Session Descriptions

Scientific Sessions - Day 1

Session I: Podium Talks with Patient Advocates - Tumor Immunology and microenvironment

(Auditorium, August 22nd 10:30 am)

This session will explore cutting-edge research examining the complex interactions within the tumor microenvironment, across multiple cell types. The presented works will cover diverse aspects such as how plasma exosomes in obesity-driven diabetes exacerbate the progression of triple negative breast cancer, and the spatial analysis of immune-related adverse events using novel animal models. We will also discuss how apoptotic cells promote circulating tumor cell survival and metastasis, and the role of Claudin 7 in suppressing invasion and metastasis. Finally, we will delve into dynamic modeling of tumor progression to uncover critical transitions that establish metastatic potential.

Concurrent Session IIA: Spotlight Talks - Translational cancer research and drug discovery

(Balcony B, August 22nd 1:30 pm)

This session focuses on innovative approaches to understanding and treating cancer. The session will begin with exploring tumor stromal dynamics using a 3D organotypic model of colorectal cancer and the recapitulation of skeletal metastasis using an in vitro organ-on-a-chip platform. We will also learn about in situ visualization of drug binding in mammalian tissue. More about drug discovery, we will see prediction of trastuzumab deruxtecan response and resistance mechanisms in metastatic breast cancer, plus oncology drug mechanisms of action and polypharmacology. Finally, from a translational perspective, we will hear about how insulin resistance increases TNBC aggressiveness via exosomes.

Concurrent Session IIB: Spotlight Talks - Multiomics and bioinformatics in cancer research

(Balcony C, August 22nd 1:30 pm)

This session explores advancements in computational biology and 3D modeling that enables cutting-edge cancer research. We will discuss computational resources to enable large-scale analysis, and exciting large-scale cancer research projects. Our topics will span a range of topics from computational workflows for single cell spatial proteomics and inferences of genetic ancestry, chromosome organizational characteristics in various cell types, signaling and transcription to study c-Myc induced stress response and organ-specific evolution of tumor microenvironments in metastatic breast cancer.

Concurrent Session IIIA: Spotlight Talks - Niche regulation of cancer progression

(Balcony B, August 22nd 3:30 pm)

In this session we will discuss lymphatic vessels as a target for increasing cancer immunosurveillance, molecules secreted by neurons that drive cancer progression, and plasma exosomes derived from patients with type 2 diabetes increasing metastatic potential of breast cancer. Other topics will cover immune competent lymphoma organoids specially investigated for T cells – BCR receptor signaling via histone modification and astrocytes shaping the invasiveness of glioblastoma. Finally, we will hear about how taking serotonin inhibitors may not only alleviate depression but also help fight pancreatic cancer.

Concurrent Session IIIB: Spotlight Talks - Genetic and epigenetic regulation of tumor progression and metastasis

(Balcony C, August 22nd 3:30 pm)

This session explores the genetic and epigenetic mechanisms underlying tumor progression and metastasis. Presentations highlight the heterogeneity in drug resistance among melanoma cells, clonal dynamics in triple-negative breast cancer, and the role of DNA hypermethylation in tumor suppression. Studies also examined chromatin reorganization under environmental cues, age-specific changes in head and neck squamous cell carcinoma, and spatial analysis methods to understand stromal effects on tumor behavior. Collectively, these investigations reveal new mechanisms and potential therapeutic targets for improving treatment strategies of several types of cancers.

Scientific Sessions - Day 2

Session IV: Podium Talks with Patient Advocates - Multiomics and Computational Cancer Research

(Auditorium, August 23rd 10:30 am)

This session discusses advancements in computational biology and 3D modeling that enables cutting-edge cancer research. We will discuss computational models to enable large-scale analysis and effective predictions, 3D modeling, and exciting large-scale cancer research projects. Our topics will include modeling imaging-based spatial transcriptomics data, identifying a novel EGFR mutation signature in lung adenocarcinoma, investigating tumor immune suppression through PD1-PD-L1 Interactions with MDSC & T Cell Phenotypes, 3D agent-based modeling of glioblastoma subtypes and therapies and AI-Enhanced rapid lifetime determination method.

Concurrent Session VA: Spotlight Talks - AI/ML approaches for translational cancer research

(Balcony B, August 23rd 4:30 pm)

This session focuses on advancements in AI/ML technology that enable more accurate analysis, prediction, and presentation of patient data thereby advancing early recognition and treatment of cancer. We will hear about how scientists use histology slides to predict response to immunotherapy. Other studies in this session will explore AI/ML tools to harmonize and integrate publicly available omics data. We will also discuss self-supervised AI frameworks to assess intratumor heterogeneity of glioblastoma using MRI. Finally we will hear about recent advancements in mathematical modeling to detect tumor proteins in the presence of high background noise.

Concurrent Session VB: Spotlight Talks - Tumor immunology and immunotherapy

(Balcony C, August 23rd 4:30 pm)

In this session, we will explore groundbreaking research that illuminates the interplay between immune cells and the tumor microenvironment, alongside innovative therapeutic strategies harnessing the immune system to combat cancer. The presentations will span a range of topics, including the use of CAR T cells to overcome immune suppression, the dynamics of macrophage infiltration, macrophage clusters, immune cell regulation in melanoma, and immunopeptidome analysis for identification of novel targets for immunotherapy.

Special Sessions

Patient advocates: Hearing their story

(Auditorium, August 22nd 8:45 am)

Learn how Junior Investigators can engage with research advocates, and about NCI resources in research advocacy. Hear the perspective of MetNet research advocates, Katie Craven, Christine Hodgdon and Julia Maués on how to make basic research inclusive, accessible and most importantly patient-centered.

What can you do with a PhD?

(Rooms A/B and E1/E2, August 23rd 9:00 am)

Join us for a "What to Do with a PhD" breakfast, where you'll have the opportunity to network with journal editors, NIH professionals, and industry leaders. Gain insights into diverse career paths and discover how to leverage your PhD for success across academia, government, and industry.

“Just Starting Out” Panel

(Auditorium, August 23rd 1:30 pm)

In this session, early career investigators will share their experiences and lessons learnt during their academic career transitions. Discussion will focus on common questions junior investigators have as they transition to their academic careers. The session features 5 scientists starting out in faculty positions including Drs. Katie Houlahan, Ashley Kiemen, Kate Miroshnikova, Hernando Lopez-Bertoni and Kaitlyn Sadtler.

Lunchtime Discussions

Day 1 (August 22, lunch provided)

a) Scalable Processing of Multiplexed Tissue Imaging Datasets Using Nextflow and MCMICRO

(Rooms F1/F2, August 22nd 12:00 pm)

Join our workshop for hands-on training in scalable processing of multiplexed tissue imaging data with Nextflow and MCMICRO. Learn with experts from Harvard Medical School’s Lab of Systems Pharmacology, Sage Bionetworks, and the MC2 Center. No prior experience with these tools needed, just comfort with command line and bioinformatics basics.

b) NCI SBIR: Small Business Transition Grant Info Session

(Rooms E1/E2, August 22nd 12:00pm)

The goal of this session is to introduce funding opportunities aimed at supporting early career academic scientists interested in transitioning to entrepreneurship while also supporting the transfer of technology from academic laboratories into small businesses.

Day 2 (August 23, lunch provided)

NCI CBIIT Data Science Training Resources

(Rooms F1/F2, August 23rd 12:00pm)

Have questions about developing data science skills in your cancer research career? Get answers from 6 NCI experts in data science, informatics, and statistics. These NCI staff lead various data science initiatives, but also helped develop the Cancer Data Science 101 course on datas