

PERSONAL INFORMATION**Current position**

Job Title	Group Leader R3		
Starting date	2022		
Institution	Centro de Investigación Príncipe Felipe, Valencia		
Country	Spain	Phone Number	+34 963 289 681

Previous positions

Period	Job Title / Name of Employer / Country
2012 - 2022	Postdoctoral researcher, IBEC, Barcelona, Spain
2018 - 2022	Associate Professor / Universitat de Barcelona / Spain

Education

Degree/Master/PhD	University / Country	Year
PhD in Biology	University of Toulouse, France	2012
Master of Analytical Sciences	University of Lyon, France	2008
B.Sc. in Molecular Biology and Biochemistry	University of Toulouse, France	2006
Diploma of Higher Education in Molecular Biology and Biochemistry	University of Toulouse, France	2005

Keywords	Mechanobiology, Tumor Biology, Cell migration, Tumor microenvironment
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CV SUMMARY

Anna Labernadie (AL) holds a PhD in Cell Biology from University Paul Sabatier Toulouse, France. She recently obtained a Ramón y Cajal fellowship (RYC 2020) and integrated The Príncipe Felipe Research Center Foundation (CIPF) as Group Leader of the Cell Behaviour and Tissue Bioengineering group (2022). AL has been working as a Postdoctoral Researcher at the ICTD group led by Prof. Xavier Trepas at IBEC, Barcelona, Spain (2012-2022). AL has strong expertise in Mechanobiology, Tumour cell biology and Biophysics. Her postdoctoral research project focused on the biophysical mechanisms of cellular movement during tumour dissemination and inflammation processes, especially on the role of fibroblasts in cancer spreading and the immune response. Over the last ten years, her research projects and collaborative work led to 9 scientific publications, including top-ranking journals in cell biology and cancer research, such as Science, Nature material, Nature Cell Biology, Nature communications, and Current opinion in cell biology, including 4 as first author and 2 as corresponding author. Over her career, AL obtained 8 competitive fellowships from European, National and private funding: Ramon y Cajal fellowship 2020, "La Caixa" Junior leader 2 fellowship (2018), Ayudas Juan De La Cierva Incorporation (2016), Marie Skłodowska-Curie Actions fellowship (2014), EMBO fellowship (2013), and participated in 6 other National and International competitive funded projects as a team member. Since 2015, AL has participated in 10 international conferences and has given 7 talks as an invited speaker. She has collaborated actively with several world-class laboratories in the fields of Biophysics and Tumour cell biology, such as Prof. Xavier Trepas, IBEC, Spain; Prof. Eduard Batlle, IRB, Spain; Dr Erik Sahai, Francis Crick Institute, UK.; Dr Sophie Acton, Cancer Research, UK. AL is currently conducting a translational project that aims at understanding the impact of the tumour microenvironment on immunotherapy efficiency. Over the last year, AL has also been involved in a collaborative research project with industries and has recently deposited a Notification of invention (ImmuneResponse On-chip. IBEC, Barcelona, application number: EP22383158). AL has held an Associate Professor position at the University of Barcelona (2017-2021), giving practical courses in Biophysics in the Department of Biomedicine.

RELEVANT ACCOMPLISHMENTS**Publications, journals, books**

AC: corresponding author.

- Conti S, Venturini V, Cañellas-Socias A, Cortina C, Abenza JF, Stephan-Otto Attolini C, Middendorp Guerra E, Xu CK, Li JH, Rossetti L, Stassi G, Roca-Cusachs P, Diz-Muñoz A, Ruprecht V, Guck J, Batlle E (AC), **Labernadie A (AC)**, Trepats X (AC). Membrane to cortex attachment determines different mechanical phenotypes in LGR5+ and LGR5- colorectal cancer cells. *Nat Commun.* 2024 Apr 18;15(1):3363. doi: 10.1038/s41467-024-47227-2. PMID: 38637494; PMCID: PMC11026456.
- González-Callejo P, Gener P, Díaz-Riascos ZV, Conti S, Cámara-Sánchez P, Riera R, Mancilla S, García-Gabilondo M, Peg V, Arango D, Rosell A, **Labernadie A**, Trepats X, Albertazzi L, Schwartz S Jr, Seras-Franzoso J, Abasolo I. Extracellular vesicles secreted by triple-negative breast cancer stem cells trigger premetastatic niche remodeling and metastatic growth in the lungs. *Int J Cancer.* 2023 May 15;152(10):2153-2165. doi: 10.1002/ijc.34447. Epub 2023 Feb 7. PMID: 36705298.
- Rivas EI, Linares J, Zwick M, Gómez-Llonin A, Guiu M, **Labernadie A**, Badia-Ramentol J, Lladó A, Bardia L, Pérez-Núñez I, Martínez-Ciarpaglini C, Tarazona N, Sallent-Aragay A, Garrido M, Celià-Terrassa T, Burgués O, Gomis RR, Albanell J, Calon A. Targeted immunotherapy against distinct cancer-associated fibroblasts overcomes treatment resistance in refractory HER2+ breast tumors. *Nat Commun.* 2022 Sep 9;13(1):5310. doi: 10.1038/s41467-022-32782-3. PMID: 36085201; PMCID: PMC9463158.
- Conti S, Kato T, Park D, Sahai E, Trepats X (AC), **Labernadie A (AC)**. CAFs and Cancer Cells Co-Migration in 3D Spheroid Invasion Assay. *Methods Mol Biol.* 2021;2179:243-256. doi: 10.1007/978-1-0716-0779-4_19. PMID: 32939725.
- Park D, Wershof E, Boeing S, **Labernadie A**, Jenkins RP, George S, Trepats X, Bates PA, Sahai E. Extracellular matrix anisotropy is determined by TFAP2C-dependent regulation of cell collisions. *Nat Mater.* 2020 Feb;19(2):227-238. doi: 10.1038/s41563-019-0504-3. Epub 2019 Oct 28. PMID: 31659294; PMCID: PMC6989216.
- Labernadie A (AC)**, Trepats X (AC). Sticking, steering, squeezing and shearing: cell movements driven by heterotypic mechanical forces. *Curr Opin Cell Biol.* 2018 Oct;54:57-65. doi: 10.1016/j.ceb.2018.04.008. Epub 2018 Apr 30. PMID: 29719271.
- Labernadie A**, Kato T, Brugués A, Serra-Picamal X, Derzsi S, Arwert E, Weston A, González-Tarragó V, Elosegui-Artola A, Albertazzi L, Alcaraz J, Roca-Cusachs P, Sahai E, Trepats X. A mechanically active heterotypic E-cadherin/N-cadherin adhesion enables fibroblasts to drive cancer cell invasion. *Nat Cell Biol.* 2017 Mar;19(3):224-237. doi: 10.1038/ncb3478. Epub 2017 Feb 20. PMID: 28218910; PMCID: PMC5831988.
- Sunyer R, Conte V, Escribano J, Elosegui-Artola A, **Labernadie A**, Valon L, Navajas D, García-Aznar JM, Muñoz JJ, Roca-Cusachs P, Trepats X. Collective cell durotaxis emerges from long-range intercellular force transmission. *Science.* 2016 Sep 9;353(6304):1157-61. doi: 10.1126/science.aaf7119. PMID: 27609894.
- Vizoso M, Puig M, Carmona FJ, Maqueda M, Velásquez A, Gómez A, **Labernadie A**, Lugo R, Gabasa M, Rigat-Brugarolas LG, Trepats X, Ramírez J, Moran S, Vidal E, Reguart N, Perera A, Esteller M, Alcaraz J. Aberrant DNA methylation in non-small cell lung cancer-associated fibroblasts. *Carcinogenesis.* 2015 Dec;36(12):1453-63. doi: 10.1093/carcin/bgv146. Epub 2015 Oct 7. PMID: 26449251; PMCID: PMC4662832.
- Labernadie A**, Bouissou A, Delobelle P, Balor S, Voituriez R, Proag A, Fourquaux I, Thibault C, Vieu C, Poincloux R, Charrière GM, Maridonneau-Parini I. Protrusion force microscopy reveals oscillatory force generation and mechanosensing activity of human macrophage podosomes. *Nat Commun.* 2014 Nov 11;5:5343. doi: 10.1038/ncomms6343. PMID: 25385672.
- Labrousse AM, Meunier E, Record J, **Labernadie A**, Beduer A, Vieu C, Ben Safta T, Maridonneau-Parini I. Frustrated phagocytosis on micro-patterned immune complexes to characterize lysosome movements in live macrophages. *Front Immunol.* 2011 Oct 12;2:51. doi: 10.3389/fimmu.2011.00051. PMID: 22566841; PMCID: PMC3341964. Mechanosensing activity of human macrophage podosomes. *Nature Communications.*

Patent:

Inventors/authors/obtainers: Anna Labernadie, Alexandre Calon, Xavier Trepats. N° of application: EP22383158. Title registered industrial property: Cell culture system and cell culture method, 2022. Entity holder of rights: IBEC, ICREA, IMIM.

Conferences and meetings (2016-2024)

Micro immune response on-chip (MIRO) model to study the spatial repartition of Immune cells in Tumor driven by Stromal Mechanosensing. IUTAM Mechanobiology Symposium: Theoretical and numerical developments in cellular mechanobiology. 2024. Sevilla. Participatory - poster. Conference.

Tumor-Stroma Mechanobiology: Role in cancer spreading and immunotherapy outcomes. Imaging life: The future. 2023. France. Participatory - invited/keynotetalk. Conference.

Tumor-Stroma Mechanobiology: Role in cancer spreading and immunotherapy outcomes. 9th Biennial European Cell Mechanics Meeting. 2023. France. Participatory - invited/keynote talk.

Tumor-Stroma Mechanobiology: Role in cancer spreading and immunotherapy outcomes. VII encuentro de investigadores y investigadoras en càncerciutat d'alcoi. Trobada d'investigadors i investigadores en càncer "ciutat d'alcoi" alcoi (Alicante). 2023. Spain. Participatory - invited/keynote talk. Conference.

Physical forces driving fibroblast-led cancer cell migration (talk). Quantitative Analysis of Immune Cell Migration and Spatial Processes in Health and Disease, CMO Workshop, Oaxaca, Mexico, 2018. CMO Workshop. 2018. Participatory - oral communication.

Physical forces driving fibroblast-led cancer cell migration (talk). II Congrés de Biologia, Societat Catalana de Biologia, Barcelona, Spain, 2018. Societat Catalana de Biologia. 2018. Participatory - oral communication.

Physical forces driving fibroblast-led cancer cell migration (talk). Soft Matter Symposium, University of Florida, Gainesville, FL, USA, 2017. University of Florida. 2019. Participatory- oral communication.

Physical forces driving fibroblast-led cancer cell migration (poster). Gordon Research Conference on Directed Cell Migration, Galveston, TX USA, 2017. Gordon Research Conference. 2017. Participatory - poster.

Physical forces driving fibroblast-led cancer cell migration (talk). Gordon Research Conference on Directed Cell Migration, Galveston, TX USA, 2017. Gordon Research Conference. 2017. Participatory - oral communication.

Physical forces driving fibroblast-led cancer cell migration (talk). IRB Barcelona BioMed Conference, Barcelona, Spain, 2016. IRB. 2016. Participatory - oral communication.

Research projects and contracts (2018-2024)

Project. RYC2020-029736-I, Ayudas Ramón y Cajal, financiado por el Ministerio de Ciencia e Innovación (MICINN), y cofinanciado por el Fondo Social Europeo (FSE) y la Agencia Estatal de Investigación (AEI). Anna Labernadie (CIPF). 01/06/2022-31/05/2027. 208.600 €. Principal investigator.

Project. PID2021-125212OA-I00, MECHANOBIOLOGY OF THE IMMUNE RESPONSE IN CANCER. Ministerio de Ciencia e Innovación. Investigación. Anna Labernadie (CIPF). 01/09/2022-31/08/2025. 157.300 €. Principal investigator.

Project. Code: LCF/BQ/PR18/11640001, Tumor dissemination by cancer stem cells: a cell mechanics approach. LA CAIXA Junior Leader postdoctoral fellowship. Anna Labernadie, (IBEC). 10/04/2018-10/04/2021. 305.700 €. Principal investigator. Leading research projects focusing on the role of physical interactions driving intercellular cooperation that could impact cancer spreading and immunotherapy outcomes