

## 2027 Internship Offer

**Master 1:** YES – Duration: 2-6 months

**Master 2:** YES – Duration: 5-6months

Team, Contact	Team: Integrative RNA networks in Development, IGMM, CNRS UMR5535 Julie Carneseccchi, <a href="mailto:julie.carneseccchi@igmm.cnrs.fr">julie.carneseccchi@igmm.cnrs.fr</a>
Title	<b>Gene regulation beyond DNA: Exploring RNA-related functions of transcription factors in development</b>
Research Themes and questions	<p><b>How do transcription factors control gene expression beyond their classic DNA-binding roles?</b></p> <p>Our lab investigates the <b>unconventional RNA-related functions of developmental transcription factors</b>, especially their ability to interact with RNA and RNA-binding proteins to regulate splicing and coordinate cell fate. The internships will contribute to ongoing projects using a range of molecular, imaging, and genetic tools to explore these regulatory mechanisms, <b>from <i>in vitro</i> biochemistry to <i>in vivo</i> studies in <i>Drosophila</i> muscle development.</b></p>
Methods and experimental approaches	<p><b>Methods:</b> Protein-RNA interaction assays, protein/RNA biochemistry, CRISPR, Nanobody-based tools, proteomics, transcriptomics, and confocal imaging</p> <p><b>Model:</b> <i>Drosophila</i> (cells and embryos), <i>in vitro</i> systems</p>
Illustration	<p>The diagram shows a cluster of yellow RNA splicing factors and a red transcription factor (TF) interacting with a black RNA molecule. Dashed pink arrows indicate interactions between these components and a red muscle tissue structure labeled 'Cell fate' and 'Drosophila embryonic muscle tissue'.</p>
2-3 Publications	<p>-<b>Synergistic DNA and RNA binding of the Hox transcription factor Ultrabithorax coordinates splicing and shapes <i>in vivo</i> homeotic functions.</b> Blanco C, Xiang W, Boumpas P, (...), Carneseccchi J*. <i>Nucleic Acids Res.</i> 2025.</p> <p>-<b>Integrating transcription and splicing into cell fate: Transcription factors on the block.</b> Boumpas P, Merabet S, Carneseccchi J*. <i>WIREs RNA.</i> 2023.</p> <p>-<b>The Hox transcription factor Ultrabithorax binds RNA and regulates co-transcriptional splicing through an interplay with RNA polymerase II.</b> Carneseccchi J*, Boumpas P, (...), Lohmann I. <i>Nucleic Acids Res.</i> 2022.</p> <p>*corresponding author</p>