

ESCUELA

XII UIMP Summer
School on Integrative
Synthetic Biology

Condensates
as Organizing
Frameworks
of Natural and
Synthetic Cells

Horario y dirección de contacto

Mañana de L a V: 9.00 a 14.00 h

Santander

Campus de Las Llamas
Avda. de los Castros, 42
39005 Santander
Tlf.: 942 29 87 00

Madrid

C/ de Isaac Peral, 23
28040 Madrid
Tlf.: 91 592 06 31 / 33

A partir del 22 de junio

Mañana de L a V: 9.00 a 14.00 h
Tarde de L a J: 15.30 a 18.00 h

Santander

Palacio de la Magdalena
39005 Santander
Tlf.: 942 29 88 00

alumnos@uimp.es
www.uimp.es

Organizado en colaboración con



Este curso es susceptible de ser reconocido como formación permanente del profesorado para el personal docente de los centros que imparten las enseñanzas reguladas en la Ley Orgánica 2/2006, de Educación, en base al artículo 21 y 29 de la Orden EDU/2886/2011, de 20 de octubre, por la que se regula la convocatoria, reconocimiento, certificación y registro de las actividades de formación permanente del profesorado.

Código 66AF - ECTS: 2,5

Dirección

Rafael Giraldo Suárez

Doctor en Ciencias Biológicas.
Profesor de Investigación de OPI.
Centro Nacional de Biotecnología (CNB-CSIC).

Germán Rivas

Profesor de Investigación de OPI
Centro de Investigaciones Biológicas Margarita Salas
(CIB-CSIC)

Secretaría

Silvia Zorrilla

CIB Margarita Salas, Madrid

Life is built on the dynamic organization of interacting molecular networks. In recent years, biomolecular condensates—membrane-less compartments formed by phase separation—have transformed our understanding of how cells create order, regulate complexity, and adapt to change. These self-organizing structures challenge classical views of cellular architecture and offer a new physical and conceptual framework for biology.

This year's Summer School explores biomolecular condensates as a **bridge between natural cellular organization and the design of synthetic and minimal cells**. From the physics of phase separation to the engineering of programmable cellular compartments, the school will highlight how emergent organization can be understood, controlled, and ultimately built. Bringing together ideas from biology, physics, chemistry, and engineering, the XII Summer School invites graduate students and junior fellows with these multidisciplinary backgrounds to engage with one of the most transformative concepts shaping the future of **synthetic biology and cell engineering**.

Apertura matrícula

Desde el día 13 de abril de 2026
(plazas limitadas)

Solicitud
online





Lunes 24

- 10.00 h Welcoming and Introductory Remarks
Germán Rivas
BIOMOLECULAR CONDENSATES:
WHERE PHYSICS AND CHEMISTRY
MEET CELL BIOLOGY
- 10.30 h Impact of biomolecular
condensates in prebiotic evolution
María Luisa Romero Romero
IQAC-CSIC, Barcelona
- 12.00 h From droplets to structures:
Multiscale simulations of phase
transitions in biomolecular
condensates
Jorge R. Espinosa
UCM
- 15.30 h Round table 1



Martes 25

- BIOMOLECULAR CONDENSATES
IN BACTERIA: MECHANISMS
AND FUNCTIONS
- 09.30 h Bacterial biomolecular condensates
in synthetic cell research
Silvia Zorrilla
- 12.00 h Biomolecular condensates in
bacterial biotechnology
Laura Corrales
IBVF-CSIC/Univ. Sevilla
- 15.30 h Workshop 1
Enabling tools - Microfluidics in
Synthetic Biology
Raúl Fernández
IBBTEC - UNICAN/CSIC, Santander



Miércoles 26

- PHASE SEPARATION AND
AMYLOID FORMATION: THE
ROLE OF BIOMOLECULAR
CONDENSATES
- 09.30 h Biomolecular condensates and
amyloid formation: confusion of the
kinds?
Salvador Ventura
UAB & I3PT-CERCA, Barcelona
- 12.00 h Bacterial amyloids and
condensates
Rafael Giraldo Suárez
- 15.30 h Round table 2
Preparing the next generation of
synthetic cell engineers - CSIC-
UIMP Master SYN BIO and
COFUND SYN BIO-CSIC Doctoral
Network
Germán Rivas



Jueves 27

- BIOMOLECULAR CONDENSATES
IN EUKARYOTES: MECHANISMS
AND FUNCTIONS
- 09.30 h Condensates as functional
organizers of intermediate
filaments
Dolores Pérez-Sala
CIB Margarita Salas, CSIC, Madrid

- 12.00 h Harnessing biomolecular
condensation in cellular stress
signaling
Irene Díaz-Moreno
IIQ-cicCartuja, Sevilla
- 15.30 h Workshop 2
ML and AI tools in systems and
synthetic biology
Raúl Fernández



Viernes 28

- 09.30 h KEYNOTE CLOSING LECTURE I:
Functional compartments in
synthetic cells: Coacervates as
models for cellular organization
and the origin of life
Evan Spruijt
Radboud University, Institute for Molecules
and Materials, Nijmegen, NL
- 12.00 h Before Cells: Roles for Liquid-Liquid
Phase Separation in the Emergence
of Life
Christine Keating
Shapiro Professor of Chemistry
Pennsylvania State University, USA
- 13.00 h Round table 3
Biomolecular condensates research
in Europe - current status and
future perspectives



Red social de conocimiento UIMP
Accede a las retransmisiones en streaming
de los cursos y actividades en uimptv.es



Universidad Internacional Menéndez Pelayo

