

Guillaume Lamour

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- Summary**
- **Research Engineer** (“Ingénieur de recherche”) at the University of Évry (permanent since Dec. 2022) in characterizing biomaterials. Specialized in atomic force microscopy (AFM). Accredited to lead research (“**HDR**”).
 - **34** journal articles, **14** conference talks, **20** conference posters, **14** invited talks (seminars). *h-index* = **17**. Articles: **10** as first author, **3** as last author, and **8** as corresponding author. Journals: *Nat. Nanotechnol.*, *Nat. Chem.*, *Adv. Mater.*, *Nano Lett.*, *ACS Nano*, *JACS*, *Phys. Rev. X*, *Biomaterials*, *Nat. Commun.*, *Small*, *Biophys. J.*,...
- Research Interests** Interfacing physics, chemistry and computing with biology at the nanoscale; biomaterials; biophysics; nanomechanics.
- Professional Experience**
- RESEARCH ENGINEER (SINCE JAN. 2020), POST-DOC., ATER 2017–present
Lambe CNRS (UMR8587), Université d'Évry-Paris Saclay, France.
- Developing an AFM platform to image and characterize the morphological and mechanical properties of soft materials, including living cells and biomimetic systems. Current projects focus on cardiomyocytes and myotubes.
- POSTDOCTORAL RESEARCH FELLOW 2011–2016
Michael Smith Laboratories, University of B.C. in Vancouver, Canada
- Investigated amyloids and connected their mechanical properties (stiffness, strength) with the intermolecular interactions in the fibrils. This helps understanding the molecular origins of amyloid diseases (*e.g.*, Alzheimer’s or prion diseases) and may help in designing amyloid-based nanomaterials with tailored mechanical properties.
- PH.D. RESEARCHER 2006–2010
Biomedical Department, Université Paris Cité, France.
- Discovered how nanoscale spatial variations in adhesion energy of self-assembled monolayers, used as culture substrates, can dramatically affect the adhesion and differentiation of neuronal cells (*i.e.*, making axons and dendrites). This may help designing new biocompatible materials with controlled physico-chemical surface features.
- Education**
- University of Paris Cité (ex-Paris Diderot/Paris 7, France)*
- Ph.D.** in Interfaces of Chemistry, Physics, and Informatics with Biology (2010)
- Title: Influence of substrate nanostructure in cell adhesion and differentiation.
 - Advisor: Ahmed Hamraoui.
 - Defended on June 24, 2010 in Paris ; manuscript: www.theses.fr/2010PA077152
 - Jury: J.F. Joanny , H. Haidara, P. Bongrand, E. Borguet, S. Souès et P. Nassoy.
- M.Sc.**, Cellular and Molecular Biophysics (2006)
- B.Sc.**, Physical-Chemistry (2004)
- Service Activities**
- Co-organiser of the “Forum des microscopies à sondes locales 2026”. Reviewed research articles for *ACS Nano*, *Small*, *Nat. Commun.*, *J. Phys. Chem. Lett.*, *Biophys. J.*, *J. Biomed. Mater. Res. A*, *Langmuir*, *J. Mol. Model.*, *JoVE journal*.
- Funding**
(awarded to me, unless specified)
- ANR MoHeDis (2022–2026, partner, **150 k€**, P.I.: Onnik Agbulut); Genopole postdoctoral fellowship (2017–2019), **150 k€** ; *Equipment grants*: Fonds d’Investissement de la Recherche (2023): **23 k€** ; DIM Respole (2019): **80 k€** awarded to the team.
ANR JCJC 2022 (as Principal Investigator): admitted to the 2nd round.

Teaching TUTORIAL LECTURER

- 2016: *Physics* classes to Physics students and *Biophysics* classes to Biology students at the University of Évry (“*Travaux Dirigés*”: **96 h**; 3×40 students; 1st year undergraduates): Mechanics, electricity and optics.
- 2007: *Physics* classes to medical school students at the Faculty of Medicine, Université Paris Cité—*ex-Paris Descartes-Paris 5*— (“*Travaux Dirigés*”: **66 h**; 2×40 students; “1^{ère} année de médecine”): Diffusion (fluid statics and dynamics), electricity and optics.

MENTOR/(CO-)ADVISOR

Univ. Évry-Paris Saclay and Univ. of B.C.

Level	Student name	Years	Advising duties	Amount of supervision	Production
Ph.D.	Anissa Aït Ouailal	2025–present	Project supervision	100 %	N/A
Ph.D.	Raphaël Crépin	2022–present	Project supervision	70 %	<i>BMC Bioinformatics</i> 2025; <i>ACS Biomater. Sci. Eng.</i> 2024
Ph.D.	Rose Bulteau	2021–2025	AFM force spectro.	30 %	<i>Small</i> 2025; 1 book chapter (2024)
Ph.D.	Rogério Lopes dos Santos	2019–2023	AFM imaging and nanomechanics	30 %	2 conf. posters (2021; 2022)
Ph.D.	Maxime Liboz	2018–2022	AFM imaging and nanomechanics	40 %	<i>Stem Cell Rev</i> 2024; <i>ACS Appl. Mater. Interfaces</i> 2023
Ph.D.	Roy Nassar	2017–2019	Computing proteins	30 %	<i>JACS</i> 2019
Postdoc	Dr. Preety Panwar	2012–2015	AFM imaging and nanomechanics	30 %	<i>J. Biol. Chem.</i> 2013 <i>J. Biol. Chem.</i> 2015
Ph.D.	Jinsong Feng	2012–2014	AFM imaging and surf. energy calc.	30 %	<i>Int. J. Food Microbiol.</i> 2016
Ph.D.	Chengzhi He	2012–2014	SMD simulations	30 %	<i>JACS</i> 2014
M.Sc.	Roy Nassar	2015–2017	SMD simulations	60 %	<i>J. Phys. Chem. Lett.</i> 2018; <i>Biophys. J.</i> 2017
M.Sc.	Y. Devin Li	2011–2012	SMD simulations	30 %	<i>Biophys. J.</i> 2012

Research Production

- Facts and figures:
 - *h-index* = **18**. ~ 150 citation/year.
 - **34** journal articles (*first author*: **10**, *last author*: **3**, *corresponding author*: **8**).
 - **14** conference talks.
 - **19** conference posters (**11** as presenter).
 - **14** invited talks (seminars).
- Webpages:
 - **Google Scholar**: scholar.google.ca/citations?user=8AxLjooAAAAJ&hl=en
 - **ResearcherID**: www.researcherid.com/rid/D-6758-2015
 - **ResearchGate**: www.researchgate.net/profile/Guillaume-Lamour
 - **Laboratory**: www.lambe.univ-evry.fr/equipes/membres-permanents
 - **Semantic scholar**: www.semanticscholar.org/author/Guillaume-Lamour/2085710
 - **HAL**: cv.hal.science/guillaume-lamour
 - **ORCID**: orcid.org/0000-0002-9331-5532
 - **LinkedIn**: www.linkedin.com/in/lamourphd

**Research
Production**
(cont.)

- Selected Publications (corresponding authors underlined):
- 1. Lamour G., M. Malo, R. Crépin, J. Pelta, S. Labdi, and C. Campillo. *Dynamically mapping the topography and stiffness of the leading edge of migrating cells using AFM in fast-QI mode*. ACS BIOMATER. SCI. ENG. **2024**; DOI: [10.1021/acsbiomaterials.3c01254](https://doi.org/10.1021/acsbiomaterials.3c01254) . Journal impact factor (IF) = 5.
Highlights: A new AFM module to characterize the nanomechanics of nanoscale objects with better spatiotemporal resolution. Here it is applied to the leading edge of migrating cells, and shows how lamellum and lamellipodium interact to propulse cancer cells forward. Indicates the presence of strong gradients in the local stiffness of the lamellipodium.
- 2. Lamour G., A. Allard, J. Pelta, S. Labdi, M. Lenz, and C. Campillo. *Mapping and modeling the nanomechanics of bare and protein-coated lipid nanotubes*. PHYS REV X. **2020**; DOI: [10.1103/PhysRevX.10.0111031](https://doi.org/10.1103/PhysRevX.10.0111031). IF = 14.
Highlights: A new platform to study the mechanical interactions of lipid membranes with membrane proteins. Also includes a complete theoretical description of the interaction between the soft nanotube and the nanoscale indenter. Unveils the universal relationship between nanotube height and stiffness.
- 3. Nassar R., E. Wong, JM. Bui, CK. Yip, HB. Li, J. Gsponer, and G. Lamour. *Mechanical anisotropy in GNNQQNY amyloid crystals*. J PHYS CHEM LETT. **2018**; DOI: [10.1021/acs.jpcclett.8b02027](https://doi.org/10.1021/acs.jpcclett.8b02027). IF = 7.
Highlights: Combines multifrequency AFM experiments on amyloid crystals with full-atom molecular dynamics simulations to measure the mechanical properties of these nanoscale structures both *in vitro* and *in silico*. Shows the molecular origin of the mechanical anisotropy by looking at the distinct interfaces within the crystal structure.
- 4. Lamour G., C. Yip, HB. Li, and J. Gsponer. *High intrinsic mechanical flexibility of mouse prion nanofibrils revealed by measurements of axial and radial Young's moduli*. ACS NANO. **2014**; DOI: [10.1021/nl5007013](https://doi.org/10.1021/nl5007013). IF = 18.
Highlights: First account of the nanomechanical properties of prion fibrils, known to propagate extremely fast in Creutzfeldt-Jakob/mad cow disease. Prion fibrils appeared consistently softer than nonprion amyloid fibrils, across a wide range of morphologically different fibrils made of both wild-type and mutant recombinant prion proteins.
- 5. Lamour G., A. Eftekhari-Bafrooei, E. Borguet, S. Souès, and A. Hamraoui. *Neuronal adhesion and differentiation driven by nanoscale surface free-energy gradients*. BIOMATERIALS. **2010**; DOI: [10.1016/j.biomaterials.2010.01.099](https://doi.org/10.1016/j.biomaterials.2010.01.099) . IF = 12.
Highlights: Combines nonlinear optics (sum-frequency generation) with contact angle measurements to characterize the nanoscale surface distribution of the adhesion energy of self-assembled monolayers. Shows how the adhesion and differentiation of neuronal cells is triggered by increasing the magnitude of local gradients surface energy.

**Conference
Talks**

- AFM BIOMED, Barcelona, **Spain**. 2025
- FORUM MICROSCOPIES À SONDES LOCALES, Spa, **Belgium**. 2025
- FORUM MICROSCOPIES À SONDES LOCALES, Lyon, **France**. 2024
- 9TH MULTIFREQUENCY AFM CONFERENCE, Madrid, **Spain**. 2023
- BRUKER WORKSHOP–AFM USERS DAYS, Nancy, **France**. 2022
- FORUM MICROSCOPIES À SONDES LOCALES, Saint-Valéry, **France**. 2022
- THE PROTEIN AGGREGATION CONFERENCE (FASEB), **USA** (Online). 2021
- 8TH MULTIFREQUENCY AFM CONFERENCE, Madrid, **Spain** (Online). 2020
- FRENCH MICROSCOPY SOCIETY (SF μ), Poitiers, **France**. 2019
- GDR 3070, PHYSICS FROM THE CELL TO THE TISSUE, Arcachon, **France**. 2016
- BIOPHYS. SOC. MEETING: POLYMERS AND SELF-ASSEMBLY, Rio de J., **Brazil**. 2015
- MOLECULAR ORIGINS OF NEURODEGEN. DISEASES, Vancouver, **Canada**. 2014
- FRONTIERS IN BIOPHYSICS, Vancouver, **Canada**. 2013
- GORDON-KENAN RESEARCH SEMINAR, Lewiston, **USA**. 2011

Invited Seminars	– UNIVERSITY OF CALIFORNIA SAN DIEGO, Dept. of Chemistry, San Diego, USA .	2024
	– UNIVERSITÉ PARIS CITÉ, Epigenetics and Cell Fate Centre, Paris, France .	2023
	– AMOLF, Biochemical Networks group, Amsterdam, Netherlands .	2022
	– SORBONNE UNIVERSITÉ, Institut de Biologie Paris-Seine, Paris, France .	2020
	– COLLÈGE DE FRANCE, LCMCP, Paris, France .	2016
	– UNIVERSITÉ D'ÉVRY, LAMBE, Évry-Courcouronnes, France .	2016
	– UNIVERSITÉ DE STRASBOURG, Faculté de Chimie, Strasbourg, France .	2016
	– CAMBRIDGE UNIVERSITY, Dept. of Physiology, Dev. and Neurosci., UK .	2015
	– SIMON FRASER UNIVERSITY, Biophysics Group, Burnaby (BC), Canada .	2015
	– ILLUMINA INC., San Diego (CA), USA .	2015
	– DUPONT CENTRAL R&D, Materials Science, Wilmington (DE), USA .	2015
	– MCGILL UNIVERSITY, Dept. of Bioengineering, Montreal (QC), Canada .	2014
	– INSTITUTE FOR BIOENGINEERING OF CATALONIA, Barcelona, Spain .	2010
	– UNIVERSIDAD DE LOS ANDES, Dept. of Physics, Bogota, Colombia .	2010

Poster Presentations	– GORDON RES. CONF.: INTERMEDIATE FILAMENTS, Barcelona, Spain .	2024
	– PHYSICS AND BIOLOGICAL SYSTEMS, Gif-sur-Yvette, France .	2018
	– PHYSICS AND BIOLOGICAL SYSTEMS, Palaiseau, France .	2016
	– SPM ON SOFT POLYMERIC MATERIALS, Toronto (ON), Canada .	2014
	– BIOPHYSICAL SOCIETY MEETING, Philadelphia (PA), USA .	2013
	– PRION, Amsterdam, Netherlands .	2012
	– GORDON RES. CONF.: SCIENCE OF ADHESION, Lewiston (ME), USA .	2011
	– PRION NEW WORLD, Montreal (QC), Canada .	2011
	– PHYSICS OF CELLS (EMBO), Primošten, Croatia .	2009
	– FORUM OF EUROPEAN NEUROSCIENCES SOC., Geneva, Switzerland .	2008
	– EUROPEAN BIOPHYSICS CONGRESS, London, UK .	2007

Collaborators
(Present and past)

■ International:

- Julia Ortony (**University of California San Diego**, USA)
→ *Advanced Materials* 2025; *Nature Chemistry* 2025; *Nature Communications* 2021; *Nano Letters* 2021; *Nature Nanotechnology* 2020
- Jörg Gsponer, Calvin Yip (**University of British Columbia**, Canada)
→ *JACS* 2019; *J Phys Chem Lett* 2018; *Biophys. J* 2017; *ACS Nano* 2014; *Biochem. J* 2013
- Hongbin Li, Dieter Brömme, Neil Cashman, Xionan Lu (**UBC**, Canada)
→ *ACS Chem. Neurosci.* 2018; *Int. J. Food. Microbiol.* 2016; *J. Biol. Chem.* 2015 & 2013; *JACS* 2014; *J. Neurosci.* 2013; *Biophys. J* 2012
- Hao Wu (**Harvard Medical School**, USA)
→ *Biophys. J* 2017
- Tuomas Knowles (**Cambridge University**, UK)
→ *Source Code Biol. Med.* 2014
- Nancy Forde (**Simon Fraser University**, Canada)
→ *Biomacromolecules* 2014
- Eric Borguet (**Temple University**, USA)
→ *J. Chem. Educ.* 2010; *Biomaterials* 2010

■ National:

- Pierre Joanne, Onnik Agbulut (**Sorbonne Université**)
→ *thèse Raphaël Crépin* (2022–présent), *thèse Anissa Aït Ouailal* (2025–présent)
- Clément Campillo, Sid Labdi, Juan Pelta, Régis Daniel (**Université d'Évry**)
→ *ACS Biomater. Eng. Sci.* 2024; *ACS Appl. Mater. Interfaces* 2023; *Phys. Rev. X* 2020
thèse Maxime Liboz (2018–2022), *thèse Rogerio Lopes dos Santos* (2019–2023), *thèse Rose Bulteau* (2022–présent)
- Christelle Monville, Karim M'Barek (**i-Stem**)
→ *Thèse Élise Hérardot* (2020–2023); *Stem Cell Rev.* 2024
- Martin Lenz (**Université Paris Sud**)
→ *Phys. Rev. X* 2020
- Ahmed Hamraoui, Sylvie Souès (**Université Paris Cité**)
→ *Macromol. Biosci.* 2015; *J. Biomed. Mater. Res. A* 2011; *Biomaterials* 2010; *J. Chem. Educ.* 2010; *Colloids. Surf. B* 2009