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

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. PMID: 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 tomenin inhibition. *Nature.* 2023 Mar;615\(7954\):913-919. doi: 10.1038/s41586-023-05755-9. Epub 2023 Mar 15. PMID: 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. PMID: 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. PMID: PMC7677169.](#)

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People



Ross L. Levine, MD

Senior Vice President, Memorial Hospital, Translational Research

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

MD, Johns Hopkins School of Medicine

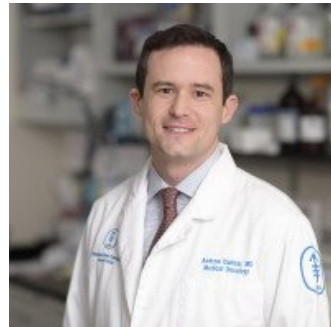
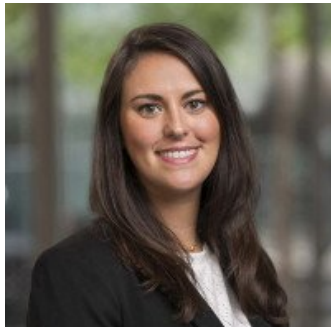
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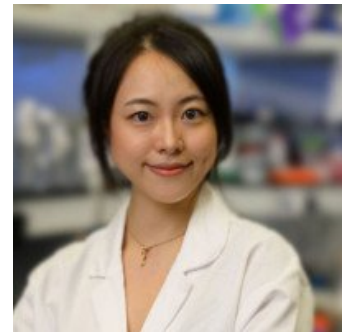


Remie Houston
Research Technician

Bing Li
Visiting Investigator



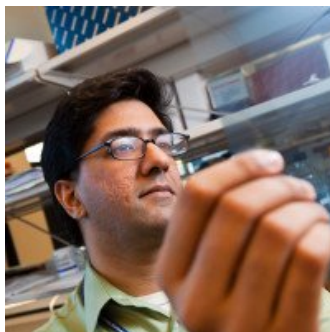
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Assistant Attending

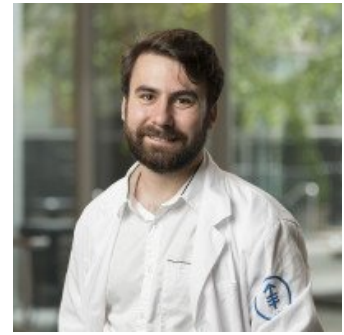


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Lab Alumni
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Lab Affiliations
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Achievements

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

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