



Unit Director

Pierre Leopold

Unit Deputy Director

Yohanns Bellaïche

The research Unit “Genetics and Developmental Biology” of Institut Curie is composed of nine teams addressing fundamental questions related to the development of organisms and its pathological dysfunctions.

Our action is based on a simple idea: understanding developmental processes and tissue homeostasis is key to understand the etiology of diseases. We study living organisms at different scales ranging from organisms (mouse, zebrafish, Drosophila) to molecular aspects, and including organoids, patient-derived xenografts and cell lines. This variety of approaches enables an integrated analysis from the cell nucleus to the whole organism.

Our research addresses the following themes:

- the acquisition and maintenance of identity of stem cells, germ cells, or specialized somatic cells through cell signaling and transcriptional control
- the control of gene expression by the non-coding genome (ncRNAs, transposons) in normal and pathological conditions
- the role of mechanical forces and cell divisions in building embryos and tissues
- the role of inter-organ communications and systemic signals in tissue growth and homeostasis.

Key publications

Year of publication 2021

Tomasz Chelmicki, Emeline Roger, Aurélie Teissandier, Mathilde Dura, Lorraine Bonneville, Sofia Rucli, François Dossin, Camille Fouassier, Sonia Lameiras, Deborah Bourc'his (2021 Jan 14)

mA RNA methylation regulates the fate of endogenous retroviruses.

Nature : 312-316 : [DOI : 10.1038/s41586-020-03135-1](https://doi.org/10.1038/s41586-020-03135-1)

Year of publication 2020

Jesús M López-Gay, Hayden Nunley, Meryl Spencer, Florencia di Pietro, Boris Guirao, Floris Bosveld, Olga Markova, Isabelle Gaugue, Stéphane Pelletier, David K Lubensky, Yohanns Bellaïche (2020 Oct 16)

Apical stress fibers enable a scaling between cell mechanical response and area in epithelial tissue.

Science (New York, N.Y.) : [DOI : eabb2169](https://doi.org/10.1126/science.1257169)

Al zouabi L and Bardin AJ (2020 Jan 13)

Stem Cell DNA Damage and Genome Mutation the Context of Ageing and Cancer Initiation

Cold Spring Harbor Perspectives in Biology : [DOI : doi: 10.1101/cshperspect.a036210](https://doi.org/10.1101/cshperspect.a036210)

Year of publication 2019

Graindorge A, Pinheiro I, Nawrocka A, Mallory AC, Tsvetkov P, Gil N, Carolis C, Buchholz F, Ulitsky I, Heard E, Taipale M, Shkumatava A (2019 Dec 1)

In-Cell Identification and Measurement of RNA-Protein Interactions

Nature Communications

Roberta Ragazzini, Raquel Pérez-Palacios, Irem H Baymaz, Seynabou Diop, Katia Ancelin, Dina Zielinski, Audrey Michaud, Maëlle Givelet, Mate Borsos, Setareh Aflaki, Patricia Legoix, Pascal W T C Jansen, Nicolas Servant, Maria-Elena Torres-Padilla, Deborah Bourc'his, Pierre Fouchet, Michiel Vermeulen, Raphaël Margueron (2019 Aug 26)

EZH1 constrains Polycomb Repressive Complex 2 activity in germ cells.

Nature communications : 10 : 1-18 : [DOI : 10.1038/s41467-019-11800-x](https://doi.org/10.1038/s41467-019-11800-x)

Julien G Dumortier, Mathieu Le Verge-Serandour, Anna Francesca Tortorelli, Annette Mielke, Ludmilla de Plater, Hervé Turlier, Jean-Léon Maître (2019 Aug 3)

Hydraulic fracturing and active coarsening position the lumen of the mouse blastocyst.

Science (New York, N.Y.) : 465-468 : [DOI : 10.1126/science.aaw7709](https://doi.org/10.1126/science.aaw7709)