of DNA-damage induced cell death to switch from apoptotic to non-apoptotic
- James Park (Institute for Systems Biology)
  Single-cell analysis of drug-induced mesenchymal transition in patient-derived GBM stem-like cells
- Patrick Ryan (University of Massachusetts, Amherst)
  Tissue-engineered bone metastasis model to quantitatively capture dynamic tumor cell heterogeneity

10:30 am – 12:00 pm Poster Session #1

12:00 – 1:30 pm Lunch + "Meet the PIs" Lunch Tables

2:00 – 3:40 pm Session #2: Health Equity Special Session

Chaired by Linh Huynh (University of Utah) and Andrew Raddatz (Georgia Tech)

- Loretta Erhunmwunsee (City of Hope)
  Neighborhood-level Factors that Contribute to Non-Small Cell Lung Cancer Risk and Aggressive Biology
- Salma Kaochar (Baylor College of Medicine)
  Androgen receptor mediated metabolic plasticity in advanced prostate cancer

3:40 – 4:00 pm Coffee Break

4:00 – 5:40 pm Session #3: Translational Systems Biology

Chaired by Jorge Gómez Tejeda Zañudo (Broad Institute of MIT and Harvard) and Robert Beckman (Georgetown University)

- David Fuller (MD Anderson Cancer Center)
  Imaging Biomarkers in Head and Neck Cancer: Applications for Multi-scale Modeling
- Elana Fertig (Johns Hopkins University)
  Spatial multi-omics for tumor microenvironment development and therapeutic resistance
- James C Pino (Pacific Northwest National Laboratory)
  Mapping the molecular landscape of Acute Myeloid Leukemia enables prediction of drug response from proteogenomic data
- Lisa Uechi (City of Hope)
  Application of State-Transition theory and treatment modeling for chemotherapy

6:00 – 7:00 pm **Dinner**

7:00 – 8:00 pm **ACSB business meeting (open to all)**

8:00 – 10:00 pm **Networking Mixer**

Friday, October 21, 2022

7:30 – 8:30 am **Breakfast**

8:30 – 10:10 am **Session #4: Immunology & Microenvironment**

Chaired by Ashlee Ford Versypt (University at Buffalo) and Stacey Finley (University of Southern California)

- Ning Jenny Jiang (University of Pennsylvania)
  High-throughput and high-dimensional single-cell profiling of CD8+ T cells
- Jose Javier Bravo-Cordero (Icahn School of Medicine at Mount Sinai)
  High-resolution intravital microscopy reveals the plastic behavior of disseminated dormant cells and their niches
- Matthew Poskus (University of Pittsburgh)
  Mathematical modeling of fibroblast-mediated drug resistance in HER2+ breast cancer
- Anne Talkington (University of Virginia)
  Perturbations of cellular interaction networks in the melanoma tumor microenvironment as a result of immune checkpoint blockade

10:10 – 10:20 am **Lightning talks from selected posters**

- Amartya Singh (Rutgers Cancer Institute of New Jersey)
  Uncovering intra-tumoral heterogeneity and mechanism of response to treatment using single-cell biclustering
- Temitope Benson (University of Buffalo)
  A multiscale agent-based in silico model of metastatic cancer migration and invasion through a remodeling extracellular matrix
- Chaitanya R Acharya (Duke University)
  Mapping intercellular communication networks with scRNAseq in a mouse model of HER2+ breast cancer reveals unique signaling networks associated with tumor metastases
- Krishna Choudhary (University of California, San Fancisco)
  epitoPeR enables scale up of high-content CRISPR screens
- James Joly (Nautilus Biotechnology)
  Toward Comprehensive, Single-molecule Proteomics: Protein Identification by Short-epitope Mapping

10:30 am – 12:00 pm **Poster Session #2**

12:00 – 1:30 pm **Lunch + "Meet the PIs" Lunch Tables**

2:00 – 3:40 pm **Session #5: Systems Pharmacology**

Chaired by Nicholas Graham (University of Southern California) and James Costello (University of Colorado)

- Mike Lee (UMass Chan Medical School)
  Mechanisms of lethality following dysregulated gene expression
- Dan Kirouac (Notch Therapeutics)
  Engineering T cell-based therapies
- Haeun Hwangbo (University of North Carolina at Chapel Hill)
  A model of clinical drug additivity accurately predicts the efficacy of most FDA-approved drug combinations for advanced cancer
- Lukasz Bugaj (University of Pennsylvania)
  Optogenetic dissection of how oncogenic protein condensates modulate signal perception and drug tolerance.

3:40 – 4:00 pm **Coffee Break**

4:00 – 5:40 pm **Session # 6: Cancer Evolution and Mechanisms Resistance**

Chaired by Robert Beckman (Georgetown University) and Leonard Harris (University of Arkansas)

- Amy Boddy (UC Santa Barbara)
  The evolution of cancer defenses across species
- James DeGregori (University of Colorado Anschutz Medical Campus)
  Somatic evolution – causes and consequence
- David Basanta (Moffitt Cancer Center)
  A systems approach to elucidate basic science questions and clinical translation in multiple myeloma
- Edward Evans (University of Colorado Anschutz Medical Campus)
  Characterizing Clonal Hematopoiesis to Assess Cancer Risk in People with Down Syndrome

6:00 – 7:00 pm **Dinner**

Saturday, October 22, 2022

7:30 – 8:30 am **Breakfast**

Please note that check-out is at 10 am.

9:00 – 10:40 am **Session #7: Signaling Networks in Cancer**

Chaired by Brian Joughin (Massachusetts Institute of Technology) and Sara Gosline (Pacific Northwest National Laboratory)

- Reka Albert (Pennsylvania State University)
  Network-based dynamic models of oncogenic signaling suggest therapeutic interventions
- Kristen Naegle (University of Virginia)
  Advances and challenges in a systems understanding of tyrosine phosphorylation
- Avlant Nilsson (Massachusetts Institute of Technology)
  Mechanistic neural network models of signaling predict drug treatment effects on cell viability

- Yasmine Ahmed (University of Pittsburgh)
  Rapid assembly and extension of network models in cancer from the information in literature

10:40 – 11:00 am Coffee Break

11:00 am – 12:00 pm Closing Keynote

- Michael Yaffe (Massachusetts Institute of Technology)
  Systems Approaches to Deciphering the Phosphoproteome: Linking Cancer, Inflammation, and DNA Damage

12:00 pm Closing remarks by Kevin Janes

2022 SACB Scholars

The SACB 2022 Organizing Committee is pleased to present the SACB Scholars Program. This initiative supports travel and registration to bring new scientists and new perspectives to the cancer systems biology community.

Welcome the inaugural SACB Scholars as they learn more about the research and people in cancer systems biology!

Fareeda Abu-Juam
College of Wooster

Fareeda Abu-Juam (she/her/hers) from Accra, Ghana, is a junior undergraduate student majoring in Biochemistry and Molecular Biology and minoring in Computer Science at The College of Wooster in Wooster OH. She plans to pursue a career in research after obtaining a PhD in Systems Biology or Bioinformatics, following her graduation. She has served as an Undergraduate Research Fellow at The Rockefeller University where she studied the proteasome and PI31 regulation under Dr. Hermann Steller. At the College of Wooster, her research involves studying and helping develop Boolean models of regulatory networks, under Dr. Erzsébet Regan. She also serves as the Vice-president of the African Students Union at Wooster and is involved with the STEM Success Initiative to help uplift underrepresented populations in STEM at her college.

Jaidyn Bryant
Xavier University of Louisiana

Jaidyn Bryant is a senior undergraduate student of Biology at Xavier University of Louisiana in New Orleans. She began working as a research intern at Pacific Northwest National Laboratory (PNNL) in 2020. During her first project with PNNL, Jaidyn analyzed spectroscopic emissions of nanosecond laser produced $LiAlO_2$ plasma. She spent the summer of 2021 at PNNL working on a project under Dr. Jonathan Forman entitled "Increased Accessibility in Utilizing the Chemical Weapons Convention." She worked to create a system for non-chemists to use the chemical weapons convention, a treaty document from the OPCW that lists a number of chemical families classified as chemical weapons. She then campaigned to secure additional funding from the laboratory to continue the project in the summer of 2022 and print the resulting flowchart tool for public use. She is a member of multiple service organizations on campus and the City of New Orleans Medical Reserve Corps. After completing her Bachelor of Science degree in 2023, Jaidyn will proceed with graduate school where she will continue to study Biology. She looks forward to new opportunities to study Biology, although she appreciates the interdisciplinary work that she has completed thus far.

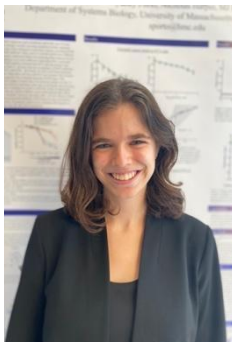
Jose Cadavid
University of Toronto

Jose Cadavid was born and raised in Medellin, Colombia, where he studied process engineering as an undergraduate. He then moved to Germany to pursue graduate work in Chemical Engineering and finally moved to Canada in 2018 to complete his doctorate in Chemical/Biomedical engineering at the University of Toronto. Under the mentorship of Professor Alison McGuigan, his PhD research focuses on the development of novel 3D in vitro models of pancreatic cancer that better recapitulate the heterogeneity and the complexity of the tumor microenvironment of pancreatic tumors. He is interested in applying mathematical and computational tools from systems biology to tissue engineering as a way of unlocking the true potential of engineered tissue models of disease.

Rachelle Chanthavong
University of California, Los Angeles

Rachelle Chanthavong is a first-generation Laotian-American bioinformatician, and the youngest daughter of two war refugees from Laos who immigrated to the U.S. in 1993. Ms. Chanthavong graduated with her B.S. in Computer Science in May 2022 (being the first in her family to earn a degree), and she now works as a staff research associate for UCLA. While working for UCLA, she contributed to ground-breaking research in the identification of pernicious gene signatures that could lead to the development of oral cancers, as well as the development of type-I and type-II diabetes.

Sydney Porto
Harvey Mudd College



Sydney Porto is a junior (’24) at Harvey Mudd College where she is pursuing a Joint Major in Chemistry and Biology. Following a year in the Schulz Lab at Harvey Mudd, Sydney joined the Lee Lab in the Department of Systems Biology at the University of Massachusetts Chan Medical School as a Summer Research Fellow. In the Lee Lab, Sydney studied non-small cell lung cancers with activating mutations in their epithelial growth factor receptors and now maintains her connection with the Lee Lab during the academic year doing remote computational work. Sydney’s ultimate goal is to obtain her MD/PhD and become a physician scientist conducting research in the field of oncology.

Kinza Rizwan
Baylor College of Medicine

Kinza Rizwan is a 3rd year PhD candidate in Cancer and Cell Biology program at Baylor College of Medicine in Texas. Ms. Rizwan graduated from Prairie View A&M University in 2020 with a Bachelor's degree in Chemical engineering. Currently, Ms. Rizwan is pursuing her thesis in Dr. Salma Kaochar's lab where she is studying the mechanistic role of the most commonly mutated gene, SPOP, in primary prostate cancer. Ms. Rizwan is also part of Clinical Translational Research program where her capstone project is focuses on expanding utilization of currently approved prostate cancer therapeutics across a wider range of prostate cancer subclasses to ultimately benefit more patients.

Caitlin Strassburg
College of Wooster

Caitlin Strassburg (she/her) is a senior undergraduate student majoring in BCMB and Mathematics at the College of Wooster in Wooster, Ohio. She is from Warren, PA. Caitlin intends to pursue a doctorate in BCMB or Systems biology following her graduation this Spring. Her research experience includes an internship in the Cleveland Clinic Cancer Biology Dept with Dr. Xianfang Wu studying the molecular mechanism of NAFLD, a student research project exploring the binding mechanism of NADH to the enzyme NicC, and a research assistant position aiding with both agent based and Boolean modeling of regulatory networks. She is also a founding member of the College of Wooster's first student organization for the support and advocacy of disabled students.

Sebastian Velez
University of Texas at San Antonio

Sebastian Velez is a senior at the University of Texas at San Antonio (UTSA) majoring in Computer Engineering. He was born and raised in San Antonio, Texas and comes from both Mexican and Puerto Rico origins. In his free time he enjoys basketball, cooking, coding, and mathematics. Sebastian currently serves as a Computer Engineering Representative for the Engineering Student Council and is a McNair Scholar that has a passion for biomedical research. His goal is to pursue an MD/PhD that combines bioinformatics and mathematical oncology research. He aspires to be at the intersection of biology, mathematics and technology to fully collaborate with doctors, researchers and engineers to serve the best care to patients with cancer. His overarching goal is to help and inspire minority students to pursue medicine and research. He hopes to accomplish his goal by expanding his current project First and Second Year Training (FAST) in REU Applications. This training helps freshman and sophomore students at UTSA receive guidance and mentorship in applying to REU programs through weekly workshops and mentorship.

Poster session #1: Thursday, Oct. 20, 10:30 am

Poster #	***Presenter***	***Title***
1	Paudel, Bishal	*Divergent nucleocytoplasmic transport via double-negative feedback facilitates escape from DCIS-state in breast epithelia*
2	Compton, Zachary	*Phenotypic Models of the Evolution of Cancer Susceptibility*
3	Seyedi, Sareh	*Controlling Resistance in Hormone Refractory Breast Cancer using adaptive therapy*
4	Snyder, Joshua	*Occult tumorigenesis establishes genetic programs of treatment resistant breast cancer*
5	Calistri, Nicholas	*Paclitaxel treatment partially phenocopies interferon response, and siRNA knockdown of phenocopied transcription factors slows cell line growth.*
6	Streller, Matthias	*Image segmentation of irradiated tumour spheroids by Fully Convolutional Networks*
7	Meyer, Aaron	*The signaling mechanisms of AXL-mediated resistance*
8	Kapsetaki, Stefania	*Life history, the immune system, and cancer prevalence across vertebrates*
9	Finley, Stacey	*Siamese neural networks to quantitatively calibrate agent-based models of cancer using tumor images*
10	Ramirez, Andrew	*Using Low Tensor Rank Approximations (ULTRA) for isolating the mechanisms of dysregulated IL-10, IL-6, and IFN-Î3 signaling in breast cancer patients*
11	Crowl, Sam	*KSTAR: Overcoming Limitations of Phosphoproteomic Data to Obtain Robust Predictions of Patient-Specific Kinase Activities*
12	Fares, Wisam	*TGFβ Ligand Discrimination and Signaling are Rewired by TGFBR3 Coreceptor*
13	Kandoor, Alekhya Abhiram	*A structure-based framework to compare inter- and intra-protein contact conservation*
14	Portelance, Reagan	*An ODE Model to Quantify Avidity Effects in Tandem SH2 Domain Binding*
15	Ahmed, Yasmine	*Rapid assembly and extension of network models in cancer from the information in literature*
16	Meimetis, Nikolaos	*A computational systems approach to indirectly down-regulate master regulator activities: A case study for STAT3*

Poster #	***Presenter***	***Title***
17	Porto, Sydney	*EGFR Inhibitor Driven Cell Death in Non-Small Cell Lung Cancer*
18	Honeywell, Megan	*Removal of p53 causes the mechanism of DNA-damage induced cell death to switch from apoptotic to non-apoptotic*
19	Abecunas, Cara	*Systematic analysis uncovers SYK dependency in NF1-LoF melanoma cells*
20	Netterfield, Tatiana	*A Systems-Based Approach Identifies Temporally Distinct Roles for the JNK and Erk MAP Kinase/AP-1 Pathways in Senescence Induction and Maintenance after DNA Damage*
21	Erdem, Cemal	*A Scalable, Open-Source Implementation of a Large-Scale Mechanistic Model for Single Cell Proliferation and Death Signaling*
22	Park, James	*Single-cell analysis of drug-induced mesenchymal transition in patient-derived GBM stem-like cells*
23	Wang, Hanwen	*Investigating Dynamics of Tumor-Associated Macrophages in Triple-Negative Breast Cancer During Immunotherapy Using a Quantitative Systems Pharmacology Model*
24	Kabraji, Sheheryar	*Temporal and spatial topography of proliferation in cancer*
25	Orman, Michael	*Identifying drivers of aggressiveness in prostate cancer molecular subtypes*
26	Saha, Rajib	*Exploring the metabolic landscape of pancreatic ductal adenocarcinoma cells*
27	Rossbach, Philipp	*Model-Based Prediction of an Effective Adhesion Parameter Guiding Multi-Type Cell Segregation*
28	Ryan, Patrick	*Tissue-engineered bone metastasis model to quantitatively capture dynamic tumor cell heterogeneity*
29	Beik, Samantha	*Unified Small Cell Lung Cancer Growth Mechanisms from Multimodel Inference and Dataset Integration*
30	Pister, Veronika	*Developmental Basis of SHH Medulloblastoma Heterogeneity*
31	Macklin, Paul	*Multiscale modeling of cancer metabolism: from single-cell metabolic flux to hundreds of cancer organoids*
32	Gosline, Sara	*Leveraging intratumor heterogeneity to uncover mechanisms of resistance in chromosome 8 amplified malignant peripheral nerve sheath tumors via spatial proteomics*
33	Qiu, Yuhan	*Adipocyte-origin exosomes drive EMT and metastasis in TNBC models, but only in insulin resistant or diabetic contexts*

Poster session #2: Friday, Oct. 21, 10:30 am

Poster #	***Presenter***	***Title***
34	Singh, Amartya	*Uncovering intra-tumoral heterogeneity and mechanism of response to treatment using single-cell biclustering*
35	Doha, Zinab	*Modeling the heterogeneity and therapeutic response of Triple-negative breast cancer*
36	Feldman, Lily Elizabeth	*Investigating upstream mechanisms of NPEPPS-mediated drug resistance in muscle-invasive bladder cancer*
37	Tran, Thinh N.	*Computational methods for identifying treatment-related genomic alterations*
38	Richker, Harley	*A Life History Framework of Therapeutic Resistance*
39	Yette, Gabriel	*Identifying and characterizing aggressive prostate cancer subtypes*
40	Benson, Temitope	*A multiscale agent-based in silico model of metastatic cancer migration and invasion through a remodeling extracellular matrix*
41	Ojwang, Maureiq	*Reconstructing the oxygenation landscape of bladder tumors in mice.*
42	Kowalewski, Karl	*Cancer-associated fibroblasts promote epithelial-mesenchymal transition in pancreatic ductal adenocarcinoma*
43	Omokehinde, Tolu	*Analysis of Single-cell Transcriptomics to Investigate the Role of the Microenvironment on Small Cell Lung Cancer Phenotypic Transition and Subtype Composition using 3D organoids*
44	Acharya, Chaitanya R.	*Mapping intercellular communication networks with scRNAseq in a mouse model of HER2+ breast cancer reveals unique signaling networks associated with tumor metastases*
45	Spill, Fabian	*Systems-Mechanobiology of Cancer*
46	Regan, Erzsébet	*Boolean model of the Epithelial Mesenchymal Transition linked to mechanosensing, contact inhibition and growth signaling charts the context-dependence of biomechanically triggered EMT and MET*

Poster #	***Presenter***	***Title***
47	Thippana, Mallikarjuna	*Ascertainment of non-coding genes as key molecular players in cervical squamous cell carcinoma through the systems biology approach*
48	Kundu, Atreyee	*Potential role of micro RNAs in pancreatic cancer manifestation*
49	Lifferth, Jonathan	*AKT inhibition reduces cell motility in CD90+ Hepatocellular Carcinoma*
50	Degefu, Yonatan	*AP1 protein interactions affect the dynamics of cell state transitions in Melanoma*
51	Choudhary, Krishna	*epitoPeR enables scale up of high-content CRISPR screens*
52	Garana, Belinda B.	*Drug Mechanism Enrichment Analysis: interpreting drug rank lists using common mechanisms of action*
53	Franke, Florian	*Dimension reduction in simulation models for the analysis of 3D spheroids for the Optimization of radiotherapy in tumor treatment*
54	Joly, James	*Toward Comprehensive, Single-molecule Proteomics: Protein Identification by Short-epitope Mapping*
55	Patterson, Sarah	*Ultrasensitive response explains the benefit of combination chemotherapy despite antagonism*
56	McCoy, Matthew	*Overcoming the Challenges to Cancer Patient Digital Twins with Simulations of Tumor Evolution and Protein Structure Dynamics*
57	Tserunyan, Vardges	*Computational analysis of 4-1BB-induced NFκB signaling suggests improvements to CAR cell design*
58	Marohl, Taylor	*Combination therapy including inavolisib suppresses transcriptional cell cycle signatures in ESR1-mutant ER-positive breast cancer cells*
59	Lange, Steffen	*Modeling age-specific incidence of colon cancer via niche competition*
60	Sundus, Aneequa	*Accelerating Cell Based Cancer Simulations Using Deep Neural Networks*

Poster #	***Presenter***	***Title***
61	Ginzel, Joshua	*Modeling divergent HER2 growth dynamics reveals epithelial plasticity changes as a bottlenecking event in cancer progression*
62	Ferrall-Fairbanks, Meghan C.	*HSC depletion and expansion of inflammatory GMP cells are clinically relevant features of disease progression in chronic myelomonocytic leukemia (CMML)*
63	Peyton, Shelly	*Tissue-specific biomaterials to study cancer dormancy*
64	Cochran, Brent	*Modeling glioblastoma stem cell heterogeneity with a dynamic causal model of the cell signaling network*
65	Coskun, Ahmet F.	*Multiplexed Imaging of Signaling and Metabolism at the Single Cell Level*
66	Rogava, Meri	*Melanoma co-opts homeostatic signaling to promote liver-specific metastasis*
67	Cadavid, Jose	*An Engineered Model of Pancreatic Cancer to Assess the Effect of Tissue Architecture and Fibroblast Content on Cellular Phenotype and Behavior*

List of attendees

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General information about the conference

Social media sharing policy

Conference attendees may share information from presentations on social media provided that they respect the wishes of presenters and properly cite authorship. Oral presenters may label any or all slides in their presentations with "DO NOT POST." Similarly, poster presenters may label their posters with "DO NOT POST." Attendees must respect the presenters' requests in these instances; while attendees may take photographs of all slides and posters, they must refrain from posting on social media any images from slides or posters labeled "DO NOT POST."

Feel free to use our hashtag: **#SACB2022**

Marine Biological Laboratory in Woods Hole, MA

Address

Marine Biological Laboratory

7 MBL Street

Woods Hole, MA 02543

Housing Information

Check in/out Time

Housing check-in time is after 2 pm at the Swope lobby. Parking passes are available at check-in.

Check-out time is prior to 10 am. Please remember to return your key to the front desk.

Alcohol, Drugs, and Hazardous Substances

Alcohol is limited to Beer and Wine consumed at scheduled mixers/receptions and dinners. Alcohol is not allowed in any housing common areas, including lounges, corridors, stairwells, and the like. Please take note of MBL policy on alcohol:

https://www.mbl.edu/policies/drug-and-alcohol-policy

All local, state and federal laws concerning the use, possession, and distribution of drugs and alcohol are in effect in all MBL facilities at all times. Illegal drugs are not permitted.

Please note that it is not permitted to use or store any flammable, toxic, or otherwise hazardous materials in any MBL facility or the campus.

COVID-19 Information

As of September 22 2022, MBL requires individuals to wear a mask at all times in all indoor public spaces, including the auditorium (unless actively speaking at the podium), and requires everyone to be fully up to date on their vaccination status.

There are no seating capacities in the Swope dining hall. People are encouraged to take their food and sit outdoors. There are two heated tents set up behind Swope to sit outdoors (Swope Lower Terrace Tent). Mixers and catering events will take place in the Swope Lower Terrace Tent.

See below for more detailed information on MBL's COVID-19 policies.

Acknowledgement and Attestation Regarding COVID-19

The COVID-19 pandemic has created substantial individual and community health risks. Even with extensive planning and focus on the community's health and safety, the Marine Biological Laboratory (MBL) cannot eliminate these risks. We can try to reduce risk to the community if each of us commits to fostering a culture of shared responsibility for our individual and collective health and safety. The MBL expects every person who comes to an MBL facility, whether as an employee, faculty member, postdoctoral researcher, student, visitor, or volunteer, (collectively "MBL visitors") to adopt precautions designed to mitigate the risk of viral transmission. The MBL has outlined these safety precautions on https://goforward.mbl.edu/.

All individuals must acknowledge and attest to the following before entering any of MBL's offices, laboratories, classrooms, or other MBL facilities:

1. I intend to confirm that I am up to date with all recommended COVID-19 vaccinations, including any booster dose(s) when eligible by uploading proof of vaccination or by providing proof of an exemption as required on the MBL Go Forward website. I understand that if I do not meet the MBL's vaccination requirement then I may need to be tested in accordance with the MBL's Asymptomatic Testing Program.

2. I will conduct a Mandatory Daily Health Screening for COVID-19 symptoms every day before arriving on campus (whether off campus or in residence in MBL housing), and I will monitor my health for new symptoms throughout the day. If I am experiencing any symptoms associated with COVID-19, I will immediately inform my supervisor or primary MBL contact and Human Resources, I will get a COVID-19 PCR test, if possible, and I will not enter any MBL facilities (or will remain in my assigned MBL residence) until criteria in the Protocol for Addressing Confirmed or Suspected COVID-19 Exposures are met.

3. If I have tested positive for COVID-19, I will seek appropriate medical care, if needed. I will contact Human Resources who may initiate campus contact tracing. I will isolate at home or in a designated housing location at the MBL until criteria as laid out in the Protocol for Addressing Confirmed or Suspected COVID-19 Exposures are met.

4. I will follow the masking requirements should there be any in effect at the MBL. If I am not up to date with all recommended COVID-19 vaccinations, then I will follow the COVID-19 precautions required by the MBL based on my COVID-19 vaccination status.

5. I will fully cooperate in MBL's Contact Tracing Program.

6. While on campus and accessing MBL facilities, I will not give anyone my MBL ID Card to access any MBL facilities and I will not let anyone into an MBL facility.

ONGOING COMMITMENT

By choosing to enter MBL's campus or any of MBL's facilities, I am making an ongoing commitment to follow the COVID-19-related guidance and safety precautions communicated by the MBL. I acknowledge this guidance may continue to change as new information becomes available, and that it is my responsibility to stay informed. I understand that the MBL relies on the commitment of every employee to comply with all safety policies and guidelines. I understand that if we, as a community, do not adhere to the MBL and public health authority rules and guidance (both on and off campus), and a COVID-19 outbreak occurs, the MBL may need to end an on-campus experience.

INHERENT RISK

I understand that the MBL continues to take steps to mitigate the risk of infection to members of our community. I recognize that COVID-19 poses a serious public health risk and that the MBL is not able to guarantee a COVID-19-free environment or eliminate the chance of infection and associated health risks. By entering the campus or any MBL facility, I acknowledge my responsibility to contribute to the collective efforts of the MBL community to reduce the risk of COVID-19 transmission, and I understand that these efforts will not eliminate the risk of transmission.

NON-COMPLIANCE

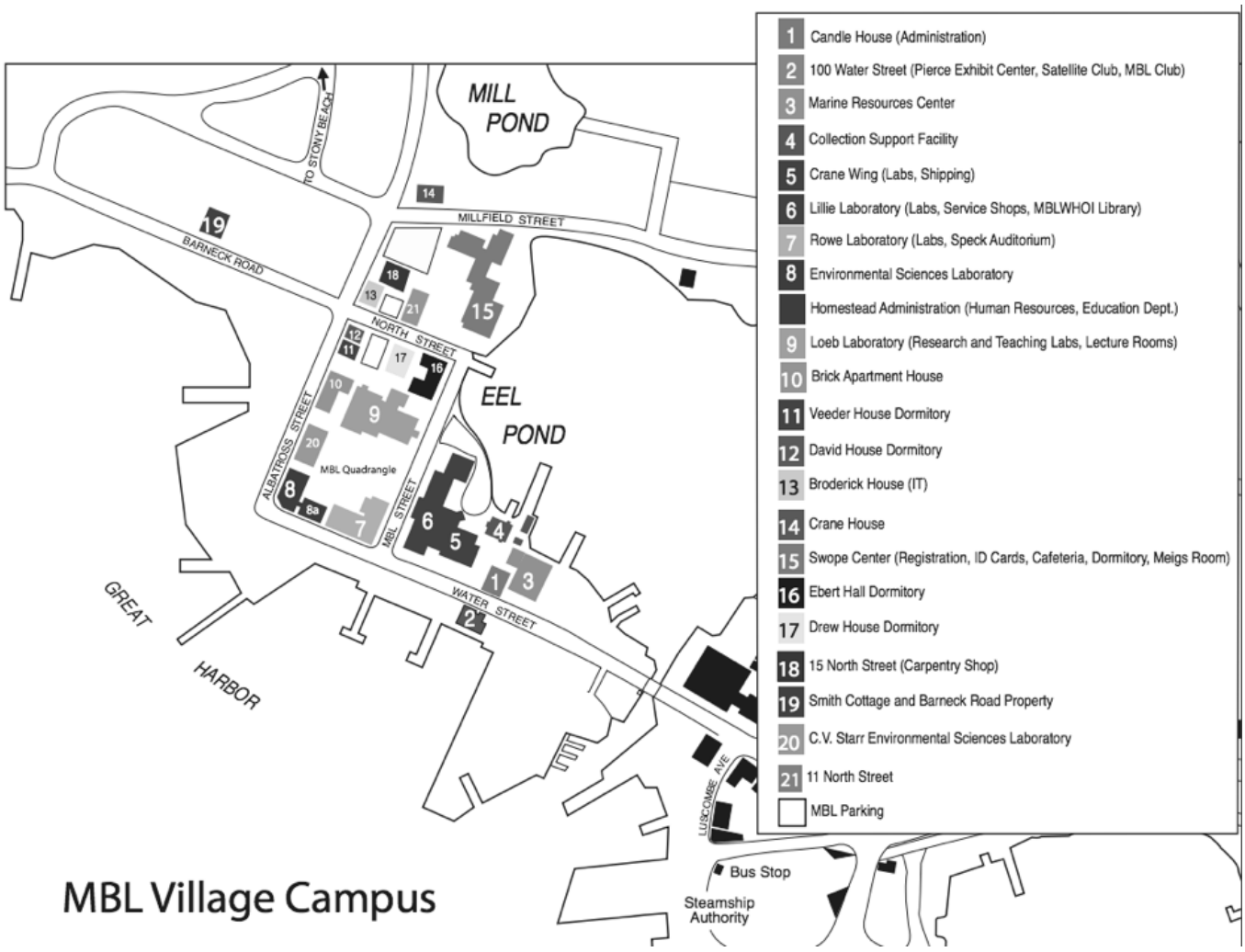
I understand that my failure to follow the requirements set forth in this attestation may endanger myself and/or others and cause further disruption of MBL research and educational activities. I understand that I may be subject to disciplinary action, including but not limited to: (i) a written warning, (ii) suspension of MBL privileges including access rights to MBL facilities and other resources, and (iii) removal from MBL properties or dismissal from participating in MBL activities. If I believe that MBL required safety policies and practices are not being followed by others, I will promptly report such issues through the MBL Human Resources Dept hr@mbl.edu or Environmental Health & Safety safety@mbl.edu.

Map of Marine Biological Laboratory

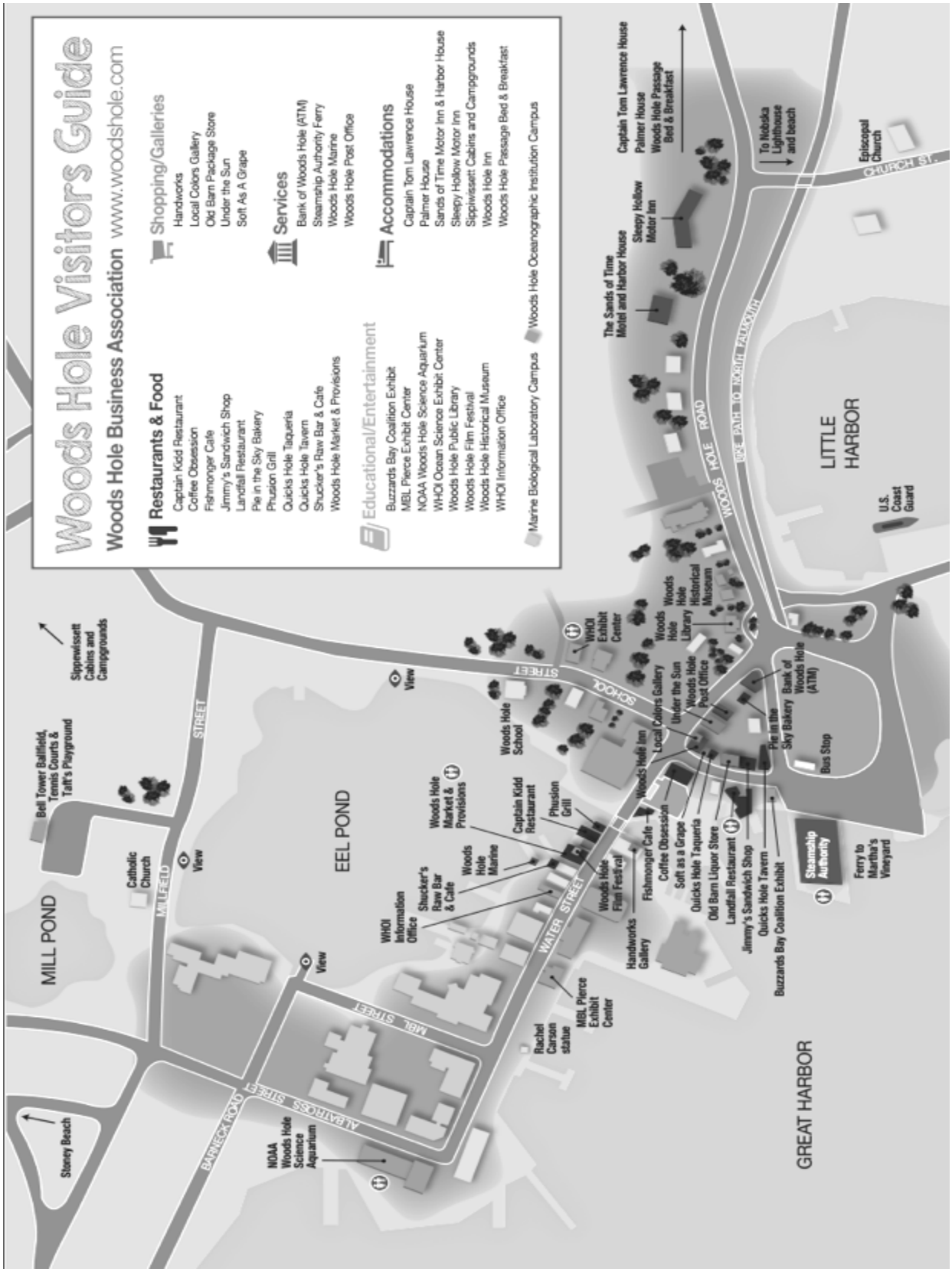
Check-in will be at the Swope lobby (#15).

All talks will take place in the Cornelia Clapp (formerly Lillie) auditorium (#6).

The ACSB Business Meeting will be held in the Cornelia Clapp (formerly Lillie) auditorium (#6).



Map of Woods Hole



MBL Code of Conduct

All conference participants must adhere to the MBL Code of Conduct. Please familiarize yourself with the MBL Code of Conduct for participants:

https://www.mbl.edu/policies/code-of-conduct

ACSB Code of Conduct

This code of conduct outlines our expectations for participants within the ACSB community, as well as steps to reporting unacceptable behavior. We are committed to providing a welcoming and inspiring community for all and expect our code of conduct to be honored. Anyone who violates this code of conduct may be banned from the community.

Our community strives to:

- Be friendly and patient.
- Be welcoming: We strive to be a community that welcomes and supports people of all backgrounds and identities. This includes, but is not limited to members of any race, ethnicity, culture, national origin, colour, immigration status, social and economic class, educational level, sex, sexual orientation, gender identity and expression, age, size, family status, political belief, religion, and mental and physical ability.
- Be considerate: Your work will be used by other people, and you in turn will depend on the work of others. Any decision you take will affect users and colleagues, and you should take those consequences into account when making decisions. Remember that we're a world-wide community, so you might not be communicating in someone else's primary language.
- Be respectful: Not all of us will agree all the time, but disagreement is no excuse for poor behavior and poor manners. We might all experience some frustration now and then, but we cannot allow that frustration to turn into a personal attack. It's important to remember that a community where people feel uncomfortable or threatened is not a productive one.
- Be careful in the words that we choose: We are a community of professionals, and we conduct ourselves professionally. Be kind to others. Do not insult or put down other participants. Harassment and other exclusionary behavior aren't acceptable.
- Try to understand why we disagree: Disagreements, both social and technical, happen all the time. It is important that we resolve disagreements and differing views constructively. Remember that we're different. The strength of our community comes from its diversity, people from a wide range of backgrounds. Different people have different perspectives on issues. Being unable to understand why someone holds a viewpoint doesn't mean that they're wrong. Don't forget that it is human to err and blaming each other doesn't get us anywhere. Instead, focus on helping to resolve issues and learning from mistakes.

Definitions

Harassment includes, but is not limited to:

- Offensive comments related to gender, gender identity and expression, sexual orientation, disability, mental illness, neuro(a)typicality, physical appearance, body size, race, age, regional discrimination, political or religious affiliation.
- Unwelcome comments regarding a person's lifestyle choices and practices, including those related to food, health, parenting, drugs, and employment.
- Deliberate misgendering. This includes deadnaming or persistently using a pronoun that does not correctly reflect a person's gender identity. You must address people by the name they give you when not addressaning them by their username or handle.
- Physical contact and simulated physical contact (eg, textual descriptions like "hug" or "backrub") without consent or after a request to stop.
- Threats of violence, both physical and psychological.
- Incitement of violence towards any individual, including encouraging a person to commit suicide or to engage in self-harm.
- Deliberate intimidation.
- Stalking or following.
- Harassing photography or recording, including logging online activity for harassment purposes.
- Sustained disruption of discussion.
- Unwelcome sexual attention, including gratuitous or off-topic sexual images or behaviour.
- Pattern of inappropriate social contact, such as requesting/assuming inappropriate levels of intimacy with others .
- Continued one-on-one communication after requests to cease.
- Deliberate "outing" of any aspect of a person's identity without their consent except as necessary to protect others from intentional abuse.
- Publication of non-harassing private communication.

Our open source community prioritizes marginalized people's safety over privileged people's comfort. We will not act on complaints regarding:

- 'Reverse' -isms, including 'reverse racism,' 'reverse sexism,' and 'cisphobia'.
- Reasonable communication of boundaries, such as "leave me alone," "go away," or "I'm not discussing this with you".
- Refusal to explain or debate social justice concepts.
- Communicating in a 'tone' you don't find congenial.
- Criticizing racist, sexist, cissexist, or otherwise oppressive behavior or assumptions.

Diversity Statement

We encourage everyone to participate and are committed to building a community for all. Although we will fail at times, we seek to treat everyone both as fairly and equally as possible. Whenever a participant has made a mistake, we expect them to take responsibility for it. If someone has been harmed or offended, it is our responsibility to listen carefully and respectfully, and do our best to right the wrong.

Although this list cannot be exhaustive, we explicitly honor diversity in age, gender, gender identity or expression, culture, ethnicity, language, national origin, political beliefs, profession, race, religion, sexual orientation, socioeconomic status, and technical ability. We will not tolerate discrimination based on any of the protected characteristics above, including participants with disabilities.

This statement is meant to cover all meeting-associated events and online spaces associated with the meeting, including Facebook, Twitter, and other online venues.

Reporting Issues

If there are issues to report in violation of the code of conduct—or have any other concerns—please report it to conduct@sacbmeeting.org or contact any of the members of the organizing committee. All reports will be handled with discretion.

In your report please include:

- Your contact information.
- Names (real, nicknames, or pseudonyms) of any individuals involved. If there are additional witnesses, please include them as well. Your account of what occurred, and if you believe the incident is ongoing. If there is a publicly available record (e.g. a mailing list archive or a public IRC logger), please include a link.
- Any additional information that may be helpful.

After filing a report, a representative will contact you personally, review the incident, follow up with any additional questions, and make a decision as to how to respond. We will respond in a timely manner and if you are not contacted within 12 hours of sending an e-mail, please talk to a member of the SACB organizing committee at the meeting to ensure that the message is received. If you witness or experience behavior that constitutes an immediate and serious threat, please call 911 or the local police first.

If the person who is harassing you is part of the response team, they will recuse themselves from handling your incident. If the complaint originates from a member of the response team, it will be handled by a different member of the response team. We will respect confidentiality requests for the purpose of protecting victims of abuse.

ACSB takes any breach of professional conduct at the SACB meeting very seriously. In situations for which additional action is warranted, the ACSB will cooperate fully with the appropriate authorities. Those who violate the standards of professional and respectful conduct may be

asked to leave the meeting immediately and without refund, may not be considered for service on ACSB boards and committees, and may be subject to additional legal action or reporting of behavior to their institutions for investigation.

The TODO Group Open Source Code of Conduct and Safe and Inclusive Meetings from the American Meteorological Association served as starting points for this code of conduct, which was adapted.

About our sponsors

Nautilus Biotechnology

Nautilus Biotechnology (Nasdaq: NAUT) is a life sciences company creating a platform technology for quantifying and unlocking the complexity of the proteome. We are driven to transform the field of proteomics by democratizing access to the proteome and enabling fundamental advancements across biomedical research and drug discovery. We were founded in 2016 on the belief that incremental advancements to existing technologies are inadequate; that a bold scientific leap would be required to radically reinvent proteomics and create a new gold standard in the field.

By integrating breakthrough innovations in computer science, engineering, and biochemistry, we are developing a large-scale, single-molecule proteomic analysis platform that enables the quantification of intact proteins and proteoforms with extreme sensitivity, scale, and dynamic range. Researchers can now explore the breadth of the proteome without sacrificing depth, driving their next discoveries.

Our novel single-molecule proteomics platform isolates and repeatedly interrogates billions of single, intact protein molecules with a diverse array of affinity reagents to overcome the challenges of single-reagent sensitivity and specificity and achieve accessible and reproducible sensitivity and scale.

By enabling an expansion of both the depth and breadth of proteomic studies, Nautilus' technology has the potential to revolutionize how biological research is conducted, drugs are identified and developed, and human disease is treated.

To learn more about Nautilus, visit www.nautilus.bio .

USC Norris Comprehensive Cancer Center

The USC Norris Comprehensive Cancer Center (NCCC), a National Cancer Institute (NCI)-designated Comprehensive Cancer Center, is an innovative leader in the cancer field, setting a global standard for cutting-edge research that is accelerating programs to prevent, control, and cure cancer. As one of the first eight Comprehensive Cancer Centers to receive the NCI comprehensive designation in 1973, NCCC is an international leader in cancer research, education, and patient-centered oncology care. Our vision is to reduce the burden of cancer for all people, and our mission is to foster and integrate high impact research, education, community engagement, and personalized cancer care. We have created a highly inclusive and engaging culture of collaboration, an environment that fosters and supports revolutionary, interdisciplinary approaches to the treatment and prevention of cancer. A central priority for NCCC is to serve the unique cancer-related needs of our multicultural catchment area, Los Angeles County. By catalyzing highly collaborative programs of laboratory, clinical, and population-based research, NCCC drives scientific discoveries and facilitates the translation of these discoveries into clinical practice.

NCCC includes numerous Cores that support cancer research efforts, including the Data Science Core. This Core provides integrated state-of-the-art biostatistics and informatics support to NCCC investigators working on all aspects of cancer research, from basic science to translational and clinical studies, and cancer etiology to cancer control.

The use of computational approaches, including data science and mathematical modeling, is critically important in cancer research, and NCCC is thrilled to support the 2022 Systems Approaches to Cancer Biology Meeting.

To learn more about the USC Norris Comprehensive Cancer Center, visit uscnorriscancer.usc.edu

Center for Cancer Systems Biology at Vanderbilt University

The Center for Cancer Systems Biology (CCSB) at Vanderbilt University addresses a fundamental issue in oncology: the pervasive and ubiquitous occurrence of phenotypic heterogeneity in any cancer, at all stages of progression. The overarching goal of the CCSB is to produce a quantitative understanding of plasticity and dynamics of cancer cell phenotypes in a tumor, as we believe this knowledge holds the promise of major advances in treatment. Both genetic and epigenetic factors contribute to tumor heterogeneity. Furthermore, multidirectional interactions of distinct tumor cell phenotypes amongst themselves and with host cells shape the evolutionary trajectory of a tumor, including its metastatic properties. Thus, heterogeneity is a complex, multi-scale problem (from genes to molecules to cells to tissues), intrinsically unsuitable to reductionist approaches. Rather, we consider a systems-level approach to current challenges, which include: 1) identifying useful quantitative metrics of a tumor phenotypic space; 2) defining deterministic and stochastic components of heterogeneity at molecular and cellular levels; 3) deriving emergent tumor phenotype dynamics from single-cell behavior; and 4) designing effective treatment strategies based on this system-level knowledge. To tackle these challenges, we frame tumors as complex adaptive systems and apply concepts from dynamical systems theory. Furthermore, we resolved to focus a multitude of theoretical and experimental approaches on one single cancer type, Small Cell Lung Cancer (SCLC), which at the moment is a disease with dismal outcomes and no improvement in treatment approaches for over half a century. Under the leadership of Dr. Vito Quaranta (PI and Director) and Dr. Amanda Linkous (Scientific Center Manager), the CCSB at Vanderbilt University studies the dynamics of transcription factor and signaling networks that define and maintain cell identity, and ultimately contribute to forming the phenotypic landscape of the tumor microenvironment.

To learn more about the Center for Cancer Systems Biology at Vanderbilt University, visit lab.vanderbilt.edu/ccsb

University of Colorado Cancer Center

The University of Colorado (CU) Cancer Center's vision is to "Prevent and conquer cancer. Together." We do this through our mission statement of "uniting our community to overcome cancer through innovation, discovery, prevention, early detection, multidisciplinary care, and education."

The CU Cancer Center is headquartered at the Anschutz Medical Campus in Aurora, Colorado and part of the CU School of Medicine. It is Colorado's only National Cancer Institute-designated comprehensive cancer center, a distinction recognizing its outstanding contributions to research, clinical trials, prevention and cancer control. CU Cancer Center's clinical care sites are UCHealth, University of Colorado Hospital and Children's Hospital Colorado are ranked nationally by U.S. News and World Report.

The CU Cancer Center is a member of the prestigious National Comprehensive Cancer Network®, an alliance of the nation's leading cancer centers working to establish and deliver the gold standard in cancer clinical guidelines. CU Cancer Center also is a member of the Oncology Research Information Exchange Network (ORIEN), a unique research partnership among North America's top cancer centers leveraging multiple data sources and matching patients to targeted treatments. CU Cancer Center includes six institutional partners made up of approximately 300 researchers and physicians at three state universities and three healthcare delivery institutions. The cancer biology program at the University of Colorado combines training in the basic biomedical sciences with opportunities to apply clinical and translational research to studies on human cancer.

To learn more about the University of Colorado Cancer Center, visit medschool.cuanschutz.edu/colorado-cancer-center

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