

20
YEARS **IBEC**^R

Institute for Bioengineering of Catalonia

IBEC 20th Anniversary Symposium

OCTOBER 22nd AND 23rd, 2026
BARCELONA

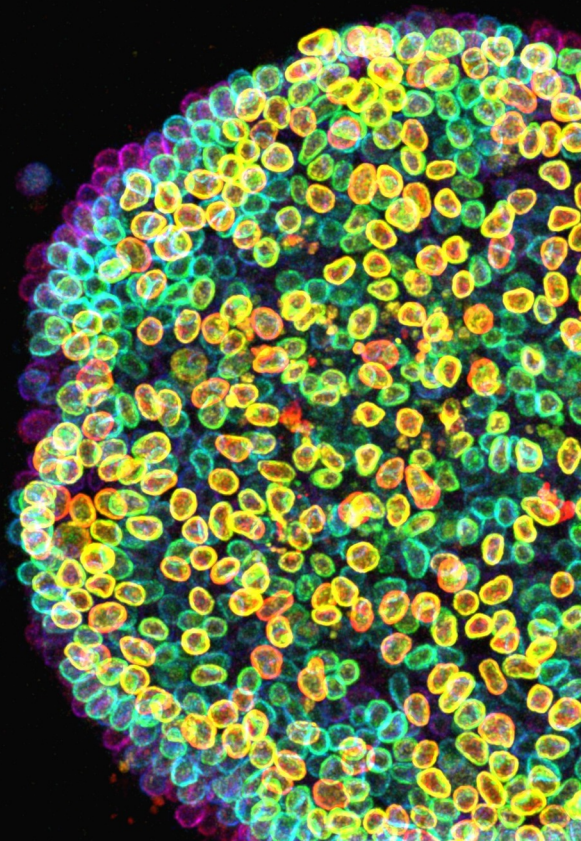


Image credit: Özge Özgüç, Integrative Cell and Tissue Dynamics
Research Group.

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 A β 42 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 <i>Pseudomonas aeruginosa</i>
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 high sensitivity nanoscale electrical characterization of biological nanofibrils
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

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11	Claudia	Camarero-Hoyos	A multifaceted approach to define a novel family of antimalarial compounds: the role of protein aggregation in <i>Plasmodium</i> .
12	Dario	Castellana	Dual-Action 3D Biomaterial for radiotherapy: protection and regeneration of tissue during X-ray treatment
13	Esra	Kasapgil	Endothelium-mimicking hemocompatible coatings for artificial placenta systems
14	Joaquín	Martínez Tambella	Restoration of edge detection and visually guided behavior in ambient white light with photoswitchable small molecules
15	Carlos	Moreno Yruela	Nucleosome-Based Platforms to Decipher Histone Deacetylase Mechanisms and Develop Modulators in High Throughput
16	Juan Enrique	Valdés Carreras	New targeted fusion proteins for enzyme replacement therapy of lysosomal storage disorders
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 <i>Pseudomonas aeruginosa</i>
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 <i>Pseudomonas aeruginosa</i>
23	Aurora	Dols Pérez	High throughput AFM drug delivery imaging and physical characterization
24	Carles	Prado Morales	SkinBots for the topical delivery of antigens
25	Carles	Verdaguer	Developing a multicellular 3D <i>in vitro</i> model for the detection of high-performing iPSC-derived CAR-NK against HER2+ solid tumors

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26	Daniela	Currea	Unravelling the Molecular Targets and Mode of Action of Compound EMA377 in <i>Leishmania infantum</i>
27	Dayaneth	Jácome Montero	From Brain to Blood: Evaluation of miR-519a-3p as a Minimally Invasive Biomarker for Alzheimer's Disease
28	Dunja	Arsenijevic	Exploring the interactions of small-molecule probes with protein condensates as a potential targeting mechanism in <i>Plasmodium falciparum</i>
29	Guanyu	Zhou	Engineering Multivalent ApoE Nanostructures for Isoform-Dependent Neurovascular Unit Reprogramming
30	Ilaria	Porello	Phosphorylcholine-presenting polymer micelles with intrinsic anti-inflammatory activity via scavenger receptor engagement
31	Inés	Macías Tarrío	Nanomotors-mediated delivery of FGFR3 inhibitor for bladder cancer therapy
32	Kristin	Fichna	Nanomotor-Driven Transport Potentiates ADC Efficacy Across Target Heterogeneity
33	Lucia	Roman	YAT2150 Analogues Target Stress-Induced Molecular Condensates in <i>Leishmania infantum</i>
34	Marc	Palà	Ionic Comb Polymers as a Modular Toolbox for Synthetic Biomimetic Vesicles
35	Marta	Badia Graset	Mapping distinct A β 42 aggregation pathways for precision medicine
36	Martín	Ruiz Gutiérrez	Portable grating-coupled SPR platform using Blu-ray-based sensing chips for multiplexed biosensing
37	Núria	Blanco-Cabra	A simple diagnostic platform reveals shear stress as critical in biofilm development.
38	Samantha	Morón Ros	3D-Bioprinting of functional β -cell spheroids for Type 1 Diabetes treatment
39	Sarahi	Elizondo	Ioniccombisomes: Synthetic Cells Across Mucus
40	Sergi	Tosal	PolyQ expansion remodels the sequence determinants of huntingtin nucleation
41	Tomás	Quiroga	The folding, dimerization and allosteric landscapes of the ALS protein SOD1: a comprehensive mutational atlas
42	Yaiza	Andrés	Deep Mutational Scanning of Tau Amyloid Nucleation

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43	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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44	Joel	Àlvarez Puig	Modelling biomaterial-associated biofilm infections in <i>Galleria mellonella</i> for antibiotic susceptibility screening
45	David	Bartolomé Català	Microphysiological reconstruction of the colonic tumor microenvironment for T cell migration studies
46	Florencia	Lezcano	Toward biohybrid facial actuation: 3D bioprinting of functional skeletal muscle systems
47	Andreu	Matamoros Anglès	Extracellular vesicles in Alzheimer's disease: Amyloid β aggregation and neuronal network dysfunction
48	Nicolle	Miranda de Lima	Engineering a Scalable and Highly Sensitive Microfluidic Platform for Real-Time Hyperpolarised ^{13}C Metabolic Imaging of 3D Hepatoblastoma Models
49	Daniel	Moya Rull	A reproducible and scalable human airway and lung organoid platform for infection modelling and therapeutic screening
50	Chiara	Ninfali	A Human 3D Platform combining Engineered Skeletal Muscle and Pancreatic Cancer Spheroids to model Cancer-Associated Cachexia
51	Anna	Panteleeva	Monitoring Neurodegeneration in a Brain-on-a-Chip with an NfL Biosensor
52	Francisco Manuel	Sáez González	From Organoids to Assembloids: Modeling Neurovascular Dynamics in Spinal Cord Injury
53	Jarmila	Stankova	Spatially resolved analysis of CRISPR-mediated metabolic gene knockouts in tumor xenografts
54	Agnieszka	Nikitiuk	Beyond the Cell: Engineering the HPV-Negative HNSCC Microenvironment for Matrix-Dependent Drug Screening
55	Ainoa	Tejedera-Villafranca	Modeling Duchenne Muscular Dystrophy Cardiomyopathy Using hiPSC-Derived 3D Cardiac Co-Cultures
56	Alba	Calonge Sanz	Optimization of Calu-3 and primary bronchial epithelial cell (PBEC) air-liquid interface (ALI) models for investigating chronic <i>Pseudomonas aeruginosa</i> respiratory infections.
57	Anna	Vílche Mariscal	Tuning Hydrogel Network Architecture in PEG-HA-Norbornene Hydrogels Enhances Brain Organoid Diffusion and Maturation

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

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73	Keerthy	Reghunandanan	Dissecting chemokine driven cell migratory behaviour of breast cancer in 3D Micro physiological system using a custom developed migration tracker
74	Lluís	Mangas Florencio	Hyperpolarised ¹³ C NMR enables functional drug response assessment in early-stage oncology drug development
75	Marc	Riu-Villanueva	An assembloid model to interrogate the contribution of inhibitory cortical interneurons to familial Alzheimer's disease network alterations
76	Maria	Escolà	Targeting nucleotide metabolism to attenuate <i>Pseudomonas aeruginosa</i> virulence
77	Marina	Rovira	Engineered Biohybrid Sphincter with Aperture Control
78	Michela	Lain Contato	Three-dimensional spheroid model of colorectal cancer cells in different metabolic conditions
79	Natalia	Castro	Development of personalized bioinks for skeletal muscle tissue engineering to understand the role of ECM in Duchenne muscular dystrophy
80	Nicola	Manicardi	Examining How Mfsd2a-Mediated Lipid Transport Regulates BBB Endocytic Dynamics
81	Oscar	España Romera	Spatial features of antigen escape in a CAR-T treated murine model of melanoma
82	Palash	Chandravanshi	Modelling Human Spinal Cord Injury and Repair in a 3D-Printed Organoid-on-a-Chip Device
83	Patrícia	Zoio	Liquid-templated soft bioreactors for muscle-powered biohybrid robotics
84	Paulina Teresa	Sobierajska	Role of Amorphicity in Determining the Structure, Morphology, Thermal Stability and <i>In Vitro</i> Biological Response of Calcium Phosphates
85	Petra	Bauzon	Linking sarcolemmal instability to metabolic dysregulation: a DMD-on-Chip Platform investigating mitochondrial dysfunctions
86	Pol	Picón Pagès	Structural and Mechanistic Insights into GPR133 Signaling in Glioblastoma Multiforme
87	Rita	Grimalt Mirada	A Microengineered Platform for the Generation of Single-Lumen Human Spinal Cord Organoids
88	Thomas	Wilson	Epifluidics: a scaffold-free platform for perfusable, geometrically programmable, epithelial tubes

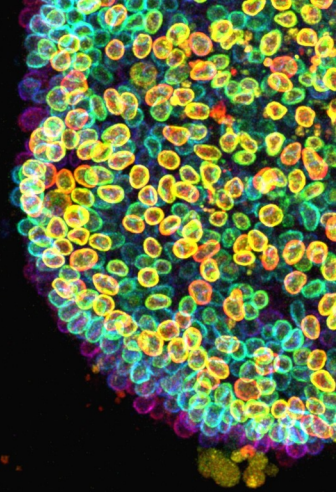
N	NAME	SURNAME	TITLE
89	Timothée	Caboche	A Magnetic Actuator-Based Platform for Functional Assessment of 3D Human Skeletal Muscle Bioengineered Tissues in Myotonic Dystrophy
90	Tobias	Walther	DNA hydrogel microparticles as phantom cells for tissue engineering
91	Vicent	Ribas Serra	Sex- and model-dependent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

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

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110	Margherita	Gallano	Nuclear Envelope Remodelling upon Mechanical Perturbation
111	Marina	Placci	Redefining Membrane Nanomechanics in Lysosomal Disorders: The Role of GlcCer and Gb3.
112	Miguel	González Martín	Design of synthetic mechanosensitive transcription factors
113	Mireia	Valero Puigdomenech	Effects of matrix viscoelasticity on macrophages polarization and their interactions with mesenchymal stem cells
114	Ona	Baguer Colomer	Nuclear mechanics integrate chemical and physical cues to regulate EMT in pancreatic cancer cells
115	Pierre	Ucla	From 2D to 3D: CAF Mechanotransduction in Fibrillar Microenvironments
116	Ricard	Casanovas Zapata	Mechanobiology of Differentiating hiPSC Colonies
117	Rohit	Nautiyal	Nematically guided fracture in brain endothelia
118	Steffen	Grosser	Cell contractility controls epithelial tissues across timescales
119	Valeria	Venturini	Force transmission and mechano-transduction from cell-cell adhesions to the nucleus
120	Vladislav	Petrovskii	Diffusion Anisotropy in Ionically Linked Copolymers

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

N	NAME	SURNAME	TITLE
135	Angela M.	Ramírez Rosales	Nanocellulose & Bacterial Cellulose for Medical and Environmental Applications
136	Yoel	Melul Steinfeld	A Closed-Loop System for Real-Time Calcium Imaging, Neuron Selection, and Targeted Photostimulation in Freely Moving Mice
137	Sustainability	Committee	Building a Culture of Sustainable Science at IBEC: From Green Labs to Institutional Transformation



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