Speaker Bio

Introductory talk: Neuroepithelial Interactions in Cancer

January 22nd, 2026

Gustavo Ayala, MD

Dr. Gustavo Ayala is the Director of the Path Urologic Pathology Division, at the University of Texas Health Science Center at Houston and a nationally and internationally recognized urologic pathologist.

Through his scientific career, Dr. Ayala has pioneered research investigating the role of nerves in cancer growth and invasion. His visionary approaches led him to conduct successful fundamental, translational, and clinical research in cancer neuroscience. Notably, he is the principal investigator with a first-in-human clinical trial to test local denervation of prostate tumors, using Botox in a neoadjuvant setting.

In 2023, Dr. Ayala authored a detailed review on the interaction between the nervous system and the epithelium, in normal physiological conditions and in the pathological context of cancer, in the *Annual Review of Pathology: Mechanisms of Disease*. Recently, Dr. Ayala published a groundbreaking discovery in *Nature* showing that neurons transfer mitochondria to cancer cells, inducing metabolic reprogramming associated with metastatic potential.

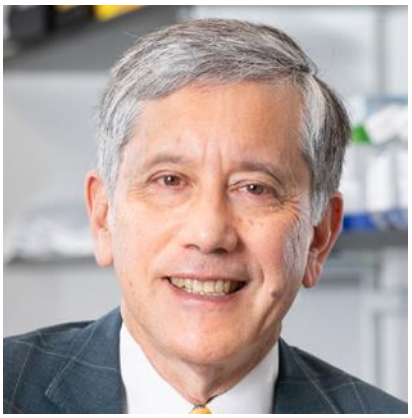
Dr. Ayala is a recognized leader in urologic cancer research and an innovator in the field. He has published more than 120 scholarly manuscripts. His prostate cancer biomarkers development effort, funded by the National Cancer Institute, has led to new models of prediction for prostate cancer based on the interaction between cancer and host. He is a member of several professional organizations, including the College of American Pathologists, the Arthur Purdy Stout Society, the International Urologic Pathology Society,

and the Texas Society of Pathology, where he serves as a board member. He served as a reviewer for many pathology and oncology journals and served on national and international grant review committees and expert panels.

Peripheral nerve-tumor interactions and cancer progression

February 12th, 2026

Timothy C. Wang, MD



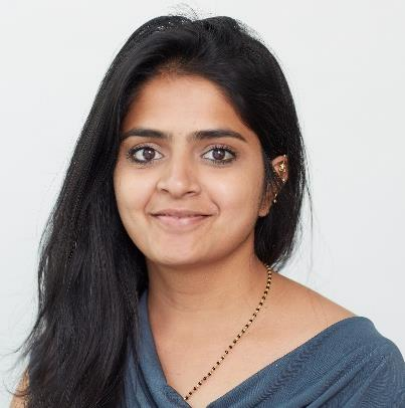
Dr. Timothy C. Wang is the Vice Chair for Academic Programs in Medicine, Silberberg Professor of Medicine, and Co-Leader for Tumor Biology and Microenvironment in the Irving Cancer Research Center at Columbia University.

Dr. Wang is a leading expert in gastroenterology cancer research and patient care. His laboratory investigates the molecular mechanisms of gastrointestinal carcinogenesis. His lab has worked for many years on the role of inflammation in modulating stem cells and promoting gastrointestinal neoplasia using mouse models. They have defined key roles for stromal cells in tumor development, including myeloid cells, ILCs, and nerves. His lab makes extensive use of transgenic/knockout mice, stem cells, lineage tracing, 3D organoids, scRNA-seq, and FACS analysis of immune and epithelial cells in the gut.

Dr. Wang first showed a role for the vagus nerve in gastric cancer (Zhao CM et al. Sci Transl Med 2014) and more recently published an impactful discovery showing that nociceptive neurons promote gastric tumor progression via a CGRP-RAMP1 axis, forming a neural circuit with the tumor. His team further identified that this functional interaction between neurons and cancer cells can be pharmacologically interrupted using Rimegepant, an FDA-approved drug for migraines (Zhi *et al*. *Nature* 2025).

Dr. Wang's laboratory has been continuously funded by the NIH for 29 years and by the NCI for 14 years. He also serves as director of the Columbia University NCI U54 Tumor Microenvironment (TMEN) program and directs the Barrett's Esophageal Translational Research Network (BETRNet) program and the Intestinal Stem Cell Consortium (ISCC) at Columbia. Dr. Wang has served as President of the American Gastroenterology Association (AGA). His work has been recognized with numerous awards, including the Outstanding Investigator Award from the NCI, the Irene and Arthur Fishberg Prize for medical research, the Ruth Leff Siegel Award for pancreatic cancer research, and the William Beaumont Prize in Gastroenterology from the AGA. Over his career, he has organized numerous conferences, including conferences on Gastrin, Regulatory Peptides, AACR Symposium on Gastric Cancer, Tumor Microenvironment, and Keystone Conferences.

Veena Padmanaban, PhD



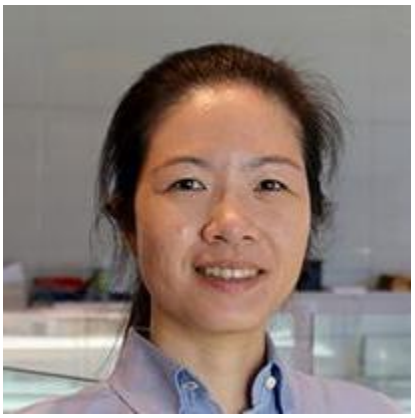
Dr. Veena Padmanaban is a cancer biologist whose research explores how the nervous system shapes breast cancer progression and metastasis. She completed her Ph.D. at the Johns Hopkins School of Medicine, where she discovered that E-cadherin—a molecule traditionally viewed as a tumor suppressor—paradoxically promotes metastasis across multiple breast cancer models (Nature, 2019). As a postdoctoral fellow at The Rockefeller University in Dr. Sohail Tavazoie's lab, she led pioneering work demonstrating that sensory nerves actively drive breast cancer metastasis by releasing a neuropeptide that activates a pro-metastatic signaling pathway in cancer cells (Nature, 2024). Her research further identified an FDA-approved anti-nausea drug that blocks this nerve–cancer crosstalk and significantly reduces tumor growth and metastasis. In a retrospective study of over 13,000 women with early-stage breast cancer, use of this drug was associated with improved survival and reduced metastasis in patients with non-luminal subtypes (JNCI, 2025). Dr. Padmanaban will soon launch her independent laboratory at the Johns Hopkins School of Medicine, where her group will investigate therapeutic vulnerabilities in the tumor

microenvironment, with a particular emphasis on nerve–cancer interactions. Her work has been recognized with numerous honors, including the Blavatnik Regional Award for Young Scientists, the Breakout Prize for Junior Investigators, the ASCB Merton Bernfield Award, and a Hope Funds for Cancer Research Fellowship.

Neural mimicry, bioelectrical signaling, and metastatic progression

March 12th, 2026

Leanne Li, MD, PhD



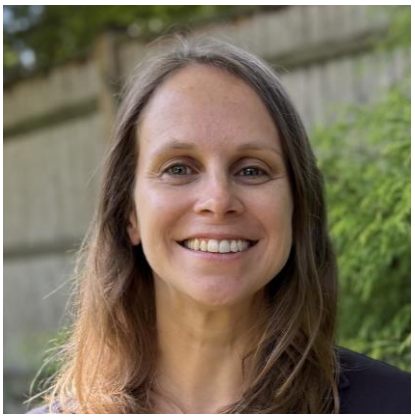
Dr. Li leads the Cancer-Neuroscience laboratory at the Francis Crick Institute in London, UK.

Dr. Li obtained an MD degree from National Taiwan University. She then trained with pioneers and leaders in the field of genetically engineered mouse models (GEMMs), focusing on studying the tumor microenvironment and cancer genetics during her PhD at EPFL and post-doctoral fellowship at MIT, respectively. She joined the Francis Crick Institute in 2020 to start her own lab, seeking to further illuminate the intertwined, yet under-explored relationships between cancer cells and the nervous system.

Her laboratory combines cancer biology and neuroscience to investigate how cancer cells communicate with the host, and is particularly interested in three major aspects of the crosstalk: cancer cell intrinsic neuronal properties, local/tumor microenvironmental, and distal/systemic interactions. Her lab employs contemporary cancer genetics and neuroscience methodologies to reveal the cancer-nervous system interaction in a panel of GEMMs, including lung and pancreatic cancers. By learning more about the relationship between cancer and neuroscience, they aim to develop potential new cancer therapeutics through neuronal modulation.

Dr. Li recently discovered that small cell lung cancer (SCLC), a highly aggressive neuroendocrine tumor which metastasizes early and has very limited treatment options, exerts intrinsic electrical activity that promotes cancer progression. This mimicry of neuronal activity enables the cancer cell to be less dependent on the neuronal input from the host, suggesting a tumor-autonomous vicious cycle. This insightful mechanism was published in Nature in February 2025 (Peinado et al.).

Madeleine Oudin, PhD



Dr. Oudin is a Tiampo Family Endowed Faculty Fellow and Associate Professor in Biomedical Engineering at the School of Engineering at Tufts University.

Dr. Oudin's graduate research focused on understanding the interplay between multiple signaling pathways in driving neuronal cell migration in response to growth factors during adult neurogenesis. Following the completion of her Ph.D. from King's College London, she completed postdoctoral studies in Professor Frank Gertler's lab at the Koch Institute for Integrative Cancer Research at MIT. There, she investigated the process of cancer metastasis.

As a principal investigator, Dr. Oudin investigates the role of the various components of the tumor microenvironment in driving tumor metastasis and drug resistance. The diagnosis of Dr. Oudin’s daughter with SCN8A encephalopathy has led to a new research area in the lab, investigating how alternative splicing of sodium channels impacts neuronal function and the development of epilepsy. Her lab aims to develop novel splice-switching antisense oligonucleotide therapies for the treatment of SCN8A neurodevelopmental disorders.

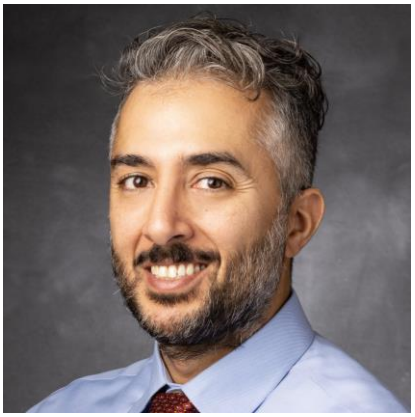
Merging her expertise in cancer metastasis and brain development, Dr. Oudin leads a unique Cancer Neuroscience research program. Her lab uses biology, engineering and clinically translatable approaches to understand how neoneurogenesis occurs in tumors, how the

neural identity of tumors impacts the systemic regulation of metastasis and how they can leverage this information for non-invasive monitoring and treatment of metastatic disease. Her team has shown that bioelectricity regulates cancer cell invasion and metastasis which could lead to a new class of therapeutics for patients with metastatic disease (Payne *et al*., 2022, Ebiomedicine). Her lab also identified a novel mechanism of sensory nerve-driven invasion in breast cancer via the axon guidance molecule PlexinB3 (Le *et al*, NPJ Breast Cancer 2022).

Perineural invasion

April 30th, 2026

Moran Amit, MD, PhD



Dr. Amit is a principal investigator leading research investigating neural regulation of cancer in the Department of Head and Neck Surgery at MD Anderson Cancer Center, University of Texas.

His laboratory uses neuroscience and cancer biology to advance the current understanding of the nervous system's contribution to cancer. His team has established experimental models in neuroscience research to uncover novel mechanisms used by the nervous system to promote tumor initiation, progression, and metastasis. His laboratory develops new experimental methods to isolate and sequence neural niche subpopulations and apply analytical approaches to study how solid tumors sculpt their microenvironment. His research focuses mainly on head and neck cancer to understand the role of the peripheral nervous system in the evolution of invasion, metastasis, and response to chemotherapy. The goal is to understand the role of neural signaling in tumor evolution to uncover therapeutic vulnerabilities and enhance cancer therapy. Applying the tools developed by his lab to

patients will ultimately inform key areas of cancer research, including the prevention and treatment of head and neck cancer.

Notably, his preclinical studies have focused on developing and testing rational combinations of neuromodulating and immune checkpoint blockade therapies. These concepts are being moved into the clinic to improve treatment outcomes for patients. Exploring the impact of perineural invasion, Dr. Amit and his team uncovered a sophisticated mechanism by which cancer-associated nerve injury induces immunotherapy resistance in patients with different types of cancer. Targeting the cancer-induced nerve injury signaling process can restore responses to anti–PD-1 immunotherapy (Baruch *et al*. *Nature* 2025).

Dr. Amit has a major role in propelling the emerging field of Cancer Neuroscience through his impactful publications and through his leadership in organizing International Cancer Neuroscience Symposiums.

Richard J. Wong, MD

Dr. Wong is a Physician-scientist and the Chief of Head and Neck Surgery at Memorial Sloan Kettering Cancer Center. As a surgeon, Dr. Wong cares for people with thyroid and head and neck cancers.

Dr. Wrong has expertise in perineural invasion (PNI). PNI is an ominous form of cancer progression in which cancer cells invade and track along nerves. PNI occurs most frequently in cancers that affect highly innervated organs, including pancreatic, head and neck, and prostate cancers. It is associated with increased recurrence and poor prognosis.

His research laboratory investigates the mechanisms of PNI and the collaborative interactions between cancers and nerves. His team uncovered mechanisms of cancer cell chemotaxis and invasion involving the release of ligands (GDNF, CCL2) and soluble receptors (GFRα) by Schwann cells (SC) (*J Natl Cancer Inst, 2010; PNAS, 2014, Mol Cancer Res,*

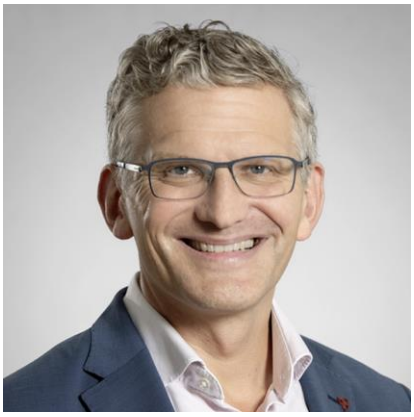
2015, Mol Cancer Res, 2020). The team identified that SCs in cancer-invaded nerves release ligands that disrupt cancer clusters enabling single cell dispersion and migration (*J Clin Invest, 2016*). In 2022, Dr. Wong published a groundbreaking study, identifying Schwann cells as a driving force facilitating pancreatic cancer invasion (Deborde *et al.*, *Cancer Discovery*). His team showed that Schwann cells can be reprogrammed by cancer cells to collectively organize into tracks that enable cancer cell spread. His study revealed a complex mechanobiological process in which the cancer cells migrate through the tumor-activated Schwann cell tracks (TAST). His team also showed that cancer cells utilize an amoeboid form of migration to migrate rapidly along nerves (Marcadis *et al. PNAS, 2023*). In 2025, his team identified the involvement of sympathetic nerves in tumor axonogenesis, which promotes adenoid cystic carcinoma progression (Chen *et al. J Exp Med*). Dr. Wong also co-authored key reviews in cancer neuroscience.

Through his research in PNI and tumor innervation, Dr. Wong has worked to advance research in cancer neuroscience.

Cancer neuroscience of brain metastasis

May 21st, 2026

Frank Winkler, MD, PhD



Prof. Dr. Frank Winkler is a Professor of Neuro-Oncology at Heidelberg University Faculty of Medicine, Managing Senior Physician at the Department of Neurology of Heidelberg University Hospital, where he treats patients with brain tumors, and a pioneer and leader in the field of Cancer Neuroscience.

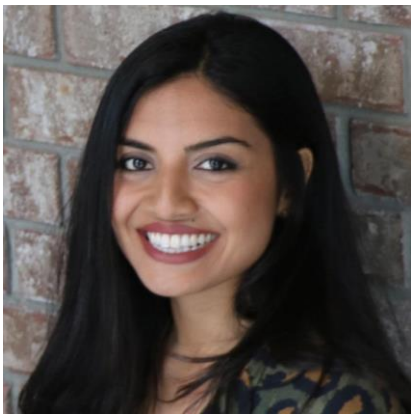
Prof. Dr. Winkler leads a research laboratory at the German Cancer Research Center (DKFZ). His laboratory employed neuroscientific methods to develop a fundamentally new

understanding of the most malignant brain tumors in adults, glioblastomas and brain metastases. Key discoveries of this work have helped to establish the new research field of Cancer Neuroscience. Those include malignant multicellular tumor networks that are highly functional and resistant, driven by neurodevelopmental factors, including pacemaker-like tumor cells in network hubs, and excitatory synapses between brain neurons and various incurable brain tumor entities that fuel brain tumor growth, invasion, and metastasis. Prof. Winkler translates his pioneering work in Cancer Neuroscience into novel, neuroscience-instructed cancer therapies. He has initiated clinical trials that investigate how disconnections of neuro-cancer networks can better control brain tumors in humans.

Prof. Winkler has been using state-of-the-art microscopy to decipher the cellular mechanisms of primary and secondary brain tumor outgrowth. In 2019, Prof. Winkler published paradigm-shift findings showing functional synaptic interactions between neurons and cancer cells originating from the brain. His team and colleagues recently discovered that these synaptic connections are also present between the neurons and cancer cells originating from outside the brain. This discovery represents a fundamental breakthrough in understanding brain metastatic colonization (Venkatarmani et al, *bioRxiv* 2024).

Prof. Winkler is the recipient of the Brain Prize 2025 for his groundbreaking research and clinical work that created the foundation for the emerging field of Cancer Neuroscience.

Humsa Venkatesh, PhD



Dr. Venkatesh is an assistant Professor of Neurology and an associate scientist at the Brigham and Women's Hospital and Harvard Medical School.

Dr. Venkatesh leads a laboratory that investigates the reciprocal interactions between the central nervous system and brain cancers. Her work emphasizes the electrical components

of glioma pathophysiology and highlights the extent to which the brain and its neurons can control and facilitate disease progression. The understanding of these co-opting mechanisms has led to novel strategies to broadly treat cancers by disabling their ability to electrically integrate into neural circuitry. Her pioneering efforts in this emerging field of cancer neuroscience aim to harness the systems-level microenvironmental dependencies of tumor growth to develop innovative therapeutic treatments. In addition to primary brain tumors, Dr. Venkatesh studies brain metastases. Her team aims to understand the mechanisms through which non-glial-derived malignant cells interact with their microenvironment and clarify how metastatic cells engage with neurons within the supportive brain niche. The team further aims to understand the mechanisms by which electrical inputs facilitate metastatic colonization.

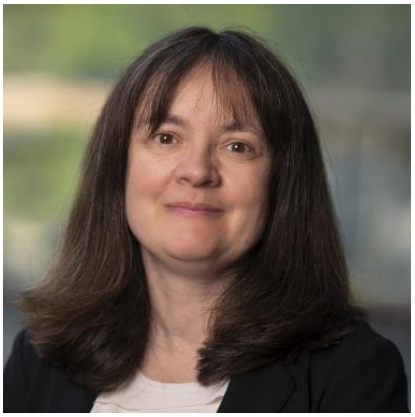
Dr. Venkatesh received her undergraduate degree in Chemical Biology from the University of California, Berkeley, and her PhD in Cancer Biology from Stanford University. After completing her postdoctoral work, she joined the Stanford faculty in 2019 before starting her Cancer Neuroscience research program. During her postdoctoral fellowship in the laboratory of Dr. Michelle Monje, Dr. Venkatesh published groundbreaking work uncovering bidirectional neuron-glioma communications, leading to new avenues for therapeutic approaches.

She has been recognized by the MIT Technology Review as a Pioneer Under 35 'TR35' (2018), by Genetic Engineering News as a 'Top 10 innovator to watch under 40' (2019), and won the Science & SciLife Prize for Young Scientists (2019).

Psychological stress fueling metastatic colonization

June 11th, 2026

Mikala Egeblad, PhD



Dr. Egeblad is an internationally-recognized cancer researcher who studies how the tumor microenvironment—the immune cells, blood vessels, chemical signals, and support matrix surrounding a tumor—regulates cancer initiation, progression, and metastasis. Dr. Egeblad's ultimate goal is to help cancer patients mitigate their risk of recurrence and metastasis, and her work holds promise for potential future treatment options.

While most microenvironments help tumors grow and metastasize, some can restrict tumors. Dr. Egeblad investigates how to target the bad microenvironments and support the good ones to prevent metastatic spread. She examines the functions of immune cells known as myeloid cells, how different types of myeloid cells are recruited to tumors, and how signals between the myeloid cells and cancer cells or other immune cells influence cancer progression, including metastasis, as well as response to chemotherapy. Dr. Egeblad has been a driving force in identifying the mechanisms by which neutrophils—a specific type of myeloid cell—influence cancer progression, and specifically how neutrophil extracellular traps can promote cancer recurrence and metastasis. A current line of research involves learning more about how the brain regulates the immune system to combat cancer.

Dr. Egeblad and her team uncovered a complex mechanism linking chronic stress to metastasis development. Chronic stress and depression are associated with poor outcomes in cancer patients. The team deciphered the stress-induced changes occurring in the host environment that prepare the terrain for the disseminated cancer cells to grow and form metastases. The strength of this study is to depict a comprehensive and whole-body picture of the metastatic process, bridging psychological pressure to immune system function, circadian rhythm dysregulation, and cancer metastases. This study provides an innovative perspective and a solid ground to explore new avenues for metastasis prevention (He *et al*. *Cancer Cell* 2024).

Dr. Egeblad joined Johns Hopkins University as a Bloomberg Distinguished Professor in 2023 from the Cold Spring Harbor Laboratory.

Xueyan He, PhD

Dr. He obtained her Ph.D. from Nanjing University in 2015, where she discovered a novel non-cell-autonomous function of myeloid p53 in suppressing inflammation-driven tumors and revealing unexpected functions of signal peptides in the assembly of glutamate receptors.

In 2016, she joined Dr. Mikala Egeblad's lab at Cold Spring Harbor Laboratory for her postdoctoral training. There, she expanded her expertise to the tumor microenvironment, investigating how myeloid cells—such as neutrophils, macrophages, and dendritic cells—orchestrate immune surveillance. Her most notable work uncovered how stress-induced neutrophil extracellular traps (NETs) promote breast cancer metastasis by altering the lung microenvironment. This transformative discovery opened a new research direction focusing systemic effects,--chronic stress--, in cancer progression.

In October 2023, Dr. He joined Washington University in St. Louis as an Assistant Professor, where she continues her research on stress and cancer progression. Her current research investigates how behavioral stress impacts gut disorders—such as colitis and colorectal cancer—with a focus on the dynamic interplay between stress, the enteric nervous system and colorectal cancer metastasis.