City of Hope's Abstract Presentations at the AACR Annual Meeting 2022

April 8 to 13, 2022
Ernest N. Morial Convention Center
in New Orleans

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CityofHope.org/AACR2022

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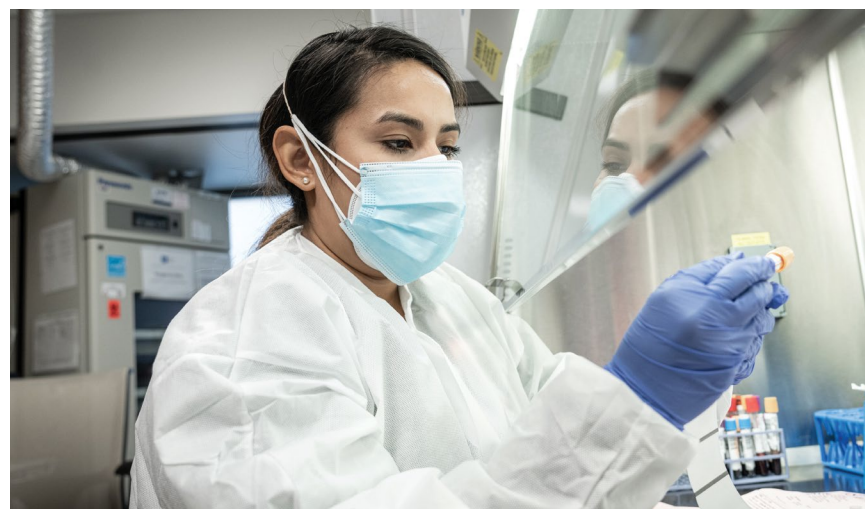CANCER
2021-22

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Advancing Discovery. Accelerating Access.

City of Hope is home to leading-edge research and groundbreaking innovation, with unmatched R&D capabilities that allow us to translate discovery into practical patient benefit as quickly as possible.

And we are committed to democratizing cancer care through education, expansion and advocacy to ensure that **the discoveries made here benefit patients everywhere**.

At the AACR Annual Meeting 2022, City of Hope physicians and researchers will share breakthroughs discovered in oncology. Keep reading to learn more about our oral and poster abstracts, awards and informative sessions at this year's meeting.

VISIT US AT **BOOTH 1801** TO DISCOVER OUR LEADING-EDGE RESEARCH AND TREATMENT OPTIONS.

Highlighted Presentations include:

PRECISION MEDICINE

IMPROVING PREDICTIONS OF CHEMOTHERAPY RESPONSE AND DISEASE RELAPSE

"Predicting response to chemotherapy in a mouse model of acute myeloid leukemia"

Poster Presentation 5065: Friday, April 8, 2022, noon CT

Lisa Uechi, Ph.D., Russell Rockne, Ph.D., and colleagues developed a mathematical model to illustrate how blood cells go from healthy to progressive states of acute myeloid leukemia (AML). Using mice with AML, they followed which genes are turned on and off over the course of the disease, extending their mathematical model to predict how AML responds to chemotherapy and when relapse likely will occur. An ability to accurately predict treatment response and disease relapse could help treatment timing and strategies and possibly improve outcomes.

YOUR BREASTS MAY NOT BE THE SAME AGE AS YOU

"Accelerated biological age is a driver of cancer susceptibility in genetic high risk breast tissue"

Poster Presentation 5682: Friday, April 8, 2022, noon CT

Mark LaBarge, Ph.D., and colleagues found that women with underlying genetic susceptibility for breast cancer show indications of faster aging in their breast tissue, with some cells appearing 40 years older than the woman herself. This work identifies markers that link breast cell age and cancer risk independent of the patient's genetic background, age or cancer subtype.

MOLECULAR PRINCIPLES OF METASTASIS

"The N6-methyladenosine reader YTHDC1 is essential for TGF-beta-mediated metastasis of triple-negative breast cancer"

Oral minisymposium 2188: Monday, April 11, 2022, 2:30 to 4:30 p.m. CT

Metastatic triple-negative breast cancer (TNBC) patients have a five-year survival rate of just 12%. Therefore, there is an urgent need to discover novel molecular mechanisms contributing to TNBC metastasis, such as N6-methyladenosine (m6A) RNA modification. Brandon Tan, Ph.D., will share research conducted on an m6A reader protein, YTHDC1, found to be essential for the metastasis of TNBC cells. The study demonstrates that TGF-β-mediated TNBC metastasis is mediated at least in part through YTHDC1's function in promoting SMAD3 expression.

NEXT-GEN GENETICALLY ENGINEERED MOUSE MODELS

"The impact of carcinogens, obesity, and chronic inflammatory processes on mutational signatures and cancer risk in mouse tumor models"

Oral minisymposium 2198: Monday, April 11, 2022, 2:30 to 4:30 p.m. CT

An estimated 40% of all human cancers are suspected to be a result of modifiable risk factors, such as obesity, high-fat diet and chronic inflammation; however, whether genomic signatures exist for modifiable cancer risk factors remains. Yun Rose Li, M.D., Ph.D., and colleagues report the analysis of nearly 300 mouse tumors using multiple models of human cancers in the setting of obesity, high-fat diet, wounding, chronic inflammation or chemotherapy to evaluate their impact on the cancer genome. They found that these factors are critical in controlling when tumors develop, and thus behaviors and environment impact cancer susceptibility and development. In combination with recently published work in Nature Genetics on the impact of suspected environmental carcinogens in eliciting tumors in mice, the present study represents the largest compendium of whole-genome sequencing data from nearly 300 mouse tumors, offering invaluable insights on how cancers arise and the critical impact of behavior and environment in tumor development.

"An exosomal miRNA-based liquid biopsy signature for the noninvasive early detection of pancreatic ductal adenocarcinoma"

Poster Presentation 3389: Tuesday, April 12, 2022, 1:30 to 5 p.m. CT

Kota Nakamura, M.D., Ajay Goel, Ph.D., M.S., and colleagues have identified a new marker for pancreatic ductal adenocarcinoma that identifies with accuracy higher than the typical biomarkers currently used. With more research, this biomarker could greatly improve outcomes for pancreatic cancer patients who have a condition that is typically diagnosed so late that only 20% of cases are operable.

"METTL16 drives leukemogenesis and maintains leukemia stem cell self-renewal via reprogramming BCAA metabolism"

Oral minisymposium 3617: Tuesday, April 12, 2022, 2:30 to 4:30 p.m. CT

As the most prevalent internal decorations in mammalian mRNA, N6-methyladenosine (m6A) has been involved in many physiological and pathological processes, including acute myeloid leukemia (AML). METTL3 and METTL14, the well-recognized m6A methyltransferase complex, contribute to AML. METTL16 is a recently identified m6A methyltransferase reported to deposit m6A in a few targets. Li Han, postdoctoral fellow, Department of Systems Biology, will present data on the function and mechanism of METTL16 in AML pathogenesis and its therapeutic potential for AML treatment.

Utilizing various techniques, including CRISPR0Cas9 screen, KO-cell creation, BMT, xenograft and PDX models, Han and colleagues uncovered a tumor-promoting role of METTL16 in AML and LSC self-renewal via reprogramming BCAA metabolism. The findings suggest METTL16 functions as an m6A methyltransferase to regulate the expression of BCAT1 and BCAT2. Our data indicate that METTL16 is an attractive target for AML therapy.

CELL THERAPY

"Regional administration of IL-12 endowed CAR T cells effectively targets systemic disease"

Poster Presentation 588: Sunday, April 10, 2022, 1:30 to 5 p.m. CT

Eric Lee and Saul Priceman, Ph.D., have developed a second-generation CAR T cell product targeting a tumor-associated antigen, TAG72, that, when tested in mice with ovarian tumors, largely overcame the barriers that limit CAR T cell therapy from working in solid tumors. Additionally, they engineered these CAR T cells to produce a cytokine that further enhanced their activity in vivo. These modifications lend hope that soon CAR T cell therapy can overcome the immunosuppressive tumor microenvironment and be used to treat more types of cancers. The researchers will soon start recruiting patients for a Phase 1 clinical trial testing the TAG72-CAR T cell product in women with ovarian cancer.

"A mathematical model for optimization of combination therapy involving targeted radionuclide and CAR T cell therapy"

Poster Presentation 2732: Tuesday, April 12, 2022, 9 a.m. to 12:30 p.m. CT

Vikram Adhikarla, Ph.D., and Russell Rockne, Ph.D., led preclinical research that treated mice with multiple myeloma with CAR T and targeted radionucleotide therapy to develop a mathematical model and optimize combination therapy delivery. By varying the length of time between treatments, they found that the rate of tumor growth had the most impact on treatment success.

AACR Annual Meeting 2022
Abstract Presentations

Time	Session Type	Location	Presentation Number	Session	Poster Board Number	Presentation Title	Presenters/ Investigators
noon to 1 p.m.	Poster Session	E-Poster Website	5065	Convergence Science and Systems Biology		Predicting response to chemotherapy in a mouse model of acute myeloid leukemia	Lisa Uechi
noon to 1 p.m.	Poster Session	E-Poster Website	5196	Immuno-Oncology		CD47 Blockade potentiates immunotherapy of durvalumab against cutaneous T cell lymphoma	Zhen Han
noon to 1 p.m.	Poster Session	E-Poster Website	5208	Immuno-Oncology		Circulating T cell: B cell: NK cell axis associated with response to pembrolizumab plus doxorubicin in patients with metastatic triple negative breast cancer	Yuan Yuan, M.D., Ph.D.
noon to 1 p.m.	Poster Session	E-Poster Website	5345	Drug Resistance		Novel approach to attenuate melanoma initiation and progression	Sharad S. Singhal, Ph.D.
noon to 1 p.m.	Poster Session	E-Poster Website	5682	Cellular Stress Responses		Accelerated biological age is a driver of cancer susceptibility in genetic high risk breast tissue	Mark A. LaBarge, Ph.D.
noon to 1 p.m.	Poster Session	E-Poster Website	5685	Cellular Stress Responses		Recognition of internal mRNA N7-methylguanosine by QKI shuttles transcripts into stress granules and modulates drug resistance	Zhicong Zhao, M.D., Ph.D.
noon to 1 p.m.	Poster Session	E-Poster Website	5711	Epigenetics and Epigenomics		Targeting FTO suppresses pancreatic carcinogenesis via cancer stem cell maintenance	Rachana Garg, Ph.D.
noon to 1 p.m.	Poster Session	E-Poster Website	5717	Epigenetics and Epigenomics		Novel evidence for FTO as an oncogenic player and mediator of chemoresistance in colorectal cancer	Rachana Garg, Ph.D.
noon to 1 p.m.	Poster Session	E-Poster Website	5809	Metabolism and Cancer		eIF2α O-GlcNAcylation promotes oxidative stress in arginine-starved triple-negative breast cancer cells	Yu-Wen Hung
noon to 1 p.m.	Poster Session	E-Poster Website	6144	Tumor Microenvironment		Novel M2 macrophage gene signature as a biomarker of poor outcomes independent of TNM stage in peritoneal liquid biopsy of gastric cancer patients	Kevin M. Sullivan, M.D.
noon to 1 p.m.	Poster Session	E-Poster Website	6293	Biomarkers Predictive of Therapeutic Benefit 3	9	Genomic characteristics of nivolumab/ipilimumab with or without CBM-588 supplementation in patients with metastatic renal cell carcinoma	Daniela V. Castro
noon to 1 p.m.	Poster Session	E-Poster Website	6342	Genomic Instability 1	2	Pan-cancer analysis of promoter or promoter-proximal somatic mutations defines transcription-replication conflict mutational signature	Marc A. Attiyeh, M.D.
noon to 1 p.m.	Late-breaking Poster Session	E-Poster Website	LB553	Population Sciences		Empowering tobacco using cancer patient initiation of tobacco cessation by a personal pathway to success program during preoperative patient counseling: a feasibility study	Cary Presant, M.D.

ALL SESSIONS ARE LISTED IN CENTRAL TIME.

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SUNDAY, APRIL 10, 2022

Time	Session Type	Location	Presentation Number	Session	Poster Board Number	Title	Presenters/ Investigators
1:30 to 5 p.m.	Poster Session	Section 20	298	Nanotechnology Drug Delivery	6	Targeting KRAS mutant non-small cell lung cancer with EGFR aptamer displaying 3WJ pRNA nanoparticles	Linlin Yang, M.D., Ph.D.
1:30 to 5 p.m.	Poster Session	Section 29	481	Cancer Systems Biology	8	Biophysical models of pattern formation in bone marrow endothelial networks	Alexander B. Brummer
1:30 to 5 p.m.	Poster Session	Section 37	588	Adoptive Cell Therapy 2	23	Regional administration of IL-12 endowed CAR T cells effectively targets systemic disease	Hee Jun Lee

MONDAY, APRIL 11, 2022

Time	Session Type	Location	Presentation Number	Session	Poster Board Number	Title	Presenters/ Investigators
9 a.m. to 12:30 p.m.	Poster Session	Section 1	723	Preclinical Prevention, Early Detection and Interception 2	18	Dual inhibition of MDM2 and p38 MAPK signaling is a potential therapeutic strategy in esophageal squamous cell carcinoma	Souvick Roy, Ph.D.
9 a.m. to 12:30 p.m.	Poster Session	Section 9	898	Cancer Stem Cells	12	Metformin and ICG-001 act synergistically to abrogate cancer stem cell-mediated chemoresistance in colorectal cancer by promoting apoptosis and autophagy	Souvick Roy, Ph.D.
9 a.m. to 12:30 p.m.	Poster Session	Section 14	1005	Tumor Adhesion	11	Ecological interactions in breast cancer: Cell cooperation within heterogeneous populations promotes growth and survival under drug pressure	Rena Emond
9 a.m. to 12:30 p.m.	Poster Session	Section 40	1409	High-Throughput Screening, Drug Design and Natural Products in Cancer	13	Synergistic antitumorigenic activity of Berberine and oligomeric proanthocyanidins through regulation of PI3-AKt signaling pathway in colorectal cancer	Keisuke Okuno, M.D., Ph.D.
1:30 to 5 p.m.	Poster Session	Section 3	1467	Chromatin, Enhancers, Promoters and Regulation of Transcription Factor Function	11	RUVBL1 controls protein synthesis and tumor progression via MYC-dependent EEF1A1 expression	Mingli Li, Ph.D.
1:30 to 5 p.m.	Late-Breaking Poster Session	Section 18	LB102	Late-Breaking Research: Immunology 1	9	Off-the-shelf cord blood FLT3 CAR-NK cells for immunotherapy of acute myeloid leukemia	Anthony G. Mansour
2:50 to 3:05 p.m.	Minisymposium	Room 260-262, Convention Center	2188	Molecular Principles of Metastasis		The N6-methyladenosine reader YTHDC1 is essential for TGF-beta-mediated metastasis of triple negative breast cancer	Brandon Tan, Ph.D.
3:35 to 3:50 p.m.	Minisymposium	Room 278-282, Convention Center	2198	Next-Gen Genetically Engineered Mouse Models		The impact of carcinogens, obesity, and chronic inflammatory processes on mutational signatures and cancer risk in mouse tumor models	Yun Rose Li, M.D., Ph.D.

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TUESDAY, APRIL 12, 2022

Time	Session Type	Location	Presentation Number	Session	Poster Board Number	Title	Presenters/ Investigators
9 a.m. to 12:30 p.m.	Poster Session	Section 11	2459	In Vivo Imaging 1	6	Automated VIF methods improve DCE-MRI parameterization repeatability in GBM	Ryan T. Woodall
9 a.m. to 12:30 p.m.	Poster Session	Section 29	2732	Mathematical Models	3	A mathematical model for optimization of combination therapy involving targeted radionuclide and CAR-T cell therapy	Vikram Adhikarla
9 a.m. to 12:30 p.m.	Poster Session	Section 29	2735	Mathematical Models	6	An information theoretic approach to investigate AML development using time-series-omics	David E. Frankhouser
9 a.m. to 12:30 p.m.	Poster Session	Section 29	2741	Mathematical Models	12	A communication theory framework for modeling cytokine-mediated signaling in healthy and breast cancer derived peripheral blood immune cells	Adina Matache
9 a.m. to 12:30 p.m.	Poster Session	Section 40	2920	Structural and Chemical Biology	5	Targeting integrin alpha V beta 5 heterodimer stability using a novel small molecular inhibitor for tumor suppression	Nicole Mattson
1:30 to 5 p.m.	Poster Session	Section 3	2967	Chromatin Modifiers: From Mechanism to Therapeutic Opportunity	15	ACTR5 maintains hepatocellular carcinoma via H3K9 epigenetic silencing of CDKN2A	Xiaibao Xu
1:30 to 5 p.m.	Poster Session	Section 30	3389	Cell-Free DNA 1	17	An exosomal miRNA-based liquid biopsy signature for the noninvasive early detection of pancreatic ductal adenocarcinoma	Kota Nakamura, M.D., Ph.D.
2:35 to 2:50 p.m.	Minisymposium	Room 220-222, Convention Center	3617	Cancer Epigenetics: From Nucleotides to 3D Genome Structure		METTL16 drives leukemogenesis and maintains leukemia stem cell self-renewal via reprogramming BCAA metabolism	Li Han

WEDNESDAY, APRIL 13, 2022

Time	Session Type	Location	Presentation Number	Session	Poster Board Number	Title	Presenters/ Investigators
9 a.m. to 12:30 p.m.	Poster Session	Section 3	3677	Cancer Health Disparities	16	Incorporating societal determinants of health with implementation science to increase tobacco cessation patient and community responsiveness	Kimlin T. Ashing, Ph.D.
9 a.m. to 12:30 p.m.	Poster Session	Section 27	4070	New Chemotherapy Agents	24	Caveolin-1 functions as a potential predictive biomarker for JNTX-101, an albumin encapsulated gemcitabine prodrug	Tiantian Cui, M.D., Ph.D.
9 a.m. to 12:30 p.m.	Poster Session	Section 35	CT241	Phase I Trials in Progress 2	2	ENVOY-001: A Phase 1, multicenter, open-label study of SQZ-AAC-HPV as monotherapy and in combination with immune checkpoint inhibitors in HLA-A*02+ patients with HPV16+ recurrent, locally advanced, or metastatic solid tumors.	Victoria Villaflor, M.D.
9 a.m. to 12:30 p.m.	Late-Breaking Poster Session	Section 18	LB211	Late-Breaking Research: Immunology 2	2	Tumor-reactive and anti-PD-L1 co-stimulated killer cells (TRACK-NK) for immunotherapy of non-small cell lung cancer	Ting Lu
9 a.m. to 12:30 p.m.	Late-breaking Poster Session	Section 35	CT541	Phase I Trials in Progress	19	Oncolytic viral reshaping of the tumor microenvironment to promote CAR T cell therapy for glioblastoma	Christine Brown, Ph.D.

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