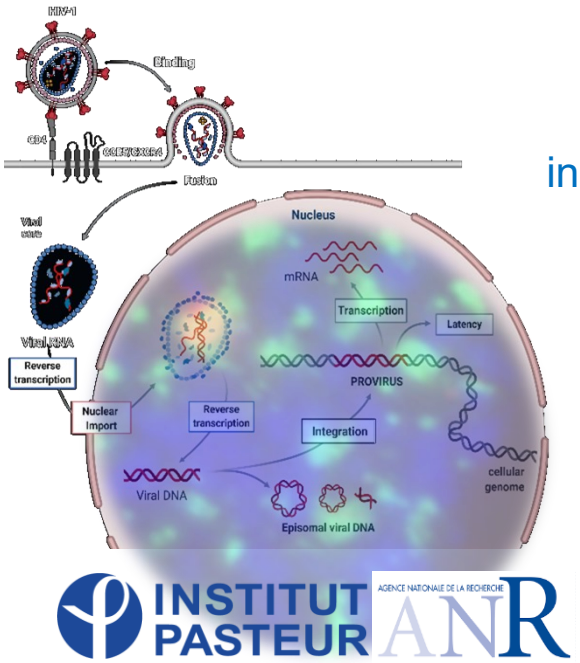

Post-Doctoral Research Opportunity in Host-Virus Co-existence and HIV Infection Dynamics

Institut Pasteur
Paris

We are seeking a bright, curious, and flexible scientist to join our research team at the Institut Pasteur. Our study focuses on the intricate dynamics of the human immunodeficiency virus (HIV) during the early stages of infection, particularly within the host cell nuclei. Despite years of research and established dogmas, recent studies have unveiled new aspects of these early steps, highlighting the complexity of HIV's journey inside the host.

Aspects on spatial organization of cells in organs and how the mechanodynamics stress can influence the nuclear viral journey is the aim of this study. The virus to enter the nucleus encounter the first barrier constitute by the nuclear pore complex that can be linked to nuclear membraneless organelles, all these steps should occur under the shadow from the innate immunity that is the first immunity defence against viruses.

Key Aspects of the Role:

- Our group combines molecular and cell biology, virology, and quantitative microscopy techniques, such as single-particle tracking of viral genomes.
- This project will leverage unique live cell tools we have developed to track the virus as it reverse transcribes its genome directly into the host nucleus.
- The candidate will have the opportunity to work with several cutting-edge platforms on campus, with a collaborative interdisciplinary team, and under the guidance of an enthusiastic and passionate mentor.

Requirements:

- A Ph.D. degree in virology, cell biology, biophysics, or related fields.
- Enthusiasm, motivation, and passion for uncovering new insights into viral-host interactions.
- Demonstrated ability to conduct independent research.

About the Institut Pasteur: The Institut Pasteur provides excellent training and a collaborative environment for research. It offers a highly stimulating international

environment with many cutting-edge platforms located on campus, and numerous benefits associated with the salary.

Duration: 24 months

Application Instructions: To apply, please send a motivation letter, CV, and contact information for three references to Francesca Di Nunzio at dinunzio@pasteur.fr.

For more information regarding projects in the laboratory, please visit: https://research.pasteur.fr/en/team/advanced-molecular-virology/

Join us in our quest to uncover the hidden mechanisms of HIV and its persistence in our world. Your contributions could pave the way for ground-breaking discoveries in virology and cell biology.

Related publications from the Di Nunzio's laboratory:

1: Scoca V, Di Nunzio F. Characterization of Nuclear HIV-Induced Membraneless Organelles Through Fluorescence Microscopy. Methods Mol Biol. 2024;2807:113-125. doi: 10.1007/978-1-0716-3862-0_8. PMID: 38743224.

2: Ay S, Di Nunzio F. HIV-Induced CPSF6 Condensates. J Mol Biol. 2023 Aug 15;435(16):168094. doi: 10.1016/j.jmb.2023.168094. Epub 2023 Apr 14. PMID: 37061085.

3: Di Nunzio F. Stress-induced condensate switch awakens sleeping viruses. Cell Host Microbe. 2023 May 10;31(5):679-680. doi: 10.1016/j.chom.2023.04.008. PMID: 37167945.

4: Scoca V, Morin R, Collard M, Tinevez JY, Di Nunzio F. HIV-induced membraneless organelles orchestrate post-nuclear entry steps. J Mol Cell Biol. 2022 Apr 6;14(11):mjac060. doi: 10.1093/jmcb/mjac060. PMID: 36314049; PMCID: PMC10117160.

5: Blanco-Rodriguez G, Di Nunzio F. The Viral Capsid: A Master Key to Access the Host Nucleus. Viruses. 2021 Jun 20;13(6):1178. doi: 10.3390/v13061178. PMID: 34203080; PMCID: PMC8234750.

6: Scoca V, Di Nunzio F. Membraneless organelles restructured and built by pandemic viruses: HIV-1 and SARS-CoV-2. J Mol Cell Biol. 2021 Aug 4;13(4):259-268. doi: 10.1093/jmcb/mjab020. PMID: 33760045; PMCID: PMC8083626.

7: Scoca V, Di Nunzio F. The HIV-1 Capsid: From Structural Component to Key Factor for Host Nuclear Invasion. Viruses. 2021 Feb 10;13(2):273. doi: 10.3390/v13020273. PMID: 33578999; PMCID: PMC7916756.

8: Rensen E, Mueller F, Scoca V, Parmar JJ, Souque P, Zimmer C, Di Nunzio F. Clustering and reverse transcription of HIV-1 genomes in nuclear niches of macrophages. EMBO J. 2021 Jan 4;40(1):e105247. doi: 10.15252/embj.2020105247. Epub 2020 Dec 3. PMID: 33270250; PMCID: PMC7780146.

9: Blanco-Rodriguez G, Gazi A, Monel B, Frabetti S, Scoca V, Mueller F, Schwartz O, Krijnse-Locker J, Charneau P, Di Nunzio F. Remodeling of the Core Leads HIV-1 Preintegration Complex into the Nucleus of Human Lymphocytes. J Virol. 2020 May 18;94(11):e00135-20. doi: 10.1128/JVI.00135-20. PMID: 32238582; PMCID: PMC7269431 (Cover August 2020)

10: Buffone C, Martinez-Lopez A, Fricke T, Opp S, Severgnini M, Cifola I, Petiti L, Frabetti S, Skorupka K, Zadrozny KK, Ganser-Pornillos BK, Pornillos O, Di Nunzio F, Diaz-Griffero F. Nup153 Unlocks the Nuclear Pore Complex for HIV-1 Nuclear Translocation in Nondividing Cells. J Virol. 2018 Sep 12;92(19):e00648-18. doi: 10.1128/JVI.00648-18. PMID: 29997211; PMCID:
PMC6146805.

11: Lelek M, Casartelli N, Pellin D, Rizzi E, Souque P, Severgnini M, Di Serio C, Fricke T, Diaz-Griffero F, Zimmer C, Charneau P, Di Nunzio F. Chromatin organization at the nuclear pore favours HIV replication. Nat Commun. 2015 Mar 6;6:6483. doi: 10.1038/ncomms7483. PMID: 25744187; PMCID: PMC4366494.

12: Di Nunzio F. New insights in the role of nucleoporins: a bridge leading to concerted steps from HIV-1 nuclear entry until integration. Virus Res. 2013 Dec 26;178(2):187-96. doi: 10.1016/j.virusres.2013.09.003. Epub 2013 Sep 16. PMID: 24051001.

13: Di Nunzio F, Fricke T, Miccio A, Valle-Casuso JC, Perez P, Souque P, Rizzi E, Severgnini M, Mavilio F, Charneau P, Diaz-Griffero F. Nup153 and Nup98 bind the HIV-1 core and contribute to the early steps of HIV-1 replication. Virology. 2013 May 25;440(1):8-18. doi: 10.1016/j.virol.2013.02.008. Epub 2013 Mar 21. PMID: 23523133; PMCID: PMC3860269.