



COMPTE RENDU  
REUNION DU BUREAU EXECUTIF

20 décembre 2023, 14:00 – 16:10  
*Visio-conférence*

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**Participants** : Cyril Favard, Delphine Muriaux, Jérémy Dufourt, Gicacomo Cavalli, Frederic Bantignies, Davide Normanno (présentations équipes R&D Candidates), Yves Mely, Bertrand Vernay, David Perrais, Fabrice Cordelières, Marc Tramier, Perrine Paul-Gilloteaux, Sandrine Lecart, Cédric Matthews, Emmanuel Margeat, Patrick Lemaire, René Marc Mège, Nathalie Aulner, Olivier Gadai, Cécile Pouzet, Artemis Kosta, Aurélien Dauphin, Nicolas Brouilly, Lydia Danglot, Caroline Thiriet, Alexandre Philips, Edouard Bertrand

**Excusés** : Jacky Goetz, Emmanuel Beaurepaire, Jean-Christophe Olivo-Marin, Charles Kervrann, Pierre-François Lenne, Didier Marguet, Jacques Rouquette, Audrey Salles, Etienne Henry, Jean Salamero, Emmanuel Faure, Christine Terryn, Laurent Heliot, Fabrice Schmitt, Martin Belle, Alain Schmitt, Alban Belloir

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**1) Présentation des équipes de R&D candidates (Nœud Montpellier) :**

- Cyril Favard, Delphine Muriaux, Jérémy Dufourt (voir présentation en annexe)
- Gicacomo Cavalli, Frederic Bantignies, Davide Normanno (voir présentation en annexe)

**2) Offre de services FBI :**

Une réflexion va débuter début 2024 pour restructurer l'offre de services et mettre en valeur les technologies, pipelines, logiciels,... de pointe ou rares sur les plateformes ou les équipes de R&D. Des propositions seront intégrées dans le dossier d'évaluation de l'IR.

**3) Informations concernant EuBI :**

Yves Mély officiellement nommé Représentant CNRS au Board EuBI par le Ministère. La délégation française au Board EuBI est maintenant composée de Catherine Le Chalony -représentante du Ministère, en remplacement d'Eric Guittet-, Yves Mély, -en remplacement de Daniel Choquet-, et deux "special advisors": Jean Salamero et Caroline Thiriet.

Entrée de deux nouveaux membres dans l'ERIC EuBI: Belgique et Espagne. Arrivée du nœud Flandres BioImaging pour la Belgique.

Préparation du dossier pour l'intégration des noeuds Toulouse et Alsace à EuBI ; travail avec les noeuds concernés et la coordination (premier rendu au 15/01 et soumission finale: 31/01 5pm).



Call INFRATECH : Ouvert depuis le 6 décembre. Deux dossiers (Greenscopy et Prestige) en cours de montage pour répondre à cet appel d'offres.

Invitation à participer au prochain All-Hands Meeting EuBI à Turin 17-19 avril 2024

Satellite event le 16/04: "Workshop on Health Data platforms for AI-driven discovery"

Le 17/04: meeting conjoint EuBI Industrial Board & NODES Workshop "Imaging services for Discovery and Translational Research"

Appel à abstract pour des présentations orales. Il y a 3 sessions scientifiques de proposées :

- Imaging across scales and modalities
- Multidimensional imaging/Imaging beyond 3D
- Screening and working with disease models

A diffuser auprès des WGs Technologiques et des nœuds. Attention : participation en tant que membre du nœud français de EuBI France-BioImaging.

Les personnes intéressées sont invitées à contacter Caroline.

18 et 19 avril 2024 : ALL HANDS NODES MEETING (membres des nœuds EuBI uniquement)

Appel à abstract pour les sessions "Updates from the Nodes / Scientific session", sujet libre : cela peut être une présentation d'un nœud ou d'une plateforme en particulier, d'une nouvelle techno ouverte aux utilisateurs, un transfert technologique, une initiative FBI - l'année dernière, par exemple, nous avons présenté la mission Formation et les activités structurantes FBI-...)

+ Appel abstract pour poster

Attention : participation en tant que membre du nœud français de EuBI France-BioImaging.

A diffuser dans vos nœuds, le WG CFS FBI a aussi reçu l'information pour diffusion.

Les personnes intéressées sont invitées à contacter Caroline.

Pour les deux événements ci-dessus, l'inscription doit se faire via le lien suivant : <https://docs.google.com/forms/d/e/1FAIpQLScvYVvKkNYJeMAwSd-kOpy6qA6SAhREu861fDmzefrNrlZraK4g/viewform>

Les inscriptions avec dépôt d'abstract sont prioritaires.

Cf. Programme en annexe.

#### **4) Demande de subvention pour des événements scientifiques**

Cycle de vie / gestion des données en biologie (4/04/2024, Sophia-Antipolis, 100 participants attendus). Demande de Frédéric Brau.

➔ Subvention de 1 500 € accordée sous conditions d'apposer le logo de FBI sur le programme et d'intégrer une présentation courte de l'IR dans la programmation.



9th Biosensor Workgroup meeting (GDRImaBio) (1 jour sur 13-14/06/2024, Boulogne sur mer, 80 participants attendus). Demande de Marie Erard.

➔ Subvention de 1 500 € accordée sous conditions d'apposer le logo de FBI sur le programme et d'intégrer une présentation courte de l'IR dans la programmation.

Atelier de formation sur les techniques de 3D MEB de la préparation des échantillons à l'acquisition des images (18-20/11/2024, Paris, 10 participants attendus). Demande de Remi Le Borgne.

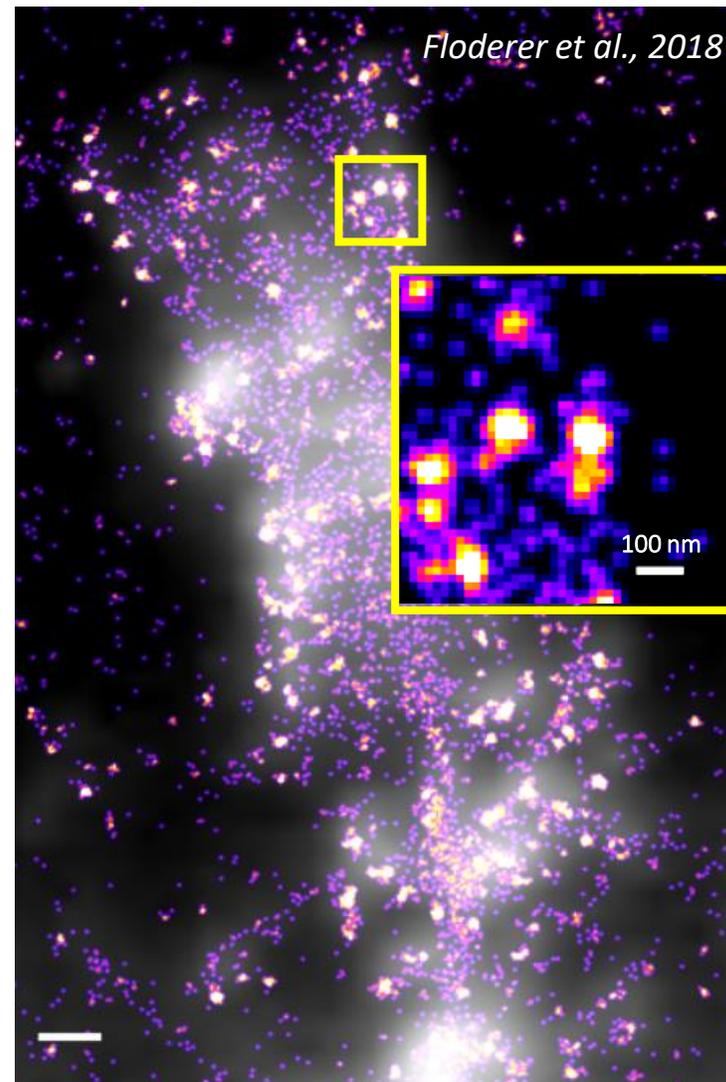
➔ Subvention de 500 € accordée sous conditions d'apposer le logo de FBI sur le programme.

**Rappel : prochaine réunion du BE le mercredi 10/01/2024 à 14h sur Zoom**

## Equipe Domaines Membranaires et Assemblage Viral

Responsables: D.Muriaux & C.Favard

IRIM UMR 9004 CNRS – Université de Montpellier





## MDVA Team Members

### Permanents

- **Delphine Muriaux, DR1 CNRS, Virologue/Biologiste Cellulaire.**  
*Directrice de l'UAR CEMIPAI, laboratoire de confinement de niveau 3.*
- **Cyril Favard, IRHC CNRS, Biophysique**
- **Jeremy Dufourt, CRCN CNRS, Biologie du développement**
- Peggy Merida, AI CNRS, Lab. Manager, Biologie Cellulaire

### Non Permanents

- **Claire Lacouture, Biophysique, Post-Doc ANR**
- Baptiste Carrio, Doctorant ANRS
- Damiens Avinens, Doctorant UM
- **Sébastien Brun, Doctorant CIFRE, (recrutement prévu février 2024)**
- **Jhili Mishra, Biophysique, Post-Doc CEFIPRA, (recrutement prévu février 2024)**

# Equipe Domaines Membranaires et Assemblage Viral

PI: D.Muriaux & C.Favard

## THEMATIQUES

Molecular mechanisms of envelopped viruses assembly in their host cells.

Generate and Characterize virus like particles or model membranes to identify the molecular set involved in assembly and entry.

Quantify translation and viral assembly dynamics at the single molecule level (from cells to organisms).

Development of biological nano-objects and protocols for fluorescence super resolution microscopies (SRM) in virology (up to BSL3 infectious fluorescent viruses)

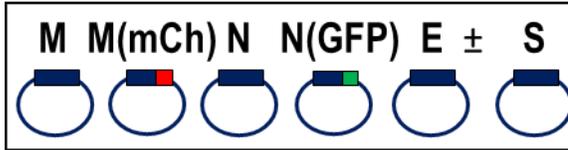
Quantification and modelling of molecules' dynamics in living systems using fluorescence microscopies and nanoscopies (from cells to embryo)

Development and application of enhanced evanescent wave / super resolution microscopies with biocompatible surface nano-coating substrates. (with Institut Fresnel)

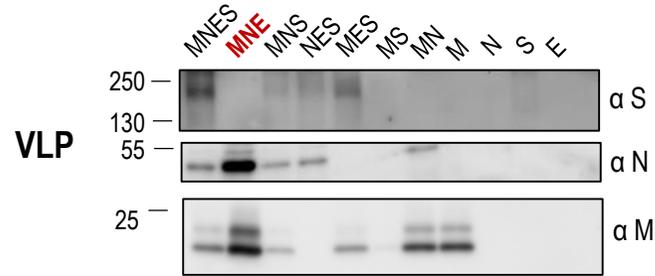
# Development of biological nano-objects and protocols for fluorescence super resolution microscopies (SRM) in virology (up to BSL3 infectious fluorescent viruses)

## Engineered fluorescent VLP and viruses

mEOS 2, 3, 4...  
eGFP, mScarlet  
Halo, SNAP  
Lipids, RNA probes ...



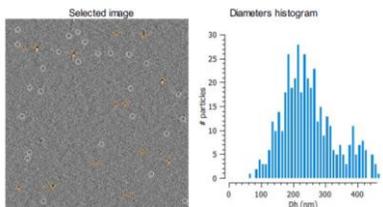
## Particle release by Western Blot



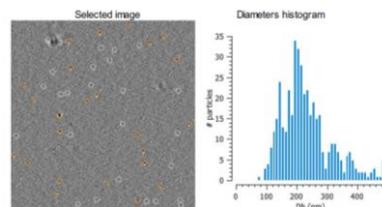
## VLP size and concentration by Videodrop

Sample	Size (nm)	Concentration (part/mL)
TNE	0	$2,72 \cdot 10^8$
VLP-Cov2	239	$2,35 \cdot 10^{10}$
VLP-GFP-Cov2	217	$3 \cdot 10^9$

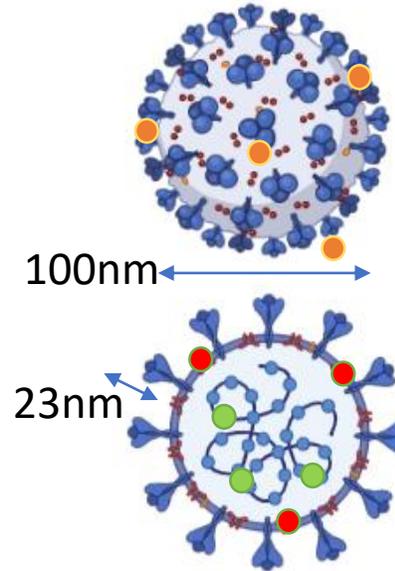
### VLP-Cov-2



### VLP-GFP-Cov-2



## Example of SARS-CoV-2 VLP

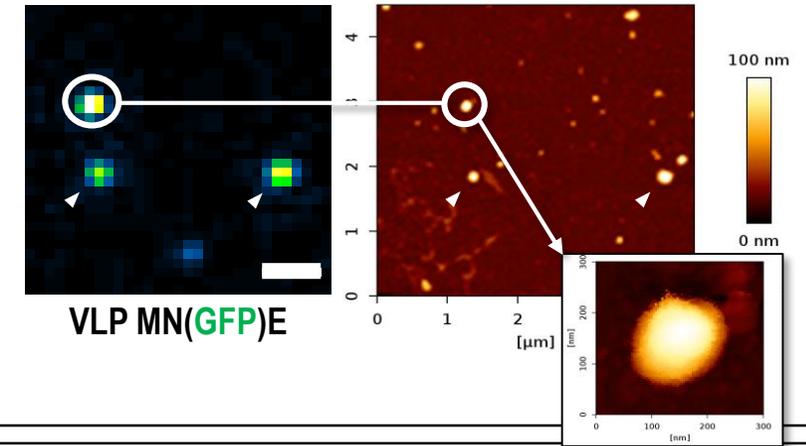


- Surface glycoprotein, Spike (S)
- Membrane protein (M)
- Envelope protein (E)
- Nucleocapsid protein (N)
- Genomic (+)RNA

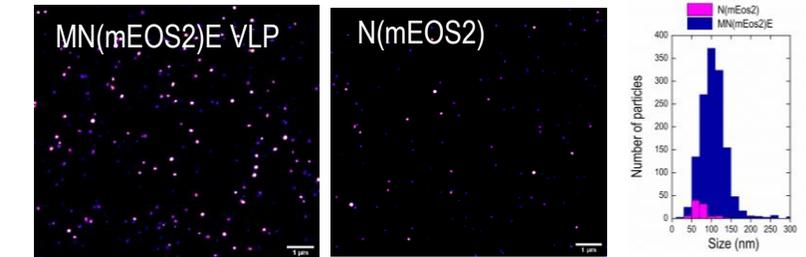


Gourdelier et al., *Sci Rep* 2022  
Laplantine et al., *iScience* 2022  
Nguyen et al., *Small* 2023  
Swain et al., *iScience* 2023  
Schiaelis et al., *ACS Nano* 2023

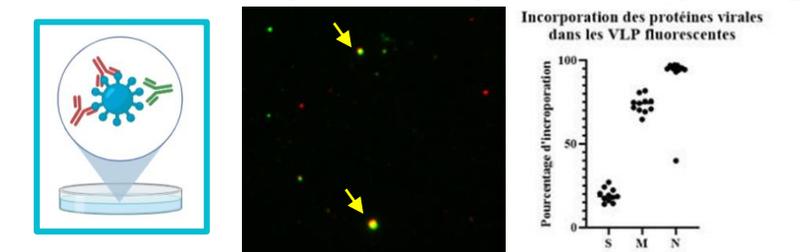
## VLP morphology and size by correlative-AFM



## Fluorescent VIRUSES/VLP by TIRF-Microscopy



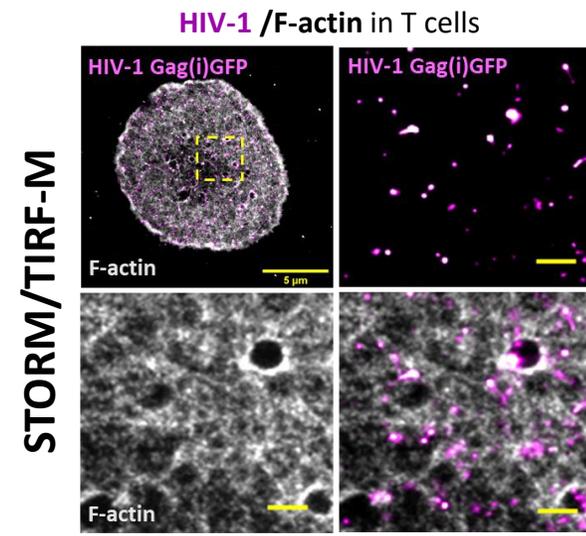
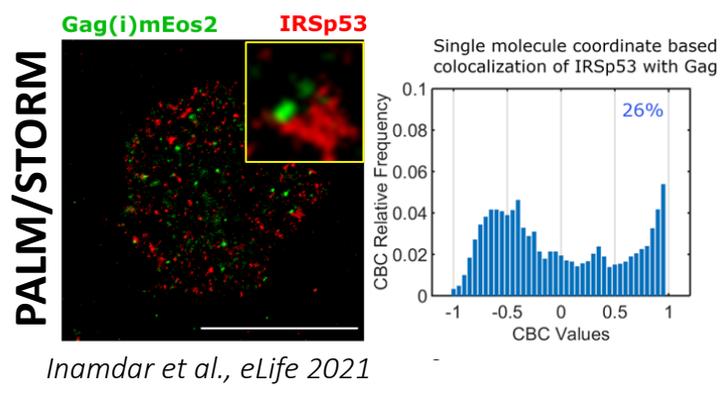
## Visualization of viral protein incorporation on VLP-(M)GFP particles by immuno-spotting



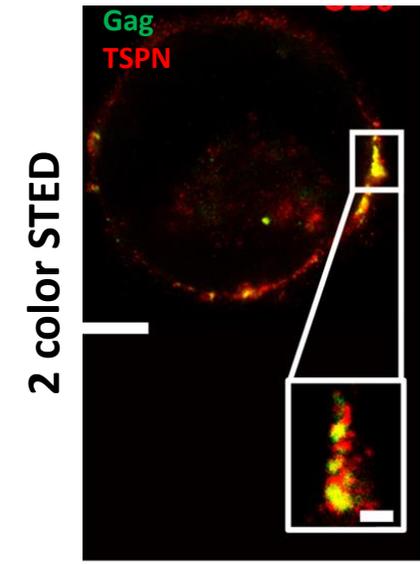
# Development of biological nano-objects and protocols for fluorescence super resolution microscopies (SRM) in virology (up to BSL3 infectious fluorescent viruses)

Visualize lipids, viral and membrane cellular proteins in infectious virus and infected cells at nanoscale imaging using PALM, spt-PALM and PALM-STORM/TIRF-M, STED, STED-FCS and STED-AFM.

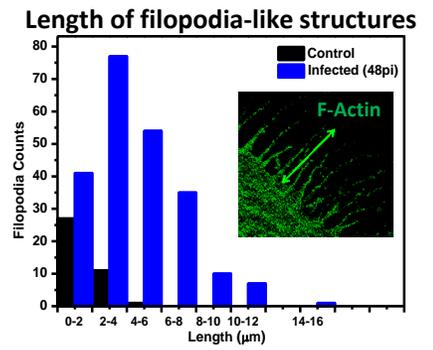
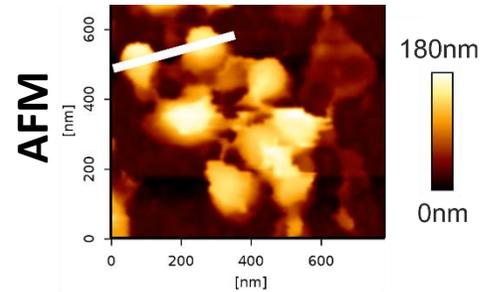
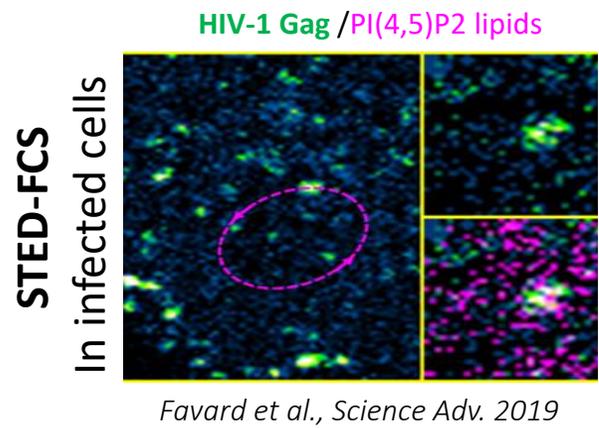
HIV-1(i)GFP infected CD4 T cells



HTLV-1 infected T cells Tetraspanins



SARS-CoV-2 / F-Actin



@CEMIPAI & MRI



Application to other viruses

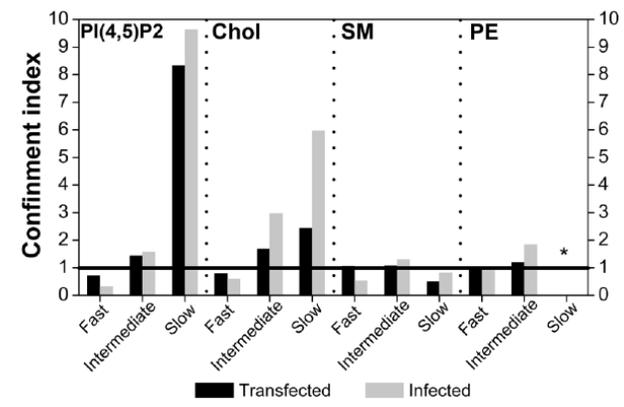
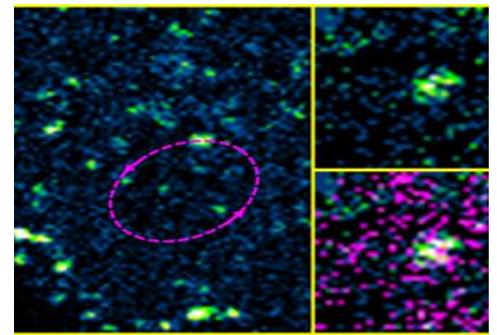
*Arone et al., mBio 2023*

@CEMIPAI

*Swain et al., iScience 2023 @MRI*

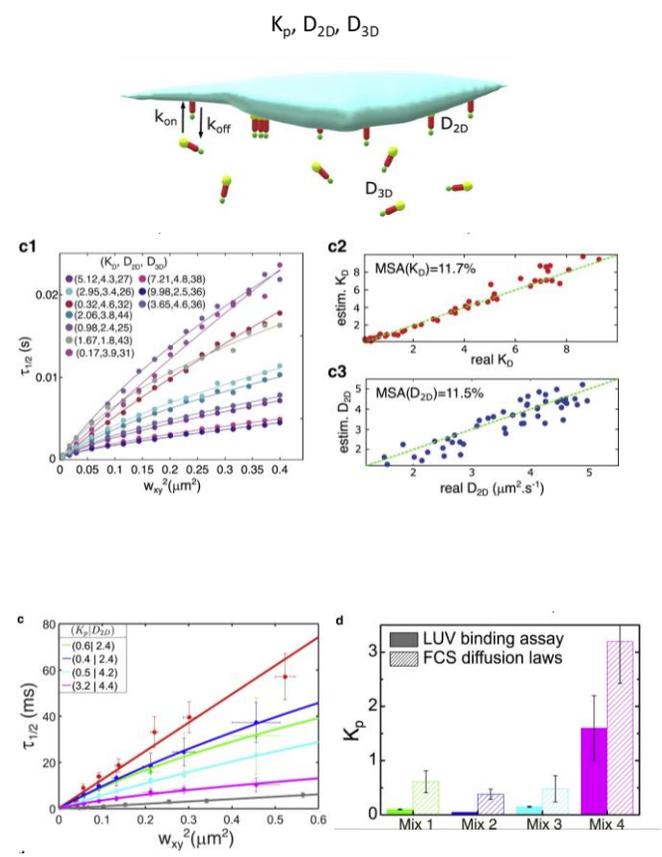
# Quantification and modelling of molecules' dynamics in living systems using fluorescence microscopies and nanoscopies (from cells to embryo)

## Plasma membrane lipid dynamics during HIV assembly in living T cells using STED-FCS



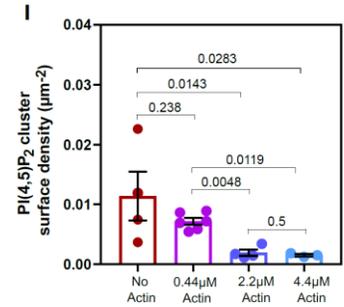
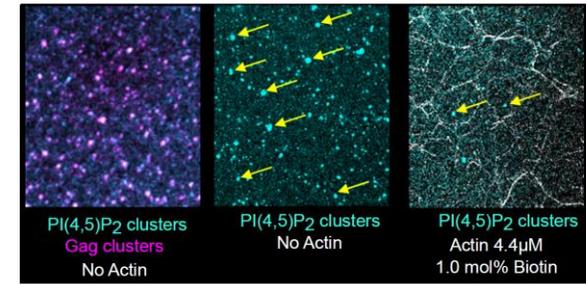
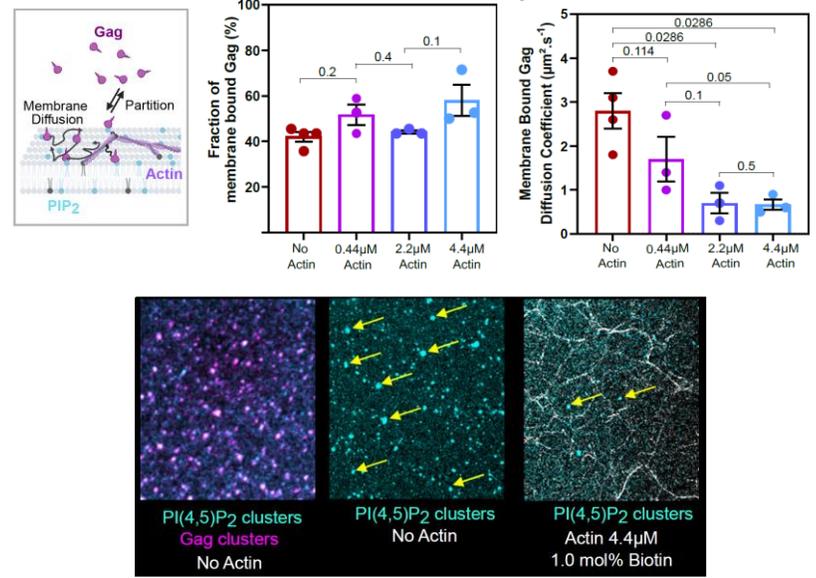
HIV-1 Gag /lipid analogue  
 HIV-1(i)GFP infected CD4 T cells  
 @ Oxford & MRI Montpellier  
 Favard et al., Science Adv. 2019

## Quantification of membrane binding using sv-FCS



@ MRI Montpellier  
 Mouttou et al., Biophys. J. 2023

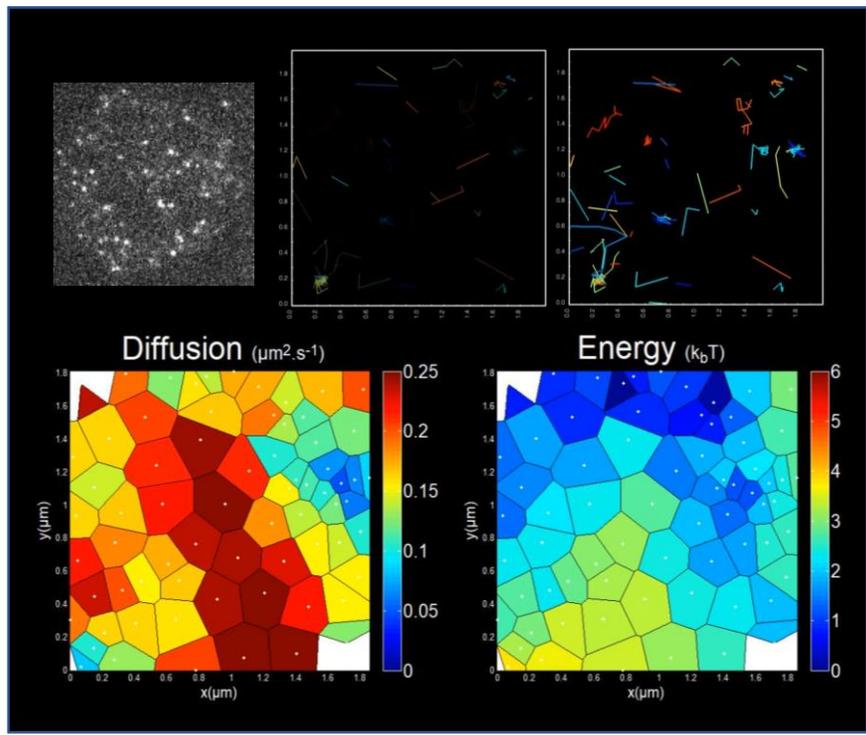
## Effect of actin meshwork on HIV-1 Gag membrane dynamics and assembly initiation with sv-FCS



@ MRI Montpellier  
 Dibsy et al., Nat. Comm. 2023

# Quantification and modelling of molecules' dynamics in living systems using fluorescence microscopies and nanoscopies (from cells to embryo)

## Energy of Gag-Gag interactions during assembly in living T cells



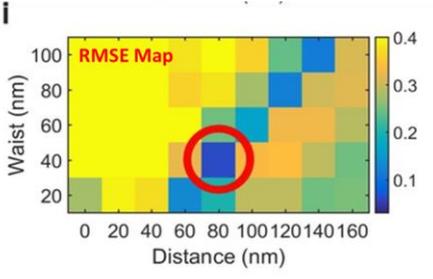
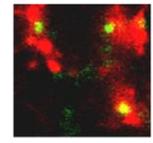
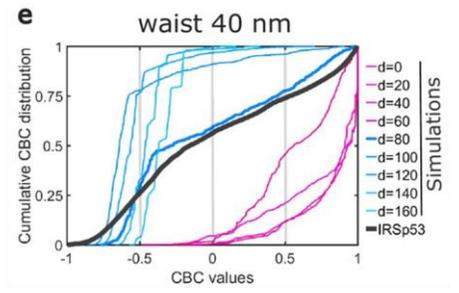
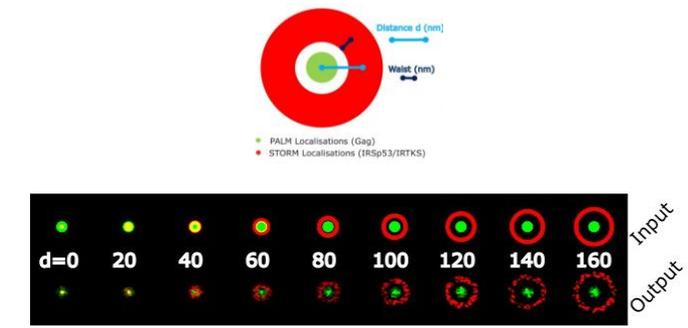
Floderer et al., Sci. Rep. 2018

With  
**JB Masson**  
 @ FBI Biologie  
 Informatics Node  
 &  
**JB Sibarita**  
 @FBI Bordeaux  
 Node

*Spt-PALM transferred  
 @CEMIPAI Facility*

Currently applied to other viruses

## Simulations of inter-molecular localizations scenarii In two colors SMLM

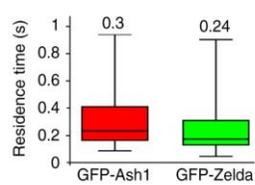
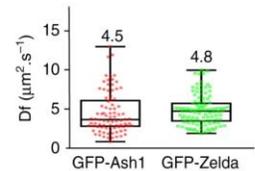
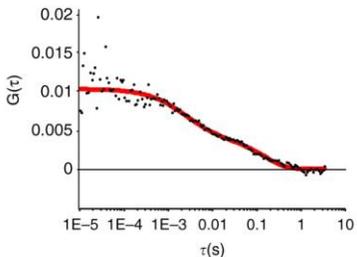
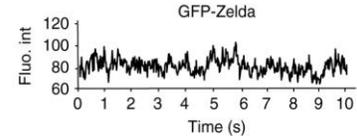
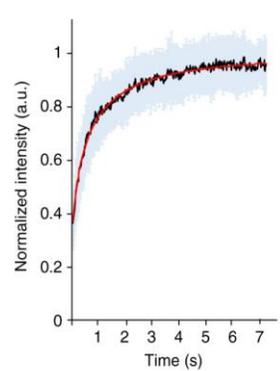
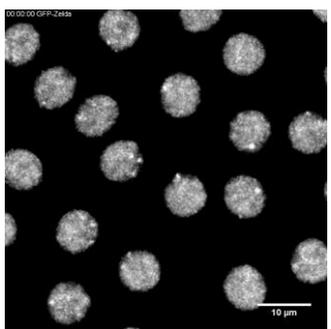


PALM STORM implemented  
 @CEMIPAI Facility

Inamdar et al., eLife 2021

# Quantification of molecules' dynamics using fluorescence (fluctuation) microscopies in embryo : Coll. with J. Dufourt & M. Lagha (IGMM)

## Transcription factor kinetics in living *Drosophila* embryos using FRAP and FCS

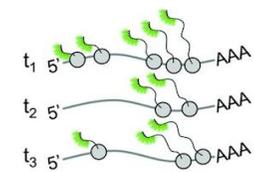
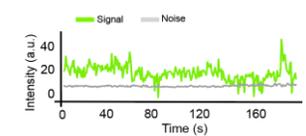
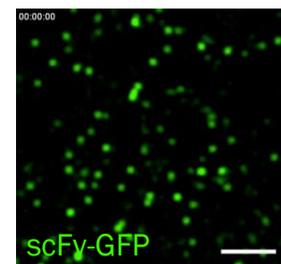


@ MRI Montpellier

Dufourt, Trullo et al. Nat com 2018  
Bellec, Dufourt et al. Nat com 2022

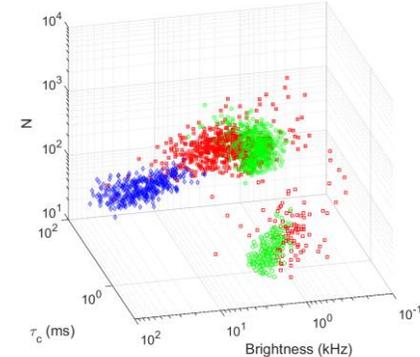
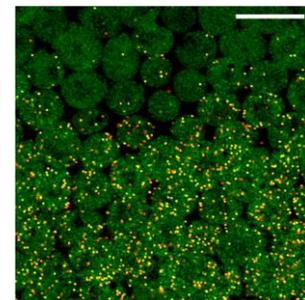
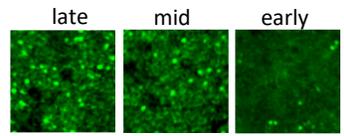
## Quantification of translation kinetics in living *Drosophila* embryos

@ MRI Montpellier



Dufourt\*, Bellec et al. Science 2021

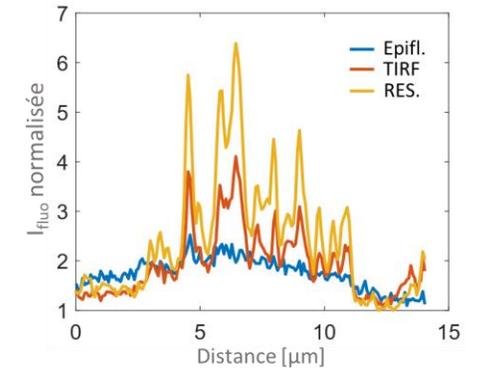
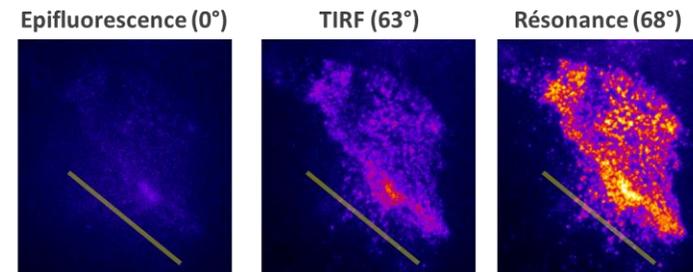
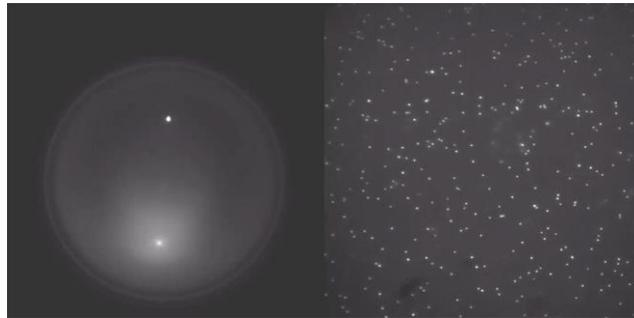
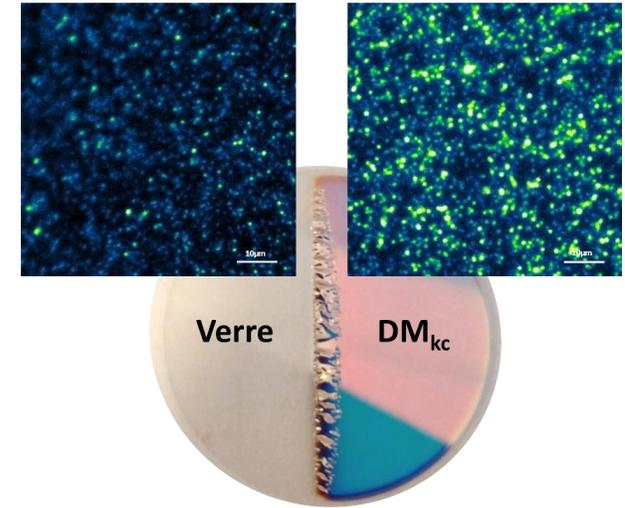
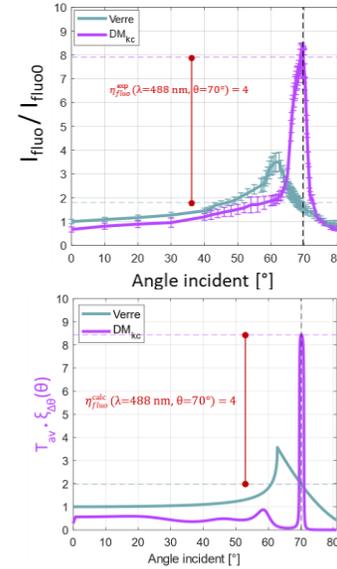
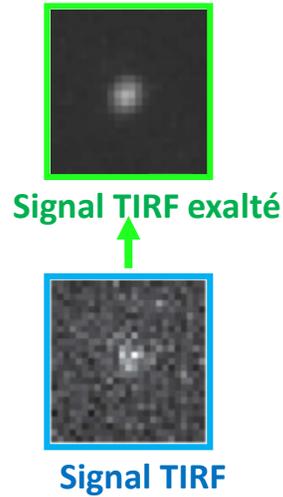
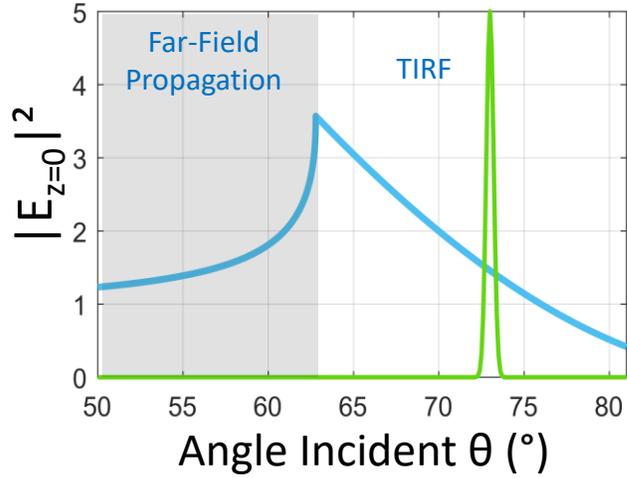
@ MRI Montpellier  
Collab. Edouard Bertrand  
@ FBI Montpellier node



Bellec et al. BioRxiv 2022

# Development and application of enhanced evanescent wave / super resolution microscopies with biocompatible surface nano-coating substrates. (with Institut Fresnel)

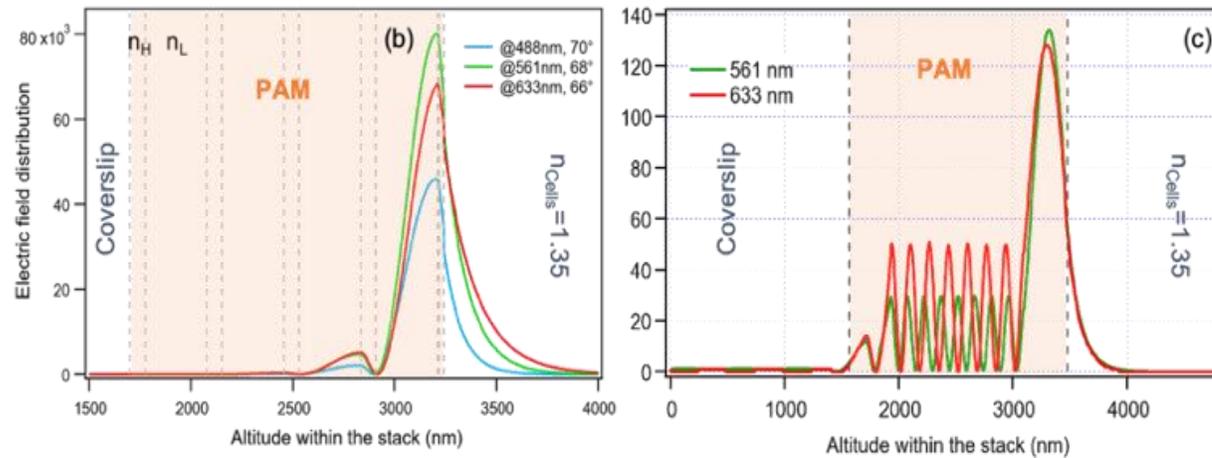
## Planar All-dielectric Multilayers : Enhanced TIRF



Moultou et al., *Opt. Mat. X*, 2022  
 Moultou et al., *Opt Exp*, 2022  
 Patent FR2108879  
 Patent FR2301673

On going development

Achromatic Excitation Planar All-dielectric Multilayers



Development



Expertise



Steering Committee Member

Heading the molecule dynamics in cells WG

MiFoBio Organisers

Imabio 20 years congress  
lead of the organizing committee

## Thematic Scientific meetings

- Congress molecular trajectories analysis Lyon 2015 (50 pers)
- eMeeting NanoVirus Imaging March 2021 (200 pers)
- eMeeting Imaging & modeling transcr. & transl. Sept 2021 (100 pers)

**Molecule Trajectories in Cellular Spaces**  
Promoting interactions between theoreticians and experimentalists

**Invited Talks:**  
R. Volturiez, UPMC Paris  
A. Triller, ENS Paris  
H. Soula, INSA Lyon  
J.-B. Sibarita, IINS Bordeaux  
J. Salameo, Curie Paris  
A. Parmegiani, Univ. Montpellier 2  
J.-B. Masson, Pasteur Paris  
C. Kerbrann, INRIA Rennes  
L. Heliot, Phlarn Lille  
L. Forest, ENS Paris  
C. Favard, CPBS Montpellier  
N. Destainville, UPS Toulouse  
A. Charvillat, UJF Grenoble  
H. Coppey, Curie Paris  
H. Berry, INRIA Lyon

**Organizing committee:**  
L. Heliot, Phlarn Lille  
C. Favard, CPBS Montpellier  
H. Berry, INRIA Lyon

**Main Topics include:**  
Spatial dynamics of:  
transcription  
synaptic receptors  
viral assembly  
intracellular transports

**Imaging viruses : From single molecule to diagnosis**  
Recent advances in photonic micro/nanoscopy and AFM applied to virology

**ImaBio** A CNRS-IMABIO consortium Webmeeting

**Single Day Event**  
March

**Invited Speakers**  
Christian Eggeling, Leibniz-IPHT/Friedrich-Schiller University, Jena, Germany  
Ricardo Henriques, Instituto Gulbenkian de Ciência, Portugal  
Romain F. Laline, MRC UCL, UCL, United Kingdom  
Camrindne Moskalenko, ENS Lyon/CNRS, France  
Delphine Muriaux, CNRS, CNRS/INSERM, Montpellier, France  
Sergi Pedilla-Parrá, King's College, United Kingdom  
Nicole Robb, University of Warwick, United Kingdom  
Saveez Saffarian, University of Utah, USA  
Christian Sieber, Helmholtz Centre for Infection Research, Germany

**Registration and abstract submission:**  
<http://imabio-cnrs.fr/event/imaging-viruses/>

6 talks of 10 min will be selected

Organized by GDR IMABIO  
Cyril Favard (Local)  
Delphine Muriaux (Local)

**Imaging and modeling transcription and translation *in situ***

**ImaBio** A CNRS-IMABIO consortium Webmeeting

**e-Symposium**  
September 14th, 2021  
9AM-1PM CEST

**Invited Speakers**  
**Elizabeth Hinde**, School of Physics, University of Melbourne (Australia)  
Quantitative imaging of the role oligomer formation plays in transcription factor dynamics  
**Jeremy Dufour**, Institute of Molecular Genetics, Montpellier (France)  
Imaging mRNA dynamics from transcription to translation in living organisms  
**Hye Yoon Park**, Seoul National University (South Korea)  
Real-time imaging of Arc mRNA during memory formation in live animals  
**Luca Clandri**, Center for Structural Biology, Montpellier (France)  
Biophysical modelling of miRNA translation: from codon usage to ribosome economics

**Registration and abstract submission:**  
<http://imabio-cnrs.fr/event/imaging-and-modeling-transcription-and-translation-in-situ/>

6 talks of 10 min will be selected

Organized by GDR IMABIO  
Cyril Favard - Davide Normanno - Laurent Heliot

## Trainings on Microscopy

**FBIAT 2016**  
France BioImaging Advanced Training, Montpellier, 18-22 January 2016

Share one week of lectures and workshops dedicated to application of microscopy in different biological fields.

**Invited Lecturers:**  
• S. Brasselet  
• M. Carmo-Fonseca  
• M. Digman  
• A. Ephrussi  
• S. Liveque-Fort  
• S. Manley  
• C. Moskalenko  
• B. Müller  
• L. Blanchoin  
• D. Bourgeois  
• J. Chao  
• X. Darzacq  
• M. Dahan  
• C. Eggeling  
• A. Kapamadis  
• D. Lamb  
• M. Leske  
• M. Piel  
• D. Sherratt  
• L. Schermelleh  
• J.B. Sibarita

**Covered Topics:**  
• Cell Mechanics  
• Membrane Dynamics  
• RNA Biology  
• Chromatin Structure  
• Virus and Bacteria

**Organizing committee:**  
• A. Abrieu  
• D. Muriaux  
• E. Bertrand  
• C. Favard  
• E. Margat  
• P. E. Milhiet  
• M. Nollmann

**ACTION NATIONALE DE FORMATION**  
Microscopie de super-résolution en biologie cellulaire

Lieux: Paris - Bordeaux - Lyon - Montpellier  
Dates: 21-24 Juin 2022  
Date limite d'inscription: 16 Mai 2022 (dr13.FP@cnrs.fr)

**- Objectif -**  
Démocratiser les outils de microscopie de super-résolution par détection de molécules uniques (PALM, STORM, DNA-PAINT) en fluorescence: applications en biologie cellulaire

**- Format hybride -**  
Les cours communs seront en visioconférence. Les TP répartis sur 4 sites aborderont les mêmes notions mais seront colorés par des thématiques biologiques locales.

**- Public visé -**  
Ingénieurs, chercheurs, étudiants intéressés par la microscopie de super-résolution

**- Organismes et intervenants -**  
L. Danglot - S. Maillet - M. Mondin  
K. Monier - D. Muriaux

**- Autres intervenants -**  
P. Bun - R. Dibsy - C. Favard  
R. Galland - D. Gery - F. Levot - J. Nguyen  
C. Mallevat - C. Rousset - M. Sainlos

**MIFoBio**  
FUNCTIONAL MICROSCOPY FOR BIOLOGY  
CNRS - GdR ImaBio

Courses & Seminars  
Round Tables & Workshops

**DU 9 AU 17 NOVEMBRE 2023**  
Presqu'île de Giens - France

10th edition  
CNRS Thematic School

- Atelier Inserm Bordeaux/Lyon 2018 (Organisation)
- F-BIAT Montpellier 2016 (Organisation)
- ANF Montpellier 2022 (Organisation)

YouTube video player showing a video titled "Regards fluorescents sur les virus" from 2022. The video is from the channel "IRIM UMR9004 CNRS Montpellier".

YouTube video player showing a video titled "How dynamic nanoscopies can shed the light on virus assembly in host living cell". The video is from the channel "Cyril Favard".

On line seminars for RT-mFm  
YouTube Channel

### Aim of the Montpellier Node

The Montpellier node comprises a **tight collaboration of research/development teams and microscopy research platforms**. The main objective of this FBI node is to **develop, implement and provide access of state-of-the-art optical microscopy systems** allowing microscopic imaging from unicellular organisms to whole animals. Specifically, **our emphasis is on super-resolution and fluctuation microscopies**, high-throughput high-content microscopies, and ***in vivo* cellular imaging and manipulation**.

### Imaging in the MDVA team

- **Collaboration with MRI and CEMIPAI**
- State of the art in Quantitative Fluorescent Micro(nano)scopy Imaging from single molecule to embryos. Development of enhanced TIRF imaging
- **STED-FCS, sv-FCS, Spt-PALM, PALM-STORM to decipher virus assembly at the single molecule level.**
- ***In vivo* cellular imaging and manipulation of viral assembly, transcription and translation.**

**Expertise on state-of-the-art optical microscopy systems and methods in infectious diseases**



## Past Ph.Ds & Post-Doc

Kaushik Inamdar  
Rayane Dibsy  
Anita Mouttou  
Coline Arone  
Jitendriya Swain  
Charlotte Floderer  
Naresh Yandrapalli  
Manon Gourdelier  
Erwan Bremaud

*All Alumni  
since 2012*



## Collaborators

**Johnson MAK**  
Australia  
**Patricia Bassereau**  
Paris  
**Jean-Baptiste Masson**  
Paris  
**Jean-Baptiste Sibarita**  
Bordeaux  
**Christian Eggeling**  
Germany  
**Philippe Roingard**  
Tours  
**Hugues Berry**  
Lyon  
**Aude Lereu & Julien Lumeau**  
Marseille



CEFIPRA





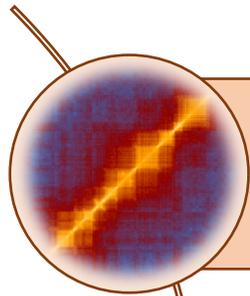
# FBI executive board audition: Giacomo Cavalli lab application



# 'Chromatin and cell biology' lab overview

## Understanding the eukaryotic genome 3D organization using *genetics* and *epigenetics* readouts

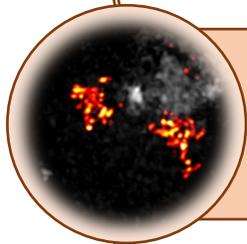
During differentiation (murine ES cells) and development (Drosophila)



### Population level genomics

Hi-C, Micro-C, Capture Hi-C, Capture micro-C, ChIP-Seq, Cut&Run, RNA-Seq

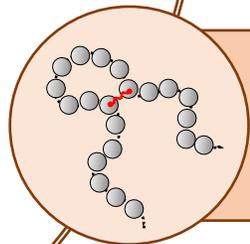
14



### Single-cell imaging, Oligopaint

Wide-field, Confocal, SIM, STED, dSTORM, Sequential microscopy

10



### Chromatin organization modelling

Data-driven (top-down) and Hypothesis-driven (bottom-up) approaches

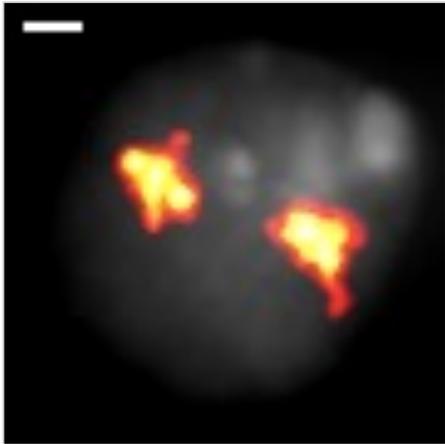
6



# Oligopaint activity in the lab

## Chromatin and Topologically Associating Domains (TADs) imaging

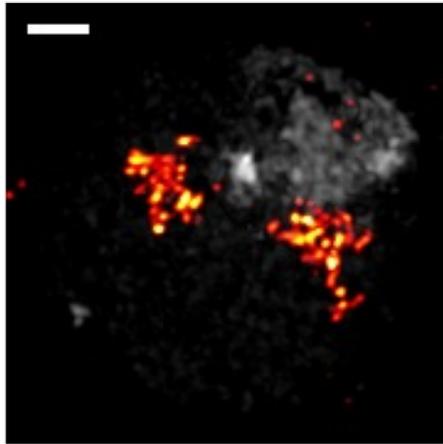
Conventional WF



Scale bar: 1  $\mu$ m

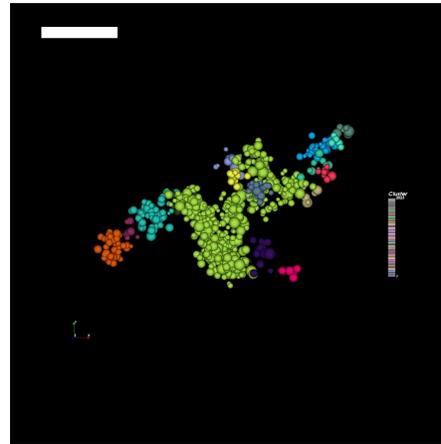
***Drosophila* cells**  
Oligopaint probe covering **3 Mb**

3D-SIM



Scale bar: 1  $\mu$ m

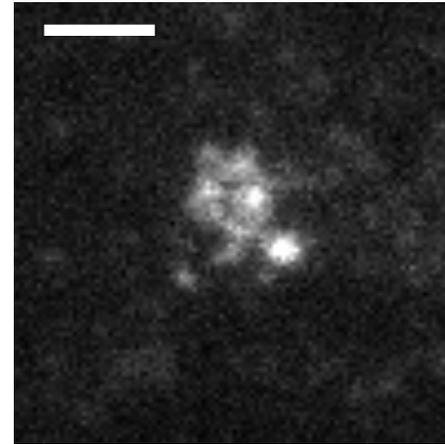
dSTORM



Scale bar: 300 nm

**Mouse ES cells**  
TAD #32, **970 kp**

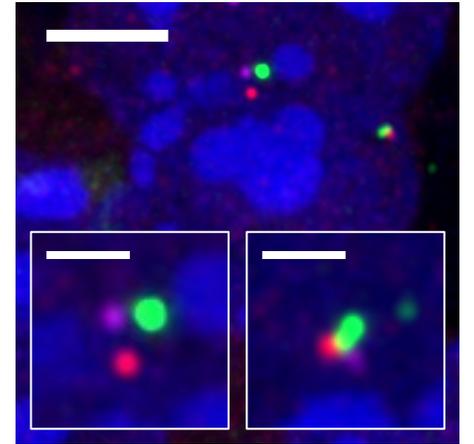
STED



Scale bar: 500 nm

**Mouse ES cells**  
TAD #22, **675 kb**

AiryScan



Scale bars: 5  $\mu$ m and 500 nm

**Mouse NPC cells**  
Sox2 locus, **10 kb**

*Szabo et al., Science Advances 2018*

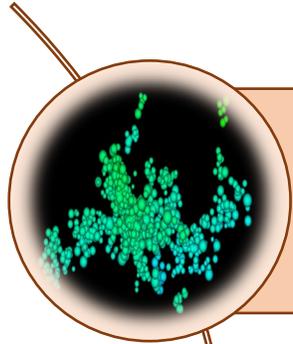
*Szabo et al., Nature Genetics 2020*

Low

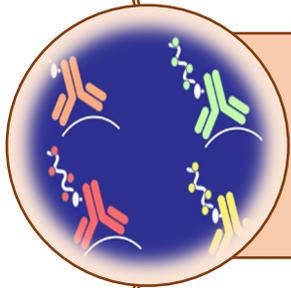
Genomic resolution

High

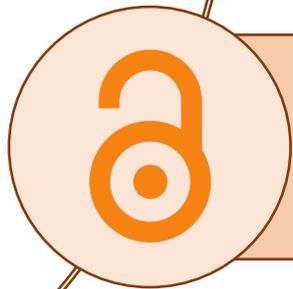
# Possible GC lab contribution to the FBI community



**Oligopaint technology sharing**



**Development of combined IF and Oligopaint**



**Continued implementation of FAIR and *Open Science* policies**

# Oligopaint technology sharing

## Available tools and lab know-how

Guidance with different **probe design algorithms & barcode library** for probe multiplexing and colour encoding

Beliveau *et al.*, *Nat. Commun.* 2015

Protocols for multicolour and signal-enhanced **Oligopaint probe realization**

Jerković *et al.*, *in preparation*

Protocols for **Oligopaint FISH in different model systems:**

Mouse ES and differentiated cells  
Primary human cells  
*Drosophila* cells, embryos, and tissues

Bantignies & Cavalli, *Meth. Mol. Biol.* 2014  
Szabo *et al.*, *Meth. Mol. Biol.* 2021

**Analysis pipelines and software suites** for data analysis

Szabo *et al.*, *Nat. Genet.* 2020  
Szabo *et al.*, *Meth. Mol. Biol.* 2021

### Available Oligopaint probe library

- Mouse *Sox2* locus: 15 probes
- Mouse *Zfp608* locus: 5 probes
- Mouse TADs: 26 probes (Szabo *et al.*, *Nat. Genet.* 2020)
- *Drosophila* TADs: 12 probes (Beliveau *et al.*, *Nat. Commun.* 2015, Szabo *et al.*, *Science Advances* 2018)
- *Drosophila* Dachshund locus: 20 barcoded probes for sequential imaging (Denaud *et al.*, *submitted*)
- ...

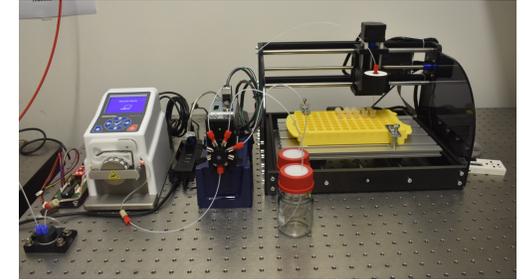
# Oligopaint technology sharing

## Transfer to FBI community

### Oligopaint technology web page

(within the FBI infrastructure)

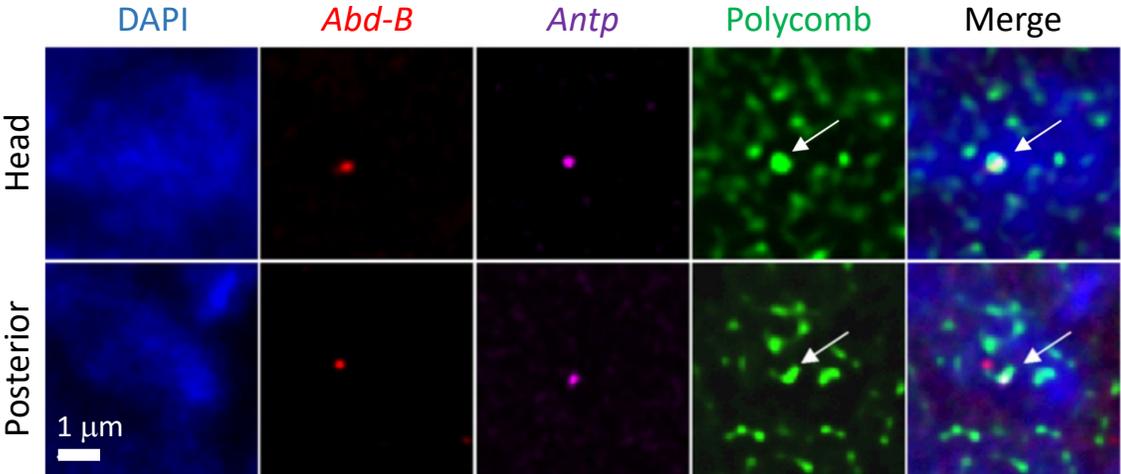
- **Protocols for Oligopaint probes design and realization**
- **Repository of barcodes**
- **Protocols for Oligopaint experiments**
- **List of available Oligopaint probes**
- **Software**
- **References**
- **Links**
- **News**
- **Q/A, user comments, forum**



- A **user-friendly**, sequential imaging station (Vutara VXL with 96 reservoirs + 2 cam, Bruker), at the **MRI@IGH platform**, is available for the **FBI community**.
- **Portable liquid handling unit** for sequential imaging experiments with different microscopy modalities (spinning disk, light sheet, ...) is under development and will be available to the community.

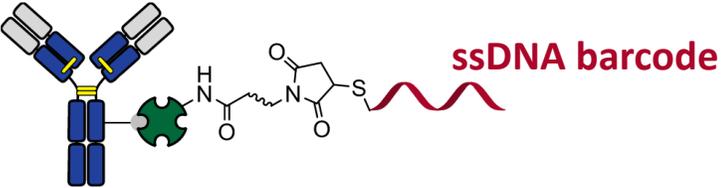
# Development of combined IF and Oligopaint

## Towards sequential imaging

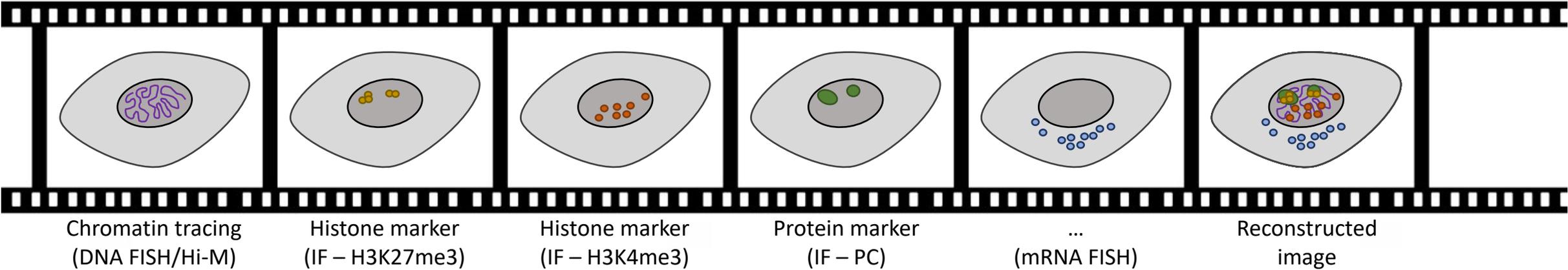


Bantignies *et al.*, *Cell* **144**, 214 (2011)

Conventional antibodies, Recombinant single-chain variable fragments, Nanobodies, Mintbodies  
**Possible collaboration with EpiCypher Inc.**



Dovgan *et al.*, *Bioconjugate Chem.* **30**, 2483 (2019)



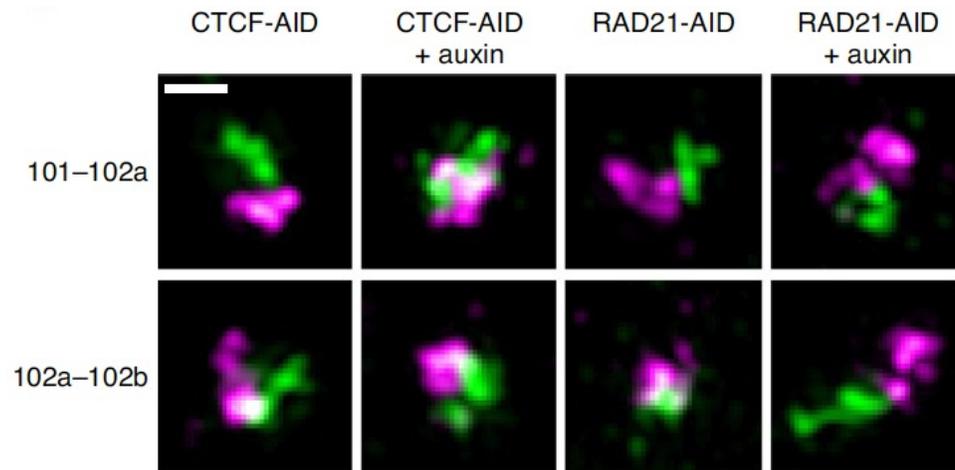
# Implementation of *Open Science* and FAIR policies

- Publication in journals



## Regulation of single-cell genome organization into TADs and chromatin nanodomains

Quentin Szabo<sup>1</sup>, Axelle Donjon<sup>1,6</sup>, Ivana Jerković<sup>1,6</sup>, Giorgio L. Papadopoulos<sup>1,6</sup>, Thierry Cheutin<sup>1</sup>, Boyan Bonev<sup>1,5</sup>, Elphège P. Nora<sup>2</sup>, Benoit G. Bruneau<sup>2,3,4</sup>, Frédéric Bantignies<sup>1</sup>✉ and Giacomo Cavalli<sup>1</sup>✉



- Publication of codes for image analysis

[https://github.com/QuentinSzabo/Szabo\\_NG\\_2020](https://github.com/QuentinSzabo/Szabo_NG_2020)

- Publication of annotated source data

Szabo, Quentin (2021): *image\_repository*. figshare. Dataset.  
<https://doi.org/10.6084/m9.figshare.14459004.v1>



In collaboration with MRI (Julio Mateos Langerak):

➤ **Published in IDR (Image Data Resource)**

Access number: idr0156 (*in press*).

<https://idr.openmicroscopy.org>

Other possibility for the future: set up a similar initiative in FBI  
Or use Figshare, Zenodo or Bioimage archive, but less useful.

# WORKSHOP ON HEALTH DATA PLATFORMS FOR AI-DRIVEN DISCOVERY AND ALL-HANDS NODES MEETING

16th-19th April 2024

Torino - Palazzo Ceriana Mayneri, Corso Stati Uniti 27



[Register here](#)

## Tuesday, 16th April 2024: Satellite event “Workshop on Health Data platforms for AI-driven discovery”

12.30 – 13.30	<i>Light lunch and registration</i>
13.30 – 14.00	Welcome and Introduction from Euro-BioImaging ERIC
14.00 - 14.30	Digital Transformation, Aleksandra Wesolowska, European Commission, Programme Officer – EU Policies, CNECT.H3 – eHealth, Well-Being and Ageing (TBD)
14.30 – 15.00	EUCAIM, The European Federation for Cancer Images, Prof. Luis Marti Bonmati - La Fe Polytechnic and University Hospital of Valencia
15.00 – 15.30	Innovative Health Initiative (IHI) project (tbd)
15.30 – 16.30	<i>Coffee break &amp; networking</i>
16.30 – 17.00	New digital developments to support personalized Medicine, Dr. Alessandro Maiocchi, Innovation Hub - Bracco Spa
17.00 – 17.30	Industrial Speaker (tbd)
17.30 - 18.45	Advanced medical imaging and AI-driven discovery at Euro-BioImaging Nodes
18.45	Closing

**Wednesday, 17th April 2024: EBIB & NODES Workshop**  
**“Imaging services for Discovery and Translational Research”**

8.30-9.30	<i>EBIB meeting (Closed)</i>
9.00-9.30	<i>Registration</i>
9.30 – 9.40	Welcome from Euro-BioImaging Industry Board (EBIB)
9.40 - 10.30	<b>Scientific session I: Imaging across scales and modalities</b> <ul style="list-style-type: none"> <li>- TissueGnostics- AI Diagnostics</li> <li>- Speaker 2</li> <li>- Speaker 3</li> <li>- Speaker 4</li> <li>- ...</li> </ul>
10.30 - 11.30	<i>Coffee Break / networking</i>
11.30 - 12.30	<b>Scientific session III: Multidimensional imaging/Imaging beyond 3D</b> <ul style="list-style-type: none"> <li>- Speaker 1</li> <li>- Speaker 2</li> <li>- Speaker 3</li> <li>- ....</li> </ul>
12.30 - 14.00	<i>Buffet Lunch</i>
14.00 - 15.30	<b>Scientific session II: Screening and working with disease models</b> <ul style="list-style-type: none"> <li>- Telight - Screening systems</li> <li>- Speaker 2</li> <li>- Speaker 3</li> <li>- Speaker 4</li> <li>- ...</li> </ul>
15.30 - 16.15	<i>Coffee Break / networking</i>
16.15 - 16.45	Keynote talk: EuroPDX Prof. Enzo Medico, Candiolo Cancer Institute IRCCS, Candiolo, Italy
16.45 - 17.00	Discussion and wrap-up
19.30	<i>Dinner (offered by EBIB) at La Badessa Restaurant</i>

*Note: time slots can be adapted based on number of contributions received*

### Thursday 18th April: ALL HANDS NODES MEETING - Day 1

9.00 – 9.10	Welcome from the Chairs of the panel of Nodes
9.10 – 10.30	<b>Updates from the Nodes / Scientific session IV (open topics)</b> <ul style="list-style-type: none"> <li>- Speaker 1</li> <li>- Speaker 2</li> <li>- Speaker 3</li> <li>- Speaker 4</li> <li>- ...</li> </ul>
10.30 – 11.30	<i>Coffee break &amp; Poster tour</i>
11.30 – 12.50	<b>Updates from the Nodes / Scientific session V (open topics)</b> <ul style="list-style-type: none"> <li>- Speaker 1</li> <li>- Speaker 2</li> <li>- Speaker 3</li> <li>- Speaker 4</li> <li>- ...</li> </ul>
13.00 – 14.30	<i>Buffet Lunch &amp; Networking</i>
14.30 - 15.30	Recapitulation from previous meeting of Nodes Updates and Opportunities from Euro-BioImaging - presentation by the Hub
15.30 – 16.15	<i>Coffee break &amp; Poster tour</i>
16.15 – 17.45	Q&A and discussion (open session)
17.45 - 18.00	Conclusion
19.30	<i>Social Pizza</i>

*Note: time slots can be adapted based on number of contributions received*

### Friday 19th April: ALL HANDS NODES MEETING - Day 2

9.00 – 9.15	Introduction by the Chairs of the panel of Nodes
9.15 – 10.30	Panel and breakout sessions (TBD)
10.30 - 11.30	<i>Coffee break and networking</i>
11.30 - 12.30	Wrap up from breakout sessions
12.30 - 14.00	<i>Lunch</i>