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Memorial Sloan Kettering
Cancer Center

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CANCER BIOLOGY & GENETICS PROGRAM

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The Scott Lowe Lab

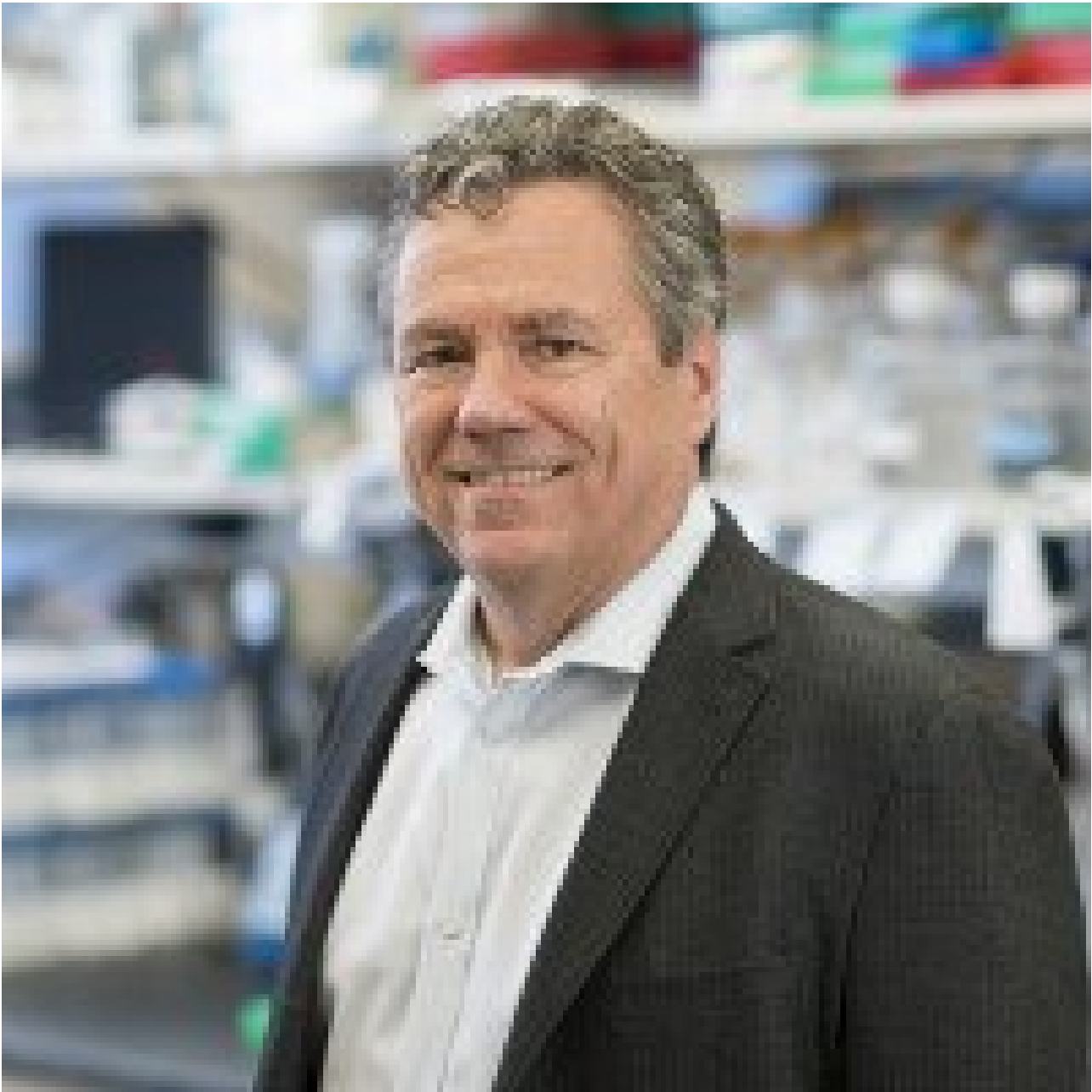


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Scott W. Lowe, PhD
Chair, Cancer Biology & Genetics Program, SKI; Chair, Geoffrey Beene Cancer Research Center;
Investigator, Howard Hughes Medical Institute

About the Scott Lowe Lab

Cancer biologist Scott Lowe uses genetically engineered mouse models to study how the genetic alterations in cancer cells contribute to tumorigenesis, alter treatment response, and create molecular vulnerabilities that may be targeted therapeutically.

Cancer arises through an evolutionary process whereby normal cells acquire mutations that erode

growth controls. Still, cancer is not an inevitable consequence of mutation, but is kept in check by intrinsic tumor-suppressor programs activated in damaged cells. We study such programs to reveal, and ultimately exploit, the strategies nature uses to combat cancer.

Our early studies focused on *cell-intrinsic* programs that prevent tumorigenesis (e.g., apoptosis, senescence), and have broadened to *cell-extrinsic* mechanisms (e.g., immune surveillance). New areas of interest include how tumor-suppressive programs are blunted by environmental factors known to increase cancer incidence (e.g., obesity, aging) and how excessive activation of tumor-suppressive programs (e.g., senescence) can harm function of normal tissue. To gain a mechanistic understanding of these phenomena, we apply mouse models in which cancer arises in an intact tissue ecosystem, which is a long-standing strength of our program. Our affiliation with Memorial Sloan Kettering Cancer Center enables us to probe human systems as well.

Another major goal is to harness our knowledge of tumor suppression therapeutically. We and others have shown that reengaging tumor-suppressive programs in established cancer cells can coordinate tumor regression through both cell-intrinsic and cell-extrinsic components (1-5), so these programs represent attractive strategies for tumor control. With Michel Sadelain, we have also developed a cell therapy approach to remove excessive senescent cells from tissues (6); this therapy may have beneficial effects on cancer and non-cancer pathologies. Advancing these concepts are major goals of our current research.

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[View Lab Overview \(https://www.mskcc.org/research/ski/labs/scott-lowel/overview\)](https://www.mskcc.org/research/ski/labs/scott-lowel/overview)

Research Projects

- [Developing Technologies that Reveal New Biology](#)
- [The p53 Tumor Suppressor Network](#)
- [Understanding and Targeting Cellular Senescence](#)
- [Gene-Environment Interactions in Cancer Initiation and Progression](#)

VIDEO | 02:17

Go inside the lab of Scott Lowe from SKI's Cancer Biology & Genetics Program.

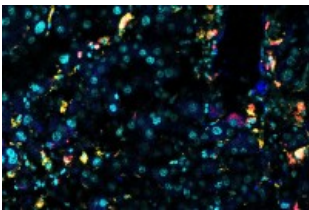
[Video Details \(https://www.mskcc.org/videos/inside-my-lab-scott-lowel\)](https://www.mskcc.org/videos/inside-my-lab-scott-lowel)



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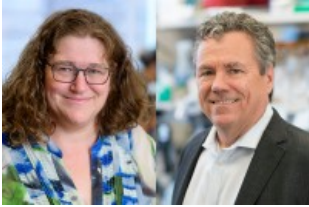
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Featured News



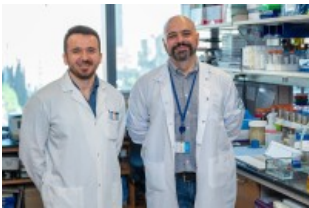
[CAR T Cells Show Promise Against Age-Related Diseases in Mice](#)

Laboratory research led by MSK and Cold Spring Harbor Laboratory demonstrates the potential for CAR T cells to improve “healthspan” by eliminating senescent cells associated with aging-related diseases.



[Expansion of Cell-to-Cell Communication Drives the Early Development of Pancreatic Cancer, New Research in Mice Finds](#)

New MSK research combined sophisticated genetically engineered mouse models and advanced computational methods to map the earliest cell states leading to pancreatic ductal adenocarcinoma (PDAC), the most common type of pancreatic cancer.



[New MACHETE Technique Slices Into Cancer Genome To Study Copy Number Alterations](#)

Learn why MSK researchers developed MACHETE, a new CRISPR-based technique to study large-scale genetic deletions efficiently in laboratory models.

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Publications Highlights

[Metabolic adaptations direct cell fate during tissue regeneration](#)

Chaves-Perez A, Millman SE, Janaki-Raman S, Ho YJ, Hinterleitner C, Barthelet VJA, Morris JP 4th, Barriga FM, Reyes J, Kyaw A, Pasolli HA, Pe'er D, Thompson CB, Finley LWS, Cross JR, Lowe SW. Metabolic adaptations direct cell fate during tissue regeneration. *Nature*. 2025 Jul;643(8071):468-477. doi: 10.1038/s41586-025-09097-6. Epub 2025 Jun 11. Erratum in: *Nature*. 2025 Jul;643(8072):E15. doi: 10.1038/s41586-025-09294-3. PMID: 40500453; PMCID: PMC12240837.

[Epigenetic plasticity cooperates with cell-cell interactions to direct pancreatic tumorigenesis.](#)

Burdziak C, Alonso-Curbelo D, Walle T, Reyes J, Barriga FM, Haviv D, Xie Y, Zhao Z, Zhao CJ, Chen HA, Chaudhary O, Masilionis I, Choo ZN, Gao V, Luan W, Wuest A, Ho YJ, Wei Y, Quail DF, Koche R, Mazutis L, Chaligné R, Nawy T, Lowe SW, Pe'er D. *Science*. 2023 May 12;380(6645):eadd5327. doi: 10.1126/science.add5327. Epub 2023 May 12. PMID: 37167403

[Senescence Rewires Microenvironment Sensing to Facilitate Antitumor Immunity.](#)

[View All Publications](#)

People

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- PhD, Massachusetts Institute of Technology

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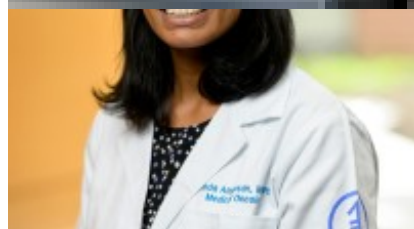
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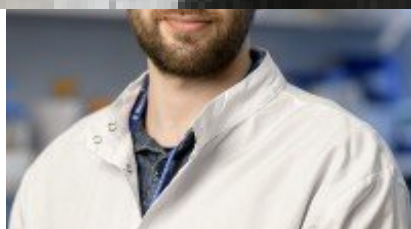
Members

Lab

Alumni



Brinda Alagesan



Valentin Barthet

Postdoctoral Researcher

Lab Affiliations

Open Positions

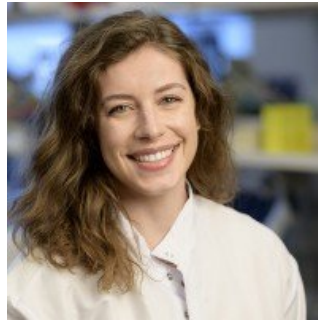
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To learn more about compensation and benefits for postdoctoral researchers at MSK, please visit [Resources for Postdocs](#)



Lynn Boss
Administrative Coordinator



Andrea Chaikovsky
Postdoctoral Researcher



Almudena Chaves Perez
Postdoctoral Researcher

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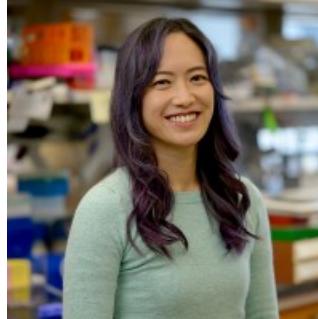
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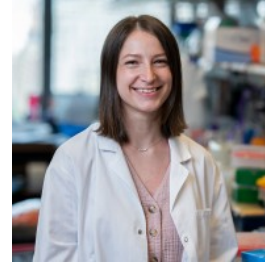
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 [_Lowe Lab](#)

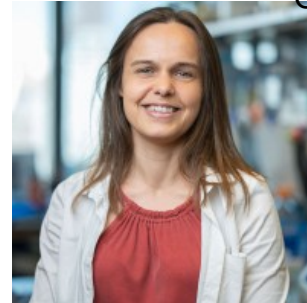
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Joyce Chen
Medical Oncology Fellow



Isabella Del Priore
Graduate Student



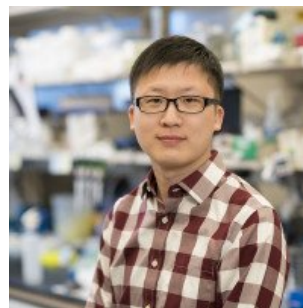
Aveline Filliol
Lead Program Manager **Lab Resources**



Hailey V. Goldberg
Graduate Student



Clemens Hinterleitner
Postdoctoral Researcher



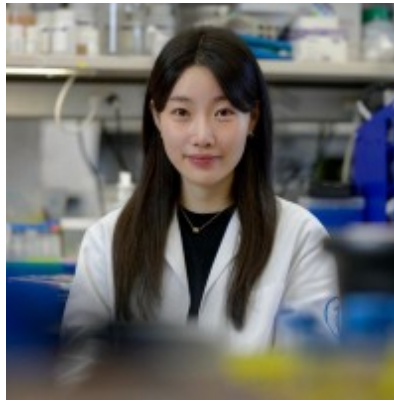
Yu-Jui (Ray) Ho
Computational Biologist

Disclosures

Members of the MSK Community 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. These activities outside of MSK further our mission, provide productive collaborations, and promote the practical application of scientific discoveries.

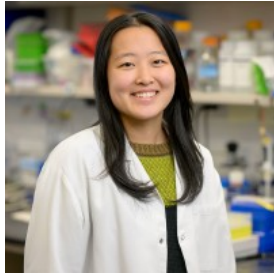
MSK requires doctors, faculty members, and leaders to report (“disclose”) the relationships and



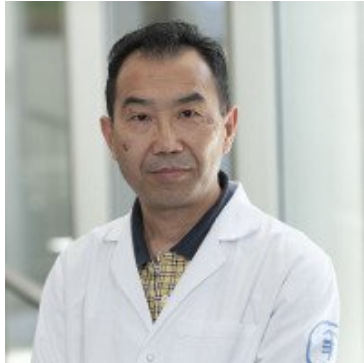
Minseo Kim
Weill Cornell Graduate Student

financial interests they have with external entities. As a commitment to transparency with our community, we make that information available to the public.

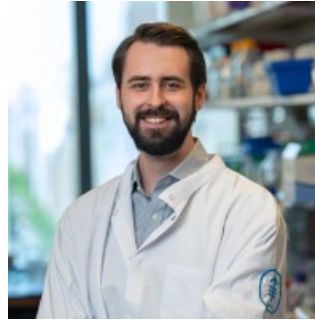
Not all disclosed interests and relationships present conflicts of interest. MSK reviews all disclosed interests and relationships to assess whether a conflict of interest exists and whether formal COI management is needed.



Marguerite Li
Research Technician



Wei Luan
Senior Research Technician



Domhnall McHugh
Postdoctoral Researcher



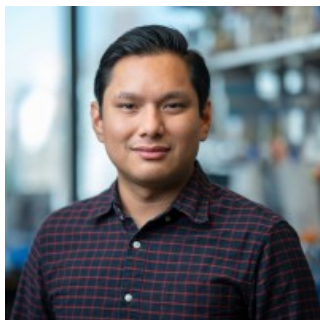
Riccardo Mezzadra
Postdoctoral Researcher

Scott W. Lowe discloses the following relationships and financial interests:

- Algen Intellectual Property Rights
- Blueprint Medicines



Elif Ozelik



Nalin Ratnayeke
Postdoctoral Researcher



José Reyes
Postdoctoral Researcher



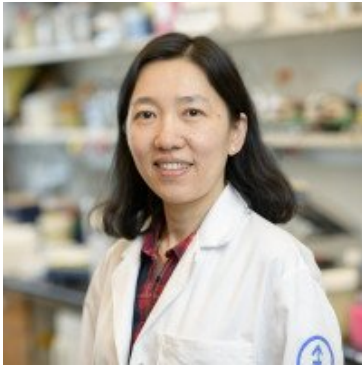
Janelle Simon
Mouse Colony Manager
Therapeutics, Inc

- Equity; Professional Services and Activities
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Sha Tian
Senior Research Technician



Stephanie Tingue
Assistant to Chair



Jadae Watson
MSK Bridge Program Scholar

- Mirimus
Equity; Professional Services and Activities
- Oric Pharmaceuticals
Equity; Professional Services and Activities
- PMV Pharma
Equity; Professional Services and Activities



Zeda Zhang
Postdoctoral Researcher

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