Gerstner Sloan Kettering
Graduate School of Biomedical Sciences

HUMAN ONCOLOGY & PATHOGENESIS PROGRAM

The Ross Levine Lab

Research

Ross L. Levine, MD
Senior Vice President, Memorial Hospital, Translational Research

Professor

The goal of our research is to improve our understanding of the genetic basis of blood disorders known as myeloid malignancies, and to use this knowledge to improve therapies for patients with these disorders. Our efforts are focused on the identification and characterization of somatic mutations in hematologic malignancies using candidate gene, genome-wide, and functional approaches, with a specific interest in

the role of aberrant signal transduction in malignant transformation and in the effects of mutations in epigenetic modifiers in myeloproliferative neoplasms (MPNs) and acute myeloid leukemia (AML). As a physician-scientist, we have a specific interest in translating this knowledge back to the clinic, in the preclinical and clinical evaluation of targeted therapies for leukemia patients, and in the development of clinically tractable genomic assays for patients with hematologic malignancies.

The Levine Lab

Featured News

IN THE LAB

AACR 2021 Research Roundup: Chromosomal Instability, Early Changes in Blood Cancer, Revamping CAR T Cell Therapy

MSK researchers shared their latest research developments at the 2021 meeting of the American Association for Cancer Research.

IN THE LAB

Single-Cell Study Sheds Light on Leukemia's Family Tree

New research looks at how a series of mutations in normal blood cells can lead to them becoming cancerous and how these mutations accumulate as cancer progresses.

FINDING

Why Do Certain Chemotherapies Increase the Likelihood of Blood Cancer?

New research focuses on clonal hematopoiesis, an age-related blood condition that increases the risk of blood cancer.

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Publications Highlights

Dunbar A.J., Bowman R.L., Park Y.C., O'Connor K., Izzo F., Myers R.M., Karzai A., Zaroogian Z., Kim W.J., Fernandez-Maestre I., Waarts M.R., Nazir A., Xiao W., Codilupi T., Brodsky M., Farina M., Cai L., Cai S.F., Wang B., An W., Yang J.L., Mowla S., Eisman S.E., Hanasoge Somasundara A.V., Glass J.L., Mishra T., Houston R., Guzzardi E., Martinez Benitez A.R., Viny A.D., Koche R.P., Meyer S.C., Landau D.A., Levine R.L. Jak2V617F Reversible Activation Shows Its Essential Requirement in Myeloproliferative Neoplasms. Cancer Discov. 2024 Jan 12. doi: 10.1158/2159-8290.CD-22-0952. Epub ahead of print.

Stonestrom A.J., Menghrajani K.N., Devlin S.M., Franch-Expósito S., Ptashkin R.N., Patel S.Y., Spitzer B., Wu X., Jee J., Sánchez Vela P., Milbank J.H., Shah R.H., Mohanty A.S., Brannon A.R., Xiao W., Berger M.F., Mantha S., Levine R.L. High-risk and silent clonal hematopoietic genotypes in patients with nonhematologic cancer. Blood Adv. 2024 Feb 27;8(4):846-856. doi: 10.1182/bloodadvances.2023011262. PMCID: PMC10875331.

Perner F., Stein E.M., Wenge D.V., Singh S., Kim J., Apazidis A., Rahnamoun H., Anand D., Marinaccio C., Hatton C., Wen Y., Stone R.M., Schaller D., Mowla S., Xiao W., Gamlen H.A., Stonestrom A.J., Persaud S., Ener E., Cutler J.A., Doench J.G., McGeehan G.M., Volkamer A., Chodera J.D., Nowak R.P., Fischer E.S., Levine R.L., Armstrong S.A., Cai S.F. MEN1 mutations mediate clinical resistance to menin inhibition. Nature. 2023 Mar;615(7954):913-919. doi: 10.1038/s41586-023-05755-9. Epub 2023 Mar 15. PMCID: PMC10157896.

Dunbar A.J., Kim D., Lu M., Farina M., Bowman R.L., Yang J.L., Park Y., Karzai A., Xiao W., Zaroogian Z., O'Connor K., Mowla S., Gobbo F., Verachi P., Martelli F., Sarli G., Xia L., Elmansy N., Kleppe M., Chen Z., Xiao Y., McGovern E., Snyder J., Krishnan A., Hill C., Cordner K., Zouak A., Salama M.E., Yohai J., Tucker E., Chen J., Zhou J., McConnell T., Migliaccio A.R., Koche R., Rampal R., Fan R., Levine R.L., Hoffman R. CXCL8/CXCR2 signaling mediates bone marrow fibrosis and is a therapeutic target in myelofibrosis. Blood. 2023 May 18;141(20):2508-2519. doi: 10.1182/blood.2022015418. PMCID: PMC10273167.

Miles L.A., Bowman R.L., Merlinsky T.R., Csete I.S., Ooi A.T., Durruthy-Durruthy R., Bowman M., Famulare C., Patel M.A., Mendez P., Ainali C., Demaree B., Delley C.L., Abate A.R., Manivannan M., Sahu S., Goldberg A.D., Bolton K.L., Zehir A., Rampal R., Carroll M.P., Meyer S.E., Viny A.D., Levine R.L. Single-cell mutation analysis of clonal evolution in myeloid malignancies. Nature. 2020 Nov;587(7834):477-482. doi: 10.1038/s41586-020-2864-x. Epub 2020 Oct 28. PMCID: PMC7677169.

View All Publications

People

Ross L. Levine, MD

Senior Vice President, Memorial Hospital, Translational Research

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Mechanisms of genetic and epigenetic cooperativity which drive myeloid transformation; Elucidating and modeling evolution from hematopoietic stem/progenitor cells to clonal hematopoiesis and then to myeloid malignancies; Identification and credentialing novel therapeutic dependencies in myeloid malignancies

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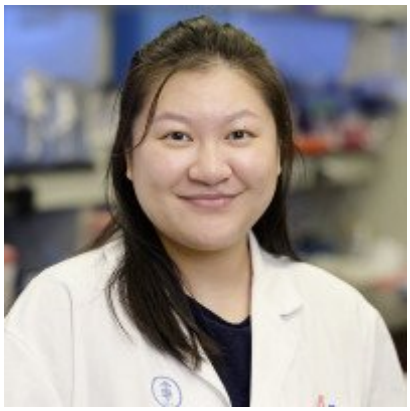

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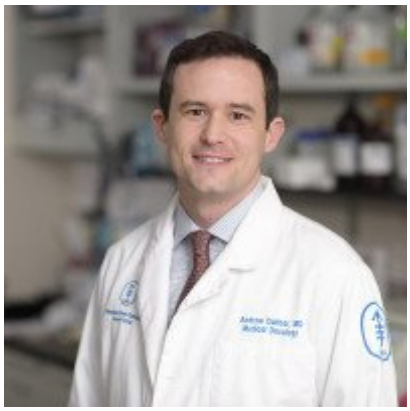

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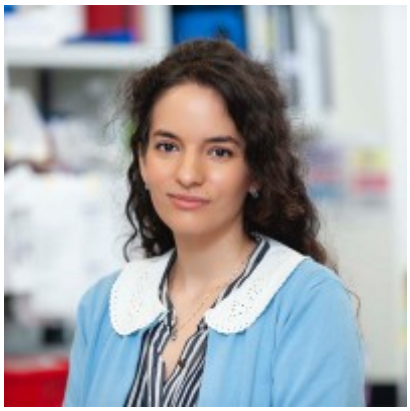

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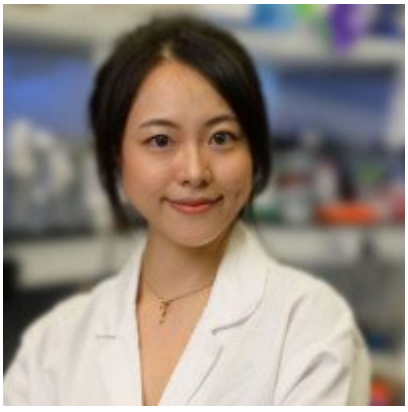

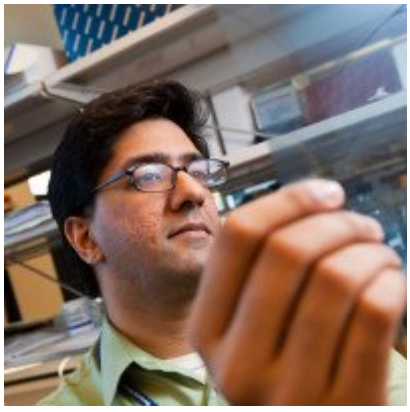

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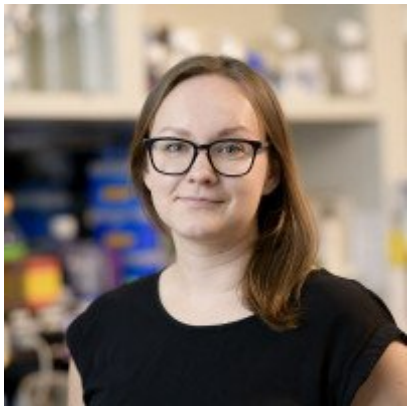

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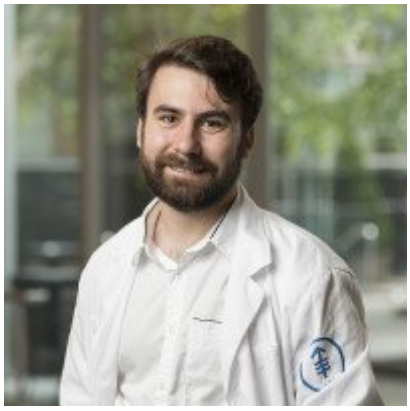

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Research Scholar

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Lab Alumni

+

Lab Affiliations

+

Achievements

Scholar, Leukemia and Lymphoma Society Scholar (2012)

Louis and Allston Boyer Young Investigator Award for Basic Research, Memorial Sloan Kettering Cancer Center (2011)

Member, American Society of Clinical Investigation (2011)

Sir William Osler Young Investigator Award, Interurban Clinical Club (2011)

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Disclosures

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.

MSK requires doctors and faculty members to report (“disclose”) the relationships and financial interests they have with external entities. As a commitment to transparency with our community, we make that information available to the public.

Ross L. Levine discloses the following relationships and financial interests:

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AstraZeneca

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