



PROYECTOS SINÉRGICOS 2018 EN I+D

ACRONIMO: **NUCLEUX Madrid CM**

TITULO PROYECTO: *El Núcleo Celular: un Encuentro entre la Física y la Biología en la Última Frontera de la Vida*

PRESUPUESTO CONCEDIDO: **657,800 €**

Madrid, 1 de febrero de 2023

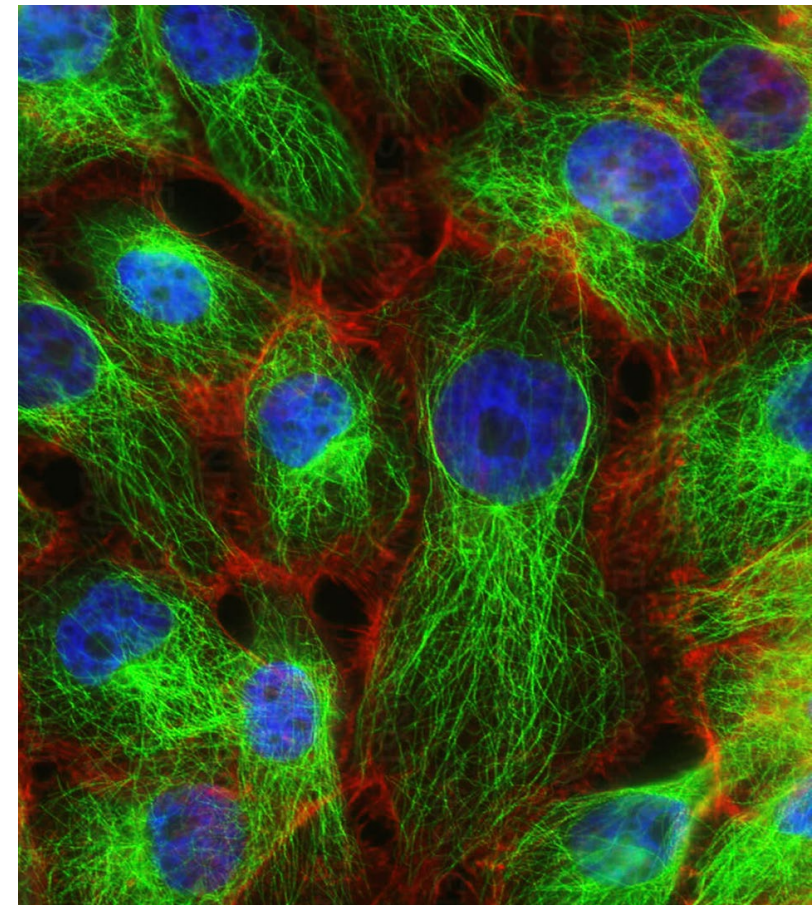
NUCLEUX - ¿Quiénes participamos?



- *Francisco Monroy – UCM (IP Coord)*
- *Javier Redondo – UCM / CIB-CSIC (IP)*
- *Pedro Roda – UCM (IP)*

Grupos Asociados

- *Margarita Salas – CBMSO / CSIC*
- *Manuel Ramírez – Hosp. Niño Jesús*
- *Miguel G. Velasco – Univ Extremadura*



<https://www.nucleux.es/>



NUCLEUX - ¿Qué objetivos planteamos?



Primeros principios (físicos y biológicos) de funcionamiento nuclear

- **Objetivo 1.** Creación de un nodo de liderazgo en ciencia del núcleo celular
- **Objetivo 2.** Termodinámica del ciclo nuclear: fisiología y autopoiesis
- **Objetivo 3.** Metaboloma y ciclo nuclear
- **Objetivo 4.** Epigenética, interacciones de la cromatina y fenotipo nuclear
- **Objetivo 5.** Función nuclear, regulación e información

Termodinámica de la célula



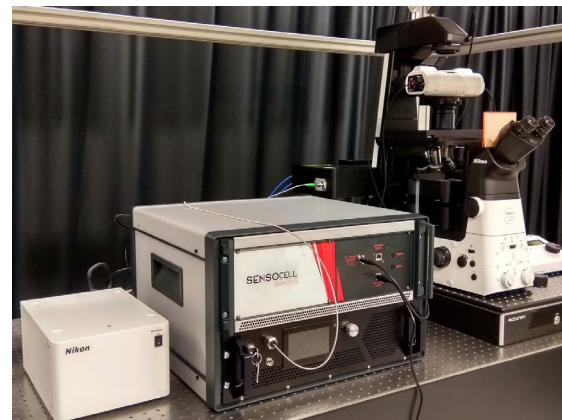
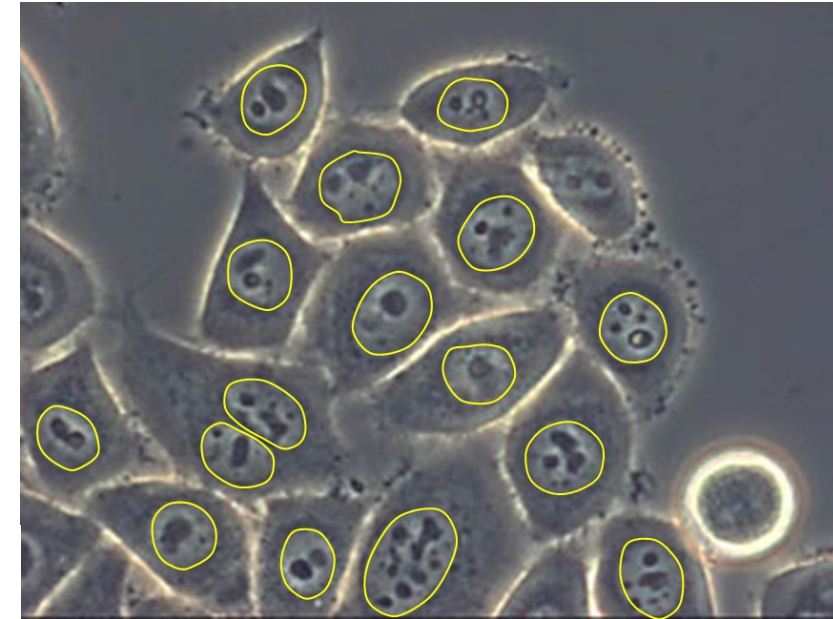
University of California
San Francisco



International
Human Frontier
Science Program
Organization



museonacionaldecienciasnaturales



European Research Council
Established by the European Commission

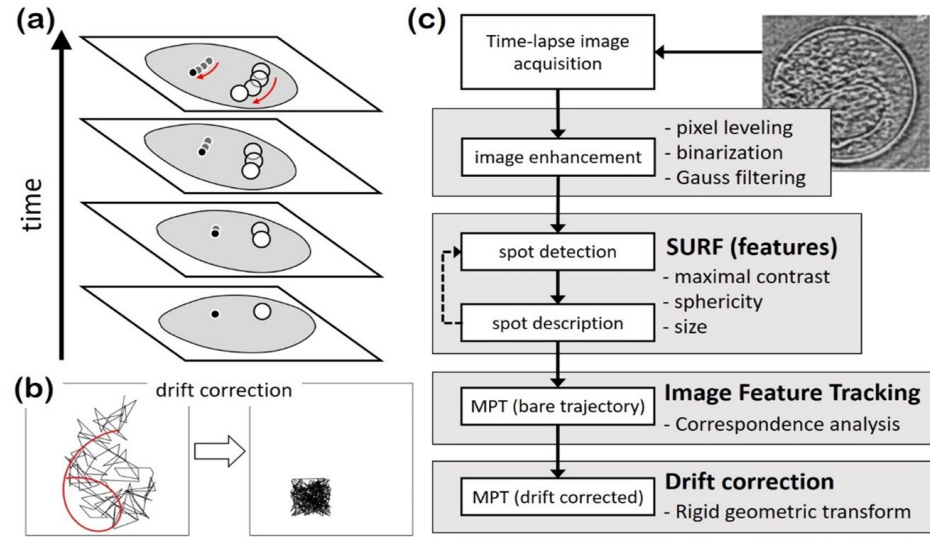
Synergy
Grants



NUCLEUX - ¿Qué resultados hemos obtenido?

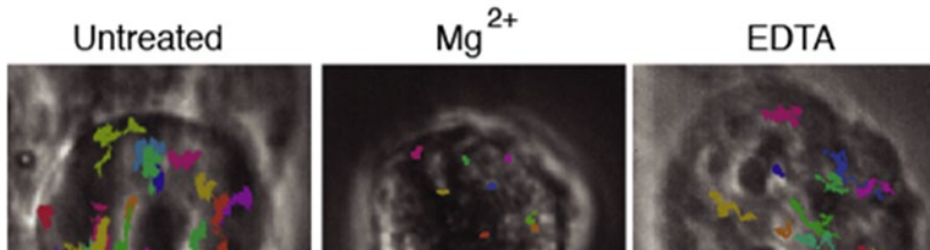
**Optical tweezer indentation:
nuclear mechanics**

Chromatin tracking: a new tool for nuclear viscosity



Herráez-Aguilar et al.
Scientific Rep. 2020

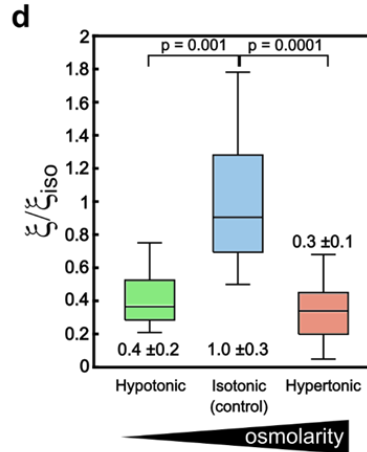
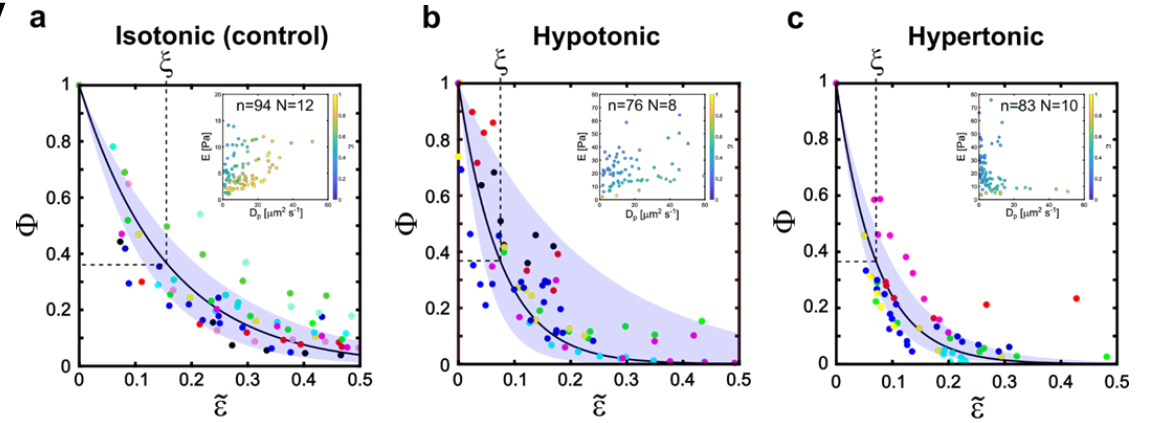
Jurkat



Multiple particle tracking analysis in isolated nuclei reveals the mechanical phenotype of leukemia cells

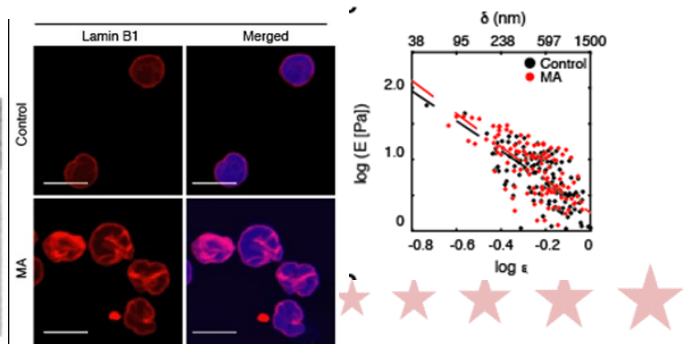
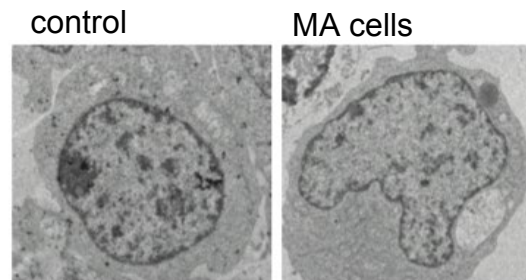
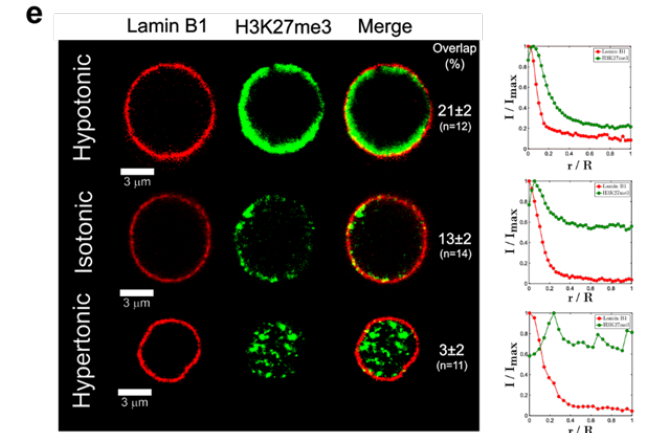
Diego Herráez-Aguilar, Elena Madrazo, Horacio López-Menéndez, Manuel Ramírez, Francisco Monroy & Javier Redondo-Muñoz

Scientific Reports 10, Article number: 6707 (2020) | Cite this article

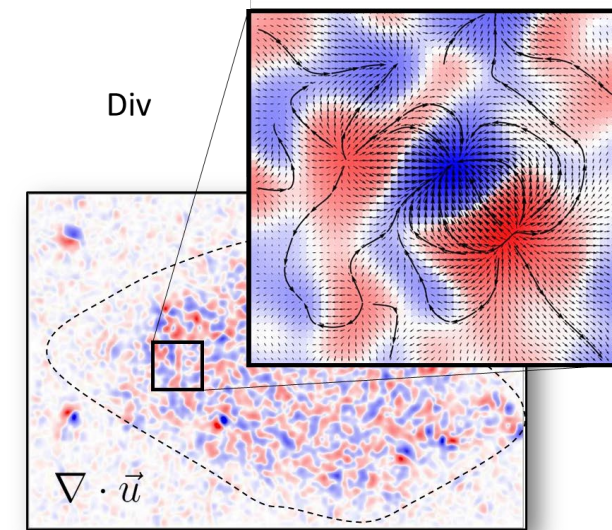
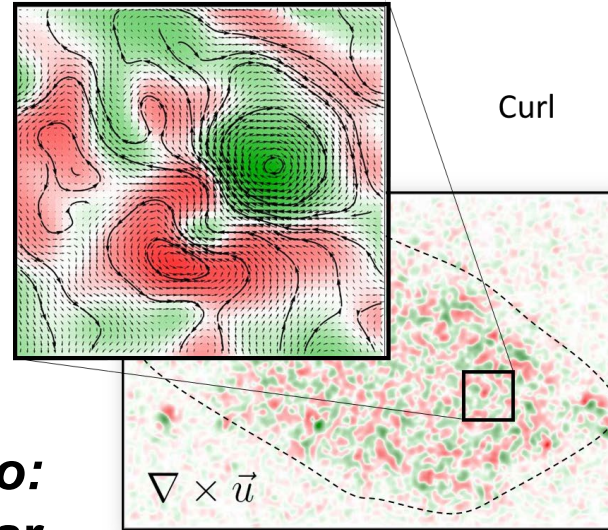


López-Menéndez et al.
bioRxiv 2022

De Lope-Planelles et al.
bioRxiv 2022

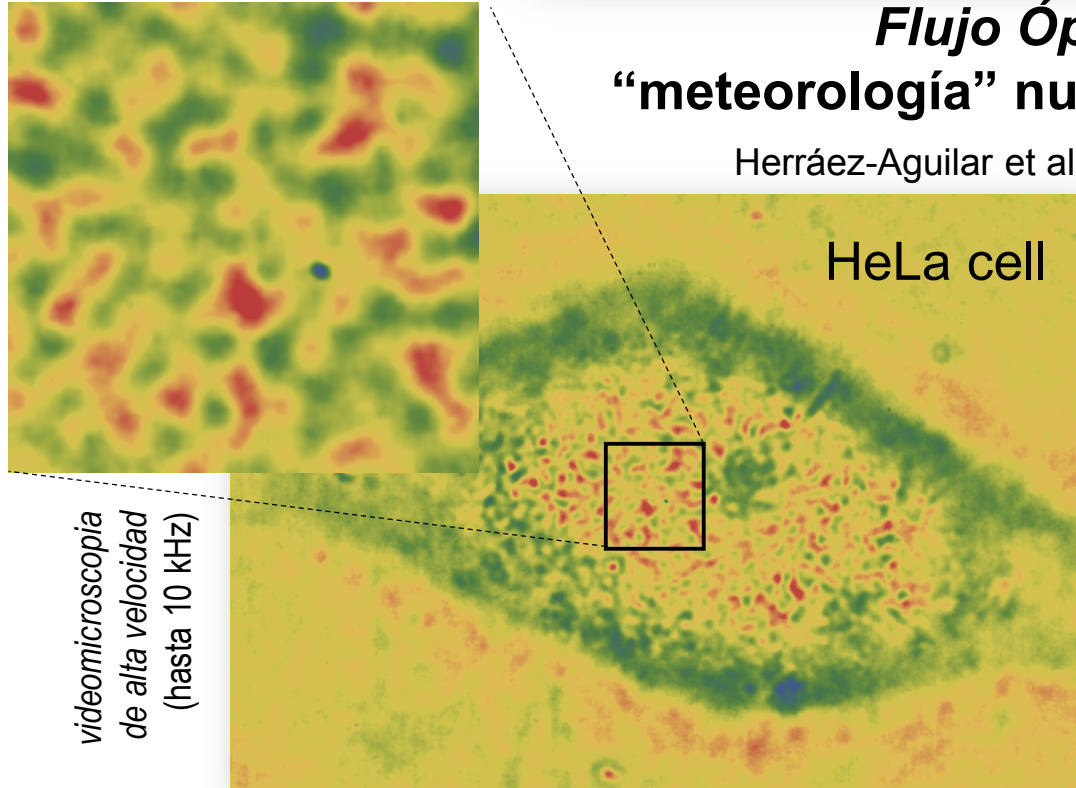


NUCLEUX – Nuevas herramientas de dinámica nuclear

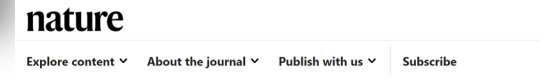
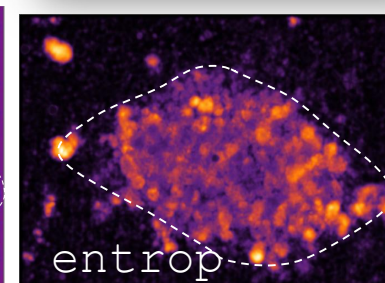
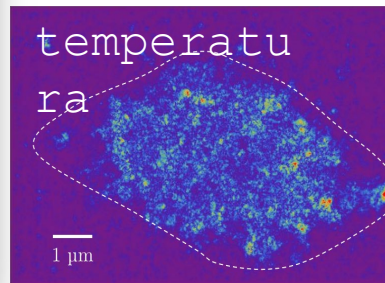
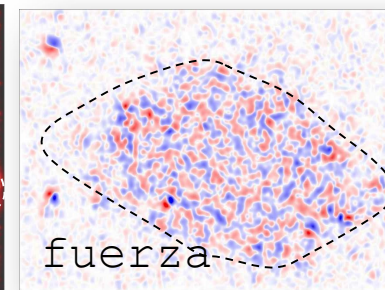
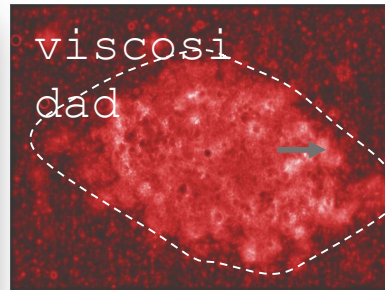


Flujo Óptico: “meteorología” nuclear

Herráez-Aguilar et al. **BioArXiv 2023**



HeLa cell



nature > books & arts > article
BOOKS AND ARTS | 01 May 2019 | Correction 07 May 2019
The new physics needed to probe the origins of life
★ ★ ★ ★ ★ ★

NUCLEUX – ¿Cómo hemos continuado?



Associated with document Ref. Ares(2022)3223187 - 26/04/2022

European Research Council
Executive Agency
Established by the European Commission



[Panel: SyG1, Page 1, 26042022]

Step 1 Evaluation Report CONFIDENTIAL

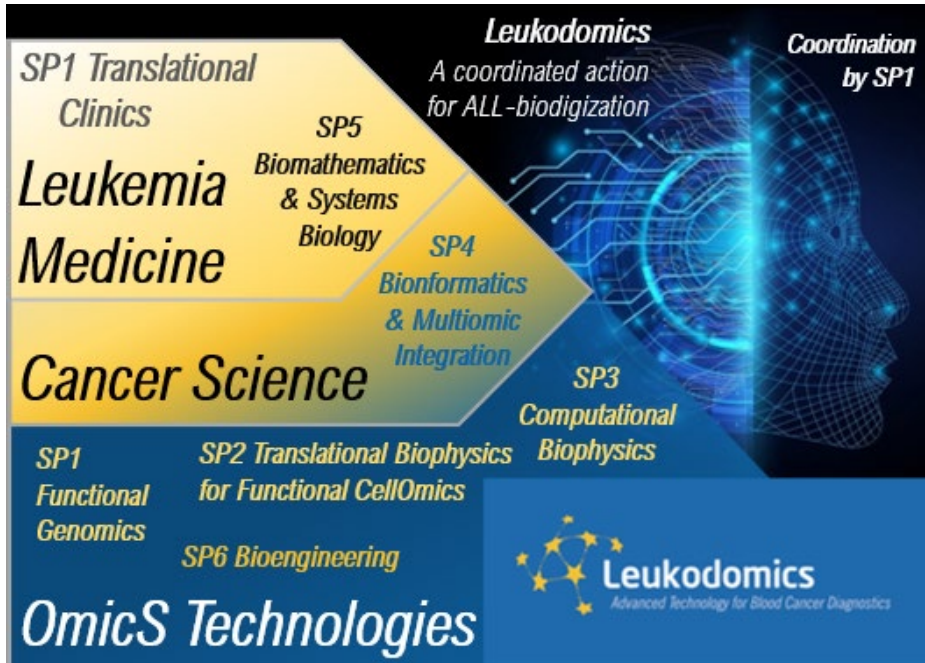
Call reference	ERC-2022-SYG
Activity	HORIZON ERC Synergy Grants
Funding scheme	ERC Synergy Grants
Panel name	SyG1
Proposal No.	101072283

Principal Investigators

To what extent have the PIs demonstrated the ability to conduct ground-breaking research?	Excellent
To what extent do the PIs have the required scientific expertise and capacity to successfully execute the project?	Excellent
To what extent does the Synergy Grant Group successfully demonstrate in the proposal that it brings together the know-how - such as skills, experience, expertise, disciplines, teams - necessary to address the proposed research question?	Very good

Comments (Optional for reviewers)

The team is composed of excellent scientists, whose skill sets are complementary.



Celómica integrativa para la medicina de precisión en leucemia infantil: una acción eHealth coordinada para biodigitalización del cáncer (Estratégicos 2022 / 1.7 M€).



**Propuesta reforzada
ERC Synergy 2024**

