HUMAN ONCOLOGY & PATHOGENESIS PROGRAM

The Marc Ladanyi Lab

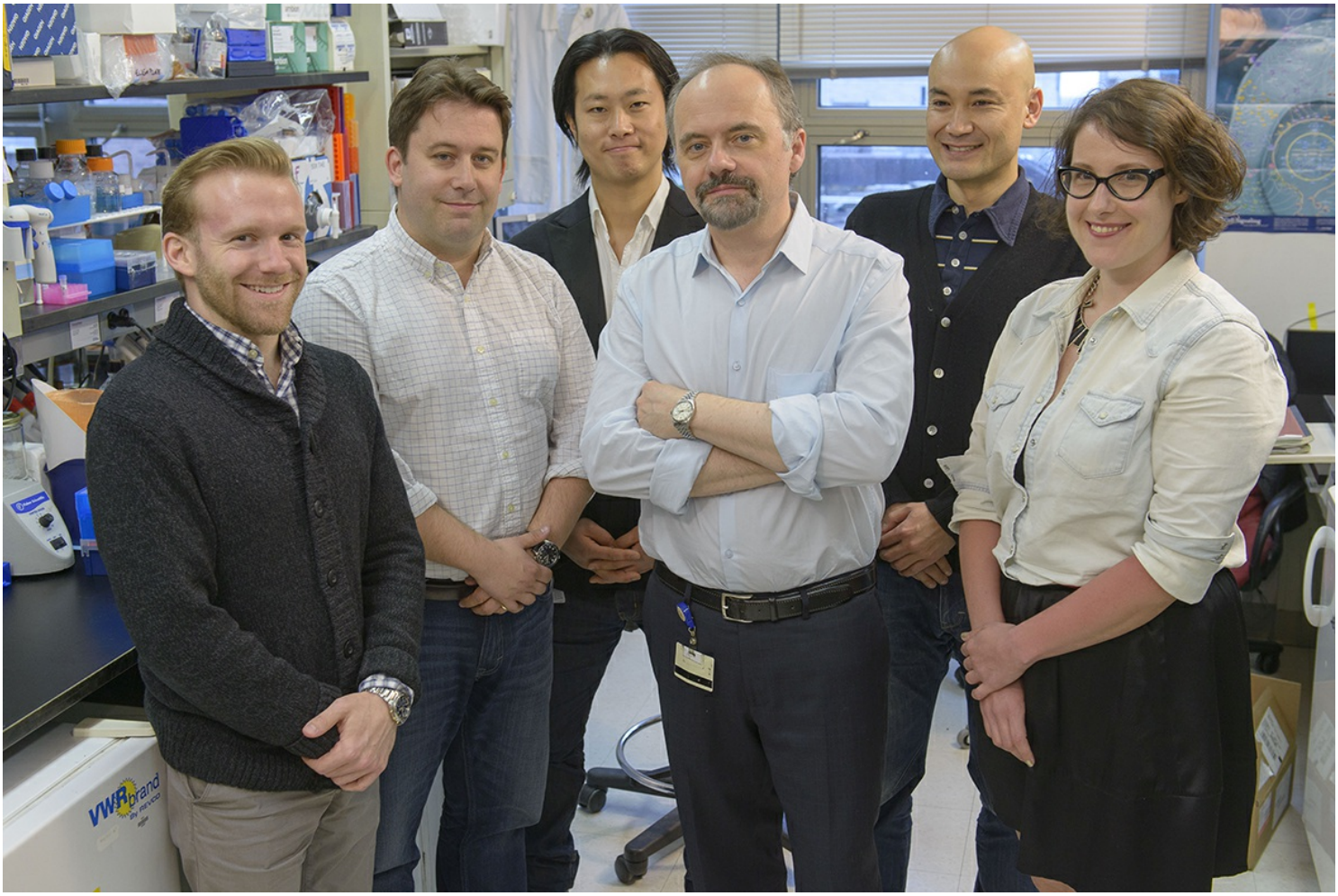
Research

Marc Ladanyi, MD

Professor

The research program in this laboratory focuses on the genomics and molecular pathogenesis of sarcomas and thoracic malignancies, with an emphasis on clinical translation of potential diagnostic markers and therapeutic targets. Dr. Ladanyi also co-directs (with Chris Sander) the Genome Data Analysis Center at Memorial Sloan Kettering, which is part of the TCGA project network.

Examples of recent contributions include the validation of *DUSP4* as a driver gene for 8p losses in *EGFR*-mutant lung adenocarcinomas, the establishment of methods for enhanced detection of the EGFR T790M secondary mutation in the setting of acquired resistance to EGFR inhibitors, the discovery of *BAP1* mutations in mesotheliomas with 3p losses, the identification of novel, recurrent *HEY1-NCOA2* and *KIF5B-RET* fusions in mesenchymal chondrosarcoma and lung adenocarcinoma, respectively, both based on mining of exon-level expression data, as well as major involvement in the TCGA Network marker papers on the genomics of glioblastoma, ovarian carcinoma, and squamous lung cancer. Ongoing projects are addressing further questions in lung adenocarcinoma, mesothelioma, and several sarcoma types using whole exome and whole transcriptome sequencing, ChIP-seq, Sequenom mass spectrometry genotyping, NanoString expression profiling, RNAi screens, chemical screens, and proteomic approaches.



Ladanyi lab

Featured News

IN THE CLINIC

A Perfect Match: Molecular Tests Developed at MSK Guide Personalized Treatment for Lung Cancer

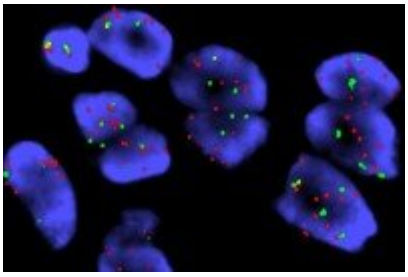
For personalized treatment to work, it's important to analyze each person's tumor for genetic mutations and find the best drugs to target those mutations.

IN THE LAB

What Was MSK's Role in TCGA, the Groundbreaking Cancer Genomic Study?

The multicenter project, which yielded dozens of scientific papers on more than 30 different kinds of cancer, has officially drawn to a close.

IN THE LAB



Scientists Pinpoint a New Cause of Resistance to EGFR-Targeting Drugs

Multiple copies of a gene called YES1 appear to be responsible for certain precision drugs losing their effectiveness.

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Publications

Odintsov I, Somwar R, Ladanyi M, Drilon A. (2021). ROS1 at the Crossroads of Clinical Oncology, Molecular Diagnostics, and Drug Development. JCO oncology practice, 17(1), 15–16.

Hayashi T, Desmeules P, Smith RS, Drilon A, Somwar R, Ladanyi M. (2018). RASA1 and NF1 are Preferentially Co-Mutated and Define A Distinct Genetic Subset of Smoking-Associated Non-Small Cell Lung Carcinomas Sensitive to MEK Inhibition. Clinical cancer research : an official journal of the American Association for Cancer Research, 24(6), 1436–1447.

Fan PD, Narzisi G, Jayaprakash AD, Venturini E, Robine N, Smibert P, Germer S, Yu HA, Jordan EJ, Paik PK, Janjigian YY, Chaft JE, Wang L, Jungbluth AA, Middha S, Spraggon L, Qiao H, Lovly CM, Kris MG, Riely GJ, Politi K, Varmus H, Ladanyi M. (2018). YES1 amplification is a mechanism of acquired resistance to EGFR inhibitors identified by transposon mutagenesis and clinical genomics. Proceedings of the National Academy of Sciences of the United States of America, 115(26), E6030–E6038.

Shukla N, Somwar R, Smith RS, Ambati S, Munoz S, Merchant M, D'Arcy P, Wang X, Kobos R, Antczak C, Bhinder B, Shum D, Radu C, Yang G, Taylor BS, Ng CK, Weigelt B, Khodos I, de Stanchina E, Reis-Filho JS, Ouerfelli O, Linder S, Djaballah H, Ladanyi M. (2016). Proteasome Addiction Defined in Ewing Sarcoma Is Effectively Targeted by a Novel Class of 19S Proteasome Inhibitors. Cancer research, 76(15), 4525–4534.

Spraggon L, Martelotto LG, Hmeljak J, Hitchman TD, Wang J, Wang L, Slotkin EK, Fan PD, Reis-Filho JS, Ladanyi M. (2017). Generation of conditional oncogenic chromosomal translocations using CRISPR-Cas9 genomic editing and homology-directed repair. The Journal of pathology, 242(1), 102–112.

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People

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Molecular pathologist Marc Ladanyi studies the molecular pathogenesis of sarcomas, lung cancer, and mesothelioma.

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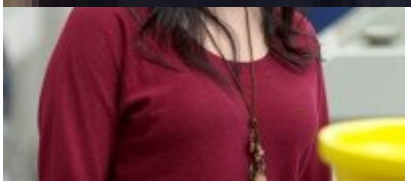

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Doctors and faculty members often work with pharmaceutical, device, biotechnology, and life sciences companies, and other organizations outside of MSK, to find safe and effective cancer treatments, to improve patient care, and to educate the health care community.

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Marc Ladanyi discloses the following relationships and financial interests:

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