

IMCBio symposium

The symposium is taking place from the **20th** to the **24th of November 2023**. You will be able to listen to presentations about various subjects in biology. Directly after their presentations, or during breaks, you will be able – and are encouraged- to ask questions to the speakers.

You can find the program and relevant references on the next pages.

Monday 20/11- Salle Léon Hirth IBMP

Plants and Virology

8h30-9h30– **Alberto Carbonnel** (Instituto de Biología Molecular y Celular de Plantas (IBMCP), CSIC Valencia)

Next-Generation Artificial Small RNA-based RNAi for Crop Improvement

Chair: Camille Schwaller/Benjamin Lefevbre

References :

- Carbonell, A., et al. (2019) Multi-targeting of viral RNAs with synthetic trans-acting small interfering RNAs enhances plant antiviral resistance, *The Plant Journal*, 100, 720-737.
- Cisneros, A., et al. (2023) Transgene-free, virus-based gene silencing in plants by artificial microRNAs derived from minimal precursors, *Nucleic Acids Research*, <https://doi.org/10.1093/nar/qkad747>
- Cisneros, A., et al. (2022) Systemic silencing of an endogenous plant gene by two classes of mobile 21-nucleotide artificial small RNAs, *The Plant Journal*, doi: 10.1111/tpj.15730
- Lopez-Dolz, L., et al. (2020) Fine-tune control of targeted RNAi efficacy by plant artificial small RNAs, *Nucleic Acids Research*, 1-17.

9h30-10h30 - **Florent Waltz** (University of Basel, Suisse)

High Resolution Investigation of Organelle Molecular Architecture using Cryo-Electron Tomography

Chair: Sana Wigati

References :

- Waltz F, Salinas-Giegé T, Englmeier R, Meichel H, Soufari H, Kuhn L, Pfeffer S, Förster F, Engel BD, Giegé P*, Drouard L*, Hashem Y* (2021). How to build a ribosome from RNA fragments in *Chlamydomonas* mitochondria. *Nature Communications*. 12, 7176.
- Soufari H, Parrot C, Kuhn L, Waltz F*, Hashem Y* (2020). Specific features and assembly of the plant mitochondrial complex I revealed by cryo-EM. *Nat Commun* 11, 5195.

10h30-11h: coffee break - Hall IBMP

11h-12h – **Ouranía Andrisani** (Purdue University, West-Lafayette, Indiana, USA)

Online presentation via Zoom

Connection link:

<https://us06web.zoom.us/j/81894734301?pwd=b6nONpcHSobLL4pOjGMHrNCZMbJeDl.1>

ID : 818 9473 4301

Code : 170192

RNA Helicase DDX5 forms a multi-component epigenetic complex that inhibits Hepatitis B Virus transcription in response to interferon.

Chair: Nafiseh Pisheh/Baptiste Rochet

References :

- Zhang H, Xing Z, Mani S, Bancel B, Durantel D, Zoulim F, Tran E, Merle P, and **Andrisani O.** (2016) RNA helicase DDX5 regulates PRC2/HOTAIR function in Hepatitis B virus infection and hepatocarcinogenesis. *Hepatology*, 64:1033-48 PMID: 2733802 [PMCID:PMC5033702](#)
- S. K. Kailasam Mani, B. Yan, Z. Cui, J. Sun, S. Utturkar, A. Foca, N. Fares, D. Durantel, N. Lanman, P. Merle, M. Kazemian*, **O. Andrisani***. Restoration of RNA helicase DDX5 suppresses hepatitis B virus (HBV) biosynthesis and Wnt signaling in HBV-related hepatocellular carcinoma. *Theranostics*, 10(24): 10957–10972, 2020, PMID: 33042264;PMC7532671.
- J. Sun, G. Wu, F. Pastor, N. Rahman, WH Wang, Z. Zhang, P. Merle, L. Hui, A. Salvetti, D. Durantel, D. Yang and **O. Andrisani.** RNA helicase DDX5 enables STAT1 mRNA translation and interferon signaling in hepatitis B virus replicating hepatocytes. *Gut*. 2022 71(5):991-1005 PMID: 34021034
- Z. Li, C. Caron de Fromentel, W. Kim, W-H Wang, J. Sun, B. Yan, S. Utturkar, N. Atallah Lanman, B. D. Elzey, Y. Yeo, H. Zhang, M. Kazemian, M. Levrero and **O. Andrisani.** RNA helicase DDX5 modulates sorafenib sensitivity in hepatocellular carcinoma via the Wnt/ β -catenin-ferroptosis axis. *Cell Death and Disease*, 2023, *in press*

12h-13h – **Frédéric Laurent** (Université Lyon 1, France)

The challenges of phage therapy in 2023

Chair: Hugo Marie/Baptiste Rochette

References :

- Ferry, T., Kolenda, C., Gustave, C.-A., Lustig, S., Josse, J., Batailler, C., Pirot, F., Leboucher, G., and Laurent, F. (2020). [Phage therapy in bone and joint infection: history, scientific basis, feasibility and perspectives in France]. *Virologie (Montrouge)* 24, 4-11. 10.1684/vir.2020.0810.

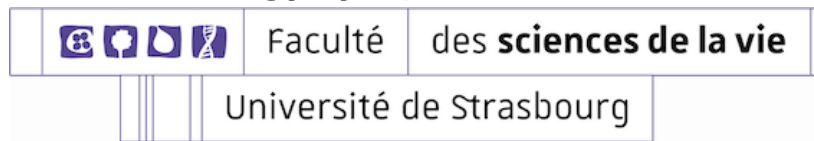
- Ferry, T., Kolenda, C., Batailler, C., Gustave, C.-A., Lustig, S., Malatray, M., Fevre, C., Josse, J., Petitjean, C., Chidiac, C., et al. (2020). Phage Therapy as Adjuvant to Conservative Surgery and Antibiotics to Salvage Patients With Relapsing *S. aureus* Prosthetic Knee Infection. *Front Med (Lausanne)* 7, 570572. 10.3389/fmed.2020.570572.

- Ferry, T., Kolenda, C., Batailler, C., Gaillard, R., Gustave, C.-A., Lustig, S., Fevre, C., Petitjean, C., Leboucher, G., Laurent, F., et al. (2021). Case Report: Arthroscopic “Debridement Antibiotics and Implant Retention” With Local Injection of Personalized Phage Therapy to Salvage a Relapsing *Pseudomonas Aeruginosa* Prosthetic Knee Infection. *Front Med (Lausanne)* 8, 569159. 10.3389/fmed.2021.569159.

13h-13h45: Lunch with speakers – hall IBMP : Lunch Box

Afternoon November, 20 at Auditorium CRBS

Joint Immunology symposium – IMCBio (optional)



Organized by Sylvie Fournel

14h : **Julie Helft** (Institut Cochin) : **Macrophage subsets and tumor immunity**

15h : **Bénédicte Py** (CIRI) : **Regulation of the NLRP3 inflammasome at the molecular level, and consequences in autoinflammatory diseases**

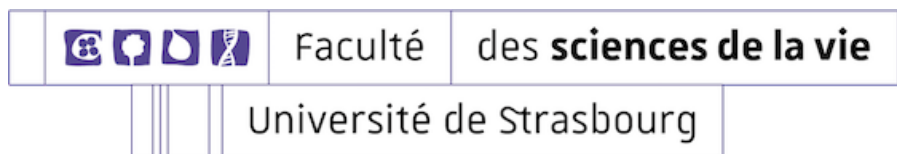
16h-16h30: coffee break

16h30 : **Benoit Marteyns** (Strasbourg) : **Neutrophil study during Shigella infection**

18h: Cocktail with the M2 and PhD students

Tuesday 21/11 – Auditorium CRBS

Joint Immunology symposium – IMCBio



8h30-9h30 : **Vanja Sisirak** (Université de Bordeaux) : **The role of extracellular DNASEs in the regulation of self-DNA sensing by the immune system**

8h30-9h30 : **Elise Jacquin** (Université Paris-Saclay) : **STING-driven antitumor immune responses, a role for autophagy and CASM?**

10h30-11h: coffee break

11h-12h : **Lukas Heger** (Erlangen University) : **Phenotypical and functional characterization of human DC subpopulations for antigen-targeting approaches**

12h-13h : **Simon Rauber** (Erlangen University) : **Monitoring fibroblast activation in rheumatic diseases**

Wednesday 22/11 – Amphithéâtre 3

Patio

Structural Biology & Distinguished lecturer

Joint symposium – IMCBio

9h-10h – **Denis Duboule** (EPFL)

Pseudo-embryos and the Hox timer

Chair: Marine Kleiber/Alison Lavauzelle

References:

- Multi-axial self organization properties of mouse embryonic stem cells into gastruloids. Beccari, Moris, Girgin et al. (2018). Nature 565, 272-276 (<https://doi.org/10.1038/s41586-018-0578-0>)

10h-10h30: coffee break – Hall Patio

10h30-11h30 – **Sébastien Eustermann** (EMBL)

Far from equilibrium : energy-driven organisation of chromatin

Chair: Thomas Guziou

References :

- Zhang, M., Jungblut, A.*, Kunert, F.*, Hauptmann, L., Hoffmann, T., Kolesnikova, O., Metzner, F., Moldt, M., Weis, F., DiMaio, F., Hopfner, K. P., and Eustermann, S#. (2023) Hexasome-INO80 complex reveals structural basis of noncanonical nucleosome remodeling. *Science* **381**, 313-319

- Shaltiel, I. A., Datta, S., Lecomte, L., Hassler, M., Kschonsak, M., Bravo, S., Stober, C., Ormanns, J., Eustermann, S.#, and Haering, C. H.# (2022) A hold-and-feed mechanism drives directional DNA loop extrusion by condensin. *Science* **376**, 1087-1094

- Oberbeckmann, E., Krietenstein, N., Niebauer, V., Wang, Y., Schall, K., Moldt, M., Straub, T., Rohs, R., Hopfner, K. P.#, Korber, P.#, and Eustermann, S.# (2021) Genome information processing by the INO80 chromatin remodeler positions nucleosomes. *Nat Commun* **12**, 3231

11h30-12h30 – **Helen Ginn** (Universität Hamburg)

Online presentation via Zoom

Connection link:

<https://us06web.zoom.us/j/88530073952?pwd=H2GjIZSWYTBTYGFRCRShXaTKxwPasqb.1>

ID : 885 3007 3952

Code : 252315

Teasing out the subtle secrets of protein dynamics

Chair: Théo D'Andréa/Romain Vincent

References :

- Ginn HM. Torsion angles to map and visualize the conformational space of a protein. Protein Sci. 2023 Apr;32(4):e4608. doi: 10.1002/pro.4608. PMID: 36840926; PMCID: PMC10022581.

12h30-13h15: Lunch with speaker – Hall Patio : Lunch Box

Thursday 23/11 - Auditorium IGBMC

Development

9h30-10h30 – **Lionel Christiaen** (University of Bergen, Norvège)

From deterministic cardiac development to regulative

Chair: Marine Kleiber/Alison Lavauzelle/Taima Lorentzen

References:

- A new heart for a new head in vertebrate cardiopharyngeal evolution. Diogo et al. (2015). Nature, 520 (<https://doi.org/10.1038/nature14435>)

- A single-cell transcriptional roadmap for cardiopharyngeal fate diversification, Wang et al. (2019). Nature cell biology 21, 674-686 (<https://doi.org/10.1038/s41556-019-0336-z>)

10h30-11h: coffee break - cafeteria IGBMC

11h-12h – **Anna Marsano** (Department of Medicine, University of Basel)

In Vitro Modeling of Cardiac Tissues: A Multi-Stimuli Approach

Chair: Lisa Bellemin-Lapponnaz/Clara Capelli/Hélène Feuerstein

References:

12h-13h00: Lunch with speakers - ping-pong room: Lunch Box

Friday 24/11

Collège Doctoral Européen

Development & Genetics and Molecular Biology

9:00-10:00 – **Denis Headon** (University of Edinburgh)

The origins of fingerprint and other patterns in the skin

Chair: Alison Lavauzelle/Marine Kleiber

References:

- The developmental basis of fingerprint pattern formation and variation. Glover JD, Cell. 2023 Mar 2;186(5):940-956.e20.

(<https://doi.org/10.1016/j.cell.2023.01.015>)

- Systems for intricate patterning of the vertebrate anatomy. Painter KJ, Ptashnyk M, Headon DJ.

Philos Trans A Math Phys Eng Sci. 2021 Dec 27;379(2213):20200270.

(<https://doi.org/10.1098/rsta.2020.0270>)

10h-10h30: coffee break – Jardin intérieur du CDE

10h30-11h30 – **Raphael Ceccaldi** (Institut Curie)

Studying alternative DNA repair mechanisms: application for developing anti-cancer therapies evolution of the drosophila immune response

Chair: Alison Lavauzelle/Marine Kleiber

References:

<https://www.biorxiv.org/content/10.1101/2023.03.17.533134v1>

<https://pubmed.ncbi.nlm.nih.gov/34179826/>

11h30-12h30 – **Arnaud Krebs** (EMBL, Heidelberg)

Cooperativity and antagonism in transcription regulation

Chair: Cindy Arias/Eva Deleurence/Taïma Lorentzen

References:

- Krebs AR*, Studying transcription factor function in the genome at molecular resolution. Trends in Genetics. 2021. [10.1016/j.tig.2021.03.008](https://doi.org/10.1016/j.tig.2021.03.008) *Perspective on the emergence of the field of single molecule genomics.*
- Sönmezer C, Kleinendorst R, Imanci D, Barzaghi G, Villacorta L, Schübeler D, Benes V, Nacho Molina, Krebs AR*. Molecular Co-occupancy Identifies Transcription Factor Binding Cooperativity In Vivo; Molecular Cell. 2021. [10.1016/j.molcel.2020.11.015](https://doi.org/10.1016/j.molcel.2020.11.015) *Development of a method for the simultaneous quantification of multiple TFs on single DNA molecules. Identification of the cooperativity mechanisms regulating transcription factor activity in vivo.*

12h30-13h30 – **Osamu Nureki** (Department of Biological Science, University of Tokyo)

Title

Chair: Nicolas Fournier/Thibault Vautrin

References:

13h30-14h15: Lunch with speaker – Jardin intérieur du CDE: Lunch Box