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The Maria Jasin Lab

Developmental Biology Program

Research



Maria Jasin, PhD
William E. Snee Chair

Human chromosomes are constantly assaulted by challenges to their integrity as a result of either environmental agents that damage DNA or from normal DNA metabolism. The failure to repair damaged DNA faithfully is ultimately responsible for many human diseases, especially cancer. This laboratory focuses on the repair of 1 particular lesion in DNA, the double-strand break (DSB). DSBs arise from agents, such as ionizing radiation, and can also occur spontaneously during DNA replication. Our emphasis is on repair of DSBs by homologous recombination, with a particular interest in the role of homologous recombination in maintaining genetic stability. Understanding the repair of DSBs is not only important for basic science and health concerns, but also impacts on molecular genetic manipulations of mammalian genomes.

Research Projects

[Partner Choice in Homologous Recombination: Sister Chromatid Repair, LOH, and Translocations](#)

[Recombination Proteins: Rad51-related and Rad51-associated Proteins](#)

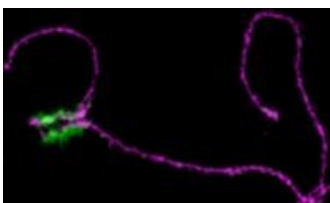
[Homologous Recombination as a Safeguard Against Tumorigenesis](#)

[Germline Recombination in the Mouse](#)



Featured News

IN THE LAB



[Breaking Up Is Hard to Do \(Especially for Sex Chromosomes\)](#)

One's big, one's small. Somehow, they make it work.

IN THE LAB



[Molecular Studies Explain Effectiveness of Longtime Treatment for Prostate Cancer](#)

Laboratory studies have revealed an explanation for why androgen-deprivation therapy makes radiation therapy more effective in the treatment of high-risk prostate cancer.



[Studies Provide New Insight into Fundamental Biological Process](#)

Developmental biologist Maria Jasin studies homologous recombination, which is important in DNA repair and can lead to cancer when it malfunctions.

Publications Highlights

[Prakash R, Sandoval T, Morati F, Zagelbaum J, Lim P, White T, Taylor B, Wang R, Desclos E, Sullivan M, Rein H, Bernstein K, Krawczyk P, Gautier J, Modesti M, Vanoli F, and Jasin M. \(2021\) Distinct pathways of homologous recombination controlled by the SWS1-SWSAP1-SPIDR complex. Nat Commun. doi: 10.1038/s41467-021-24205-6.](#)

[Abreu CM, Prakash R, Romanienko PJ, Roig I, Keeney S, Jasin M. \(2018\) Shu complex SWS1-SWSAP1 promotes early steps in mouse meiotic recombination. Nat Commun. doi: 10.1038/s41467-018-06384-x.](#)

[Egli D, Zuccaro MV, Kosicki M, Church GM, Bradley A, Jasin M. Inter-homologue repair in fertilized human eggs? \(2018\) Nature. doi: 10.1038/s41586-018-0379-5.](#)

[Garcin EB, Gon S, Sullivan MR, Brunette GJ, Cian A, Concordet JP, Giovannangeli C, Dirks WG, Eberth S, Bernstein KA, Prakash R, Jasin M, Modesti M. \(2019\) Differential Requirements for the RAD51 Paralogs in Genome Repair and Maintenance in Human Cells. PLoS Genet. doi: 10.1371/journal.pgen.1008355.](#)

[Feng, W., Jasin, M., \(2017\) BRCA2 suppresses replication stress induced mitotic and G1 abnormalities through homologous recombination. Nat Commun 8:525. doi: 10.1038/s41467-017-00634-0.](#)

[View All Publications](#)

People



Maria Jasin, PhD

William E. Snee Chair

The Jasin laboratory focuses on double-strand break repair and genomic integrity in mammalian cells and the relationship to tumor suppression.

PhD, Massachusetts Institute of Technology

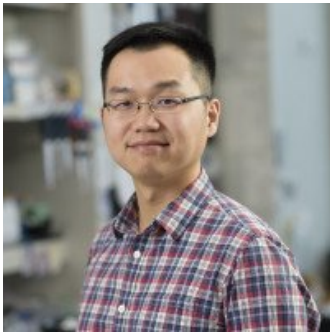
✉ jasinm@mskcc.org

Email Address

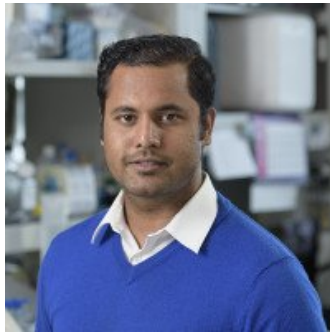
☎ [212-639-7438](tel:212-639-7438)

Office Phone

Members



Pei Xin
Lim
Senior Research Scientist



Darpan Medhi
Senior Research Scientist



Carmen Perez
Calero
Research Scholar



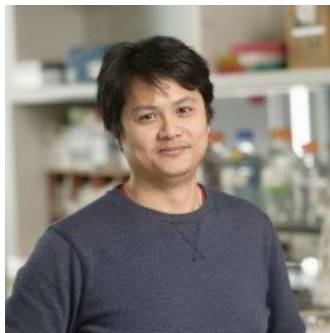
Deepika Prasad
Research Associate



Samantha Regan
Graduate Student (BCMB)



Travis White
Senior Research Scientist



Tai-Yuan
Yu
Senior Research Scientist



Fang
Zhang
Graduate Student (BME)

Lab Alumni
+

Lab Affiliations
+

Achievements

National Academy of Sciences (2015)

National Academy of Medicine (2016)
American Academy of Arts and Sciences (2017)
Basser Global Prize for BRCA Research (2018)
Shaw Prize in Life Science and Medicine (2019)

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+

Get in Touch

✉ jasinm@mskcc.org

Lab Head Email

☎ [212-639-7438](tel:212-639-7438)

Office Phone

☎ [212-639-8384](tel:212-639-8384)

Lab Phone

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.

Maria Jasin discloses the following relationships and financial interests:

Rutgers New Jersey Medical School

Professional Services and Activities

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