UAB
Universitat Autònoma de Barcelona

Animal Production

Name	UAB Academic Position	Address	e-mail	Doctoral Programme	Department/Institute	Research line of the Doctoral Pr.	Topic Description Proposal related to the Research Line
Ahmed Salama Fadali	Associate Professor		ahmed.salama@uab.cat	Animal Production	Animal and Food Science/UAB	Behavior and welfare	This research focuses on the transcriptomic, metabolomic, and behavioral monitoring of dairy and meat sheep from birth to their first lactation. The aim is to evaluate their responses to various stress situations (e.g., birth, weaning, social isolation, shearing, first visit to the milking parlor). The ultimate goal is to contribute to sustainable production systems by reducing animals' susceptibility to stressors and improving overall efficiency. Specifically, the objectives are: 1) Collect and analyze blood samples from sheep at different stress points to study transcriptomic and metabolomic responses. 2) Identify common behavioral and metabolic patterns associated with stress in sheep. 3) Enhance the sustainability of production systems by improving animal welfare and overall system efficiency.
Ahmed Salama Fadali	Associate Professor		ahmed.salama@uab.cat	Animal Production	Animal and Food Science/UAB	Lactation biology and milk production in ruminants	Investigate the potential effectiveness of rapid on-farm methods for identifying mastitis-causing pathogens in small ruminants and their implications for udder health management and treatment outcomes. The specific objectives are: 1) To determine the prevalence and characteristics of mastitis in goats and sheep during the postpartum period, focusing on identifying pathogen types and infection rates using rapid detection methods. 2) To evaluate the mastitis incidence in goats and sheep before parturition, examining how early detection can impact management and treatment options. 3) To apply and validate the effectiveness of rapid detection methods in real commercial farm settings, assessing practicality, accuracy, ease of use among small ruminant producers and identify adequate treatment.
Alex Clop & Alicia Roque	CSIC researcher at CRAG; Professora Titutalr d'universitat al Dept de Bioquimica UAB	c/ Vall Moronta sn, edifici crag. Campus UAB.	alex.clop@cragenomica.es alicia.roque@uab.cat	Animal Production	Dept of Animal Sciences and food technology	single cell omics towards the identification of gesemen quality in swine.	We are carrying whole genome sequencing and single cell multiome (RNA + ATAC) sequencing of the pig testicle in (i) boars with opposite performance for sperm morphology and (ii) boars with a novel case of azoospermia and unaffected controls. With this approach, we have identified DNA variants with allelic frequeny differences between the boars with opposite semen quality (i) and being strong candidate to cause azoospermia in our pig population (ii). We have collected testicles from a selection of these samples and will soon send them for single cell sequencing (ATAC and RNA). We want to identify gene expression or genome accessibiity differences between groups for (i) and for (ii). A selection of candidate variants will be then used in a genetic association study for a set of reproduction traits in near 1000 boars from dfferent genetic backgrounds. We will also study the genetic basis of sperm capacitation and will also develop a deconvolution model to carry in silico single cell transcriptomes from bulk RNA-seq of the pig's testicle.
Josep M. Folch Albareda	Professor of the Department of Animal and Food Science and Researcher at CRAG	CRAG. Campus de la UAB. 08193 Bellaterra. Barcelona	JosepMaria.Folch@uab.cat	Animal Production	Department of Animal and Food Science, University Autonomous of Barcelona. Centre for Research in Agricultural Genomics (CRAG)	Conservation and Improvement of Animal Genetic Resources	Genomics applied to the improvement of pig production and health. The research group of CRAG - UAB has an extended experience in the application of molecular genetics and genomics methods to animal breeding. A large number of pigs, belonging to several crosses and commercial populations, with phenotypic and genotypic information is available in our group. In the present project, we are interested in a holistic approach combining immunity, production, and meat quality traits to increase pigs' efficiency, health and welfare, while maintaining economic profitability for producers and social acceptance. The research proposal will include the multiomics analysis of gene expression and regulation in relevant pig tissues for energy metabolism and its association with growth, immunity and meat quality records using systems biology approaches. In addition, the most relevant genetic variants in candidate genes will be validated.
Lorena Castillejos	Profesora Agregada /Associate Professor	Facultat de Veterinària	lorena.castillejos@uab.cat	Animal Production	Ciència Animal i dels Aliments	Nutrició i Alimentació de Remugants (Boví) / Cattle nutrition	(1) Ruminal fermentation (additives and non-protein nitrogen sources) & (2) AI and data solutions for individualised automated milking & feeding of dairy cows
Marcelo Amills Eras	Catedràtic laboral	Edifici CRAG, carrer Vall Moronta i Facultat de Veterinària, avda. dels turons	marcel.amills@uab.cat	Animal Production	Ciencia Animal i dels Aliments	Molecular Genetics applied to Veterinary Medicine	Molecular basis and genetic determinism of complex phenotypes in goats
Susana María Martín Orúe	Proffesor in Animal Science	Travessera dels Turons s/n. Facultat de Veterinària. Campus UAB. 08193 Bellaterra. Barcelona. Spain	susana.martin@uab.cat	Animal Production	Departament de Ciència Animal i dels Alimentos (Animal and Food Sciencie Departament)	Monogastric Nutrition and Feeding (pigs, birds, fishes).	**Unraveling the causes of low growth in piglets: Analysis of the impact of perinatal events, nutrient flow, and the gut-brain axis on metabolic response and feeding behavior.** The proyect will include differente *in vivo* studies in commercial and experimental farms to understand the reasons for the low performance of some piglets. *In vitro* models of the pig hindgut will be also used to evaluate the potential of different nutritional and biotic strategies to modulate the microbiota and the synthesis of neuroactive molecules.

Animal and Food Science

Name	UAB Academic Position	Address	e-mail	Doctoral Programme	Department/Institute	Research line of the Doctoral Pr.	Topic Description Proposal related to the Research Line
Bibiana Juan Godoy	Professora agregada	Edifici V, Travessera dels Turons, 08193 Cerdanyola del Vallès, Barcelona	bibiana.juan@uab.cat	Animal and Food Science	Animal and Food Science Deparment. CER CIRTTA.	Food Processing and Control	This proposal aims to explore strategies to improve the functionality of pea protein to those commonly consumed, using dynamic homogenization technologies (High-Pressure Homogenization, HPH; Microfluidization, MF) and Ultrasound (US). **https://ja.cat/iTu7J**

Jordi Saldo	Associate Professor	Facultat de Veterinària	jordi.saldo@uab.cat	Animal and Food Science	Animal and Food Science Department. CER CIRTTA.	Food Processing and Control	Improving the functionality of alternative undervalued proteins by applying high-energy physical treatments and combining different protein sources (rice and pork spleen proteins). **https://ja.cat/R9dLD**

Animal Medicine and Health

Name	UAB Academic Position	Address	e-mail	Doctoral Programme	Department/Institute	Research line of the Doctoral Pr.	Topic Description Proposal related to the Research Line
Joaquim Segalés & Júlia Vergara-Alert	Full professor / Researcher	Edifici CReSA, Campus Universitat Autònoma de Barcelona	joaquim.segales@uab.cat julia.vergara@irta.cat	Animal Medicine and Health	Sanitat i Anatomia Animals	Animal Health, Infectious Diseases and Veterinary Epidemiology	Use of in vitro systems (organoids and explant models) as alternatives to study the infection dynamics and pathogenesis of coronavirus infections in animals.

Biochemistry, Molecular Biology and Biomedicine

Name	UAB Academic Position	Address	e-mail	Doctoral Programme	Department/Institute	Research line of the Doctoral Pr.	Topic Description Proposal related to the Research Line
Ester Boix	Full Professor	Faculty of Biosciences, campus UAB, Universitat Autonoma de Barcelona	Ester.Boix@uab.es	Biochemistry, Molecular Biology and Biomedicine	Dpt. of Biochemistry and Molecular Biology	Gene regulation, structure and function of macromolecules	Structure-functional studies of human host defense ribonucleases. Design of novel antimicrobial agents against antimicrobial resistance.
Gema Ariceta	Professor	Passeig de la Vall d'Hebron, 119-129 | 08035 Barcelona	gema.ariceta@vallhebron.cat	Biochemistry, Molecular Biology and Biomedicine	Vall d'Hebron Research Institute	Clinical Biochemistry, Molecular Pathology and Pharmacology	**Study of renal glycome to identify novel biomarkers of kidney function for rare diseases.** Dent's Disease 1 (DD1) is a rare renal disease that progresses to fibrosis and renal failure requiring renal replacement therapy. ClC-5, a protein involved in the secretory pathway acidification, is the genetic cause of DD1. Previous work from our group showed that ClC-5 loss-of-function strongly affects levels and trafficking of glycosylated epithelial plasma-membrane proteins, although the link remains unknown. The main objective of this project is to study the role of ClC-5 on glycosylation and trafficking of epithelial markers, such as mucin-1 or E-cadherin, and to assess their potential as progression biomarkers. The successful candidate will use human DD1 cellular models and patients' samples, besides learning cutting-edge cellular/molecular technologies like high-resolution in-vivo measurements or CRISPR to achieve this aim.
Joaquín Ariño	Catedràtic d'Universitat	Ed.IBB (MRB), Campus UAB	joaquin.arino@uab.cat	Biochemistry, Molecular Biology and Biomedicine	Bioquímica i Biololgia Molecular	Genòmica, Proteòmica i Bioinformàtica	Our laboratory is developing novel platforms for expression of proteins of industrial or biomedical interest in yeasts. We use CRISPR-Cas9 technology and multi-omic approaches (transcriptomic, translatomics, proteomic and phosphoproteomic) to elucidate the overall response of the yeast Komagataella phaffii (formerly Pichia pastoris) to moderate alkalinization and the signaling pathways involved. This information will serve to develop novel yeast strains carrying expression cassettes based on synthetic hybrid promoters. Expression from such strains will be easily regulated by simple changes in the pH of the medium, thus providing more affordable and safer expression platforms than current approaches used in industry..
José Manuel López Blanco	Profesor Titular	Unitat de Bioquímica, Facultad de Medicina, Universitat Autónoma de Barcelona.	josemanuel.lopez@uab.cat	Biochemistry, Molecular Biology and Biomedicine	Bioquímica i Biologia Molecular	Bioquímica clínica, patologia molecular i farmacologia	**Alterations in Neronal Stem Cells (NSC) and Pluripotent Stem Cells (iPSC) obtained from Lesch-Nyhan patients.** Lesch-Nyhan disease (LND) is caused by a deficiency in the purine metabolism and is characterized by severe neurological manifestations. Neuronal Stem Cells and Pluripotent Stem Cells obtained from LND patients will be culture with physiological media to mimic in vivo conditions. We will asses wether these cells present biochemical and/or functional alterations, and if the differentiation program into different cell types is compromised.
Montse Sanchez Cespedes & Octavio Romero Ferraro	Associate professor & Associate professor	Josep Carreras Leukemia Research Institute, IJC Building, Campus ICO-Germans Trias i Pujol, Ctra de Can Ruti, Camí de les Escoles s/n. 08916 Badalona, Barcelona,	mscesped@yahoo.com ; oromero@carrerasresearch.org	Biochemistry, Molecular Biology and Biomedicine	Departament de Bioquímica i Biologia Molecular	Students who obtain their PhD on this programme can pursue a scientific, academic or professional career, joining research centres, universities, hospitals or scientific research and development companies, both national and international. Their professional activity can be in the field of biochemistry, molecular biology, biomedicine, biotechnology, the pharmaceutical industry or food technology, among others.	To study genetic and epigenetic alterations in cancer and to use this information for the design of novel therapeutic strategies. The work will involved the use of the latest genomic and epigenomic sequencing technologies, including single cell analysis.
Natalia Sanchez de Groot	Investigador Ramon y Cajal	Biochemistry and Molecular Biology Department Biosciences Faculty Edifici Cs Campus UAB E-08193 Bellaterra (Barcelona)	natalia.sanchez@uab.cat	Biochemistry, Molecular Biology and Biomedicine	Department of Biochemistry and Molecular Biology	Gene regulation, structure and function of macromolecules	We study the microbiota and neurodegenerative diseases connection. We combine molecular experiments, cell biology and C. elegans models to measure the impact of microbiota prion-like proteins on the host. We also look for compunds to reduce their toxicity and the incidence of neurodegeneration.

Paloma Mas & Jordi Moreno-Romero	CSIC Research Professor at CRAG & Ramon y Cajal Researcher at UAB	CRAG Building - Campus UAB & Faculty of Biosciences, Building C - Campus UAB	paloma.mas@cragenomica.es jordi.moreno.romero@uab.cat	Biochemistry, Molecular Biology and Biomedicine	Center for Research in Agricultural Genomics (CRAG) CSIC-IRTA-UAB-UB & Department of Biochemistry an Molecular Biology (UAB)	Gene Regulation, Structure and Function of Macromolecules	**Light- and clock-regulated gene expression: the role of histone modifications and chromatin dynamics.** This research project aims to address a fundamental question in plant biology: how light and the circadian clock regulate gene expression through chromatin-level mechanisms. Histone modifications, with a particular focus on polycomb group proteins, are central to mediating transcriptional changes. The study seeks to unravel the complex interplay between light signals, chromatin remodeling, and circadian regulation. By integrating molecular, epigenetic, and temporal approaches, the project investigates how chromatin modifications shape plant development and environmental adaptation. It encompasses three interconnected objectives: (i) elucidating the role of polycomb activity in light-responsive gene expression; (ii) characterizing dynamic chromatin state regulation in circadian clock pathways; and (iii) employing genome-wide approaches to identify histone marks associated with light- and clock-regulated chromatin remodeling.

Bioinformatics

Name	UAB Academic Position	Address	e-mail	Doctoral Programme	Department/Institute	Research line of the Doctoral Pr.	Topic Description Proposal related to the Research Line
Jean-Didier Maréchal	Full Professor in Physical Chemistry	InSilichem, Department of Chemistry, Facultat of Sciences, UAB	jeandidier.marechal@uab.cat	Bioinformatics	Department of Chemistry	Structural bioinformatics	All topics related to the proposal imply the use of multiscale molecular modeling to study and design systems at the interface between chemistry and biology. The interested candidate can select one of these three topics, :1) computer aided design of artificial metalloenzymes for green chemistry prospects, 2) elucidation of metal adquisition mechanisms in pathogenic diseases and its use in drug design and 3) design of novel iron containing compounds against diseases linked to iron deficencies.
Margarida Julià-Sapé	Senior Lecturer	Institut de Biotecnologia i Biomedicina	Margarita.Julia@uab.cat	Bioinformatics	Biochemistry Department, Biosciences faculty	Omics and Molecular Bioinformatics	Machine learning coupled to magnetic resonance spectroscopy data of brain tumours- biomarker discovery for prognostic stratification of patients with glioblastoma
Xavier Daura Ribera	Professor d'Investigacio ICREA, Professor Associat	Institut de Biotecnologia i de Biomedicina, Edifici MRB, Campus de la UAB	xavier.daura@uab.cat	Bioinformatics	Institut de Biotecnologia i de Biomedicina	Biologia de Sistemes i Sintètica	An integrative systems biology approach to the modeling and simulation of the Quorum Sensing system of the nosocomial pathogen Stenotrophomonas maltophilia, a model system of clinical significance for its multidrug-resistance. The project will entail the development of a model of the Quorum Sensing system and its downstream pathways, involved in the regulation of motility, virulence, biofilm formation, resistance, etc. The model will be based on publicly available data as well as transcriptomic, proteomic and mutational data obtained by the group. These data correspond to different growth phases of the wild type and mutants of a reference clinical strain, thus reflecting different physiological states. The ultimate purpose of the study will be to establish the model and a simulation approach able to explain and predict phenotypic changes as a result of a perturbation in the network (for example, the action of a drug).

Biotechnology

Name	UAB Academic Position	Address	e-mail	Doctoral Programme	Department/Institute	Research line of the Doctoral Pr.	Topic Description Proposal related to the Research Line
Gloria González Anadón	Professora titular	UAB, Campus de Bellaterra Escola d'Enginyeria, Departament d'Enginyeria Química, Biològica i Ambiental	gloria.gonzalez@uab.cat	Biotechnology	Departament d'Enginyeria Química, Biològica i Ambiental	Biotecnolgia	Development and upscaling of an enzymatic process to produce furan dicarboxylic acid from Hydroxy methyl furfural to produce biobased PEF
Francisca Blánquez Cano	Agregat	Escola D'Enginyeria, c/ de les Sitges, Cerdanyola del Vallès 08193 (Barcelona)	paqui.blanquez@uab.cat	Biotechnology	Departament d'Enginyeria Química, Biològica i Ambiental	Sistemas Biológicos de Tratamiento de Efuentes y Residuos	This project aims to investigate the functional characterization of enzymes involved in microbial reductive dehalogenation, a process crucial for refining the global halogen cycle and enhancing bioremediation of halogenated contaminants. To date, these studies have been limited due to challenges in the establishment of a reliable production method of these enzymes. This project will explore novel expression systems to produce either reductive dehalogenases from Dehagenimonas or methyltransferases from Dehalobacterium, both important bioremediation organisms. This methodology will facilitate detailed studies of their activity, substrate specificity and environmental roles.

Cell Biology

Name	UAB Academic Position	Address	e-mail	Doctoral Programme	Department/Institute	Research line of the Doctoral Pr.	Topic Description Proposal related to the Research Line
Aurora Ruiz-Herrera Moreno	ICREA Professor	Campus UAB	aurora.ruizherrera@uab.cat	Cell Biology	Cell Biology, Physiology and Immunology	Exploring the dynamics of genome architecture and gene function in Vertebrates	The central goal of this proposal is to investigate the evolutionary plasticity and function of higher-order vertebrate genome organization, and how this is transmitted to the offspring. We will use these data to provide new interpretive hypotheses on the mechanism(s) responsible for the origin and function of genome architecture. In the present proposal we will focus on the function and the extent of higher-order organization conservation in representative vertebrate genomes. Using cutting-edge computational and experimental methods we will examine whether chromatin interactions are conserved in distantly related vertebrate clades. Our breakthrough research on mammals demonstrates that our goals are feasible, and that analysis of the mechanistic forces responsible for chromatin structure is central to understanding genome organization and evolution in deep evolutionary assemblages. Recent references from the group: Vara et al. (2019a) Cell reports 28 (2): 352-367, e9; Vara et al. (2019b) Mol Biol Evol 36 (8), 1686-1700; Waters and Ruiz-Herrera (2020) TiG 36(10):728-738; Vara et al. (2021) Nature Communications 12 (2981); Waters et al. (2021) PNAS 118(45) e2112494118; Álvarez-González et al. (2022)Cell Reports 41, 111839.
Elena Ibáñez de Sans	Professora Agregada (Associate Professor)	Cell Biology Unit, Faculty of Biosciences, UAB	elena.ibanez@uab.cat	Cell Biology	Dept. Cell Biology, Physiology and Immunology	Reproductive biology and genetics	The aim of the PhD project is to investigate the risks of chronic nanoplastics exposure on the reproductive health of terrestrial mammals, using the laboratory mouse as a model. A comprehensive analysis of the potential reproductive toxicity of nanoplastics will be performed at multiple levels, including gonadal function, gamete and embryo quality, genome stability, placental function, offspring and fertility. Histological, cellular, and molecular techniques will be applied during the development of the project.

Ignasi Roig Navarro	Associate professor	office C2/107, Fac. Biociències, Campus UAB, Cerdanyola del Vallès 08193, Spain	ignasi.roig@uab.cat	Cell Biology	Genome Integrity and Instability group, Institut de Biotecnologia i Biomedicina (IBB)	To study the function of TRIP13 in meiotic prophase.	TRIP13 is a master regulator of the meiotic cell cycle, controlling DSB repair, chromosome axis formation, desynapsis, MSUC, and the spindle assembly checkpoint. TRIP13s involvement in these events is thought to be done by remodeling HORMA domain proteins. However, in our previous grant, we found evidence that the ATPase function of TRIP13 is dispensable to promote the loading of RAD51 onto resected breaks, implying that TRIP13 may have unexpected scaffolding functions. This proposal will use genetic, proteomic, genomic, and cell biology tools to uncover TRIP13 scaffolding functions in meiosis.

Chemistry

Name	UAB Academic Position	Address	e-mail	Doctoral Programme	Department/Institute	Research line of the Doctoral Pr.	Topic Description Proposal related to the Research Line
Adelina Vallribera Massó	Catedràtica d'Universitat	Unitat de Química Orgànica/Departament de Química/Facultat de Ciències	adelina.vallribera@uab.cat	Chemistry	Departament de Química	Materiales funcionales y reactividad química	Acces to new trifluoromethylated compounds via photocatalysis
Albert Granados	Associate Professor of Organic Chemistry	Department of Chemistry - UAB - Cerdanyola, Barcelona, Spain	albert.granados@uab.es	Chemistry	Chemistry	Functional Materials and Organic Reactivity	Accessing New Chemical Space in [3.1.1]Bicycloheptanes Settings using Photoredox Chemistry
Àngels González Lafont	Full professor of Physical Chemistry	Departament de Química,Facultat de Ciències, Campus de la UAB-08193 Bellaterra (Cerdanyola del Vallès), Barcelona, Spain	angels.gonzalez@uab.cat	Chemistry	Chemistry	Computational simulations of chemical and biochemical systems	Approaching cancer as an inflammation-based disease: Theoretical development of innovative ways to design new pharmacological and photopharmacological treatments.The methods of Theoretical Chemistry will be used to generate new knowledge that leads to rationally designed drugs that can be able to mitigate, or even stop, the inflammation associated with cancer,
Carolina Gimbert Suriñach	Associate Professor	Chemistry Department, Edifici C, Campus UAB 08193 Bellaterra (Cerdanyola)	carolina.gimbert@uab.cat	Chemistry	Chemistry Department	Functional materials and organic reactivity	Preparation and characterization of organic molecules and materials for light induced chemical reactions including solar fuel production.
Félix Busqué Sánchez	Associate professor	Facultat de Ciències, Campus de Bellaterra, 08193 Cerdanyola del Vallès, Barcelona.	felix.busque@uab.cat	Chemistry	Chemistry	Bioinorganic and bioorganic synthesis and applications	Bioinspired functional nanomaterials based on polyphenolic compounds
Giuseppe Sciortino	Associate Professor	Dep. Chemistry, UAB, Cerdanyola del Valles, 08193, Barcelona, Catalonia, Spain	Giuseppe.Sciortino@uab.cat	Chemistry	Departament of Chemistry	Computational Simulations of Chemical and Biochemical Systems	Leveraging cutting-edge computational multilevel approaches and machine learning to advance the precision and efficiency of catalyst design and optimization for: (a) Photocatalytic and stereoselective artificial miniaturized metalloenzymes for sustainable catalysis and energy applications. (b) Cooperative multimetallic homogeneous systems for highly selective synthetic routes and energy-efficient processes.
Gregori Ujaque	Professor	Dep. Chemistry, UAB, Cerdanyola del Valles, 08193, Barcelona, Catalonia, Spain	gregori.ujaque@uab.cat	Chemistry	Department of Chemistry	Computational Nanocatalysis	Use of Multiscale Modelling and Machine Learning for: (a) Design of nanodevices for energy technology (catalysis and molecular recognition). (b) Developing next generation of catalysts under green chemistry principles.
Manuel del Valle Zafra	Full Professor	Department of Chemistry, Faculty of Sciences	manel.delvalle@uab.cat	Chemistry	Química	Sensores y Biosensores	Application of new technologies for the modification of electrodes, with employement of nanotechnology and late generation nanocomponents (graphene, nanoparticles, MOFs, conducting polymers, molecularly imprinted polymers), with the aim of developing chemical sensors and biosensors for detecting compounds of interest in the environmental, pharmacy or clinical fields. Stages of the research: (1) To prepare and activate electrodes based on carbon platform; (2) Structural, microscopic and electrochemical characterization of electrodes; (3) to Characterize the analytical properties of developed sensors and biosensors; (4) To perform final application of developed devices.
Maria Isabel Pividori Gurgo	Professor/Catedràtica d'universitat	Departament de Química/Unitat de Química Analítica Edifici Cn · despatx C7-245 · carrer dels Til·lers Campus de la UAB · 08193 Bellaterra (Bellaterra) · Barcelona · Spain https://isabelpividori.net T +34 93 581 1976	isabel.pividori@uab.cat	Chemistry	Chemistry Department	Sensors oi Biosensors	Rapid Diagnostic Tests for the early diagnosis of non-communicable diseases based on exosomes. Keywords: i) exosomes; ii) bioanalytical chemistry, rapid diagnostic tests iii) analytical bioinstrumentation, biosensors, genosensors, immunosensors, DNA chips, lateral flow assays iv) nanobiomaterials, metallic nanoparticles, magnetic nanoparticles, oriented immobilization of biomaterials in nanomaterials Further details about research lines can be found in https://isabelpividori.net/research/ This proposal is related to the development of rapid tests (RDTs) to meet the features for RDTs summarized under the acronym ASSURED by the WHO (Affordable; Sensitive; Specific; User-friendly; Rapid and Robust; Equipment-free; and, Delivered to those who need it) for different applications, but specially for inflammatory biomarkers and cancer. Novel biomarkers as is the exosomes will be exploited for improving the clinical diagnosis and prognosis of different non-communicable conditions. Recently, our research group have developed our own technologies for the separation and detection of exosomes from different nature (breast cancer, osteoblastic, neuronal) from complex biological matrix. Accordingly, this proposal will address three major technological challenges that have been identified as technology bottleneck for the use of novel biomarkers as in RDTs. The first one is related to the specificity in the isolation of the biomarker from complex matrices. To achieve that, a rational study of the biomolecules will be performed, followed by the isolation by novel solid-phase preconcentration strategies and advanced materials including magnetic molecularly-imprinted polymeric particles. The second one addresses the increase in the sensitivity using strategies for the simultaneous amplification and tagging of overexpressed transcripts by ultrasensitive isothermal approaches. Finally, in all instances, analytical simplification will be implemented in order to minimize pipetting, washing steps and manipulation of reagents to provide analytical tools requiring minimal training for final users, but without any loss in the analytical performance. Biosensors and Lateral flow tests will be considered as prominent RDTs technologies based on electrochemical and optical readout, respectively, which can operate under minimal technical requirements in scarce-resource settings. The application that are envisaged includes targets affecting global health. All the developed strategies will assess a coherent business-focused analysis of research and innovation bottlenecks and opportunities to current and future societal challenges related with health and wellbeing.
Montserrat López Mesas & Roberto Boada Romero	Associate Professor (Tenure Professor)	Faculty of Science, Campus UAB, Bellaterra 08193, Barcelona, Spain	montserrat.lopez.mesas@uab.cat	Chemistry	Chemistry	Tecnicas de Separación en Química	Rare Earth Elements (REEs) are essential for developing technologies like green energy and electric vehicles. However, reliance on geographically concentrated mining poses supply and environmental challenges. The FREECOVER project focuses on developing an eco-friendly hydrometallurgical recycling process that utilizes sustainable materials to recover REEs from metallic waste. This research focuses on characterizing, optimizing, regenerating, and applying natural adsorbents for sustainable REE recycling and water remediation methodologies based on adsorption and advanced oxidation processes.

Ramon Alibés Arqués & Ona Illa Soler	Full Professor/Associate Professor	Edifici CN. Chemistry Department. Faculty of Science	ramon.alibes@uab.cat	Chemistry	Química	Synthesis of Bioactive Organic compouns and Functional Materials (SynOrgFun)/Bioorganic and Bioinorganic Synthesis and Applications	Design and Synthesis of novel therapeutic agents for degenerative disorders. This PhD proposal aims to develop and synthesize innovative drug candidates with enhanced therapeutic properties for degenerative diseases. Specifically, the project focuses on creating novel positive allosteric modulators of cannabinoid receptors, which could amplify the neuroprotective effects of orthosteric agonists, offering a potential therapeutic strategy for neurodegenerative disorders like Alzheimer's disease. Additionally, the proposal includes the development of new inhibitors targeting transthyretin (TTR) amyloidogenesis, which could improve current treatments for transthyretin amyloid cardiomyopathy. This research is highly interdisciplinary and encompasses several key stages in the drug development process ranging from the rational design and organic synthesis of the small molecule candidates to the assessment of the pharmacological activity in vitro and, ultimately, in vivo.
Xavier Solans Monfort	Professor Agregat Serra Húnter	Carrer dels Til·lers S/N	xavier.solans@uab.cat	Chemistry	Departament de Química	Computational Simulations of chemical and biochemical systems	Computational design of earh-abundant metal-based catalysts for the reduction of pollutants to added value compounds

Cognitive Science and Language

Name	UAB Academic Position	Address	e-mail	Doctoral Programme	Department/Institute	Research line of the Doctoral Pr.	Topic Description Proposal related to the Research Line
Anna Gavarró & Elena Pagliarini	Anna Gavarró: Catedràtica; Elena Pagliarini: investigadora Ramón y Cayal	Carrer de la Fortuna; Campus de la UAB · 08193 Bellaterra; (Cerdanyola del Vallès) · Barcelona · Spain	anna.gavarro@uab.cat elena.pagliarini@uab.cat	Cognitive Science and Language	Departament de Filologia Catalana	Lingüística y cognición	The goal of the project is to test infant comprehension of wh-questions in Chinese, combined with the use of pseudo-verbs in a language with covert wh-movement, namely Chinese. This is an empirical field which has not been investigated before. The data from Chinese will be compared with those from languages in which wh-questions involve wh-movement. By hypothesis, we do not expect differences to emerge as a result of the +/– movement option.

Computer Science

Name	UAB Academic Position	Address	e-mail	Doctoral Programme	Department/Institute	Research line of the Doctoral Pr.	Topic Description Proposal related to the Research Line
Anna Sikora	Titular d'Universitat	Carrer de les Sitges. School of Engineering. Universitat Autònoma de Barcelona. 08193 Cerdanyola del Vallés.	anna.sikora@uab.cat	Computer Science	Computer Architecture and Operating Systems	High Performance Computing	Auto-tuning of HPC applications based on Machine Learning. The goal is to analyze HPC applications and indicate/apply possibilities of their automatic and dynamic tuning using Machine Learning techniques.
Eduardo César	Titular d'Universitat	Carrer de les Sitges. School of Engineering. Universitat Autònoma de Barcelona. 08193 Cerdanyola del Vallés.	eduardo.cesar@uab.cat	Computer Science	Computer Architecture and Operating Systems	High Performance Computing	Parallel Agent Based Modeling and Simulation of Social Systems.
Javier Panadero	Titular d'Universitat	Carrer de les Sitges. School of Engineering. Universitat Autònoma de Barcelona. 08193 Cerdanyola del Vallés.	javier.panadero@uab.cat	Computer Science	Computer Architecture and Operating Systems	High Performance Computing	Predicting Natural Hazards Evolution Considering Climate Change Impacts by Combining High-Performance Simulation and Artificial Intelligence
Javier Panadero	Titular d'Universitat	Carrer de les Sitges. School of Engineering. Universitat Autònoma de Barcelona. 08193 Cerdanyola del Vallés.	javier.panadero@uab.cat	Computer Science	Computer Architecture and Operating Systems	High Performance Computing	Design of Placement Algorithms for Large-Scale Volunteer Fog and Edge Systems Combining Optimization Techniques with Machine and Reinforcement Learning
Joan Serra-Sagristà	Full Professor	Edifici Q, Escola d'Enginyeria, Universitat Autònoma de Barcelona	joan.serra@uab.cat	Computer Science	Dep. of Information and Communications Engineering	Security, coding, and compression	Data compression: deep learning compression, remote sensing data coding, astronomical data coding, high throughput coding, point cloud compression.
Joan Serra-Sagristà	Full Professor	Edifici Q, Escola d'Enginyeria, Universitat Autònoma de Barcelona	joan.serra@uab.cat	Computer Science	Dep. of Information and Communications Engineering	Security, coding, and compression	Data compression: deep learning compression, remote sensing data coding, astronomical data coding, high throughput coding, point cloud compression.
Joaquim Borges i Ayats	Catedràtic d'escola universitària	Edifici Q. Escola d'Enginyeria. Universitat Autònoma de Barcelona	joaquim.borges@uab.cat	Computer Science	Dept. of Information and Communications Engineering	Security, Coding and Compression	Error correcting codes and their applications: Hadamard codes, codes over rings, quantum codes, regular codes, codes for distributed storage. Software in Coding Theory

Demography

Name	UAB Academic Position	Address	e-mail	Doctoral Programme	Department/Institute	Research line of the Doctoral Pr.	Topic Description Proposal related to the Research Line

Elisenda Rentería, Pilar Zueras & Albert Esteve	Ramón y Cajal; Ramón y Cajal; Investigador distingit	Carrer de Ca n'Altayó, Edifici E2 Campus Universitat Autònoma de Barcelona 08193 Bellaterra / Barcelona	erenteria@ced.uab.es pzueras@ced.uab.es aesteve@ced.uab.es	Demography	Centre d'Estudis Demogràfics / Departament de Sociologia, UAB	Salut i Envelliment	Understanding disparities in the economic and mental wellbeing of middle-aged and older adults with disabilities: the interplay of household and family composition, (unmet) care needs, and geographical contexts. https://ced.cat/en/grups_recerca/health-and-ageing/
Sergi Trias-Llimós & Antonio López-Gay	Ramón y Cajal; Professor	Carrer de Ca n'Altayó, Edifici E2 Campus Universitat Autònoma de Barcelona 08193 Bellaterra / Barcelona	strias@ced.uab.cat alopez@ced.uab.es	Demography	Centre d'Estudis Demogràfics / Departament de Geografia, UAB	Salut i Envelliment	Health and geography: Inequalities in health across small regions. https://ced.cat/en/grups_recerca/health-and-ageing/
Pablo Gracia Molina	Research Professor	Carrer de Ca n'Altayó, Edifici E2 Campus Universitat Autònoma de Barcelona 08193 Bellaterra / Barcelona	pgracia@ced.uab.es	Demography	Departament de Sociologia, UAB; Centre d'Estudis Demogràfics	Fecunditat i Famílies	1) Socioeconomic and demographic inequalities in child well-being outcomes; 2) Impacts of digitalisation on families, relationships, dating, partnership, parenting or young people's lives and well-being; 3) Gender inequalities in time use within and across countries, and over the life course; 4) Mental health inequalities across life-course stages; 5) Impacts of precarious employment on adults' and young people's well-being. https://ced.cat/en/grups_recerca/families-inequality-and-social-change/

Economics, Management and Organizations

Name	UAB Academic Position	Address	e-mail	Doctoral Programme	Department/Institute	Research line of the Doctoral Pr.	Topic Description Proposal related to the Research Line
Miguel A García-Cestona	Full Professor (Catedràtic)	Departament d'Empresa, Facultat Economia i Empresa. Av de l'Eix Central. Edifici B. 08193 Bellaterra, Barcelona	Miguel.Garcia.Cestona@uab.cat	Economics, Management and Organizations	Departament d'Empresa	Corporate Governance and Corporate Finance	1) Corporate sustainability has received considerable attention in the media, academia, and industry in recent years. Both anecdotal and empirical evidence suggest that investors perceive corporate ESG (Environmental, Social, Governance) practices as a contributory factor of firm value and firm risk. Therefore, there has been an increasing call on firms by shareholders and various stakeholders to incorporate CSR into their business practices. Modern businesses are interdependent in the present economic system. Global supply chains have grown rapidly as a result of increased economic globalization, improvements in information technology and production, and enhanced logistics. Firms collaborate closely with their supply chain partners to enhance operational efficiency. Since the supply chain is a complex and interconnected network, any shock that affects one company or firm-specific practices can be transmitted to its upstream and downstream businesses. Anecdotal evidence shows that many corporate customers are concerned not only with their own CSR standards but also with those of their suppliers. Recent research highlights that those customers with strong ESG commitments play an important role in shaping the ESG policies of their suppliers. Therefore, firms are increasingly focused on both their own ESG performance and that of their supply chain partners. The goal of our study is to explore CSR practices spillovers in global supply chains around the world, and their economic and financial implications for both customers and suppliers. 2.) Ownership structures around the world are becoming increasingly concentrated, with the majority of market capitalization (73%) now controlled by large, identifiable owners such as institutional investors, states, corporations, individuals, and families (OECD, 2021). This shift marks a significant departure from traditional assumptions of dispersed ownership and homogeneous shareholder interests. In light of these changes, researchers have started to challenge the assumption of shareholder uniformity, emphasizing the heterogeneity among shareholder types and their implications for corporate governance practices and firm performance outcomes. However, much of the existing research in this area examines the influence of a single owner type in isolation, overlooking the complexity introduced by multiple, co-existing ownership types within firms. Firms often have ownership structures that involve diverse constellations of influential shareholders, each with potentially differing goals, time horizons, and approaches to governance. This raises a critical yet underexplored question: how do combinations of different owner types jointly shape firm performance? This project seeks to address this research gap by examining the impact of ownership configurations—defined as the composition and interaction of different types of shareholders—on firm financial performance. Specifically, the study will focus on the following key objectives: A) To identify and classify common ownership configurations across firms and industries. This involves analyzing the prevalence and combinations of ownership types such as families, institutional investors, and state entities, and understanding how these configurations vary across contexts. B) To explore the mechanisms through which ownership configurations influence firm performance. The study will investigate how interactions among different owner types, including potential conflicts or synergies, affect governance practices, strategic decision-making, and financial outcomes. By examining the interplay between different shareholder types, this study aims to shed light on the complexities of modern ownership structures and their broader implications for firm performance and governance effectiveness.

Electronic and Telecommunication Engineering

Name	UAB Academic Position	Address	e-mail	Doctoral Programme	Department/Institute	Research line of the Doctoral Pr.	Topic Description Proposal related to the Research Line
Ferran Martín (Fellow IEEE, Fellow IET)	Full Professor	GEMMA/CIMITEC, Departament d'Enginyeria Electrònica, Universitat Autònoma de Barcelona, 08193 Bellaterra, Spain	Ferran.Martin@uab.cat	Electronic and Telecommunication Engineering	Enginyeria Electrònica	RF/Microwave Engineering	Development of textile-based microwave sensors implemented in embroidered technology for wearables
Gonzalo Seco-Granados	Professor, IEEE Fellow	Engineering School Campus UAB 08193 Bellaterra	gonzalo.seco@uab.cat	Electronic and Telecommunication Engineering	Department of Telecommunications and Systems Engineering	Signal Processing for Communications and Navigation	Localization and Sensing based on Signals from Terrestrial and Non-Terrestrial Networks The PhD thesis will explore advanced techniques for localization and sensing using signals from both terrestrial and non-terrestrial networks, such as GNSS and LEO satellite constellations and 5G/6G networks. The research will focus on developing novel algorithms that exploit multi-path propagation, Doppler shifts, and time-varying channel characteristics for accurate positioning in challenging environments, including urban canyons and rural areas with limited infrastructure. A key component of the work will involve leveraging reconfigurable intelligent surfaces (RIS). ,istributed massive MIMO systems and cell-free deployments to enhance signal quality and spatial diversity, enabling precise localization and environmental sensing. The project will also examine the fusion of signals from heterogeneous networks to improve positioning accuracy and reliability, especially in hybrid scenarios where both satellite and terrestrial signals are available. The findings will be applicable to critical applications like autonomous navigation, vehicular networks, and emergency response systems, where high precision and robustness are essential. The research will contribute to the ongoing development of global positioning systems that integrate both terrestrial and non-terrestrial components for enhanced performance.

Raimon Casanova Mohr	Associate professor	QC/2052 - Escola d'Enginyeria, Campus de la UAB · 08193 Bellaterra, (Cerdanyola del Vallès) · Barcelona · Spain	raimon.casanova@uab.cat	Enginyeria Electrònica i de Telecomunicació	Department of Microelectronics and Electronic Systems	Design of Integrated Circuits and Systems	The PhD. advisor has a strong background in design of ASICs for high energy experiments as the Large Hadron Collider (LHC) at CERN and the future Circular Electron-Positron Collider (CEPC) in China. The research line will be focused on the design of monolithic pixelated detectors, which are like small cameras but detect particles instead of light This kind of detectors are a hot topic inside the community with a lot of R&D going on. The candidate will work on the design of a new generation of pixelated detectors with gain and high radiation tolerance. Their tasks will be focused on analog and digital microelectronics design, as well as characterization in the laboratory of the fabricated devices. The thesis will be carried out within a coordinated project between the Department of Microelectronics and Electronic Systems (UAB), Institute of High Energy Physics (IFAE) and the National Microelectronics Center (CNM) which all are located in the UAB campus. The candidate will have the opportunity to travel to CERN and do stays with other groups in Europe. A collaboration with the Institute of High Energy Physics (IHEP) in Beijing might be possible.

Environmental Science and Technology

Name	UAB Academic Position	Address	e-mail	Doctoral Programme	Department/Institute	Research line of the Doctoral Pr.	Topic Description Proposal related to the Research Line
David Gabriel Buguña	Professor	School of Engineering, QC-1145	david.gabriel@uab.cat	Environmental Science and Technology	Department of Chemical, Biological and Environmental Engineering	Biological Treatment and Recovery of Liquid and Gaseous Effluents. Management of Nutrients, Odors and Volatile Organic Compounds	Development and characterization of H2-driven bioreactors and advanced monitoring tools for the biomethanation of CO2 from gas streams
Juan Antonio Baeza Labat	Full professor	Department of Chemical, Biological and Environmental Engineering. School of Engineering. UAB	JuanAntonio.Baeza@uab.cat	Environmental Science and Technology	Departament d'Enginyeria Química, Biològica i Ambiental	Biological Treament and Recovery of Liquid and Gaseous Effluents. Management of Nutrients, Odors and Volatile Organic Compounds	Combination of biological and electrochemical processes for nutrient recovery from undiluted urine. N recovery as nitrate with nitrification: pilot plant operation, process modelling and control. Phosphorus recovery as struvite with an electrochemical system.
Montserrat Sarra Adroguer	Associate professor	School of Engineering	Montserrat.Sarra@uab.cat	Environmental Science and Technology	Chemical, biological and envioronmental engineering	Biodegradation of industrial contaminant and waste valorization	The project aims to develop microbial fuel cells using white rot fungi, producers of extracellular oxidoreductase enzymes, in the cathodic chamber to enhance the reduction of oxygen as a terminal electron acceptor, as well as demonstrating the ability to degrade organo-contaminant xenobiotics. The main objective of this project is the bio-electrochemical degradation of organochlorine pollutants into non-toxic products through microbial fungal fuel cells (F-MFC). Lindane will be used as a model pollutant, but the study will be extended to other organochlorine compounds. Laboratory studies will therefore be carried out to explore the dechlorination potential of white rot fungi growing on the cathode of microbial fuel cells.
Raquel Barrena	Professor	C/de les Sitges, s/n, Campus UAB	raquel.barrena@uab.cat	Environmental Science and Technology	Chemical, Biological and Environmental Engineering Department, Engineering School	Composting and Bioconversion of Organic Waste and Environmental Remediation	Innovative approaches to biodegradability assessment of new materials and the design of advanced testing equipment
Teresa Gea	Professor	C/de les Sitges, s/n, Campus UAB	teresa.gea@uab.cat	Environmental Science and Technology	Chemical, Biological and Environmental Engineering Department, Engineering School	Composting and Bioconversion of Organic Waste and Environmental Remediation	Solid-state fermentation of organic waste to obtain valuable bioproducts: development of new modelling data-based techniques (machine learning, digital twins, etc.) to simulate and scale-up the process.
Teresa Gea	Professor	C/de les Sitges, s/n, Campus UAB	teresa.gea@uab.cat	Environmental Science and Technology	Chemical, Biological and Environmental Engineering Department, Engineering School	Composting and Bioconversion of Organic Waste and Environmental Remediation	Solid-state fermentation of organic waste to obtain valuable bioproducts: microbiological and operating strategies for a succesful scale-up

Genetics

Name	UAB Academic Position	Address	e-mail	Doctoral Programme	Department/Institute	Research line of the Doctoral Pr.	Topic Description Proposal related to the Research Line
Alba Hernández Bonilla	Professora Agregada	Edifici C. Campus de la UAB 08193 Bellaterra (Cerdanyola del Vallès)	alba.hernandez@uab.cat	Genetics	Departament of Genetics and Microbiology	Mutagenesis	This project aims to explore the effects of microplastics on human gut microbiota, focusing on potential disruptions to microbial diversity and functionality. It will investigate the biotransformation processes that microplastics may undergo in the gastrointestinal tract, identifying key microbial species and enzymatic pathways involved. The study will employ advanced metagenomic and proteomic tools to understand the interaction between microplastics and the gut environment. Ultimately, the findings could contribute to assessing health risks and developing strategies to mitigate the impact of microplastics on human health.

Anna Laromaine Sagué & Alba Hernández Bonilla	Cientifica titular CSIC / Professora Agregada	Institut Ciencia de Materials de Barcelona- Campus UAB & Edifici C. Campus UAB 08193 Bellaterra (Cerdanyola del Vallès)	alaromaine@icmab.es alba.hernandez@uab.cat	Genetics	Departament of Genetics and Microbiology & ICMAB	Mutagenesis	The Project will use Caenorhabditis elegans and Drosophila melanogaster as alternative animal models to test the toxicity of micro and nanoplastics. Both models have a short life cycle, minimal maintenance and growth requirements, and a genome and metabolism function highly similar to humans. Using non-mammalian model organisms is key in the early stages of discovery: it yields highly informative results that set the basis for subsequent research strategies -such as survival rate, growth effects, reproduction toxicity, and changes in metabolism-. We have studied how nanoparticles are uptaken by worms and flies and evaluated developmental parameters for nanoparticles, metal-organic frameworks, and even complex chemical clusters (Ref below). We are currently evaluating different stimuli, drugs, nanoparticles, and nanoplastics in collaboration with different research groups, which will impact our understanding of specific diseases, and of human health globally. This project will evaluate C. elegans and D. melanogaster exposed to real-life nanoplastics, which could drive specific effects on oxidative stress, development in specific organs/ functions, cardiac arrhythmias, and metabolic health. The study will employ a wide set of front-end genomic, molecular, and bioinformatic tools to understand the health consequences of micro- and nanoplastic exposure. Team: The work will be carried out at the Nanoparticles and Nanocomposite Group (www.icmab.es/nn) at the Materials Science Institute of Barcelona (www.icmab.es) within the framework of the European project, NEXTGEM project, and the H2020 large-scale EU Project PlasticHeal (www.plasticheal.eu/en) at the Department of Genetics and Microbiology of the UAB. The research environment at UAB, BNC cluster, and Barcelona city provide many opportunities for complementary training in transferable skills (communication, entrepreneurship, ...) that will expand the candidate's interdisciplinary experience. Collaboration with complementary national and international research groups and short research stages in other centers are envisaged. References Pushing the limits on the intestinal crossing of Metal-Organic Frameworks: an ex vivo and in vivo detailed study. Sara Rojas, Tania Hidalgo, Zhongrui Luo, David Ávila, Anna Laromaine*, and Patricia Horcajada*. ACS Nano 2022, 16, 4, 5830–5838, Arrhytmic Effects Evaluated on Caernorhabditis elegans: The case of polypyrrole nanoparticles. S. Y. Srinivasan; P. Alvarez Illera; D. Kukhtar; N. Benseny-Cases; J. Cerón; J. Álvarez; R. I. Fonteriz; M. Montero; A. Laromaine, ACS Nano 2023 10.1021/acsnano.3c05245. Toxicogenomics of iron oxide nanoparticles in the nematode C. elegans. L. Gonzalez-Moragas, Si-Ming Yu , N. Benseny-Cases, S. Sturzenbaum , A. Roig, A. Laromaine*, Nanotoxicology, 2017,11,5, 647-657. Novel insights into biodegradation, interaction, internalization and impacts of high-aspect-ratio TiO(2) nanomaterials: A systematic in vivo study using Drosophila melanogaster. Alaraby M, Hernández A*, Marcos R*. J Hazard Mater. 2021 May 5;409:124474. doi: 10.1016/j.jhazmat.2020.124474. Epub 2020 Nov 5.PMID: 33187802 The hazardous impact of true-to-life PET nanoplastics in Drosophila. Alaraby M., A. Villacorta, D. Abass, A. Hernández*, R. Marcos*. Science of the Total Environment, 863: 160954 (2023). doi: 10.1016/j.scitotenv.2022.160954. Are bioplastics safe? Hazardous effects of polylactic acid (PLA) nanoplastics in Drosophila. Alaraby M., D. Abass, M. Ferré, A. Hernández*, R. Marcos*. Science of the Total Environment, 919 (2): 170592 (2024). doi: 10.1016/j.scitotenv.2024.170592.
Antonio Barbadilla Prados	Associate Professor	Department of Genetics and Microbiology / Faculty of Bioscience / Universitat Autònoma Barcelona	antonio.barbadilla@uab.cat	Genetics	Genètica i Microbiologia	Comparative Genomics and Evolution	Bioinformatics Research in Comparative Population Genomics through the analysis of our PopLife browser: a reference population genomics dataset spanning the tree of life, developed by our research group
Israel Fernández Cadenas & Jordi Surrallés Calonge	Israel Fernández: Head of the Pharmacogenomics and Genetics Group, Sant Pau Institut of Research; Jordi Surrallés: UAB professor genetics department, Genetic unit Sant Pau Hospital, director of the Sant Pau Institute of Research	Sant Quintí 77, 08041, Barcelona.	ifernandezc@santpau.cat JSurralles@santpau.cat	Genetics	Sant Pau Institut of Research.	Genomic Instability and DNA Repair Syndromes	The doctoral thesis will be focus on big data studies (genomics, proteomics, transcriptomics) with Artificial Inteligence analysis to find neuroprotective treatments in stroke and other neurological diseases. Title: BIOsmart Project Hypothesis: Stroke is second cause of death and first cause of disability in adults. Genomics and other omics will be useful to find new drugs or compounds to improve stroke outcome. These treatments will be found integrating this multi-omic data using Artificial Intelligence techniques. We will test multiple omic techniques including Genome-Wide Association Studies, proteomics and transcriptomics in large groups of patients. This is an international project with multiple collaborations around the world. Most of the groups included are part of the International Stroke Genetics Consortium (www.strokegenetics.com).
Jaime Martinez Urtaza	Catedrático	Facultat de Biociències	jaime.martinez.urtaza@uab.cat	Genetics	Genética y Microbiología	Genómica Comparada y Evolución	Global phylogeny of Vibrio parahaemolyticus in a warming planet
Jordi Surrallés Calonge	Full professor	Carrer de Sant Quintí, 77, Horta-Guinardó, 08041 Barcelona	jordi.surralles@uab.cat	Genetics	Universitat Autonóma de Barcelona: Department of Genetic and Microbiology. Unitat Mixta de Recerca en Medicina Genòmica, UAB-IR Institut de Recerca de l'Hospital de la Santa Creu i Sant Pau	DNA repair genetic syndromes and genetic predisposition to cancer	The objective of this PhD proposal is to enhance our understanding of the FA/BRCA DNA repair pathway by utilizing cutting-edge genomic and transcriptomic tools to investigate its role in cancer development and its potential for developing therapies for Fanconi anemia and cancer in the general population. The PhD student will be co-supervised by the Principal Investigator (PI) and a senior research staff member, with additional support from technical staff as needed. The student will follow a well-defined career development plan that includes (i) acquiring technical skills and achieving scientific independence; (ii) publishing in peer-reviewed journals; (iii) gaining teaching experience; and (iv) completing an international research stay. They will attend weekly meetings with the PI, participate in journal clubs, present research in English at group meetings and IIB-Sant Pau conferences, and attend at least one national or international congress annually. A minimum three-month research stay at a leading international laboratory will be provided to the PhD student to complete their degree. Previous students have conducted research at prestigious institutions such as Memorial Sloan Kettering Cancer Center, Fred Hutchinson Cancer Research Center, NIH, Rockefeller University, Karolinska Institute, and the universities of Kyoto and Nagoya. As part of IIB Sant Pau, which is accredited as an IIS by the NHI ISCIII, the institute offers training in Responsible Research and Innovation (RRI). Furthermore, collaboration with UAB allows PhD students to engage in teaching activities if they wish.
Lucas Pontel & Jordi Surrallés	Research Group Leader, Josep Carreras Leukaemia Research Institute	Ctra de Can Ruti, Camí de les Escoles s/n 08916 Badalona, Barcelona	lpontel@carrerasresearch.org	Genetics	Josep Carreras Leukaemia Research Institute	Génetica, Biologia celular, Biomedicina	Identification of metabolic vulnerabilities in hematological tumors with mutations in DNA repair
Susana Pastor Benito	Associate professor- Serra Hunter Programme	Departament of Genetics and Microbiology.Mutagenesis Unit.Bioscience Faculty. UAB Campus. Bellaterra. Barcelona. Spain	susana.pastor@uab.ca	Genetics	Department of Genetics and Microbiology	Mutagenesis	The study wants to determine if exposure to micro/nanoplastics due to the degradation of dental aligners supose a genotoxic risk.

Materials Science

Name	UAB Academic Position	Address	e-mail	Doctoral Programme	Department/Institute	Research line of the Doctoral Pr.	Topic Description Proposal related to the Research Line

Cristian Rodriguez Tinoco	Associate professor (professor agregat)	Campus UAB. Building C. C3/108	cristian.rodriguez@uab.cat	Materials Science	Physics	Nanomaterials and Nanosystems	Amorphous organic thin films grown by physical vapor deposition can exhibit spontaneous orientation polarization (SOP), giving rise to extraordinarily "giant" surface potentials (GSP). This phenomenon, which is gaining attention from researchers due to its crucial impact on semiconductor technologies, can be exploited to tune the electronic properties of inorganic 2D materials such as MoS2 or the popular 'Xenes.' Here, we aim to fully understand the origin of SOP and how the induced surface charge can affect the energy levels of 2D materials when used as a substrate. Controlling the structure of organic thin films could offer significant potential for the local modulation of the electronic properties of 2D materials, with implications for information and energy storage industries.
Fernando Novio Vázquez	Associate Professor (Professor Agregat)	Department of Chemistry, Faculty of Sciences, Campus UAB, 08193-Cerdanyola del Vallés, Barcelona (Spain)	fernando.novio@uab.cat	Materials Science	Chemistry Department	Organic, Molecular and Supramolecular Materials. Synthesis of Multifunctional Nanomaterials for Biomedical Applications.	Development of new nanodrugs based on coordination polymers for the treatment of brain diseases: The aim of this research line is to develop the synthesis and characterizacion of novel nanoparticles based on coordination polymers as a drug delivery systems and contrast agents for bioimaging in the treatment of brain diseases, specially glioblastoma (GB) and Parkinson Disease (PD). The research proposal will include: 1) The synthesis and physicochemical characterization of coordination polymer nanoparticles containing specific anticancer drugs (single drug or combined drugs) active against GB, or dopamine-based drugs for PD treatment; 2) The in vitro analysis (cellular uptake, cytotoxicity, therapeutic effect) of the resulting nanoparticles; 3) The analysis in vitro of the therapeutic effectivity of the final selected nanodrugs by collaboration of specialized research institutions.
Javier Rodriguez Viejo	Full Professor UAB/Group Leader ICN2	ICN2, campus UAB	javier.rodriguez@icn2.cat	Materials Science	Grup de Propietats Tèrmiques de Materials en la Nanoescala/ICN2	Nanomaterials and nanosystems	We propose to investigate photothermoelectric phenomena in low-dimensional semiconductors and 2D materials to enhance thermoelectric performance, enabling new energy harvesting and sensing applications.
Javier Rodriguez Viejo	Full professor UAB/GRoup Leader ICN2	Physcs department	javier.rodriguez@uab.cat	Materials Science	Grup de Propietats Tèrmiques de Materials en la Nanoescala/Physics/UAB	ICT, Materials. Nanoelectronics	We aim to develop energy-efficient, organic and flexible multibit memories using local poling of nm-size regions of an ultrastable dipolar glass. The project is expected to exploit to an unprecedented extent a temperature-voltage-driven actuation in dipolar glasses to forge a new paradigm in flexible memories.
Jose Muñoz & Núria Aliaga	Ramón y Cajal Researcher (Dr. J. Muñoz) & ICREA Research Professor (Prof. N. Aliaga).	Campus UAB	josemaria.munoz@uab.cat naliaga@icmab.es	Materials Science	Chemistry Department (UAB) & Materials Science Institute of Barcelona (ICMAB-CSIC)	Molecular Functionalization and Implementation of 2D Semiconductors for (Bio)Electronics	Emerging 2D semiconductor materials will be functionalized at will with prominent molecular moieties and subsequently integrated on electronic devices for their implementation as biomedical systems. The candidate will join the SelOxCat group (currently integrates 3 CSC students) in co-direction with FUNNANOSURF group. See more info: www.seloxcat.com &www.funnanosurf.icmab.es .
Maria Jesus Sanchez &Fernando Novio	Maria Jesus Sanchez: Associate Professor (Professor Agregat) Fernando Novio: Associate Professor (Professor Agregat)	Department of Chemistry, Faculty of Sciences, Campus UAB, 08193-Cerdanyola del Vallés, Barcelona (Spain)	mariajesus.sanchez@uab.cat fernando.novio@uab.cat	Materials Science	Chemistry Department	Organic, Molecular and Supramolecular Materials. Inorganic materials and nanomaterials, functional surfaces and crystallographic structures. Synthesis of Multifunctional Nanomaterials for Biomedical Applications.	Development of new nanodrugs for the controlled release of Selenium for the treatment of denegerative diseases and cancer: The aim of this research line is to develop the synthesis and characterizacion of novel nanoparticles obtained by encapsulation of selenium compounds, or the integration of selenium complexes in coordination polymer nanostructures as drug delivery systems for the treatment of degenerative diseases such as Parkinson's or Alzheimer diseases. Moreover, their potentiality as possible anticancer agents will be evaluated. The research proposal will include: 1) The synthesis and physicochemical characterization of the nanoconstructs; 2) The in vitro analysis (cellular uptake, cytotoxicity, therapeutic effect) of the resulting nanoparticles; and 3) The analysis in vivo of the therapeutic effectivity of the final selected nanodrugs by collaboration of specialized research institutions.

Mathematics

Name	UAB Academic Position	Address	e-mail	Doctoral Programme	Department/Institute	Research line of the Doctoral Pr.	Topic Description Proposal related to the Research Line
Joan Mateu	Titular d'Universitat (Associate Professor)	Departament de Matemàtiques Facultat de Ciències Campus de la UAB 08193 Bellaterra, Barcelona	joan.mateu@uab.cat	Mathematics	Matemàtiques	Analysis and Partial Differential Equations.	With this project we propose to study boundary regularity problems for a transport equation with a vortex patch initial condition in the case of divergence free velocity fields. To solve this type of questions the student will have to study techniques coming from transport equations and also from harmonic analysis.
Joaquim Roé	Titular d'Universitat (Associate Professor)	Departament de Matemàtiques Facultat de Ciències Campus de la UAB 08193 Bellaterra, Barcelona	joaquim.roe@uab.cat	Mathematics	Matemàtiques	Algebraic Geometry	Newton-Okounkov bodies on K3 surfaces. The project consists in exploring how the rich geometry of K3 surfaces (Néron-Severi group, Mori cone, Zariski chambers) reflects in Newton-Okounkov bodies of their big divisors.
Roberto Rubio	Ramón y Cajal fellow	Departament de Matemàtiques Facultat de Ciències Campus de la UAB 08193 Bellaterra, Barcelona	roberto.rubio@uab.cat	Mathematics	Matemàtiques	Differential Geometry	Generalized geometry: naturality, connections and low dimensions (**GENTLE**). Generalized geometry is a revolutionary approach to geometric structures: generalized complex structures encompass symplectic and complex geometry while also reaching the very narrow area between complex and almost complex structures; generalized Kähler geometry and certain Courant algebroids provide a more natural language to several physical theories; and the theory has showed its potential to provide insights or make advances into purely differential-geometric questions. The PhD candidate will join the project GENTLE, from the Spanish State Research Agency, and will work in the aspect (naturality, connections or low dimensions) more suitable to his/her expertise.

Medicine

Name	UAB Academic Position	Address	e-mail	Doctoral Programme	Department/Institute	Research line of the Doctoral Pr.	Topic Description Proposal related to the Research Line

Elena Muiño Acuña & Alberto Lleo Bisa	Investigadora del Institut de Recerca Sant Pau, neuróloga del Hospital de la Santa Creu i Sant Pau y profesor UAB	Carrer de Sant Quintí, 77, Horta-Guinardó, 08041 Barcelona	emuino@santpau.cat, ALleo@santpau.cat	Medicine	Institut de Recerca Sant Pau	Neurology	We want to find therapeutic targets and biomarkers associated with CADASIL, through omics techniques such as single-cell RNA-seq or blood proteome. CADASIL is a rare genetic disease, model of sporadic cerebral small vessel disease. Symptoms: migraine, psychiatric disturbances, recurrent strokes and dementia at early ages.
Israel Fernández Cadenas & Alberto Lleó Bisa	Israel Fernandez: Head of the Pharmacogenomics and Genetics Group, Sant Pau Institut of Research. Alberto Lleó: UAB professor, Head of the Neurology Unit at Sant Pau Hospital.	Sant Quintí 77, 08041, Barcelona.	ifernandezc@santpau.cat Alleo@santpau.cat	Medicine	Sant Pau Institut of Research.	Neurology	The doctoral thesis will be focus on big data studies (genomics, proteomics, transcriptomics) with Artificial Inteligence analysis to find neuroprotective treatments in stroke and other neurological diseases. Title: BIOsmart Project Hypothesis: Stroke is second cause of death and first cause of disability in adults. Genomics and other omics will be useful to find new drugs or compounds to improve stroke outcome. These treatments will be found integrating this multi-omic data using Artificial Intelligence techniques. We will test multiple omic techniques including Genome-Wide Association Studies, proteomics and transcriptomics in large groups of patients. This is an international project with multiple collaborations around the world. Most of the groups included are part of the International Stroke Genetics Consortium (www.strokegenetics.com).
Juan M Pericàs	Associate Professor (Professor Agregat)	Pg de la Vall d'Hebron, 119-129	juanmanuel.pericas@vallhebron.cat	Medicine	Medicine	Medicine	Role of unregulated immune-response in the pathophysiology of steatotic liver disease

Methodology of Biomedical Research and Public Health

Name	UAB Academic Position	Address	e-mail	Doctoral Programme	Department/Institute	Research line of the Doctoral Pr.	Topic Description Proposal related to the Research Line
María José Martinez Zapata & Mª Teresa Puig Reixach	Associate professor UAB. Senior researcher IR Sant Pau. Professora titular UAB.	Iberoamerican Cochrane Center-Clinical Epidemiology Service. Pavillion 18. Sant Antoni Maria Claret, 165. 08025 Barcelona	mmartinezz@santpau.cat	Methodology of Biomedical Research and Public Health	Iberoamerican Cochrane Center-Clinical Epidemiology Service/ Institute Research Sant Pau	Clinical Epidemiology and Research in Health Services	The objective of the thesis will be to develop evidence about health interventions to prevent postoperative adverse events. Specifically, the project will include: 1) the collaboration in a clinical trial in cardiac surgical outpatients for assessing the implementation of Digital Health technologies out of the hospital and 2) to assess of interventions for preventing complications after surgery using synthesis methods as systematic reviews, overviews or scoping reviews.
Pablo Alonso-Coello & Mª Teresa Puig Reixach	Senior researcher IR Sant Pau. Professora titular UAB.	Iberoamerican Cochrane Center-Clinical Epidemiology Service. Pavillion 18. Sant Antoni Maria Claret, 165. 08025 Barcelona	palonso@santpau.cat	Methodology of Biomedical Research and Public Health	Iberoamerican Cochrane Center-Clinical Epidemiology Service/ Institute Research Sant Pau	Clinical Epidemiology and Research in Health Services	Research line: Advancing Methodological Approaches in Evidence Synthesis and Clinical Practice Guidelines This research topic will focuse on addressing one or more key methodological challenges in the development and adaptation of clinical practice guidelines (CPGs). The proposed work will explore three critical areas: Evaluation and Incorporation of Economic Evidence, Decision-Making Frameworks for Multiple Comparisons, Adaptation of Clinical Practice Guidelines. The research will leverage interdisciplinary methodologies, including stakeholder engagement, user testing, and real-world validation, to create practical tools and frameworks that enhance the quality and usability of CPGs, ultimately supporting evidence-based healthcare practices globally.
Pablo Alonso-Coello & Mª Teresa Puig Reixach	Senior researcher IR Sant Pau. Professora titular UAB.	Iberoamerican Cochrane Center-Clinical Epidemiology Service. Pavillion 18. Sant Antoni Maria Claret, 165. 08025 Barcelona	palonso@santpau.cat	Methodology of Biomedical Research and Public Health	Iberoamerican Cochrane Center-Clinical Epidemiology Service/ Institute Research Sant Pau	Clinical Epidemiology and Research in Health Services	Research line: Advancing Methodological Approaches in Evidence Synthesis and Clinical Practice Guidelines The research topic may focus on strengthening the methodological foundations of evidence synthesis and guideline development within the European Commission's cancer screening initiatives for breast, colon, and cervical cancer. It aims to address key challenges by developing advanced methodologies for evaluating and synthesizing evidence, ensuring high-quality and comprehensive decision support for cancer screening recommendations. Additionally, the research will explore innovative approaches to facilitate the implementation of guidelines into diverse healthcare systems, develop strategies to integrate guideline recommendations with shared decision-making tools, and establish principles for adapting guidelines to different populations and resource settings. Through systematic evidence synthesis, stakeholder engagement, and real-world testing, this work will enhance the impact and usability of cancer screening guidelines, directly contributing to the goals of the European Cancer Plan.

Microbiology

Name	UAB Academic Position	Address	e-mail	Doctoral Programme	Department/Institute	Research line of the Doctoral Pr.	Topic Description Proposal related to the Research Line
Esther Julián Gómez	Full Professor	Facultat de Biociències	esther.julian@uab.cat	Microbiology	Dep. Genetics and Microbiology	Study of non-tuberculous mycobacteria as therapeutic tools and models of pathogenicity	The use of bacteria to treat cancer is one of the open forefronts, being a raising issue. There is a successful cancer therapy using bacteria: the case of M. bovis BCG, that is the first treatment option for non-muscle-invasive bladder cancer. Although efficacious, BCG is not a perfect therapy. Nontuberculous mycobacteria have arisen as a strong alternative to BCG treatment. We aim to understand the immunomodulatory and antitumor capacity of different species of non-pathogenic mycobacteria and BCG, both in the treatment and prevention of cancer progression and in other immune dysregulated diseases. For latest publications see: https://sites.google.com/view/mycobacteriaresearchlabuab/publications
Olga Sánchez Martínez	Full Professor	Facultat de Biociències	olga.sanchez@uab.es	Microbiology	Dep. Genetics and Microbiology	Environmental Microbiology	Microbial ecology of marine particle-associated microorganisms: joining the gap between molecular and physiological data

Neurosciences

Name	UAB Academic Position	Address	e-mail	Doctoral Programme	Department/Institute	Research line of the Doctoral Pr.	Topic Description Proposal related to the Research Line

Alfredo J. Miñano-Molina	Professor Titular d'Universitat	Av/ Can Domenech s/n - Facultat de Medicina. Unitat de Bioquímica	alfredo.minano@uab.cat	Neurosciences	Institut de Neurociències	Molecular Biology of Synaptic Dysfunction in Neurodegenerative Diseases	Synapses are affected by both synaptic AMPAR removal and impairment of mitochondrial function, leading to cognitive failure associated with Alzheimer's disease (AD). No direct relationship has been found between them, although synaptic function is a high bioenergetic demand process. A-kinase anchoring proteins (AKAPs) are multivalent scaffolding proteins that sequester combinations of signaling enzymes within subcellular microdomains. Postsynaptic AKAP150 regulates AMPAR function associated with LTP and LTD. Outer mitochondrial membrane (OMM) D-AKAP1 coordinates fusion/fission events, altered in AD leading to bioenergetic failure. Our proposal is to decipher using in vitro and in vivo models (primary neurons, genetic approaches, mitochondrial dynamics by confocal imaging, metabolic function, hiPSCs, AD-transgenic mice and bioinformatics), whether AKAPs degradation in AD is pivotal on synaptic/metabolic dysfunction exploiting them as platforms for precision pharmacology.
José Rodríguez Alvarez	Professor Biochemistry and Molecular Biology	Laboratory M2-115, Edifici M, School of Medicine, Campus de Bellaterra, Barcelona, Spain.	jose.rodriguez@uab.cat	Neurosciences	Institute of Neurosciences and Dpt Biochemistry and Molecular Biology	Mecanismos Asociados a los Déficits Cognitivos tempranos en la Enfermedad de Alzheimer. Biomarcadores y Nuevas Estrategias Terapéuticas en la Enfermedad de Alzheimer.	Molecular mechanisms involved in synaptic deficits in Alzheimer disease
José rodríguez Alvarez	Professor Biochemistry and Molecular Biology	Laboratory M2-115, Edifici M, School of Medicine, Campus de Bellaterra, Barcelona, Spain.	jose.rodriguez@uab.cat	Neurosciences	Institute of Neurosciences and Dpt Biochemistry and Molecular Biology	Mecanismos Asociados a los Déficits Cognitivos tempranos en la Enfermedad de Alzheimer. Biomarcadores y Nuevas Estrategias Terapéuticas en la Enfermedad de Alzheimer.	Nr4a2 as a therapeutic target for Alzheimer's disease
Teresa Gasull (IGTP) & Octavi Martí-Sistac (UAB)	Group leader (IGTP), Full professor (UAB)	Institut Germans Trias i Pujol (IGTP), Carretera del Canyet, Camí de les Escoles s/n, Edifici Mar 08916 Badalona, Barcelona	tgasull@igtp.cat octavi.marti@uab.cat	Neurosciences	Neurociències IGTP	Innovative BIomarkers to DIagnose Ischemic stroke: the bet on miRNAs in extracellular vesicles in humanized swine models (IBIDI-Stroke)	The project aims to test a new treatment in large animals to reduce stroke damage. It involves studying inflammatory and ferroptotic markers in the brains and blood of animals subjected to experimental stroke, comparing rodent brains with gyrencephalic, white matter-rich pig brains. The objectives are: Biomarker Discovery: Identify biochemical and imaging biomarkers to improve stroke type identification, patient stratification, treatment allocation, and outcome prediction. Mechanisms of Cell Death: Investigate ferroptosis and inflammation in stroke and other brain diseases to uncover potential therapeutic targets. Innovative Stroke Models: Develop advanced ischemic and hemorrhagic stroke models in rodents and swine, focusing on white matter damage and brain connectivity. This work seeks to advance stroke diagnosis, treatment, and understanding of brain injury mechanisms.

Physics

Name	UAB Academic Position	Address	e-mail	Doctoral Programme	Department/Institute	Research line of the Doctoral Pr.	Topic Description Proposal related to the Research Line
Jordi Sort & Can Onur Avci	ICREA Research Professor UAB / Tenured Scientist at ICMAB	Departament de Física Edifici C Facultat de Ciències 08193 Bellaterra / ICMAB-CSIC, Carrer dels Til·lers, s/n, 08193 Bellaterra	jordi.sort@uab.cat cavci@icmab.es	Physics	Physics - Science Faculty	Solid State Physics / Magnetism / Spintronics	Spintronics is the broad area of physics aiming to study the spin degree of freedom of charge carriers in solids and exploit it in future information technologies. It offers revolutionary solutions to memory and logic applications that can boost the efficiency and functionality of future computers. One of the outstanding challenges in spintronics consists in controlling magnetic binary data with electricity in engineered nano/micro-devices. Fabrication of such devices conventionally requires the optimization of physical properties of the materials on a large scale and, subsequently, create smaller structures by a top-down approach using lithographic methods. Recently, alternative approaches have been explored and successfully demonstrated to alter materials' properties by, e.g., local phase nanoengineering (irreversibly) [1] or applying electric fields (reversibly) [2]. This project is at the cross-section of recent advances in making spintronic devices using local material engineering by direct laser writing and altering their properties by local electric fields. Combining these independent lines of research is expected to create a fertile ground to build spintronic devices with added functionalities and ultrahigh efficiency. Starting from these base ideas the PhD student will: 1) prepare a series of conducting and insulating magnetic ultrathin films by magnetron sputtering whose properties are susceptible to changes upon laser irradiation and/or vertical electric field application; 2) Investigate the influence of laser irradiation and electric gating on the magnetic properties; 3) select best-performing films/materials and create innovative devices for efficient data storage and processing applications. The thin film deposition will take place at both PIs' laboratories, depending on the material choice and availability. The direct laser writing technique will be developed and executed on the ICMAB side, whereas the electric field control of magnetic properties will be conducted on the UAB side. The device characterization will take place in both laboratories. The student will benefit from a unique collaboration between two highly complementary and dynamic research groups and state-of-the-art laboratories. References: [1] Levati et al., Adv. Mater. Technol. 8, 2300166 (2023); [2] Liang et al., IEEE Trans. Magn., 57, 8, 1-57 (2021)
Thorsten Lux & Pilar Casado Lechuga	Investigador vinculat / Profesora Titula	Campus UAB, Facultat Ciencies Nord, 08193 Bellaterra, Barcelona	Thorsten.Lux@ifae.es Casado@ifae.es	Physics	Neutrinos/ IFAE	Física de Altas Energías	Long-baseline neutrino oscillation experiments as T2K and in the future HyperK are studying the origin of the matter excess in the universe. The near detector, called ND280 in T2K/HK, is crucial to achieve this goal. Using novel detector technologies, ND280 was recently upgraded. The topic of the PhD thesis will be to understand the performance of the new detectors and to perform a neutrino cross-section measurement.

Plant Biology and Biotechnology

Name	UAB Academic Position	Address	e-mail	Doctoral Programme	Department/Institute	Research line of the Doctoral Pr.	Topic Description Proposal related to the Research Line

Jae-Seong Yang & Jordi Moreno Romero	Researcher -CRAG & Ramon y Cajal Fellow -UAB	CRAG Building - Campus UAB	jaeseong.yang@cragenomica.es jordi.moreno.romero@uab.cat	Plant Biology and Biotechnology	Center for Research in Agricultural Genomics (CRAG) CSIC-IRTA-UAB-UB & Department of Biochemistry and Molecular Biology (UAB)	Plant Molecular Genetics	**Synthetic Biology & Epigenetics**: Chlorella is a promising and sustainable synthetic biology platform. However, its widespread application faces challenges, particularly gene silencing, which remains a critical issue for utilizing this species as bioengineering platform. In this project, we aim to investigate the role of epigenetic modifiers, such as histone deacetylases and other factors, using Cas9-based gene editing and NGS-based high-throughput assays.
José Luis Riechmann & Jordi Moreno Romero	ICREA Research Professor - CRAG & Ramon y Cajal Fellow	CRAG Building - Campus UAB & Faculty of Biosciences, Building C	joseluis.riechmann@cragenomica.es jordi.moreno.romero@uab.cat	Plant Biology and Biotechnology	Center for Research in Agricultural Genomics (CRAG) CSIC-IRTA-UAB-UB & Department of Biochemistry and Molecular Biology	Plant Molecular Genetics	**The plant non-conventional peptidome: a new layer on plant regulatory mechanisms.** The research project aims to address a fundamental question in plant biology: the nature, characteristics, and functions of the plant 'non-conventional' peptidome. Non-conventional peptides, or NCPs, are an important but largely uncharacterized component of the eukaryotic proteome. NCPs have already been shown to play critical roles in human biology. The plant peptidome is largely unknown, and so far, only initial experiments in a few plants (e.g., Arabidopsis, maize, moss) have attempted its characterization at a genome-wide scale. The project includes three different but interconnected aims: (i) global characterization of the Arabidopsis peptidome using mass spectrometry- and lncRNA-based approaches; (ii) functional characterization of novel peptides potentially involved in Arabidopsis developmental and physiological processes, and (iii) use of a peptidogenomics approach in pea (a model legume and protein crop of relevance for sustainable agriculture) to conduct an initial characterization of its peptidome.
Mercè Llugany Ollé & MªJesús Sánchez Martín	Tenured university lecturer UAB & Associate Professor UAB	Faculty of Biosciencies & Faculty of Sciences - Campus UAB, 08193 Bellaterra	Merce.Llugany@uab.cat MariaJesus.Sanchez@uab.cat	Plant Biology and Biotechnology	Department of Animal Biology, Plant Biology and Ecology (BABVE) & Departament of Chemistry	Physiology of plants in advesrse conditions	**Functional foods**: Se biofortification techniques can directly enhance the production of plant-based, Se-enriched foods. Furthermore, Se-NPs can enhance plant salt tolerance. Our objective is to investigate the impact of Se enrichment on phytohormones and bioactive compounds, determine its speciation, and optimize a methodology for studying Se bioaccessibility in functional food products grown in saline conditions.
Nicolas Bologna & Alicia Roque Cordova	CSIC Scientist / UAB Professor	Campus UAB - 08193 Cerdanyola - BARCELONA	nicolas.bologna@cragenomica.es Alicia.Roque@uab.cat	Plant Biology and Biotechnology	CRAG / Àrea de Bioquímica i de Biologia Molecular	Gene Regulation, Structure and Function of Macromolecules	RNA silencing and epigenetics. The purpose of the project is to study of RNA-guided gene regulation focused on the function of small and long non-coding RNAs guiding novel nuclear events, by studying the identity, localization, and functions of specific nuclear RNA molecules, nuclear RNA/proteins complexes and nuclear shuttling processes. Through these analyses, we expect to characterize novel nuclear RNA pathways and to uncover their biological relevance.
Roser Tolra Perez & Igor Florez Sarasa	UIB Professor & Ramon y Cajal-IRTA Researcher at CRAG	Edifici CRAG Campus UAB Bellaterra, Cerdanyola del Valles 08193 Barcelona, Spain	roser.tolra@uab.cat igor.florez@cragenomica.es	Plant Biology and Biotechnology	Centre for Research in Agricultural Genomics (CRAG) & Department of Biochemistry an Molecular Biology (UAB)	Physiology of Plants in Adverse Conditions	**Unraveling mitochondrial respiration in fruits under stress.** Mitochondrial alternative respiratory pathways (ARPs) are essential for providing cell metabolic flexibility while avoiding the formation of ROS and RNS, and their regulation is tightly dependent on different posttranslational modifications. However, our knowledge about the role and regulation of mitochondrial respiration under abiotic stress conditions, as those imposed by climate change, is very limited in sink (fruit) as compared to source (leaf) tissues. This project proposes an investigation involving an unprecedented combination of approaches in plant metabolomics and in vivo energy flux combined with protein and transcriptome analyses in gene edited plants to unravel yet open biological questions regarding the role and regulation of fruit primary metabolism. In particular, the mechanisms regulating mitochondrial respiration in vivo during fruit ripening are not fully understood, as well as its roles during the synthesis of health-promoting metabolites and photosynthesis. Therefore, the basic information derived from this project in tomato could be used for industrial applications related to the control of fruit ripening and postharvest shelf life.

Terrestrial Ecology

Name	UAB Academic Position	Address	e-mail	Doctoral Programme	Department/Institute	Research line of the Doctoral Pr.	Topic Description Proposal related to the Research Line
Sara Marañón Jiménez	Profesora titular	CREAF. Campus UAB. Edificio C. Despacho C5B/058, 08193 Bellaterra (Barcelona)	s.maranon@creaf.uab.cat Sara.Maranon@uab.cat	Terrestrial Ecology	BABVE	Ecologia Terrestre	Alteraciones en las necesidades estequiométricas de los microorganismos del suelo y en las interacciones planta-suelo en respuesta a incrementos de temperatura en el subártico