



universität
uulm

Physikalisches Kolloquium
Einladung

Physics Colloquium
Invitation

Monday, 18 November 2024

Format: Online via ZOOM, at 16:15

Overall objective: Lighting up the central dogma to dissect how sharp developmental patterns are established

Dr. Mounia Lagha

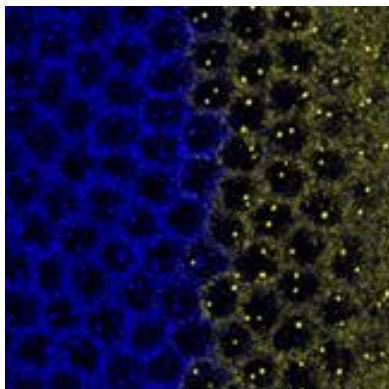
Institut de Génétique Moléculaire de Montpellier,
France

 <http://www.laghalab.com/>



A fundamental question in biology is how cellular processes are so reproducible despite the inherent variations in the chemical reactions governing them. During development of a multicellular organism, precise control of gene expression allows the reproducible establishment of patterns. Our goal is to elucidate the mechanisms responsible for precision in gene expression and to link them to accuracy in cell fate decisions.

My team tackles this question using the early development of *Drosophila* as a model system, during the maternal to zygotic transition. During this critical developmental window, patterns of gene expression are rapidly established with remarkable reproducibility and accuracy. We use quantitative imaging, genetic manipulations, biophysics and mathematical modeling to integrate the dynamic aspects of transcription and translation and examine how they contribute to cell fate decisions.



Recent Publications

Virginia Pimmett, Maria Douaihy, Louise Maillard, Antonio Trullo, Jeremy Dufourt, Helene Lenden, Ovidiu Radulescu and Mounia Lagha (2024) Dissecting the dynamics of coordinated active transcriptional repression in a multicellular organism. BiorXiv. DOI: 10.1101/2024.02.05.577724

Maelle Bellec, Ruoyu Chen, Jana Dhayni, Cyril Favard, Antonello Trullo, Helene Lenden- Hasse, Ruth Lehmann, Edouard Bertrand, Mounia Lagha and Jeremy Dufourt (2024) Boosting the toolbox for live imaging of translation. RNA. DOI: 10.1261/rna.080140.124

Dufourt J*, Bellec M*, Trullo A, Dejean M, De Rossi S, Favard C and Lagha M (2021) Imaging translation dynamics in live embryos reveals spatial heterogeneities. DOI: 10.1126/science.abc3483 . Science

Pimmett V*, Dejean M*, Fernandez C, Trullo A, Bertrand A, Radulescu O and Lagha M (2021) Quantitative imaging of transcription in living *Drosophila* embryos reveals

the impact of core promoter motifs on promoter state dynamics. DOI: 10.1038/s41467-021-24461-6 . Nature Communications

Espinola S*, Gotz M*, Bellec M, Messina O, Fiche J-B, Houbbron C, Dejean M, Reim I, Cardozo Gizzi AM, Lagha M# and Nollmann M# (2021) Cis -regulatory chromatin loops arise before TADs and gene activation, and are independent of cell fate during *Drosophila* development. DOI: 10.1038/s41588-021-00816-z . Nature Genetics

Host: Prof. Dr. Christof Gebhardt, Institute of Experimental Physics

Organisation: Prof. Dr. Jens Michaelis, Institute of Biophysics, jens.michaelis@uni-ulm.de, +49-731-50-23050