

Programme SynCell2024

Wednesday 17 April

10:30-12:30

Registration

Arrival of participants and registration, during which participants presenting a poster will hang their poster

10:40 - 11:00

Opening and welcome

(Christophe Danelon)

Plenary session (11:00 - 13:00)

Amphitheatre Sophie Germain (building 12)

11:00 - 11:30

Zhanar Abil

Evolution of Self-Replicating DNA Towards Synthetic Life

11:30 - 12:00

James Pelletier

Interpreting Cell Division in the Genomically Minimal Cell JCVI-syn3A by Applying Physical Models for Vesicles

12:00 - 13:00

John Glass

Title tba

13:00 - 14:00

Lunch buffet

Parallel sessions (14:00 - 15:30)

Cytoskeleton

Room GEI13 (building 19)

Containers and Chassis

Amphitheatre Sophie Germain (bldg 12)

Applications and innovations

Room GEI15 (building 19)

14:00 - 14:20

Audrey Ntadambanya

Artificial cells to study focal adhesion assembly and mechanosensing

Moe Yabuta

Self-growing protocell droplet formation in aqueous two-phase system induced by internal nucleic acid polymerization

Tae Seok Moon

Seven governing principles in biology

14:20 - 14:40

Aileen Cooney

Artificial cells with reconfigurable contents and viscosity

Raivo Vilu

Single Cell Model – a framework for bottom-up cell design

Oskar Stauffer

Droplet-based synthetic cells and lymphatic tissues for expansion of therapy-relevant T cells

14:40 - 15:00

Weixiang Chen

Growing and switching artificial cytoskeletons in the viscoelastic confinement of DNA synthetic cells

Job Boekhoven

Active Droplets: Droplets Regulated by Chemical Reaction Cycles

Anton Jackson-Smith

Nucleus: an open-source, full-stack distribution that lets you start developing with synthetic cell systems today

15:00 - 15:20

Ignacio Insua

Supramolecular peptide designs for biomimicry: non-canonical membranes and functional cytoskeleton mimics

Kevin Peyraud-Vicré

Bio-inspired organocatalysis in coacervate protocells

Michael Booth

Light- and magnetism-controlled synthetic cells for biology and medicine

15:30 - 16:00

Coffee break

16:00 - 18:00

Poster session

Thursday 18 April

09:00-09:15	Opening		
	Plenary session (09:15 - 10:45) <i>Amphitheatre Sophie Germain (building 12)</i>		
09:15 - 09:45	Claudia Contini Bottom-Up Approaches to Designing Dynamic Behaviors in Artificial Cells		
09:45 - 10:15	Yutetsu Kuruma Construction of artificial cells that self-produce lipids inside		
10:15 - 10:45	Cheemeng Tan Engineering Cyborg Cells as Dynamic Micromachines		
10:45 - 11:30	Break		
	Plenary session (11:30 - 12:30) <i>Amphitheatre Sophie Germain (building 12)</i>		
11:30 - 12:30	Stephen Mann Engineering Life-like Materials via Protocell Design and Dynamics		
12:30 - 13:30	Lunch		
	Parallel sessions (13:30 - 15:30)		
	Cell-free expression <i>Amphitheater Sophie Germain (bldg 12)</i>	Containers and Chassis <i>Room GEI13 (building 19)</i>	Building blocks <i>Room GEI15 (building 19)</i>
13:30 - 13:50	Samuel Herianto Cell-free Compartmentalized Synthesis of Membrane-associated Protein, PspA, Induces Shape Deformation and Pore Formation in Cell-sized Liposomes	Nicola De Franceschi Dynamin A as a one-component division machinery for synthetic cells	Steen Rasmussen Origins of biological information in a bottom up physiochemical protocell
13:50 - 14:10	Surendra Yadav ATP regeneration in PURE from pyruvate and inorganic phosphate	Paul Beales Expanding the Toolbox for Engineering Functional Artificial Cell Compartments	Jelmer Coenradij ATP recycling in giant-unilamellar vesicles via the breakdown of arginine
14:10 - 14:30	Markus Meier A Genetic Unit to Enable Membrane Protein Insertion and Translocation on Synthetic Membranes	Hendrik Hähl Fungal hydrophobins as building blocks for pure protein bilayers and vesicles	Andrea Belluati Ghost in the cell: artificial cells via enzyme-mediated polymer synthesis and self-assembly
14:30 - 14:50	Federico Ramirez Gomez Expression of an ftsZ-ftsA operon drives constriction of synthetic cells	Dario Cecchi How does the oil influence the formation of GUVs by the droplet transfer method?	Vadim Bogatyr Counting mRNAs: single-molecule in vitro transcription (smIVT) assay
14:50 - 15:10	Simone Giaveri Interdependent Metabolic and Genetic Networks show emergent properties in vitro	Chang Chen Regulating condensates within synthetic cells via segregative phase separation	Léonie Beaupère Development of Bioenergetic Hybrid Artificial Cells
15:10 - 15:30	Aurore Dupin Antibody epitope characterization in a multiplex surface-based cell-free expression platform	Roger Rubio-Sanchez Using DNA nanostructures for lipid membrane biophysics and bioengineering in synthetic cell science	Elizaveta Bobkova Engineering differential transport through N-terminal linker functionalization of self-inserting nanopores
15:30 - 16:00	Break		
16:00 - 17:00	Poster session		
17:00 - 20:00	Toulouse city tour - arrival at the restaurant		
20:00	Gala dinner		

Friday 19 April

09:00-09:15	Opening		
	Plenary session (09:15 - 10:45) <i>Amphitheatre Sophie Germain (building 12)</i>		
09:15 - 09:45	Matthew Good Protein Condensates As Synthetic Organelles To Program Cellular Functions		
09:45 - 10:15	Sindhu Naik Europe's Synthetic Biology Innovation Ecosystems: Insights from the SYNBEE Project		
10:15 - 10:45	James Sáenz Resurrecting Ancestral Membranes in Minimal Living Cells		
10:45 - 11:30	Break		
	Plenary session (11:30 - 12:30) <i>Amphitheatre Sophie Germain (building 12)</i>		
11:30 - 12:30	Geoffrey Otim The Global Quest for Synthetic Cell Research: Exploring Opportunities, Challenges, and Prospects in Africa		
12:30 - 13:30	Lunch		
	Parallel sessions (13:30 - 15:00)		
	Building blocks <i>Room GEI13 (building 19)</i>	Cell-cell communication <i>Room GEI15 (building 19)</i>	Applications and innovations <i>Amphitheatre Sophie Germain (bldg 12)</i>
13:30 - 13:50	Madelief Verwiel Engineering of compartments in coacervate-based artificial cells via controlled nucleation of the polymer building blocks	Joshua Ricouvier A 3D biochip for 2D large-scale-integration of genetically programmable artificial cells induces phase waves	César Rodriguez Emmenegger Phagocytic synthetic cells: non-living predators to fight bacteria
13:50 - 14:10	Vítězslav Kučera Exploration of tryptophane indispensability as a pathway towards a reduced amino acid code	Allen Liu Light-based juxtacrine signaling between synthetic cells	Marijn Van den Brink Evolution of synthetic cells with complex phenotypes
14:10 - 14:30	Marcus Fletcher Microfluidic technologies for artificial cell membrane engineering	Ahmed Sihorwala Orthogonal Communication Networks in Synthetic Tissue	Bela Frohn Protein Design For and With Synthetic Cells
14:30 - 14:50	Baptiste Blanc Synthetic metabolic BZ hydrogel actuator	Darcey Ridgway-Brown The role of membrane transport and confinement in regulating the feedback mechanisms of enzyme reactions in artificial organelles	Oliver G France Artificial Organelles Encapsulating Autocatalytic Enzyme Reactions For Application In Controlled Release
15:00 - 15:30	Break		
	Plenary session (15:30 - 16:30) <i>Amphitheatre Sophie Germain (building 12)</i>		
15:30 - 16:30	Poster awards, photos, closing remarks		
16:30	Closing of SynCell2024		