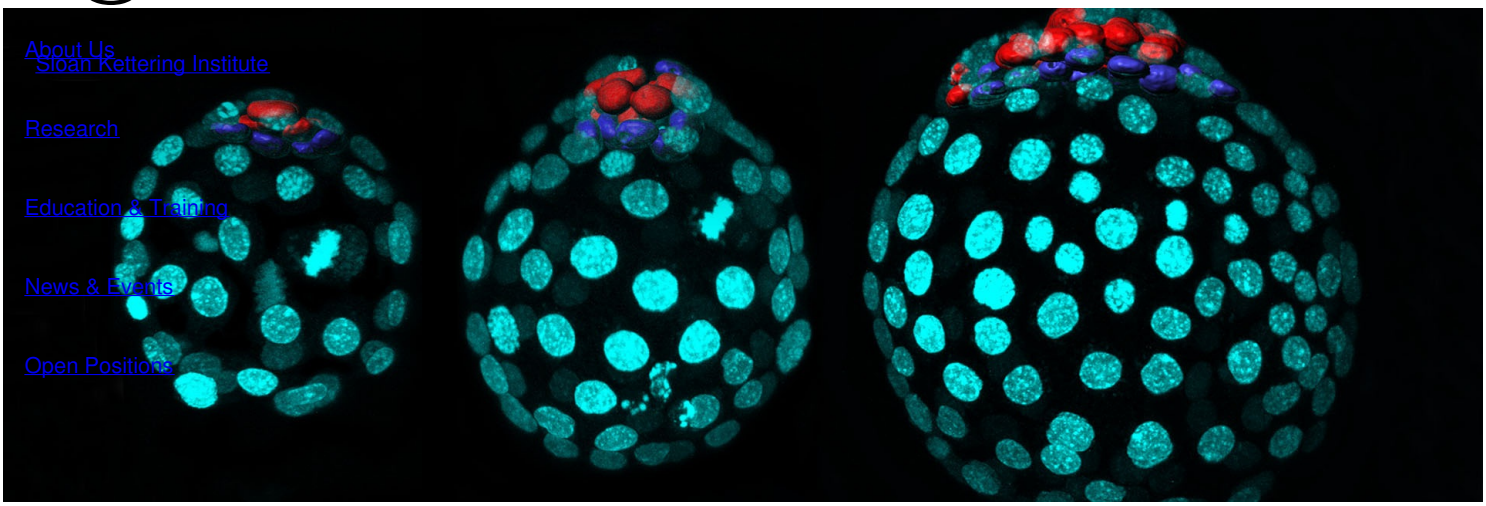
Memorial Sloan Kettering Cancer Center



Developmental Biology Program

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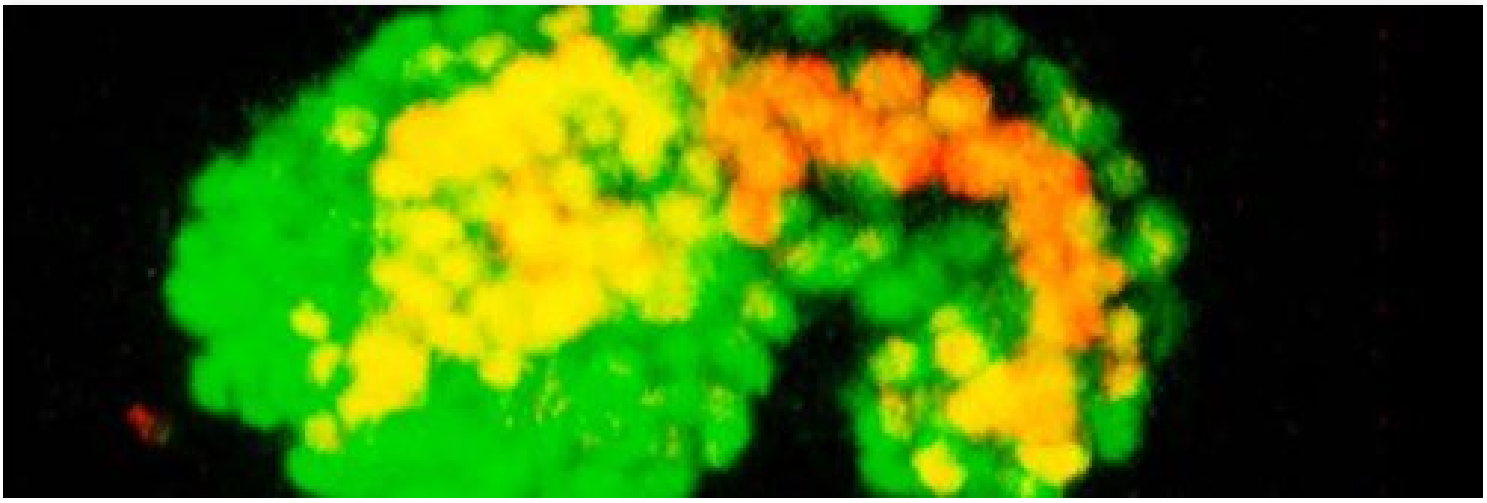
SKI's Developmental Biology Program is one of the most well-regarded and innovative programs of its type in the world, with a rich history of major contributions to the field. Our scientists study the mechanisms that control development from the single cell of the egg to the adult animal. They employ a variety of experimental tools, including genetics, cell biology, and biochemistry, as well as model systems, in order to address complex questions of pattern formation, organogenesis, and morphogenesis in the context of the whole animal. They are leaders in the study of both invertebrate and mammalian development. Several of our faculty participate in the Center for Stem Cell Biology at MSK, which is developing innovative therapies for neurodegenerative diseases like Parkinson's.

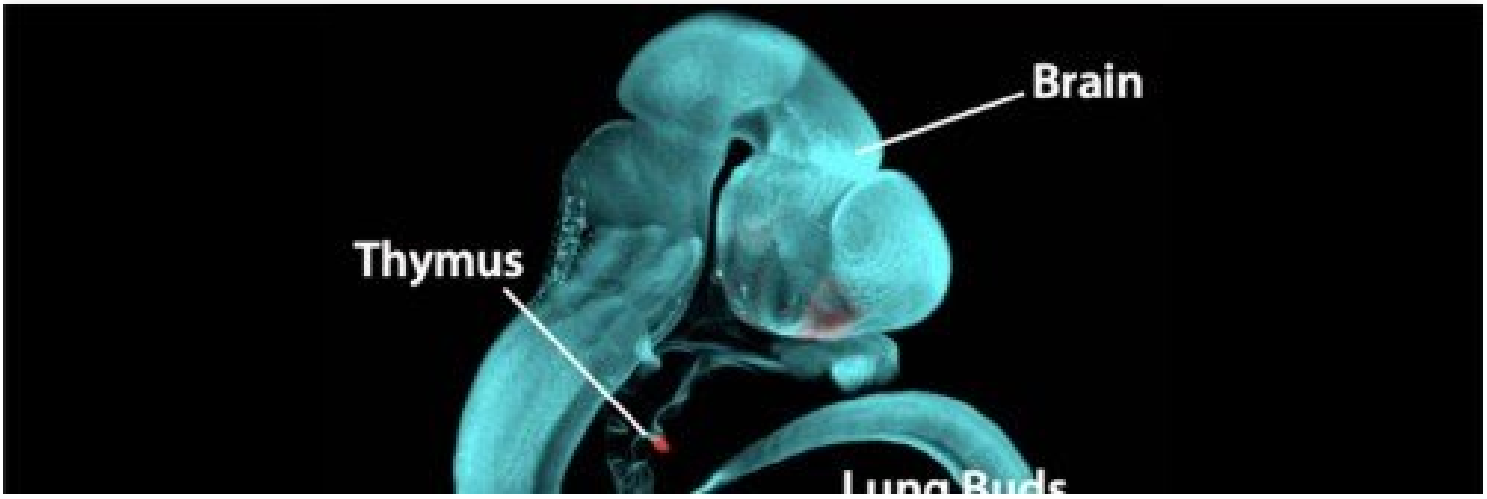
Scientists in the program focus on several different areas, including:

- Developmental Genetics
- Patterning of Tissues and Organs
- Intercellular Signaling in Development and Cancer
- Stem Cells and Organoids



VIDEO | 00:37

A Developing Worm Embryo at Single-Cell Resolution in 3D Over Time



VIDEO | 00:25

Endoderm Development at Single-Cell Resolution in 3D in a Mammalian Embryo

Our Faculty

Anna-Katerina Hadjantonakis, PhD
Chair, Developmental Biology Program
The Hadjantonakis laboratory studies pluripotency, cell lineage commitment, tissue patterning, and morphogenesis in mammalian embryos and in stem cell and organoid models.

Zhirong Bao, PhD
The Bao laboratory investigates how the genome dictates development using C. elegans as a model.

Mary Baylies, PhD
The Baylies laboratory studies the mechanisms that form and maintain muscle both during normal development and in disease.

Junhong Choi, PhD
The Choi Lab develops new synthetic biology tools to study cell-fate decisions in development.

Danwei Huangfu, PhD
The Huangfu laboratory uses human pluripotent stem cells (hPSCs) as a powerful genetic model to interrogate the transcriptional and epigenetic mechanisms underlying cell fate decisions in development and disease.

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

Alexandra Joyner, PhD
The Joyner laboratory studies the involvement of Hedgehog signaling and transcription factors in cerebellum development, regeneration and cancer.

Eric C. Lai, PhD
The Lai laboratory integrates genetics, biochemistry, and genomewide approaches to study diverse regulatory networks during patterning and behavior.

Lorenz Studer, MD
The Studer laboratory investigates human stem cells as tools to understand normal and pathological development in the nervous system and to develop cell-based strategies for regenerative medicine.

Thomas S. Vierbuchen, PhD
The Vierbuchen laboratory directs the differentiation of mouse and human pluripotent stem cells to characterize fundamental mechanisms of neuronal cell fate specification and function.

Jennifer A. Zallen, PhD
The Zallen laboratory focuses on the generation of tissue structure through the collective action of cell populations.

Emeritus and Former Members

Kathryn V. Anderson, PhD

Peter Besmer, PhD

Collaborations & Resources

SKI offers a wide array of core facilities and other technologies, as well as significant opportunity for collaboration. Members of the Developmental Biology Program derive particular benefit from close ties to the following:

- Cancer Biology & Genetics Program
- Computational & Systems Biology Program
- Center for Stem Cell Biology
- Center for Molecular Imaging & Nanotechnology

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