20 YEARS IBEC

Institute for Bioengineering of Catalonia

IBEC
20th Anniversary Symposium

OCTOBER 22nd AND 23rd, 2026
BARCELONA

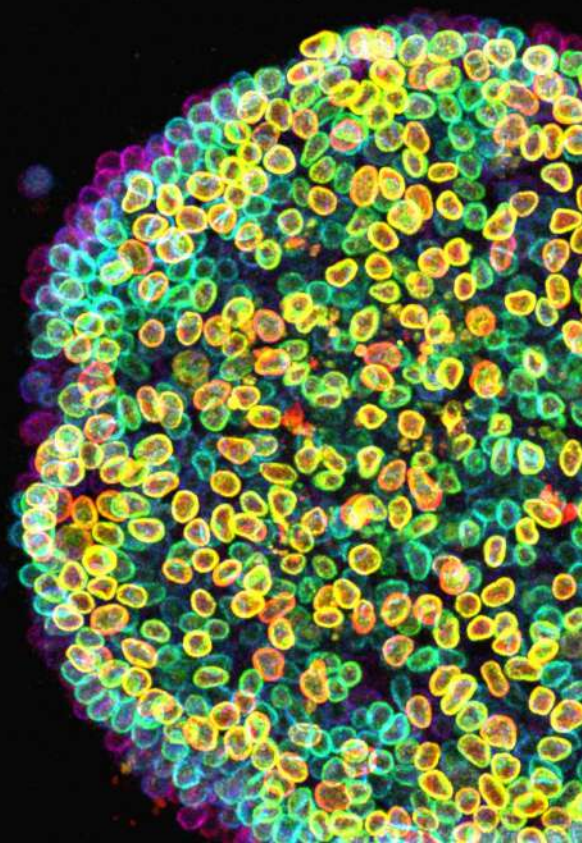


Image credit: Özge Özgüç, Integrative Cell and Tissue Dynamics Research Group.

N	NAME	SURNAME	TITLE
1	Mauricio	Cano Galván	Mechanotool: An Autonomous Open-Source Software Platform for Large-Scale Multiparametric Analysis of Bio-Atomic Force Microscopy data
2	Zahra	Saeidikia	Imaging and modelling PEG-PLA nanoparticles and their disassembly of Aβ42 fibrils
3	Esteban	Suárez Baquero	Development of an All-Optical Platform for Imaging and Holographic Manipulation of Neural Circuits in Behaving Mice
4	Belle	Clayton	Uncovering the Transcriptional Regulation of Ribonucleotide Reductases in *Pseudomonas aeruginosa*
5	Courtney Christine	Hospes	2-Photon Imaging and Manipulation of Memory Circuits in Freely Moving Mice
6	Gonzalo	Alonso Reillo	Metabolic Analysis in real time by using benchtop NMR Technology
7	Jhon	Pazos	Enhanced Scanning Dielectric Microscopy: On-Resonance operation for improved signal-to-noise ratio in nanoscale dielectric characterization
8	Raquel	García Olivas	Microscopy Characterization Facility: Enabling Advanced and Quantitative Imaging
9	Sepideh	Sadat Mirhosseini	Development of a Two-Photon Holographic Mesoscope for Large-Scale Optogenetic Stimulation with Single-Cell Resolution
10	Tom	White	Pathogenic collagen VI variants impair extracellular matrix mechanics at the nanoscale
11	Yoel	Melul Steinfeld	A Closed-Loop System for Real-Time Calcium Imaging, Neuron Selection, and Targeted Photostimulation in Freely Moving Mice

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12	Claudia	Camarero-Hoyos	A multifaceted approach to define a novel family of antimalarial compounds: the role of protein aggregation in *Plasmodium*.
13	Dario	Castellana	Dual-Action 3D Biomaterial for radiotherapy: protection and regeneration of tissue during X-ray treatment
14	Esra	Kasapgil	Endothelium-mimicking hemocompatible coatings for artificial placenta systems
15	Joaquín	Martínez Tambella	Restoration of edge detection and visually guided behavior in ambient white light with photoswitchable small molecules
16	Carlos	Moreno Yruela	Nucleosome-Based Platforms to Decipher Histone Deacetylase Mechanisms and Develop Modulators in High Throughput
17	Adriano	Caliari	Engineering superselectivity in a synthetic endocytosis model
18	Ainhoa	González Caelles	Photomechanical Vapor Nanobubble Engineering of Whole-Cell Vaccines for Bladder Cancer Prophylaxis
19	Albert	Ripoll	Novel Alginate Lyases Enhance Antibiotic Efficacy Through Biofilm Matrix Disruption in *Pseudomonas aeruginosa*
20	Albert	Ripoll	Enhanced Colistin Penetration Through Nanoparticle Encapsulation and Biofilm-Dispersing Enzymes to Treat Chronic Bacterial Infections
21	Alice	Lissmatz	Mapping the mutational landscape of Gelsolin D2 amyloid aggregation
22	Anna	Griego	An AUTOTAC-Inspired Nanoparticle Strategy to Promote Host-Driven Clearance of *Pseudomonas aeruginosa*
23	Carles	Prado Morales	SkinBots for the topical delivery of antigens
24	Carles	Verdaguer	Developing a multicellular 3D *in vitro* model for the detection of high-performing iPSC-derived CAR-NK against HER2+ solid tumors
25	Daniela	Currea	Unravelling the Molecular Targets and Mode of Action of Compound EMA377 in *Leishmania infantum*
26	Dayaneth	Jácome Montero	From Brain to Blood: Evaluation of miR-519a-3p as a Minimally Invasive Biomarker for Alzheimer's Disease

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27	Dunja	Arsenijevic	Exploring the interactions of small-molecule probes with protein condensates as a potential targeting mechanism in *Plasmodium falciparum*
28	Guanyu	Zhou	Engineering Multivalent ApoE Nanostructures for Isoform-Dependent Neurovascular Unit Reprogramming
29	Ilaria	Porello	Phosphorylcholine-presenting polymer micelles with intrinsic anti-inflammatory activity via scavenger receptor engagement
30	Inés	Macías Tarrío	Nanomotors-mediated delivery of FGFR3 inhibitor for bladder cancer therapy
31	Kristin	Fichna	Nanomotor-Driven Transport Potentiates ADC Efficacy Across Target Heterogeneity
32	Lucia	Roman	YAT2150 Analogues Target Stress-Induced Molecular Condensates in *Leishmania infantum*
33	Marta	Badia Graset	Mapping distinct Aβ42 aggregation pathways for precision medicine
34	Martín	Ruiz Gutiérrez	Portable grating-coupled SPR platform using Blu-ray-based sensing chips for multiplexed biosensing
35	Núria	Blanco-Cabra	A simple diagnostic platform reveals shear stress as critical in biofilm development.
36	Samantha	Morón Ros	3D-Bioprinting of functional β-cell spheroids for Type 1 Diabetes treatment
37	Sarahi	Elizondo	Ionicombisomes: Synthetic Cells Across Mucus
38	Sergi	Tosal	PolyQ expansion remodels the sequence determinants of huntingtin nucleation
39	Tomás	Quiroga	The folding, dimerization and allosteric landscapes of the ALS protein SOD1: a comprehensive mutational atlas
40	Yaiza	Andrés	Deep Mutational Scanning of Tau Amyloid Nucleation
41	Yasaman	Keshmiri	Tandem Enzymatic Activity of Catalase- and Glucose Oxidase- powered Nanomotors for Oxygen Generation and Therapeutic Modulation in Inflammatory Bowel Disease

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42	Joel	Àlvarez Puig	Modelling biomaterial-associated biofilm infections in *Galleria mellonella* for antibiotic susceptibility screening
43	David	Bartolomé Català	Microphysiological reconstruction of the colonic tumor microenvironment for T cell migration studies
44	Florencia	Lezcano	Toward biohybrid facial actuation: 3D bioprinting of functional skeletal muscle systems
45	Andreu	Matamoros Anglès	Extracellular vesicles in Alzheimer's disease: Amyloid β aggregation and neuronal network dysfunction
46	Nicolle	Miranda de Lima	Engineering a Scalable and Highly Sensitive Microfluidic Platform for Real-Time Hyperpolarised 13C Metabolic Imaging of 3D Hepatoblastoma Models
47	Chiara	Ninfali	A Human 3D Platform combining Engineered Skeletal Muscle and Pancreatic Cancer Spheroids to model Cancer-Associated Cachexia
48	Anna	Panteleeva	Monitoring Neurodegeneration in a Brain-on-a-Chip with an NfL Biosensor
49	Francisco Manuel	Sáez González	From Organoids to Assembloids: Modeling Neurovascular Dynamics in Spinal Cord Injury
50	Jarmila	Stankova	Spatially resolved analysis of CRISPR-mediated metabolic gene knockouts in tumor xenografts
51	Agnieszka	Nikitiuk	Beyond the Cell: Engineering the HPV-Negative HNSCC Microenvironment for Matrix-Dependent Drug Screening
52	Ainoa	Tejedera-Villafranca	Modeling Duchenne Muscular Dystrophy Cardiomyopathy Using hiPSC-Derived 3D Cardiac Co-Cultures
53	Alba	Calonge Sanz	Optimization of Calu-3 and primary bronchial epithelial cell (PBEC) air-liquid interface (ALI) models for investigating chronic *Pseudomonas aeruginosa* respiratory infections.
54	Angela M.	Ramírez Rosales	Nanocellulose & Bacterial Cellulose for Medical and Environmental Applications
55	Anna	Vilche Mariscal	Tuning Hydrogel Network Architecture in PEG–HA-Norbornene Hydrogels Enhances Brain Organoid Diffusion and Maturation
56	Carla	Arroyo	Optimization of the Blocking Step for Label-Free prism SPR Detection of C5b-9 in Human Serum as a Biomarker of Neuromuscular Junction Damage in Myasthenia Gravis

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57	Carolina	Tarantino	Modeling Ataxia-Telangiectasia Neurodevelopment Using an Optimized Isogenic Human Cerebral Organoid Platform
58	Davide	Arena	A Modular “Click” Hydrogel Platform for 3D Cell Culture and High-Throughput Screening
59	Ece	Kutukcu	Influence of Mechanical Stimulation and Matrix Stiffness on Breast Cancer Cells
60	Eduard	Torrents	Polymicrobial Interactions Involving *Burkholderia cenocepacia* Enhance Virulence, Alter Host Responses, and Modulate Antibiotic Tolerance in Cystic Fibrosis Infection Models
61	Emma	Oriol	Two-photon polymerized anisotropic microarchitectures for cardiomyocyte guidance
62	Eulàlia	Dou	From Prototypes to Production: A Scalable Blood–Brain Barrier-on-a-Chip for Pharmaceutical Screening
63	Eva	Garrido	Engineered Human Spinal Cord Constructs using 3D-bioprinting Technologies and iPSC-Derived Cells
64	Gal·la	Vinyes i Bassols	Glycocalyx remodeling at the blood-brain barrier: a microfluidic murine model to study cell-membrane protein endocytic dynamics
65	Inass	Himmiche	Ocular mechanism with embedded visual sensing for biohybrid robotics
66	Inés	Martínez Soria	Modulation of Hippocampal Vulnerability and Synaptic Plasticity by Adgrd1/GPR133 in Adult Mice
67	Jakub	Podraza	Integrating Microphysiological Systems and Longitudinal HP-MRI in Ovarian Cancer Modeling
68	Johannes	Gschwind	Generation and characterization of SALL1 and GATA3 knock-out human pluripotent stem cell lines for studying kidney development and disease
69	Jose	Huguet	Development of Barrier-Free Cancer-on-Chip Microfluidic Platforms for Studying the Cancer-Immunity Cycle in Colorectal Cancer
70	Júlia	Fabà Costa	An *ex utero* embryo culture platform to address peri-implantation development
71	Keerthy	Reghunandanan	Dissecting chemokine driven cell migratory behaviour of breast cancer in 3D Micro physiological system using a custom developed migration tracker

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72	Lluís	Mangas Florencio	Hyperpolarised 13C NMR enables functional drug response assessment in early-stage oncology drug development
73	Marc	Riu-Villanueva	An assembloid model to interrogate the contribution of inhibitory cortical interneurons to familial Alzheimer's disease network alterations
74	Maria	Escolà	Targeting nucleotide metabolism to attenuate *Pseudomonas aeruginosa* virulence
75	Marina	Rovira	Engineered Biohybrid Sphincter with Aperture Control
76	Marta	Ardèvol Teijelo	In situ Bioprinting: 6 DOF robotic system for advanced tissue engineering. Printing directly onto curved, non-planar anatomical surfaces
77	Michela	Lain Contato	Three-dimensional spheroid model of colorectal cancer cells in different metabolic conditions
78	Natalia	Castro	Development of personalized bioinks for skeletal muscle tissue engineering to understand the role of ECM in Duchenne muscular dystrophy
79	Nicola	Manicardi	Examining How Mfsd2a-Mediated Lipid Transport Regulates BBB Endocytic Dynamics
80	Oscar	España Romera	Spatial features of antigen escape in a CAR-T treated murine model of melanoma
81	Palash	Chandravanshi	Modelling Human Spinal Cord Injury and Repair in a 3D-Printed Organoid-on-a-Chip Device
82	Paulina Teresa	Sobierajska	Role of Amorphicity in Determining the Structure, Morphology, Thermal Stability and *In Vitro* Biological Response of Calcium Phosphates
83	Petra	Bauzon	Linking sarcolemmal instability to metabolic dysregulation: a DMD-on-Chip Platform investigating mitochondrial dysfunctions
84	Pol	Picón Pagès	Structural and Mechanistic Insights into GPR133 Signaling in Glioblastoma Multiforme
85	Rita	Grimalt Mirada	A Microengineered Platform for the Generation of Single-Lumen Human Spinal Cord Organoids
86	Thomas	Wilson	Epifluidics: a scaffold-free platform for perfusable, geometrically programmable, epithelial tubes

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87	Timothée	Caboche	A Magnetic Actuator-Based Platform for Functional Assessment of 3D Human Skeletal Muscle Bioengineered Tissues in Myotonic Dystrophy
88	Tobias	Walther	DNA hydrogel microparticles as phantom cells for tissue engineering
89	Vicent	Ribas Serra	Sex- and model-dependent hepatic pyruvate flux alterations in obesity revealed by HP-^{13}C NMR
90	Xavier	Barceló	Placenta-Derived ECM as a Spinal Cord-Mimetic Biomaterial

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91	Aina	Albajar Sigalés	Studying the mechanical regulation of nucleocytoplasmic transport using Single Molecule Tracking
92	Laura	Parra Gutiérrez	Characterization of matrix invasion and monolayer formation during early mouse embryo implantation
93	Àlex	Jiménez Becerra	The Effect of Nematic Defects on the Curvature of 3D Cellular Tissues
94	Alice	Perucca	Fibroblast nematicity as a tool to study stromal control on immune migration.
95	Amélie	Godeau	Mechanics of Human Embryo Implantation
96	Anabel-Lise	Le Roux	Acute Cell Stretching Triggers a Rapid Intrinsic Decrease in Plasma Membrane Bilayer Tension
97	Annalisa	Calò	Study of Neuromelanin (NM) accumulation in neurons through AFM micro and nanomechanics
98	Beatriz	Cantero Nieto	Chemically Fueled Lipid Vesicles as Transient Biomimetic Compartments: Insights from Solution-State AFM
99	Carolina	Rodríguez Gallo	Magnetic actuators: Inducing stretching in functional 3D muscle human engineered models.
100	Elena	Faustini	Rational development of a mechanosensitive transcription factor to control gene expression at will
101	Elia	López Serrano	DNA-based phantom cells for local mechanochemical control of intestinal organoid homeostasis
102	Francesca	Mauro	Photo-responsive hydrogels with tunable stiffness for cell mechanobiology
103	Gotthold	Flaeschner	Nuclear geometry predicts local nuclear pore dilation through envelope strain
104	Guillermo	Martínez Ara	An optogenetic toolset to understand and control epithelial mechanical balance.
105	Jorge	Oliver-De La Cruz	Mechanical cues regulate Tau axonal localization through microtubule stabilization
106	Margherita	Gallano	Nuclear Envelope Remodelling upon Mechanical Perturbation
107	Marina	Placci	Redefining Membrane Nanomechanics in Lysosomal Disorders: The Role of GlcCer and Gb3.

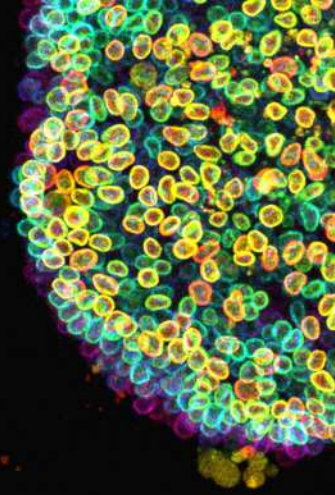
N	NAME	SURNAME	TITLE
108	Miguel	González Martín	Design of synthetic mechanosensitive transcription factors
109	Mireia	Valero Puigdomenech	Effects of matrix viscoelasticity on macrophages polarization and their interactions with mesenchymal stem cells
110	Ona	Baguer Colomer	Nuclear mechanics integrate chemical and physical cues to regulate EMT in pancreatic cancer cells
111	Pierre	Ucla	From 2D to 3D: CAF Mechanotransduction in Fibrillar Microenvironments
112	Ricard	Casanovas Zapata	Mechanobiology of Differentiating hiPSC Colonies
113	Rohit	Nautiyal	Nematically guided fracture in brain endothelia
114	Steffen	Grosser	Cell contractility controls epithelial tissues across timescales
115	Vladislav	Petrovskii	Diffusion Anisotropy in Ionically Linked Copolymers
116	Yudish	Varma	Mechanosensing through intermediate filaments alone

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117	Fleur	Clemenceau	Simultaneous 12-lead ECG for the validation of novel cellulose-based electrodes in human subjects
118	Lluís	Fernández Romero	Curvature Regularized Time Warping for Chromatographic Alignment
119	Mariano	Martín	Systematic mutational mapping reveals optimal amyloid formation for RIPK function
120	Revathi	Ravindran	Towards a Comprehensive Modelling and Design Framework for Predicting Biodegradation at a Macroscale
121	Berta	Tena	Characterization of blood pressure response during rehabilitation in individuals with spinal cord injury and stroke
122	Daniel	Romero Perez	Assessment of Robust Cardiac Beat Detection Methods using Radar-based Physiological Signals
123	Giovanni Vito	Spinelli	hpCSI: an open MATLAB toolbox for preclinical hyperpolarized C13 spectroscopic imaging
124	Inés	Bueso	Development of an Integrated Application for Automatic Data Acquisition and Transmission in Sleep Apnea Monitoring
125	Jaime	Casado García-Consuegra	Spatial tracking of clonal evolution reveals genetic and chemotherapeutic dynamics in Small Cell Lung Cancer
126	Jaume	Rodríguez Soler	Artificial intelligence for the classification of obstructive and central sleep apnea using triaxial accelerometery
127	Mahtab	Mohammadpoor Faskhodi	Assessment of Radar-Based Contactless Respiration Monitoring in Individuals with Stroke and Spinal Cord Injury
128	Renato Eduardo	Yanac Huertas	AnalyCa: a code-free calcium imaging tool, benchmarked in a tauopathy neuronal model
129	Valentina	Schastlivaia	Topology-driven modeling of LRP1-mediated of BBB-crossing nanomedicines: replacing discrete receptor sites counting with surface tension field on homeomorphic manifolds
130	Yolanda	Castillo Escario	Assessment of Night-to-Night Variability in Sleep Apnea using Smartphone-based Sensing and Multimodal Biomarkers

POSTERS

ADDITIONAL POSTERS

N	NAME	SURNAME	TITLE
131	Sustainability	Committee	Building a Culture of Sustainable Science at IBEC: From Green Labs to Institutional Transformation
132	Fátima	Serrano	MicroFabSpace: Enriching Core Facilities to Support IBEC Research



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