

Dr. Jérémy DUFOURT

Born 12 august 1983, Nationality French

Personal address and contacts :

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Research interests:

Dynamics of translation and transcription, genetics, epigenetics, development, small RNAs, piRNAs pathway, transposable element regulations, post-transcriptional gene regulations, embryonic patterning, chromatin organization, RNA regulations and localizations, spatio-temporal gene regulations, transcriptional gene regulations, viral cycle dynamics, viral translation.

Initial training

- **HDR defense** confirmed and scheduled for June 2025.
- **2008 - 2012 PhD thesis in Molecular Biology and Genetics**, in the laboratory of C. Vaury at the GReD Clermont-Ferrand (GReD UMR CNRS 6247, Clermont-Université, INSERM 931) ; Title : Epigenetic regulation of LTR retrotransposons in *Drosophila*.
(PhD defended on the 12th of May 2012 summa cum laude)
- **2007 - 2008 Master's degree in Genetics and Physiology**, University d'Auvergne, Clermont Ferrand France.
(magna cum laude, ranking 2/25)
- **2006 - 2007 Master 1 in Genetics and Physiology**, University d'Auvergne, Clermont Ferrand France.
(magna cum laude, ranking 2/45)
- **2005 – 2006 Bachelor's degree in Genetics**, University d'Auvergne, Clermont Ferrand France.

Postdoctoral studies and Research experience

2022- CRCN CNRS (Commission 24) IRIM Institut de Recherche en Infectiologie de Montpellier UMR 9004 - CNRS / UM (Team MDVA) collaborative mission (Dynamics of viral replication cycle).

2019-2022 CRCN CNRS (Commission 24) IGMM CNRS-UMR 5535 Montpellier, France (Team M. Lagha) (Live imaging of transcription and translation during embryogenesis).

2017- 2019 Postdoctoral studies in Mounia Lagha's laboratory at IGMM CNRS-UMR5535 Montpellier, France. (Live imaging of transcription and translation during embryogenesis).

2012 - Postdoctoral studies in Martine Simonelig's laboratory at IGH CNRS-UPR 1142 Montpellier, France. (Regulation of maternal mRNA by the piRNA pathway).

2008 - 2012 PhD in C. Vaury laboratory, GReD, Clermont-Ferrand France (GReD UMR CNRS 6293, Clermont-University, INSERM 1103). Epigenetic regulation of LTR retrotransposons in *Drosophila*.

Jan - June 2008 Internship in C. Vaury laboratory, GReD, Clermont-Ferrand France (GReD UMR CNRS 6293,

Clermont-University, INSERM 1103). Epigenetic regulation of LTR retrotransposons in *Drosophila*

May - Sept 2007 Internship in K. Jagla team, UMR INSERM 384, Auvergne University, Clermont Ferrand France.
Analysis of *ladybird* regulatory regions in *Drosophila*.

Technical skills

- **Molecular biology** : PCR, qRT-PCR, Cloning, Northern Blot, Western Blot, EMSA, CHIP, ISH, DNA FISH, iCLIP, PAT Assay, RIP, small RNA IP, CRISPR-Cas9, Immunostaining, smFISH, immuno-smFISH.
 - ***Drosophila* genetics, zebrafish genetics.**
 - **Microscopy** : confocal microscopy, lightsheet microscopy, lattice lightsheet microscopy, live imaging of translation, live imaging of transcription, Optogenetics, FRAP, FCS.
 - **Informatics** : Office, Adobe Photoshop, Illustrator, sequence analysis, image treatment (ImageJ, Imaris, Volocity), small RNA sequencing analysis.
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Scientific production

Articles:

- Bellec M, Chen R, Dhayni J, Trullo A, Avinens D, Karaki H, Mazzarda F, Lenden-Hasse H, Favard C, Lehmann R, Bertrand E*, Lagha M, **Dufourt J***. Boosting the toolbox for live imaging of translation. **RNA**. **2024** Sep 16;30(10):1374-1394. doi: 10.1261/rna.080140.124. *Corresponding author (Recipients of the **RNA Journal Prize 2024**)

- Chen R, Stainier W, **Dufourt J**, Lagha M, Lehmann R. Direct observation of translational activation by a ribonucleoprotein granule. **Nat Cell Biol**. **2024** Aug;26(8):1322-1335. doi: 10.1038/s41556-024-01452-5.

- Khalfi P, Denis Z, McKellar J, Merolla G, Chavey C, Ursic-Bedoya J, Soppa L, Szivovics L, Hetzel U, **Dufourt J**, Leyrat C, Goldmann N, Goto K, Verrier E, Baumert TF, Glebe D, Courgnaud V, Gregoire D, Hepojoki J, Majzoub K. Comparative analysis of human, rodent and snake deltavirus replication. **PLoS Pathog**. **2024** Mar 5;20(3):e1012060. doi: 10.1371/journal.ppat.1012060.

- Bellec M, **Dufourt J**, Hunt G, Lenden-Hasse H, Trullo A, Zine El Aabidine A, Lamarque M, Gaskill MM, Faure-Gautron H, Mannervik M, Harrison MM, Andrau JC, Favard C, Radulescu O, Lagha M. The control of transcriptional memory by stable mitotic bookmarking. **Nat Commun**. **2022** Mar 4;13(1):1176. doi: 10.1038/s41467-022-28855-y.

- **Dufourt J***, Bellec M, Trullo A, Dejean M, De Rossi S, Favard C, Lagha M*. Imaging translation dynamics in live embryos reveals spatial heterogeneities. **Science**. **2021** May 21;372(6544):840-844. doi: 10.1126/science.abc3483. Epub 2021 Apr 29.

*Corresponding author

[/ Highlights, france-bioimaging](#)

[/ Recommended as exceptional by Dr R.Singer \(Faculty Opinions\)](#)

- Formicola N, Heim M, **Dufourt J**, Lancelot AS, Nakamura A, Lagha M, Besse F. Tyramine induces dynamic RNP granule remodeling and translation activation in the *Drosophila* brain. **Elife**. **2021** Apr 23;10:e65742. doi: 10.7554/eLife.65742.

- Ramat A, Garcia-Silva MR, Jahan C, Naït-Saïdi R, **Dufourt J**, Garret C, Chartier A, Cremaschi J, Patel V, Decourcelle M, Bastide A, Juge F, Simonelig M. The PIWI protein Aubergine recruits eIF3 to activate translation in the germ plasm. **Cell Res**. **2020** May;30(5):421-435. doi: 10.1038/s41422-020-0294-9. Epub 2020 Mar 4.

- Trullo A, **Dufourt J**, Fernandez C and Lagha M. MitoTrack, a user-friendly semi-automatic software for lineage tracking in living embryos. **Bioinformatics**. **2020 Feb** 15;36(4):1300-1302. doi: 10.1093/bioinformatics/btz717.

- **Dufourt J**, Trullo A, Hunter J, Fernandez C, Lazaro J, Dejean M, Morales L, Nait-Amer S, Schulz KN, Harrison MM, Favard C, Radulescu O, Lagha M. Temporal control of gene expression by the pioneer factor Zelda through transient interactions in hubs. **Nat Commun**. **2018 Dec** 5;9(1):5194. doi: 10.1038/s41467-018-07613-z.

/ [Preprint highlights](#), par preLights (The Company of Biologists)

/ [Nature Communications Editor's Highlight](#)

- Barckmann B, **Dufourt J**, Simonelig M. iCLIP of the PIWI Protein Aubergine in Drosophila Embryos. **Methods Mol Biol**. **2018** ;1720:89-110. doi: 10.1007/978-1-4939-7540-2_7.

- **Dufourt J**, Bontonou G, Chartier A, Jahan C, Meunier AC, Pierson S, Harrison PF, Papin C, Beilharz TH, Simonelig M. piRNAs and Aubergine cooperate with Wispy poly(A) polymerase to stabilize mRNAs in the germ plasm. **Nat. Commun**. **2017 Nov** 3;8(1):1305. doi: 10.1038/s41467-017-01431-5.

- Götze M, **Dufourt J**, Ihling C, Rammelt C, Pierson S, Sambrani N, Temme C, Sinz A, Simonelig M, Wahle E. Translational repression of the Drosophila nanos mRNA involves the RNA helicase Belle and RNA coating by Me31B and Trailer hitch. **RNA**. **2017 Oct**;23(10):1552-1568. doi: 10.1261/rna.062208.117. Epub 2017 Jul 12.

- Barckmann B¹, Pierson S¹, **Dufourt J**¹, Papin C, Armenise C, Port F, Grentzinger T, Chambeyron S, Baronian G, Desvignes JP, Curk T, Simonelig M. Aubergine iCLIP Reveals piRNA-Dependent Decay of mRNAs Involved in Germ Cell Development in the Early Embryo. **Cell Rep**. **2015 Aug** 18;12(7):1205-16. doi: 10.1016/j.celrep.2015.07.030

¹co-first authors

- **Dufourt J**, Dennis C, Boivin A, Gueguen N, Théron E, Goriaux C, Pouchin P, Ronsseray S, Brasset E, Vaury C. Spatio-temporal requirements for transposable element piRNA-mediated silencing during Drosophila oogenesis. **Nucleic Acids Res**. **2014 Feb**;42(4):2512-24. doi: 10.1093/nar/gkt1184.

- **Dufourt J**, Pouchin P, Peyret P, Brasset E, Vaury C. NucBase, an easy to use read mapper for small RNAs. **Mob. DNA**. **2013 Jan** 1;4(1):1. doi:10.1186/1759-8753-4-1.

- **Dufourt J**, Brasset E, Desset S, Pouchin P, Vaury C. Polycomb group-dependent, heterochromatin protein 1-independent, chromatin structures silence retrotransposons in somatic tissues outside ovaries. **DNA Res**. **2011 Dec**;18(6):451-61. doi: 10.1093/dnares/dsr031.

Review:

- **Dufourt J**, Bellec M. Shedding light on the unseen: how live imaging of translation could unlock new insights in developmental biology. *C R Biol*. 2024 Sep 11;347:87-93. doi: 10.5802/crbiol.158. PMID: 39258401.

- **Dufourt J**^{*}, Bellec M, Messina O, Trullo A, Favard C, Radulescu O, Lagha M^{*}. Zelda, maestro of the zygotic genome awakening. *Med Sci (Paris)*. 2019 Nov;35(11):821-841. doi: 10.1051/medsci/2019160.

^{*}co-corresponding author

- **Dufourt J**, Vaury C. During a short window of Drosophila oogenesis, piRNA biogenesis may be boosted and mobilization of transposable elements allowed. **Front. Genet**. **2014 Nov** 6;5:385. doi: 10.3389/fgene.2014.00385.

Preprint:

- Virginia Pimmett, Maria Douaihy, Louise Maillard, Antonio Trullo, **Jeremy Dufourt**, Helene Lenden-Hasse, Ovidiu Radulescu, Mounia Lagha Dissecting the dynamics of coordinated active transcriptional repression in a multicellular organism **bioRxiv** **2024.02.05.577724**; doi: <https://doi.org/10.1101/2024.02.05.577724>

Meeting and congress

- **November 2024** SiFR-ARN meeting 2024 Lyon (selected poster).

- **September 2022** Invited speaker IRIM Montpellier, France.
 - **June 2022** Invited speaker IBMC (Strasbourg)
 - **March 2022** Invited speaker by ZEISS, rencontre des microscopistes ZEISS (LLS7) France.
 - **October 2021** Invited by ZEISS at ZEISS demo center (Germany) for MRI new microscope acquisitions (LLS7 and LSM980 AiryScan2 test).
 - **November 2021** Mifobio, Live imaging of transcription demonstration and courses (selected workshop).
 - **September 2021** Invited speaker ImaBio e-symposium: "Imaging and modeling transcription and translation in situ"
 - **2021-2022** Jury for oral presentation Montpellier doctoral school CBS2.
 - **February 2020** Invited speaker Workshop MICA "Démocratisons la Super-Résolution" (Nice France)
 - **November 2019** Talk « Grandes avancées en biologie santé » Montpellier (Selected)
 - **September 2017** EMBO practical training (6 days) non-neuronal Optogenetics, Heidelberg (EMBL), Germany (selected).
 - **April 2017** Talk Congress SFBD/SBCF, Lyon, France (selected talk).
 - **August 2016** Invited speaker Infectiology department EPFL, Lausanne, Switzerland.
 - **June 2016** Invited speaker IRB, Barcelona, Spain.
 - **April 2016** EMBO workshop PIWI Montpellier, France (selected poster).
 - **October 2015** Symposium EMBO Non-Coding Genome Heidelberg (EMBL), Germany (selected poster).
 - **October 2015** French *Drosophila* meeting La Grande Motte, France (selected poster).
 - **October 2014** Talk French *Drosophila* meeting Sète, France (selected talk).
 - **November 2010** Talk IFR 79 Day, Clermont Ferrand, France (selected talk).
 - **October 2010** Symposium EMBO Non Coding Genome Heidelberg (EMBL) Allemagne.
 - **June 2010** Small RNA meeting Paris (Institut Jacques Monod) France.
 - **November 2009** Epigenetic school INSERM La-Londe-Les-Maures, France.
 - **September 2009** Epigénétique et Genomique meeting Paris (Institut Pasteur) France.
 - **July 2008** Talk Annual French *Drosophila* meeting, Carry le Rouet, France (selected).
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Teaching

University teaching:

- **Dec 2018** Invited teacher for courses on mitotic memory, Master 1 student in system biology for University of Montpellier.
- **2008-2011** Teacher assistant at the University d'Auvergne Clermont-Ferrand. Molecular Biology, genome dynamics, and biochemistry teaching to medical students (1st and 2nd year of medical school) and bachelor students in biology.

Students supervision:

- **2024-present** D. Avinen PhD student (co-supervision with C. Favard and D. Muriaux)
- **2024** Supervision of bachelor 1st-year student (V. Ferrato) (1.5 months)
- **2023** Supervision of two students: bachelor 3rd year (V. Martinet) and master 2 (D. Avinens), (2 et 6 months respectively)
- **2018-2022** Help with the supervision of a PhD student (M. Bellec)
- **2017** Supervision of two students: bachelor 3rd year (J. Lázaro) et master 1 (L. Morales), (3 et 6 months respectively)
- **2014-2015** Supervision of assistant engineer (M. Bellec) (1 year).
- **2010** Supervision of master 1 student (M. Miller) (3 months).
- **2009** Supervision of bachelor 3rd year student (D. Giret) (3 months).
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Thesis committee:

- **2021** Member of Dylan Gallo thesis committee CIRAD (montpellier)
- **2022** Member of Matthieu Bellet thesis committee IBMC (Strasbourg)
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Scientific outreach:

- **2012-2021** Scientific event for young students (from primary school to high school students). The role of model organisms in science and the importance of genetics ("Fete de la science" and "Declics").
 - **2016** Organisation of a discussion on science philosophy with Dr F. Merlin (IHPST, CNRS (UMR 8590), Université Paris 1, ENS) (Epigenetics and development)
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Others

Awards and grants :

- **2024** AAP « Soutien à la recherche 2023 - programme d'excellence I-SITE », Modelisation of SARS-CoV2 translation dynamics in living cells (Leader)
- **2023** IRIM internal grant for live imaging of episomes (Co-leader with A. Decorsiere)
- **2022** Master 2 fellowship grant (GDR IMABIO) for D. Avinens (Co-leader with C. Favard)
- **2019** Winner « Grandes avancées en biologie santé » Montpellier, category: System Biology.
(Dufourt J, et al. Nat Commun 2018)
- **2017** EMBO Travel Grant to support attendance at the EMBO Practical Course: Non-Neuronal Optogenetics.
- **2013** post-doctoral fellowship given by the ARC for three years.
- **2012** End of PhD student Grant, given by the ARC for six months.
- **2008 – 2011** PhD grant awarded by the French Ministry of Higher Education and Research for three years, including teaching assistant responsibilities.

Leadership:

- Project management, interaction with collaborators across different fields & countries
- Scientific articles & grant applications writing (ARC, ANR, help with ERC writting).
- Postdoc delegate at the scientific board of the Institute of Human Genetics (Montpellier, France)

Meeting Organisation:

- **2017** : IGMM, institute retreat organization.
- **2014** : IGH, departmental retreat organization.

Reviewing:

- eLife
- Frontiers in immunology
- Molecular and Cellular Biology
- Developmental Biology
- RNA Biology

- Frontiers in cell and developmental biology
- Biology Methods and Protocols
- Zygote
- Computational and Structural Biotechnology Journal

Scientific communications:

- **Régler le réveil du génome embryonnaire**

<https://www.insb.cnrs.fr/en/node/1620>

- **Silence, moteur... action ! Lumière sur la traduction des ARN messagers dans un embryon**

https://images.cnrs.fr/photo/20210101_0001

<https://www.insb.cnrs.fr/fr/cnrsinfo/silence-moteur-action-lumiere-sur-la-traduction-des-arn-messagers-dans-un-embryon>