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
Advanced Immunology							
Marcel·la Franquesa and Francesc Borràs	Tutor doctorat Immunologia Avançada	Carretera del Canyet s/n E-08916 Badalona	mfranquesa@iqtp.cat feborras@iqtp.cat	Advanced Immunology	IGTP	Extracellular Vesicles (EV) therapeutic potential in Chronic Kidney Disease (CKD)	Use of urine EVs as a non-invasive biomarker for discovery in chronic kidney disease (CKD) and isolation of MSC-EV as a therapeutic tool to treat animal models of CKD.
Animal Medicine and Health							
Enrique M Mateu	Professor	Veterinary Faculty Travessera dels Turons s/n 08193 Cerdanyola del Valles Spain	enric.mateu@uab.cat	Animal Medicine and Health	Dept Animal Health and Anatomy	Animal Health (Swine Influenza)	The proposal aims at the understanding of the drivers of endemicity of swine influenza, the methods for control and the potential for swine viruses for spillover to humans.
Fernando Rodríguez / Francesc Accensi	CReSA Researcher / UAB Tenure-Track Lecturer	UNITAT MIXTA UAB-IRTA (Centre de Recerca en Sanitat Animal) Campus de la UAB, edifici CReSA, 08193 Bellaterra (Cerdanyola del Vallès)	francesc.accensi@uab.cat fernando.rodriguez@irta.cat	Animal Medicine and Health	IRTA-CReSA	African swine fever virus vaccine development	African Swine Fever (ASF) is devastating pig disease reportable to World orhanization for animal health (WOAH, former OIE). ASF has reached pandemic proportions, devastating Chinese porc prodution and affecting many countries from all continents, threatening the global swine industry and international trading. There is no treatment neither a vaccine alvailable against ASF, so the objective of this PhD proposal is to collaborate in the development of the safest and most efficatious ASF vaccine using a multidisciplinary approached and based on our experience of more than 20 years working with live attenuated viruses and subunit vaccine formulations. We enjoied a phD student from the CSC program from 2017-2220, today back in the Harbin Institute, working on ASF, and we woul like to repeat the experience and strength our collaboration with China.
Joaquim Segalés / Marina Sibila	UAB Professor/CReSA Researcher	UNITAT MIXTA UAB-IRTA (Centre de Recerca en Sanitat Animal) Campus de la UAB, edifici CReSA, 08193 Bellaterra (Cerdanyola del Vallès)	joaquim.segales@irta.cat / marina.sibila@irta.cat	Animal Medicine and Health	IRTA-CReSA	Animal Health, infectious disease and veterinary epidemiology	Study the pathogenesis of Porcine circovirus 3 infection in Pigs.
Carles Vilalta Sans	CReSA Researcher	UNITAT MIXTA UAB-IRTA (Centre de Recerca en Sanitat Animal) Campus de la UAB, edifici CReSA, 08193 Bellaterra (Cerdanyola del Vallès)	carles.vilalta@irta.cat	Animal Medicine and Health	IRTA-CReSA	Epidemiology of swine diseases	Analysis of swine production records. The candidate will analyze a database of national data on swine production to describe trends in mortality, pathology and key production indicators and their association with different factors or disease status.
Virginia Aragón/ Flor Correa/ Marina Sibila	CReSA Researchers	UNITAT MIXTA UAB-IRTA (Centre de Recerca en Sanitat Animal) Campus de la UAB, edifici CReSA, 08193 Bellaterra (Cerdanyola del Vallès)	virginia.aragon@irta.cat flor.correa@irta.cat marina.sibila@irta.cat	Animal Medicine and Health	IRTA-CReSA	Animal health, infectious disese and veterinary epidemiology	Role of the microbiota in the control of the respiratory pig diseases.
Animal Production							
Josep M. Folch Albareda	Professor of the Department of Animal and Food Science and Researcher at CRAG	CRAG building-Campus UAB. Carrer Vall Moronta s/n E-08193 Cerdanyola (Barcelona)	JosepMaria.Folch@uab.cat	Animal Production	Department of Animal and Food Science UAB	Genomics applied to the improvement of pig production	The research group of CRAG - Autonomous University of Barcelona has been working in the application of molecular genetics and genomics methods to animal breeding since 1996. 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: 1) The pig liver transcriptome analysis by RNA-Seq in 300 pigs; 2) The association of transcriptome data and growth, immunity and meat quality records using systems biology approaches; 3) The functional validation of relevant genetic variants in candidate genes.
Alex Clop	CSIC researcher at the Centre for Research in Agricultural Genomics CRAG	CRAG building-Campus UAB. Carrer Vall Moronta s/n E-08193 Cerdanyola (Barcelona)	alex.clop@cragenomica.es	Animal Production	Department of Animal and Food Science UAB	Single Cell MultiOMICS of the porcine testicle in relation to the genetics of semen quality	We will carry several experiments, from obtaining a single cell atlas of the pig testicle to identify strong candidate causal variants affecting semen quality and capacitation using single cell omics and whole genome sequencing on commercial boars from artificial insemination centres.
Biochemistry, Molecular Biology and Biomedicine							
Alicia Roque Córdova Inmaculada Ponte Marull	Professora Titular/Professora Titular	Facultat de Biociències	alicia.roque@uab.es inma.ponte@uab.es	Biochemistry, Molecular Biology and Biomedicine	Department of Biochemistry and Molecular Biology	Regulació gènica, estructura i funció de macromolècules	**Regulation of histone H1 somatic variants and its alterations in cancer.** There are seven variants of histone H1 differentially expressed in somatic cells. H1 variants are involved in the epigenetic regulation of chromatin structure and are often dysregulated in disease, in particular in cancer. Therefore, we are interested in studying the regulation of the expression of H1 variants and their role in cancer. Our proposal includes two main objectives. The first aim is to study of the post-transcriptional regulation of H1 variants by epitranscriptome modifications and RNA-binding proteins using genomic techniques such as me-RIP-seq and RIP. The second aim is to characterize the alterations of histone H1 variants in cancer by proteomic approaches and their molecular contribution to carcinogenesis.
Josep B Cladera Cerdà	University professor	Biophysics Unit. Neurosciences Institute Faculty of Medicine UAB E-08193 Cerdanyola del Vallès	josep.cladera@uab.cat	Biochemistry, Molecular Biology and Medicine	Neuroscience Institute	Molecular Biophysics and biomedical applications	Lipid-based nanosystems for the encapsulation and delivery of antiamyloidogenic agents in Alzheimer's disease.
Ramon Barnadas Rodríguez	University professor	Biophysics Unit. Neurosciences Institute Faculty of Medicine UAB E-08193 Cerdanyola del Vallès	ramon.barnadas@uab.cat	Biochemistry, Molecular Biology and Medicine	Neuroscience Institute	Molecular Biophysics and biomedical applications	Lipid-based drug delivery nanosystems for the encapsulation of iron-based carbon monoxide (CO) releasing molecules and the controlled delivery of CO for biomedical applications.
Jordi Moreno Romero	Ramon y Cajal Fellow	Faculty of Biosciences, Building C	jordi.moreno.romero@gmail.com	PhD in Biochemistry, Molecular Biology and Biomedicine	Department of Biochemistry an Molecular Biology	Gene regulation, structure and function of macromolecules	The research interest of the group is the study of the epigenetic regulation of plant adaptation to environmental changes. It is well known that chromatin conformation changes under different environmental stimuli. The epigenetic marks that alter chromatin structure and accessibility (that ultimately results in activating or repressing gene expression) mainly include DNA methylation and histone modifications. In the context of responses to environmental cues, DNA methylation has been the most profusely studied. By contrast, histone modifications studies, although they are gaining prominence, are still far to be correctly addressed. For that reason, this PhD project aims to address the function of the hallmark of gene silencing, the tri-methylation of lysine 27 on histone H3 (H3K27me3), in plant adaptation to environmental cues. Our group has found that H3K27me3 levels are important for the regulation of genes involved in light response, but the precise mechanisms that integrates the signalling and the epigenetic control of the transcriptional activity are still unknown. Using state-of-the-art molecular biology techniques (including transcriptomics, epigenomics and proteomics) this project aims to find the relation between transcription factors, chromatin remodellers, and histone marks that control the gene expression upon environmental changes.
David Reverter Cendrós	Profesor Agregat	IBB-MRB Autonomous University of Barcelona	david.reverter@uab.cat	Biochemistry, Molecular Biology and Biomedicine	Dept. Biochemistry / Institut of Biotechnology and Biomedicine	2) Gene regulation, structure and function of macromolecules	Structural and functional studies on the post-translational modificacions by SUMO and Ubiquitin. Analysis of conjugation by E3 ligases and deconjugation by DUB proteases. DNA repair processes.

Marc Torrent Burgas	Associate Professor	Biosciences Faculty	marc.torrent@uab.cat	Biochemistry, Molecular Biology and Biomedicine	Department of Biochemistry and Molecular Biology	Regulació gènica, estructura i funció de macromolècules	To fulfil their function, proteins need to interact with each other forming complexes. Understanding how pathogen proteins bind their host counterparts is important to explain how bacteria can infect, survive and proliferate inside cells (Crua et al. Nat. Comm, 2017). To achieve that, pathogen proteins mimic eukaryote interfaces to interact with the host (Sánchez de Groot et al. PLoS Comp Biol, 2020). Our results suggest that host-pathogen protein-protein interactions are potential targets for a new generation of antimicrobials (Gómez Borrego et al. Int. J. Mol. Sci, 2022). If an interaction is required for the pathogen to infect the host, blocking this interaction would help to stop or delay the infection (Rendon et al. Nucleic Acids Res., 2021; Rendon et al. Nucleic Acids Res., 2020). In summary, treatments interfering with the adhesion and invasion of bacteria to host cells could be used as preventive strategies during surgical procedures or after infection by reducing the resistance of pathogens to known antibiotics by combating their spread in the organism. We aim to design new compounds, such as peptides, peptidomimetics and small drugs designed to interfere with such host-pathogen interactions to develop new antimicrobials (Sandin et al. Pharmaceutics, 2022; Sandin et al. J. Med. Chem., 2021). Webpage: https://sites.google.com/site/marctorrentburgas/
Salvador Ventura	Catedràtic Contractat	Institute of Biotechnology and Biomedicine Parc de Recerca UAB Mòdul B Universitat Autònoma de Barcelona E-08193 Bellaterra (Barcelona)	salvador.ventura@uab.es	Biochemistry, Molecular Biology and Biomedicine	Institute of Biotechnology and Biomedicine/Department of Biochemistry, Molecular Biology	Gene regulation, structure and function of macromolecules	Cryo-Electron Microscopy (Cryo-EM) structural studies of pathogenic and functional amyloid fibrils
José Manuel López Blanco	Profesor Titular	Unitat de Bioquímica Facultad de Medicina Universitat Autónoma de Barcelona	josemanuel.lopez@uab.cat	Bioquímica, Biologia Molecular i Biomedicina	Biochemistry and Molecular Biology	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.
Ana Paula Candiota	CIBER-BBN senior researcher ascribed to UAB	Biochemistry and Molecular Biology Department Biosciences Faculty Edifici Cs Campus UAB	AnaPaula.Candiota@uab.cat	Biochemistry, Molecular Biology and Biomedicine	Biochemistry and Molecular Biology	Molecular biophysics and application to medicine	Noninvasive biomarkers of therapy response in preclinical brain tumours through MRSI-based molecular imaging
Alex Peralvarez-Marin	Associate Professor	Biophysics Unit School of Medicine	alex.peralvarez@uab.cat	Biochemistry, Molecular Biology, and Biomedicine	Biochemistry and Molecular Biology / Biophysics Unit	Molecular Biophysics and Biomedical Applications	We are characterizing the structure-function-interaction relationships of mammalian neuropeptides to try to understand neuroscience-related neuropeptides in Alzheimer's disease, Parkinson's disease, stroke, and neurodegeneration. We are looking for a highly motivated PhD candidate willing to combine experimental and computational methods to solve neurosciences puzzles. For latest publications check: https://scholar.google.es/citations?user=jP4TJKkAAAAJ&hl=en ORCID: 0000-0002-3457-0875
Bioinformatics							
Xavier Daura Ribera	Professor Associat (Professor de Recerca ICREA)	Institut de Biotecnologia i de Biomedicina Edifici MRB on Campus UAB	xavier.daura@uab.cat	Bioinformatics	Institut de Biotecnologia i de biomedicina	Structural Bioinformatics and Pharmacoinformatics	Computational methods for the identification and characterization of allosteric sites in proteins.
Biotechnology							
Arben Merkoçi	Professor ICREA i Investigador Principal del grup Nanobioelectronics and Biosensors	Campus UAB building ICN2 E-08193 Bellaterra (Barcelona)	arben.merkoci@icn2.cat; anna.puig@icn2.cat	Biotechnology	Nanobioelectronics and Biosensors Group / Catalan Institute of Nanoscience and Nanotechnology	Nanobiosensors design and applications	The idea of this doctoral thesis in the framework of the SUSNANO project is to improve the current state of the art in the electrochemical detection of heavy metals. The aim is to develop novel electrochemical sensors taking advantage of cutting edge nanomaterials and particularly graphene-derived composites. Additionally, in collaboration with the partners of the project, the student will be involved in the development of paper based sensors for the detection of antibiotics and pesticides. Finally, a portable device will be fabricated integrating the previously developed sensors to monitor water quality in rivers and lakes. The student will also be actively committed in other activities such as receiving and giving training to other members of the consortium, participating in project workshops and international congresses.
Gregorio Álvaro Campos	Associate Professor (Professor agregat)	Engineering School, Campus UAB, Universitat Autònoma de Barcelona	gregorio.alvaro@uab.cat	Biotechnology	Departament of Chemical, Biological end Environmental Engineering	Greener production processes, Biocatalysis, Multi-enzymatic biotransformations, Biocatalyst engineering and Enzymes production, enzyme purification/immobilization.	OXIPRO is an european project focused on the development of novel enzymes – and specifically oxidoreductases – for environment-friendly consumer products (https://www.oxipro.eu/). There are 15 organizations from industry and research participating in OXIPRO. The UAB is involved in the application of oxidoreductases in the textile industry.Home textiles production and consumption create considerable environmental, climate and social impacts. With new enzymes, OXIPRO will target steps in cotton processing that will increase wastewater reuse (circularity), and result in significant water, chemicals, and energy savings. The research group will work in both oxidoredcuatse application and enzyme production, including one-step purification/immobilization process development.
Gregorio Álvaro Campos	Associate Professor (Professor agregat)	Engineering School, Campus UAB, Universitat Autònoma de Barcelona	gregorio.alvaro@uab.cat	Biotechnology	Departament of Chemical, Biological end Environmental Engineering	CO2 valorization by biotechnological tools, Carbon Capture an Utilization by multi-enzymatic systems, Biocatalysis.	MEPLABCO2 project aims to provide experimental proof of concept of a multi-enzymatic platform for the biotransformation of CO2 in valuable chemicals, specially chiral products with attractive applications in the pharmaceutical, cosmetic and bioplastics industries.
Gregorio Álvaro Campos	Associate Professor (Professor agregat)	Engineering School, Campus UAB, Universitat Autònoma de Barcelona	gregorio.alvaro@uab.cat	Biotechnology	Departament of Chemical, Biological end Environmental Engineering	PEF production and recycling by enzymatic processes, biocataltsys, enzyme production, enzyme purification/immpbilization	FURENPOL project aims to contribute to plastic sustainability by developing an enzymatic process to synthetize and recycle PEF, a biobased alternative to PET. There are 7 organizations from industry and research participatin in OXIPRO. UAB will be focused on the production of the target enzymes for both synthesis and recycling of PEF including a one-step purification/immobilization process. Moreover, the research group will work on processs intensification strategyes for the enzymatic synthesis of the monomer of PEF (https://www.uab.cat/web/news-detail/furenpol-synthesizing-pef-a-bio-based-polymer-alternative-to-pet-1345680342044.html?noticiaid=1345874464005).
Cell Biology							
Ignasi Roig Navarro	Associate Professor	Office C2/107 Fac. Biociències Campus UAB E-08193 Cerdanyola del Vallès	ignasi.roig@uab.cat	Cell biology	Genome Integrity and Instability group, Institut de Biotecnologia i Biomedicina (IBB)	Use of CRISPR-Cas9 technology to identify novel genes required for gametogenesis in mammals.	The project aims to identify novel genes required for the proper development of mammalian gametogenesis. Our previous investigations have uncovered unannotated genes that are preferentially expressed in the gonads. Using in vivo transfection of tagged-versions of these genes, we have demonstrated that their proteins localize in the nuclei of spermatocytes. Using CRISPR-Cas9, genetics, molecular biology, and cell biology tools we will reveal the functions of these novel genes in spermatogenesis and oogenesis. The success of this project will help to better understand the origins aneuploidy and infertility in humans.
Joan Blanco Rodríguez	Associate Lecturer	Unitat Biologia Cel·lular Facultat de Biociències	joan.blanco@uab.cat	Cell biology	Cell biology, Physiology and Immunology	Reproductive Genetics	Identification of the molecular signature of the human fertilizing spermatozoa based on their chromosomal, genomic, and epigenomic profile with the aim of improving the diagnosis, prognosis, and therapeutic procedures in the management of male infertility.
Chemistry							
Gregori Ujaque	Professor Titular	Dep. Chemistry UAB E-08193 Cerdanyola del Valles	gregori.ujaque@uab.cat	Chemistry	Department of Chemistry	Nanocatalysis	(a) Design of nanodevices for catalysis and molecular recognition (Supramolecular catalysis). (b) Developing next generation of catalysts under green chemistry principles
Prof. Dr. Daniel Maspoch	ICREA Research Professor and Head of the Supramolecular NanoChemistry & Materials Group (NANOUP)	Edifici ICN2 - Campus UAB 08193 Bellaterra	daniel.maspoch@icn2.cat	Chemistry	Institut Català de Nanociència i Nanotecnologia (ICN2)	Institut Català de Nanociència i Nanotecnologia (ICN2)	The Group's research interests are focused on controlling the assembly -Supramolecular Chemistry- of molecules, metal ions and nanoparticles for the creation of functional nanostructured materials -Nanotechnology- with empty spaces; and use them to encapsulate, store, separate, react and deliver molecules of interest. Specifically, our main contributions are in the fields of nanoporous Metal-Organic Frameworks (MOFs), Covalent-Organic Frameworks (COFs), Metal-Organic Polyhedra (MOPs) and Delivery Systems for applications in myriad areas, including Energy, Catalysis, the Environment, Encapsulation, and Life Science. Within the last years, the group has published more than 50 scientific papers in prestigious international journals (Chem. Soc. Rev., Nature Chemistry, Nature Communications, Adv. Mater., JACS, Angew. Chem. Int. Ed., among others).

Roger Bofill Arasa, Laia Francàs Forcada	Professor Agregat (Associate Professor), Investigadora RyC	Office C7/331 (Dr. Roger B.) and Office C7/343 (Dr. Laia F.) Unitat Química Inorgànica Dept. Química Facultat de Ciències UAB E- 08193 Bellaterra (Barcelona)	Roger.Bofill@uab.cat Laia.Francas@uab.cat	Chemistry	Chemistry	Modular photoelectrodes for circular economy	Preparation and characterization of modular semiconducting photoanodes and photocathodes for energy and environmental applications: obtention of H2 and reduced carbon products from water and CO2 and upgrading of biomass derived molecules (e.g. glycerol and furfural). Website: https://seloxcat.com/
Adelina Vallribera Massó	Full Profesor of Organic Chemistry	Chemistry Department Organic Section	adelina.vallribera@uan.es	Chemistry	Faculty of Science	EMERGENT (PER)FLUORINATION METHODS. PHOTOCATALYSIS	Photocatalysis will be used to trigger the (per)fluoroalkylation of organic compounds, thus mixing two novel challenging fields.
Carolina Gimbert Suriñach	Ramón y Cajal Researcher and Professor	Chemistry Department, Edifici C, Campus UAB E-08193 Bellaterra (Cerdanyola)	carolina.gimbert@uab.cat	Chemistry	Chemistry Department	Functional materials and organic reactivity	**Organic molecules and materials for solar fuel production**: preparation and characterization of functional organic-inorganic materials with enhanced affinity to CO_2 gas and with the ability to convert it to high energy products.
Xavier Sala Román	Associate Professor	Officre C7/345, Unitat de Química Inorgànica, Dept. Química, Facultat de Ciències, Universitat Autònoma de Barcelona, 08193, Bellaterra (Barcelona), Spain	xavier.sala@uab.cat	Chemistry	Chemistry	Hierarchical Nanomaterials for the Production of Solar Fuels from CO2	Design, synthesis and characterization of multimetallic organized electrode materials from multilenght-scale building blocks for the selective (photo)electrochemical conversion of CO2 into high-energy density fuels and value added chemicals (i.e. ethanol, ethylene). For more information about the research line and the SelOxCat research group see: https://seloxcat.com. For related EU-funded projects where SelOxCat participates see: https://cordis.europa.eu/project/id/101084326
Ramon Alibés and Ona Illa	Associate Professors	Edifici C, Carrer dels Til.lers.. 08193-Cerdanyola del Vallès	ramon.alibes@uab.cat ona.illa@uab.cat	Chemistry	Department of Chemistry	Synthesis of Bioactive Organic Compounds and Functional Materials	G-protein-coupled receptors (GPCRs), the largest family of druggable proteins in the human genome, can be modulated in their allosteric site, which is a novel targeting approach to achieve potential therapeutic benefits avoiding intrinsic side effects of orthosteric ligands. Allosteric modulators (AMs) act in the allosteric binding site, modulating the affinity or/and efficacy of the orthosteric ligand receptor in a negative (NAM) or positive (PAM) way, without altering the receptor conformation.The thesis will imply the synthesis of new PAMs and NAMs based on cannabidiol derivatives for the binding site of the receptors.
José Giner Planas	Researcher	Institut de Ciència de Materials de Barcelona (CSIC), Carrer dels Tillers, Campus de la UAB, 08193, Bellaterra, Spain. UAB	jginerplanas@icmab.es	Chemistry	Institut de Ciència de Materials de Barcelona (CSIC)	Synthesis of Highly Water Stable Carborane-MOFs for Energy and Environmental Applications	The PhD work will seek to correlate structural features with physical properties and to design synthetic methods to prepare porous and functional Metal-Organic Frameworks (MOF) and to tune their structures and properties. Unprecedented carborane-based building blocks will be synthesized and combined with suitable transition metals to provide MOFs and then use a wide variety of techniques to study their structure and properties with emphasis in energy and environmental applications.
Rosario Núñez	Investigador Cientific CSIC	Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Campus UAB, 08193 Bellaterra (Barcelona)	rosario@icmab.es	Chemistry	Institut de Ciència de Materials de Barcelona (ICMAB-CSIC)	Highly Stable, Boron Rich Luminophores for Optical and Biomedical applications	The PhD project will deal to prepare new highly luminescent materials for optical and biomedical applications. Unique icosahedral boron clusters-based luminophores will be synthesized and their properties (photoluminescence, thermal and chemical stability, etc) will be evaluated both in solution and solid state. It is envisaged to prepare high boron content photosensitazers as promising anticancer agents for combined photodynamic (PDT) and boron neutron cancer (BNCT) therapies. We will also prepare new boron rich luminescent NPs by nanoprecipitation in aqueous media, that maintain a high emission quantum yield due to steric hindrance caused by the carborane preventing aggregation-caused quenching, as theranostic probes. The student will learn to work with Schlenck techniques (vacuum-nitrogen lines, glovebox), use different characterization techniques: Infrared Spectroscopy (IR-ATR), Nuclear Magnetic Resonance (RMN), X-Ray diffraction, UV-vis, fluorescence spectroscopy, thermogravimetric analysis (TGA), TEM, DLS, among others. This is a multidisciplinary project and the PhD student will interact with other expert groups (physics, biologists and theoreticians) to evaluate the incorporation of the luminophores into devices and to explore their biomedical applications.
Gonzalo Guirado / Jordi Hernando	Associate Professors	Department of Chemistry, Faculty of Sciences, Campus Bellaterra, UAB	gonzalo.guirado@uab.cat jordi.hernando@uab.cat	Chemistry	Chemistry	Functional Materials and Organic Reactivity	The aim of PhD project will be the development of electro- and photoresponsive molecular materials for the fabrication of smart devices (sensors, energy-saving windows, luminescent displays and anti-counterfeiting marks).
Manel del Valle	Full Professor	Department of Chemistry, Faculty of Sciences	manel.delvalle@uab.es	Chemistry	Chemistry	Nanobiosensors	Coupling molecularly imprinted receptors and machine learning to build electronic tongue analysis systems
Palet Ballús, Cristina; Baeza Labat, Mireia	Professores titulars	UAB, Facultat de Ciències, Edifici Cn, Departament de Química	cristina.palet@uab.cat; mariadelmar.baeza@uab.cat	Chemistry	Chemistry	Environmental applications	Development of electrochemical sensors based on revalorized biomass for environmental applications.
Montserrat López Mesas /Manuel Valiente	Associate Professor (Tenure Professor) / Emeritus Prof.	Faculty of Science, Campus UAB, Bellaterra 08193, Barcelona, Spain	montserrat.lopez.mesas@uab.cat	Chemistry	Chemistry	Food Chemistry	The wine market has changed dramatically in the last fifty years, moving from small national markets, to the globalized web revolution being threatened by counterfeit products. The main focuss of the work will be the use of novel combination of Plant Protection Products to improve the productivity of vineyards. Grapes will be cultivated by using tested products that reduces plant stress, increasing the productivity. Chemical parameters will be analyzed on grapes and vineyards to control the quality and also to identify those that ensure traceability.
Maria Jesús Sánchez Martín / Manuel Valiente	Associate Professor (Tenure Professor) / Emeritus Prof.	Faculty of Science, Campus UAB, Bellaterra 08193, Barcelona, Spain	mariajesus.sanchez@uab.cat	Chemistry	Chemistry	Environmental pollution	Most of the strategies used to control fungal infections have been based on the application of copper-based. After decades of use, this has led to an build-up of copper (Cu) and zinc (Zn) in vineyards.Nowadays, compounds such as Maneb are being banned in the EU and the application rates of Cu in organic agriculture are being limited. The use of plants to transfer toxic metals from soil to aerial parts to clean metal-contaminated soils is known as phytoremediation and could be a useful practice on these vineyard soils. In this sense, different plant species will be studied as the best bio-accumulators for phytoremediaton purposes. Copper will be recovered from plants and re-used in vineyards following a circular approach.
Roberto Boada/Manuel Valiente	Associate Professor (Tenure Professor) / Emeritus Prof.	Faculty of Science, Campus UAB, Bellaterra 08193, Barcelona, Spain	roberto.boada@uab.cat	Chemistry	Chemistry	Environmental pollution	Critical raw materials, such as Ge, W, Sb and Co are strategically important for the worldwide industry. This project is focused on selecting and characterizing nano-sorbents with high affinity and efficiency for the targeted elements and on developing reagentless methodologies based on thermo-adsorption/desorption to recover those high value metals. Will learn and use techniques as ICP-MS, LC-MS, HPLC, AF4 (for nanophases analysis), GC-MS, SEM, TEM, Calorimetry and Sinchrotron Radiation. It will be implemented in a pilot plant.
Maria Jesús Sánchez Matín	Associate Professor (Tenure Professor)	Faculty of Science, Campus UAB, Bellaterra 08193, Barcelona, Spain	mariajesus.sanchez@uab.cat	Chemistry	Chemistry	Functional Food	According to an estimate, almost 800 million people all over the world are malnourished, around 98% of whom are residing in developing countries. In addition to this, around 2 billion people globally experience another type of hunger, known as hidden hunger, which is caused by poor intake of essential micronutrients in the everyday diet. The aim of this project is to increase this intake through crops biofortification. Different biofortification strategies with essential micronutrients will be developed in different type of crops. Nanotechnology will be used for encapsulating the compounds in order to increase the micronutrients' uptake by foliar application. And different nanomaterials to avoid accumulation in soil or to recover different compounds for their re-use will be developed by means of a circular approach.
Montserrat López Mesas	Associate Professor (Tenure Professor)	Faculty of Science, Campus UAB, Bellaterra 08193, Barcelona, Spain	montserrat.lopez.mesas@uab.cat	Chemistry	Chemistry	Environment pollution	Have you ever considered the quantity of plastic that surrounds you? Nanoplastics (NPLs) are the product of continuous physical and chemical weathering of plastic in the environment. They can act as pollutant carriers and trespass the blood-brain barrier, releasing the pollutants into the organism. This project will be focused in the development of new and innovative methodologies to detect and quantify NPLs in several matrixes, by the use of sophisticated techniques as AF4-MLS-UV or GPC-UV... as well as, study their adsorption capacity towards inorganic and organic pollutants by ICP-MS or GC-MS respectively.
Roberto Boada	Associate Professor (Tenure Professor)	Faculty of Science, Campus UAB, Bellaterra 08193, Barcelona, Spain	roberto.boada@uab.cat	Chemistry	Chemistry	Environmental pollution	The aim of this project is to use the agricultural waste of rice husk to produce composite materials based on hierarchical zeolites modified by metal oxide nanoparticles (MON) and metal-organic framework (MOF) materials. This valoraziation strategy has a double purpose, the removal of contaminants from water, and the catalytic production of biodiesel. Laboratory techniques (ICP-MS, XRD, AF4) and advanced synchrotron techniques (XAS, XES, XRS, SAXS) will be used to characterize the materials and their performance.

Maria Jesús Sánchez Martín / Montserrat López Mesas	Associate Professor (Tenure Professor)	Faculty of Science, Campus UAB, Bellaterra 08193, Barcelona, Spain	mariajesus.sanchez@uab.cat	Chemistry	Chemistry	Environmental pollution	Fungal infection incidence of Vines can cause crop losses and have negative impacts on wine quality. To control fungal infections, strategies based on the application of copper-based phytosanitary products are widely used leading to an accumulation of copper (Cu) in vineyards, and it is accumulated in the grapes and wine produced, and also in the high amount of waste generated, becoming an important environmental problem. The present research project aims to minimize the impact of Cu compounds in vineyards and wine production, through a circular economy approach, by providing a case-tailored solution via nano-functionalized anti-weed meshes to adsorb metals (especially Cu). The circular approach is achieved by recycling both Cu content (transformed into the related fungicide compounds to be used again as needed) and the treated fabric as antibacterial fabric, commonly used in textile industry. Moreover, textiles with a lower amount of copper can be reused again in vineyards preventing vines from fungal diseases and the quality and yield of the wines will be improved.
Computer Science							
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.
Eduardo César	Titular d'Universitat	School of Engineering Universitat Autònoma de Barcelona Carrer de les Sitges E-08193 Cerdanyola del Vallès	eduardo.cesar@uab.cat	Computer Science	Computer Architecture and Operating Systems	High Performance Computing Applications for science and engineering (http://grupsderecerca.uab.cat/hpca4se/en)	Parallel Agent Based Modeling and Simulation of Social Systems.
Anna Sikora	Titular d'Universitat	School of Engineering Universitat Autònoma de Barcelona Carrer de les Sitges E-08193 Cerdanyola del Vallès	anna.sikora@uab.cat	Computer Science	Computer Architecture and Operating Systems	High Performance Computing Applications for science and engineering (http://grupsderecerca.uab.cat/hpca4se/en)	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.
Tomàs Margalef	Catedràtic d'Universitat	School of Engineering Universitat Autònoma de Barcelona Carrer de les Sitges E-08193 Cerdanyola del Vallès	tomas.margalef@uab.es	Computer Science	Computer Architecture and Operating Systems	High Performance Computing Applications for science and engineering (http://grupsderecerca.uab.cat/hpca4se/en)	Application of High Performance Computing to Environmental Applications: The goal is to design and develop environmental applications (forest fire, meteorology, climate modeling) exploiting advanced HPC architectures (Multi/many core processors, accelerators, GPUs, ...).
Miquel Angel Senar	Catedràtic d'Universitat	School of Engineering Universitat Autònoma de Barcelona Carrer de les Sitges E-08193 Cerdanyola del Vallès	miquelangel.senar@uab.es	Computer Science	Computer Architecture and Operating Systems	High Performance Computing Applications for science and engineering (http://grupsderecerca.uab.cat/hpca4se/en)	HPC challenges in genomic applications. This topic relates to the study and design of mechanisms and strategies that can be applied to improve the performance of genomic applications with large demands of data processing. Target computing systems will consist in heterogeneous platforms, combining multicore processors and accelerators (GPUs); and target applications will focuss on genome analysis tools that are applied to metagenomics problems.
Carlos Borrego Iglesias	Agregat (Associate Professor)	Building Q, Engineering School, Autonomous University of Barcelona	carlos.borrego@uab.cat	Computer Science	Department of Information and Communications Engineering	Network Scenario Classification Using Neural Networks	Imagine living in a world without network infrastructure (5G, wifi…), where users only with their mobile devices are able to form on-the-fly social networks and communicate to share data objects. Characterizing these network scenarios basically consists of defining the characteristics that describe their network structure and behavior entirely (for example: the density of nodes, the node's coverage, etc.). In this thesis, we plan to use neural networks to classify network scenarios in order to allow their nodes to make good network decisions such as choosing the path of the messages or improving their privacy.
Joan Serra-Sagristà	Full Professor	Edifici Q, Escola d'Enginyeria, Universitat Autònoma de Barcelona	joan.serra@uab.cat	Computer Science	Department of Information and Communications Engineering	Security, coding, and compression	Data compression: deep learning compression, remote sensing data coding, astronomical data coding, high throughput coding, GPU compression.
Joan Serra-Sagristà	Full Professor	Edifici Q, Escola d'Enginyeria, Universitat Autònoma de Barcelona	joan.serra@uab.cat	Computer Science	Department of Information and Communications Engineering	Security, coding, and compression	Data compression: deep learning compression, remote sensing data coding, astronomical data coding, high throughput coding, GPU compression.
Josep Lladós Canet	Associate Professor Computer Science Dept. UAB & Senior researcher CVC	Computer Vision Center Edifici O - Campus UAB E-08193 Bellaterra	josep@cvc.uab.cat	Computer Science	Computer Science Department UAB & Computer Vision Center	Computational Models for Artificial Vision	**Visual parsing in document intelligence by Graph Neural Networks (GNNs)**. Document Intelligence (DI) is focused on the reading, understanding and interpreting documents as invoices, forms, letters, diagrams… Language model (LM) architectures that NLP applies to text sentences, become a valid paradigm to be adopted by DI. LMs in DI can be backed by Graphs, that robustly represent objects and relations. Graph Representation Learning based on Graph Neural Networks (GNN) allows to define a computational framework to model the language of documents. The prospective PhD student will focus its research on (1) Learn graph-based language models able to perform task-agnostic architectures in document object recognition and information extraction (e.g. key-value association, table recognition...) (2) the development of neural program synthesis techniques in order to induce the compositional rules (via graphs) governing the structure of training layouts, synthesizing structurally plausible documents for data augmentation. Certain types of images can be interpreted as being generated according to some syntactical rules, that are inferred after parsing sample instances. Use cases range from sketches, handwritten text, diagrams or snapshots of graphical user interfaces. The host institution has a large experience in document intelligence with structural (graph-based) methods in different scenarios as administrative document processing, historical manuscript recognition, sketch understanding, etc.
Ernest Valveny Llobet	Associate Professor Computer Science Dept. UAB & Senior researcher CVC	Computer Vision Center Edifici O - Campus UAB E-08193 Bellaterra	ernest@cvc.uab.cat	Computer Science	Computer Science Department UAB & Computer Vision Center	Computational Models for Artificial Vision	**Multimodal Image Understanding:** Multimodal data representation learning is a fundamental technique to integrate data of different types that are helpful for image understanding. Multimodal representations (visual and textual) are the basis of muliple applications, such as visual question answering (VQA), image captioning, cross-media retrieval or the analysis of social media (for instance, detection of hate speech messages or fake news). The host group of this PhD candidature has introduced in the past years the tasks of Scene Text VQA and Document VQA that require to read and interpret the text that appears in images or documents in the context provided by the visual information. The prospective PhD student will focus on the development of novel methods for applications of multimodal data representation, addressing some of the challenges and limitations of current methods: multilingual textual representations, explainability (that implies providing some explanation or evidence about the reasoning process) or integrating external knowledge (that represents our prior knowledge about the world).
Debora Gil Resina	Associate Professor Computer Science Dept. UAB & Senior researcher CVC	Computer Vision Center Edifici O - Campus UAB E-08193 Bellaterra	debora@cvc.uab.cat	Computer Science	Computer Science Department UAB & Computer Vision Center	Computational Models for Artificial Vision	This proposal is focused on the Artificial Intelligence field applied to Biomedical Applications and Health within the IAM group (iam.cvc.uab.cat). One of our research lines is the characterisation of cognitive states from biosignals such as Electroencephalogram (EEG). This can be useful to define scores related to human behaviour, with several applications such as the monitoring of the cognitive state of a pilot to identify scenarios in which pilot can be in degraded mode due to information overloading or decide which is the best time window to give her/him information. Another use case we are working on is the development of an Electronic Health Assessment Tool for Eldery People (eHAT). The goal is to have a score based on an integrative analysis of multi-modal bio-signals recorded from sensors assessing individuals' clinical and functional disorders at 2 levels associated to ageing: balance and cognitive. At cognitive level, IA methods for analysis of EEG signals are being developed to determine mental degradation and risk of neurodegenerative pathologies.
Aura Hernández Sabaté	Associate Professor Computer Science Dept. UAB & Senior researcher CVC	Computer Vision Center Edifici O - Campus UAB E-08193 Bellaterra	aura@cvc.uab.cat	Computer Science	Computer Science Department UAB & Computer Vision Center	Computational Models for Artificial Vision	This proposal is focused on the Artificial Intelligence field applied to Biomedical Applications and Health within the IAM group (iam.cvc.uab.cat).One of the main research lines of the group is Intelligent radiomics for multi-diagnostic lung cancer systems, together with researchers from the Hospital Germans Trias i Pujol, Hospital General de Catalunya and Primary Care Centers. By means of Artificial Intelligence, Radiomics can convert a large number of medical images into quantifiable data, that can be used by Deep Learning systems to create a diagnosis of lung cancer at four levels: Clinical diagnosis, to determine the malignancy of a lesion; histological diagnosis, to determine the typology of the lesion; genomic diagnostics, to analyse the associated mutation in order to determine the best treatment and the epigenomic diagnosis, to determine which chromosomes are associated with the lesion. The student will contribute to the development of new deep architectures for the fusion of multimodal data (scanners, clinical, demographic) for the prediction of qualitative and quantitative diagnostic variables, as well as, methods for the clinical interpretation of deep models.
Joost van de Weijer	CVC Senior Researcher & Professor Computer Science Programme UAB	Computer Vision Center Edifici O - Campus UAB E-08193 Bellaterra	joost@cvc.uab.es	Computer Science	Computer Science Department UAB & Computer Vision Center	Computational Models for Artificial Vision	Keywords: machine learning, computer vision, articial intelligence**.** Diffusion models are able to perform high-fidelity image generation (even outperforming GANs) while achieving excellent coverage of the data distribution. In the LAMP group, we are interested in students that want to contribute to diffusion model theory. Especially, we are interested to investigate them within the context of transfer learning, continual learning and domain adaptation. Also, students that are inspired to combine their strengths with those of the popular NERFs are encouraged to apply. The project will be done in the LAMP group in the Computer Vision Center in Barcelona. The LAMP group is one of the leading groups in continual learning in Europe.

Bogdan Raducanu	CVC Senior Researcher & Professor Computer Science Programme UAB	Computer Vision Center Edifici O - Campus UAB E-08193 Bellaterra	bogdan@cvc.uab.es	Computer Science	Computer Science Department UAB & Computer Vision Center	Computational Models for Artificial Vision	One of the hottest trends in AI in the last few years has been the emergence of popular generative models. With technologies such as DALL-E and Stable Diffusion, there is a growing number of applications and use cases that are emerging. Generative AI is not new, having started with the introduction of GANs in 2014, but the recent convergence of several computational trends gave it a strong boost. Objective: Diffusion models (DM) represent an emerging research topic in Generative AI. Compared with GANs, they have some benefits such as improved image quality generation and better mode coverage/diversity. Despite recent advances, there are still some challenges which the current proposal aims to investigate: - one-shot or few-shot DM training - transfer learning in DM (such as fine-tuning, distillation, sequential task learning) - faster inference, by reducing the number of steps, without affecting image quality - combination between DM and NeRF for improved 3D image generation
Javier Vázquez Corral	Associate Professor Computer Science Dept. UAB & Senior researcher CVC	Computer Vision Center Edifici O - Campus UAB E-08193 Bellaterra	jvazquez@cvc.uab.cat	Computer Science	Computer Science Department UAB & Computer Vision Center	Computational Models for Artificial Vision	On deriving interpretable and efficient Deep Image Signal Processors. Image Signal Processors (ISPs) encompass all the processes that happen in camera from image capture to display. Examples of such processes are image denoising, deblurring, or color constancy, among many others. However, ISPs have historically been one of the last barriers to deep learning in Imaging Technology. This is due to the apprehension of camera makers to output an unsatisfactory image to users without the ability to debug and learn from errors. This said, recent advancements have proven that methods can overcome these concerns, and, therefore, different publications started aiming at end-to-end deep learning based ISPs. The main reason for this new trend is the current ubiquity of mobile phones as camera devices and the fact that mobile phones are equipped with Neural Processing Units that specifically focus on the processing of the images captured by the camera sensor. In this Thesis the goal will be to derive new deep learning based ISPs. Our newly derived methods will focus on fulfilling the following goals: - Our models should be interpretable, allowing camera engineers with the ability to debug. - Our models should be as small and efficient as possible, reducing both their memory and their energy consumption requirements.
Javier Vázquez Corral Luis Herranz Arribas	Associate Professor Computer Science Dept. UAB/CVC Senior researcher CVC Senior Researcher & Professor Computer Science Programme UAB	Computer Vision Center Edifici O - Campus UAB E-08193 Bellaterra	jvazquez@cvc.uab.cat lherranz@cvc.uab.cat	Computer Science	Computer Science Department UAB & Computer Vision Center	Computational Models for Artificial Vision	Color image and video enhancement by leveraging physical priors and deep learning. Color image and video enhancement is a traditional problem. Historically, enhancement methods were rooted in tailor-made priors (either physics or statistically-based), but since the appearance of deep learning approaches, the trend has switched. However, the black-box component of current deep learning methods, which does not allow the user to know what is happening in the failure cases, has hindered its wide deployment in some core imaging processes in which understanding on what the algorithms are performing is paramount. A possible solution to address this problem is the introduction of both i) physics-based training objectives and regularization, and ii) architectural designs that enforce physical behaviors within the deep model. Thus, in this PhD project we will propose enhancement frameworks that take advantage of methods based on physical priors and combining them with current state-of-the-art deep learning architectures. This approach will provide models that are both more robust and easier to understand, aiming at their adoption by camera manufacturers for the wide deployment in consumer cameras, as well as post-processing software applications.
Javier Vázquez Corral Luis Herranz Arribas	Associate Professor Computer Science Dept. UAB/CVC Senior researcher CVC Senior Researcher & Professor Computer Science Programme UAB	Computer Vision Center Edifici O - Campus UAB E-08193 Bellaterra	jvazquez@cvc.uab.cat lherranz@cvc.uab.cat	Computer Science	Computer Science Department UAB & Computer Vision Center	Computational Models for Artificial Vision	Explainable image and video restoration. Deep generative models have revolutionized the field of visual enhancement and restoration. These models can transform old and degraded images into realistic reconstructions with vivid colors (even from black and white content). However, the underlying decisions in the restoration process are rarely understood, since they are simply based on implicit knowledge learned from observing large amounts of high-quality images. This drawback is paramount, since visual enhancement problems are ill-conditioned, in some cases very severely. Explainability is the ability of the model to communicate to a human why a particular decision or solution was taken. In this PhD project we aim at endowing image/video restoration systems with the ability to explain their restoration decisions to humans in an intuitive and easily understandable format, who in turn can interact with the system in a more effective way. Ultimately, the system should act as a recommender, and the user should have the final decision on the multiple suggestions provided by the system. Thus, the thesis project has three main objectives: i) studying image editing deep learning architectures to improve their explainability; ii) investigating rich and intuitive human-system interaction techniques in the context of image and video enhancement; iii) extending the results to videos, where the temporal dimension may pose additional challenges.
Bartlomiej Twardowski	CVC Senior Researcher & Professor Computer Science Programme UAB	Computer Vision Center Edifici O - Campus UAB E-08193 Bellaterra	btwardowski@cvc.uab.es	Computer Science	Computer Science Department UAB & Computer Vision Center	Computational Models for Artificial Vision	Keywords: machine learning, computer vision, articial intelligence. Continual Learning is a key concept of training artificial neural networks incrementally from a continuous stream of non-iid data. Neural networks should learn more like humans, which can build new knowledge based on the previous experience, they are life-long learners. In this project, we would like to focus on the continual representation learning and better knowledge retention for architecture-based approaches, i.e. from improving consolidation in complementary learning systems, better knowledge transfer in mixture-of-experts (MoE) models, or continual federated learning. Sparsity and conditional computation in continual learning will also be investigated. The project will be done in Dr. Joost van de Weijer group (LAMP) in the Computer Vision Center in Barcelona. The LAMP group is one of the leading groups in continual learning in Europe.
Maria Vanrell	Full Professor Computer Sciende Dept UAB & CVC Senior Researcher	Computer Vision Center Edifici O - Campus UAB E-08193 Bellaterra	maria@cvc.uab.cat	Computer Science	Computer Science Department UAB & Computer Vision Center	Computational Models for Artificial Vision	**Building Efficient Deep Networks that simulates the optimal visual brain**. In the last 10 years, deep architectures have provided multiple solutions to a large range of computer vision problems. These architectures have been built to achieve their goals no matter their size, number of components and parameters, or their energy cost. However, all these visual abilities are performed by humans with a sophisticated but energy-efficient brain. In this PhD project we pursuit to build a deep architecture that can solve different visual tasks while sharing the internal representations to maximize the number of problems that can be solved but minimizing the number of parameters and the general size of the architecture.
Maria Vanrell	Full Professor Computer Sciende Dept UAB & CVC Senior Researcher	Computer Vision Center Edifici O - Campus UAB E-08193 Bellaterra	maria@cvc.uab.cat	Computer Science	Computer Science Department UAB & Computer Vision Center	Computational Models for Artificial Vision	**Explainability of deep CNN for Computer Vision**. Everyone knows the high performance of Convolutional Neural Networks (CNNs) in solving computer vision problems; however, there is a lack of understanding on how the networks achieve such a performance. In this thesis project we propose to open the black box and dissect how these networks represent the internal representations. In a previous Phd work we have developed a python package with a set of tools for neuron dissection, now in this new PhD project we want to develop a methodology to use these tools to analyse different networks for different vision tasks and explore if they correlate with human vision mechanisms.
Xavier Otazu Olivier Penacchio	Associate Professor Computer Science Dept. UAB & CVC Senior researcher Maria Zambrano Researcher UAB & CVC Senior researcher	Computer Vision Center Edifici O - Campus UAB E-08193 Bellaterra	xotazu@cvc.uab.cat olivier.penacchio@uab.cat	Computer Science	Computer Science Department UAB & Computer Vision Center	Computational Models for Artificial Vision	**Energy efficiency of biologically inspired learning mechanisms in neural networks**. The development of deep neural networks (DNNs) has brought enormous progresses in machine learning over the last decade. However, DNNs generally lack the ability to generalize to new data or are subject to catastrophic forgetting when learning new tasks. Most of the training methods trying to overcome these issues are extremely energy demanding and therefore have high environmental and economic impacts. On the other hand, the human brain can generalize given a small set of examples and learn several continuously without experiencing catastrophic forgetting while using a very reduced amount of energy. Mimicking the mechanisms of the human brain in machine learning architectures therefore seems to offer an interesting approach for addressing the shortcomings of current DNNs while keeping their energetic demand moderate or low. In this project we will develop a framework to derive quantitative estimates of the difference of energy requirements between real brain processes and their neuromorphic implementations. We will investigate which features of natural computations (learning mechanisms, temporal coding, sparse connectivity, spikes) contributes the most to the energy efficiency of the brain.

Economics, Management and Organizations							
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	PhD Program in Economics, Management and Organizations	Departament d'Empresa	Innovation and Corporate Governance	Firms' growth usually implies the creation of corporations led by boards of directors. The composition, organization and structure of such boards is a relevant research topic. Special attention has been devoted to the differences of behavior between those boards controlled by members of the same family, developing a leading paradigm in the study of family business nowadays: the socioemotional wealth. On the other hand, a key element for maintaining the firms' competitiveness is innovation. We hold a large experience in the analysis of the determinants and consequences of the innovation policies and activities of firms. Finally, corporate debt and cash holdings are important drivers of firm value. A growing literature seeks to estimate the implications of different crises (2008 financial crisis, COVID-19 pandemic, etc.) on firms' financing and liquidity needs. We propose the following broad topics: 1.Corporate finance: According to conventional wisdom, banks provide firms immediate liquidity in times of crisis, while financial markets fund investments during normal times. We propose to investigate an alternative channel that firms have to deal with liquidity constraints, loan renegotiation. We seek to analyze whether loan renegotiations could alleviate firms' liquidity constraints during the covid-19 pandemic. That is, we study whether firms managed to renegotiate the conditions of previous loan contracts granted before the pandemic, so as to ease their liquidity position. 2.Corporate ownership and governance: we will explore how increase in emphasis on one function (monitoring or resource provision) affects directors' ability to execute another function and its implications for corporate value creation and innovations.
Electrical and Telecommunication Engineering							
Xavier Oriols	Full professor	Dept. Enginyeria Electrònica (Edific QC) Universitat Autonoma Barcelona E- 08913 Bellaterra	xavier.oriols@uab.es	Electrical and Telecommunication Engineering	Electronics Enginnering	Quantum electron devices	Using light-matter interaction for developing new quantum electron devices at THz frequencies.
Juan José García García	Titular de Universidad	Edifici Q - Carrer de les Sitges s/n Campus de la UAB E-08193 Cerdanyola del Vallès	joan.garcia@uab.cat	Electrical and Telecommunication Engineering	Departament d'Enginyeria Electrònica	Enginyeria de RF/Microones, Metamaterials, Antenes, RFID i Aplicacions Industrials	RFAmbient Energy Harvesting Systems.
Núria Barniol	Catedràtica/Full professor	Engineering School	nuria.barniol@uab.cat	Electrical and Telecommunication Engineering	Electronics Engineering	Micro- and Nano-Electromechanical Systems: CMOS Integration and Applications	Multifrequency Piezoelectrical Micromachined Ultrasound Transducers (PMUTs) integrated on CMOS for image and gesture recognition
Carles Ferrer Ramis	Full professor	Escola d'Enginyeria. Carrer de les Sitges s/n E-08193 Bellaterra (Barcelona)	carles.ferrer@uab.cat	Electrical and Telecommunication Engineering	Microlectronic and Electronic Systems	Design of Integrated Circuit and Systems	Low-Power WIrelesS IoT platform with Edge Computing and Predictive Analysis
Marc Porti Pujal	Professor titular	Departament d'Enginyeria Electrònica Edifici Q Campus Universitat Autònoma de Barcelona E-08193 Bellaterra (Barcelona)	marc.porti@uab.es	Electrical and Telecommunication Engineering	Electronic Engineering Department	Cryptography with graphene based nanoelectronic devices	The PhD student's work will be focused on the electrical properties, variability and reliability of emergent devices as those based on graphene (and/or other 2D materials or printed technologies), which are of paramount importance for IoT. To do that, standard characterization techniques at wafer level and nanoscale resolution tools as Atomic Force Microscope based techniques will be combined. The goal is to study their variablity, reliability and its explotation for security applications. The PhD student will work in one of the hottest topics in nanoelectronics in a group with collaborations with worldwide research institutions and companies in the field of micro/nanoelectronics and will adquire extensive experience in characterization techniques, experimental work and/or simulation tools. The collaborative framework provided by the group will give an international projection to the student activities.
Rosana Rodríguez	Professor Titular (Associate professor)	Departament d'Enginyeria Electrònica. Escola d'Enginyeria. Campus UAB E-08193 Bellaterra (Barcelona)	Rosana.Rodriguez@uab.cat	Electrical and Telecommunication Engineering	Electronic Engineering Department	Emerging Nanoelectronic Devices	Nowadays, the necessity of ultra-scaled electronic devices has produced the appearance of new nanodevices and circuits. In this sense, the devices with resistive switching present extraordinary properties of scaling, operation speed, and lower occupied chip area, which makes them one of most promising candidates for memory, neuromorphic (neural networks) and logic applications. The application of the resistive switching phenomenon has open a new path to the development of a new computer organization, more efficient but completely different to the traditional Von-Neumann computation. Objectives: This proposal is to experimentally investigate the electrical characteristics and reliability of resistive switching nanodevices oriented to the implementation of memory cells, neuromorfic systems and logic applications. Our consolidated research group has an experience of more than 30 years in the field of electrical characterization and reliability. Supervisor: Rosana Rodríguez. Electronic Engineering Department. e-mail: Rosana.Rodriguez@uab.cat
Gonzalo Seco-Granados	Professor, Director of the Research Group on Signal Processing for Communications and Navigation	Engineering School Campus UAB 08193 Bellaterra	gonzalo.seco@uab.cat	Electrical and Telecommunication Engineering	Telecommunications and Systems Engineering	Communications, navigation and networking	Joint Localization, Communications and Sensing with 5G/6G and/or Satellite-Based (LEO-PNT and GNSS) Systems The objective of this project is to contribute to the design of positioning solutions that are valid for IoT, autonomous vehicles, or other applications that have very stringent requirements on positioning accuray and/or energy-consumption. The innovations present in the latest versions of 5G and those being discussed for 6G will be exploited to design transmission mechanisms and algorithms that allow the calculation of the six components of position and orientation. Key elements will be the use of reflective intelligent surfaces (RIS) and the availability of high-precision angular measurements even with low-bandwidth signals. The thesis can also address the positioning using signals coming from GNSS and low-earth orbit satellites (LEOs), either from existing constellations, what is commonly referred to as signals of opportunity because they are not designed for positioning, or from a specifically-designed dedicated future constellation. In both cases, the use of LEO satellites provides the advantage of a higher signal power thanks to the shorter distance than the GNSS satellites. In addition, the specific design of signals can improve performance and simplify the operations performed by the receiver. Depending on the interests of the PhD candidate, the thesis can be focused on the 5G/6G systems or in LEO/GNSS systems.
Jose A. Lopez-Salcedo	Professor	School of Engineering, Edifici Q, Campus UAB	jose.salcedo@uab.cat	Electrical and Telecommunication Engineering	Department of Telecommunication and Systems Engineering	Signal Processing for Communications and Navigation	Signal processing for Global Navigation Satellite System (GNSS), low-Earth Orbit Position Navigation and Timing (LEO-PNT) satellites and positioning using 5G/6G signals.
Entrepreneurship and Management							
Joan-Lluís Capelleras	Associate Professor	Department of Business Faculty of Economics and Business Studies E-08193 Bellaterra (Barcelona)	joanlluis.capelleras@uab.cat	Entrepreneurship and Management (IDEM)	Department of Business	Entrepreneurship, Innovation and SME Management	The PhD Program in Entrepreneurship and Management (IDEM) offers students an academic framework for scientific research in the field of entrepreneurship. The proposed doctoral thesis will be on the topic of high growth entrepreneurship. The aim is to investigate how opportunities emerge across countries and the boundaries that the institutional context set on those seeking entrepreneurial efforts. Specifically, the dissertation will examine how both individual mechanisms and national institutions affect entrepreneurial growth. A large dataset that combines individual- and country-level data covering around 50 countries for a ten-year period will be used..

Environmental Science and Technology

David Gabriel Buguña	Full professor	School of Engineering	david.gabriel@uab.cat	Environmental Science and Technology	Department of Chem*ical, B*iological and Environmental Engineering	Biological treatment of liquid and gas effluents. Elimination of nutrients, odours and volatile organic compounds	The topic is about stimulating ex-situ H2-based biotechnologies towards the biomethanation of gaseous carbon dioxide and sulfur-rich streams such as biogas focusing on the development and characterization of H2-driven membrane bioreactors and biotrickling filters combined with the use of and advanced monitoring tools
Montserrat Sarra Adroguer	Associate professor	School of Engineering	Montserrat.Sarra@uab.cat	Enviornmental Science and Technology	Chemical, Biological and Environmental Engineering	Biodegradation of Industrial Pollutants and Waste Valorization	Towards the ecological transition in the agricultural sector by fungal bioremediation of pesticide- containing wastewater: pilot-plant bioreactor set up for on-situ treatment.
Juan Antonio Baeza Labat	Full professor	Departament d'Enginyeria Química, Biológica i Ambiental School of Engineering	JuanAntonio.Baeza@uab.cat	Environmental Science and Technology	Department of Chemical, Biological and Environmental Engineering	Phosphorus Recovery from wastewater and sludge	Novel configurations for enhanced biological phosphorus removal (EBPR) linked to P recovery as struvite and vivianite
Xavier Font Segura	Professor	C/ de les Sitges s/n School of Engineering Campus UAB E-08193 Cerdanyola del Vallès (Barcelona)	xavier.font@uab.cat	Environmental Science and Technology	Chemical, Biological and Environment Engineering Dpt.	Composting, bioconversion of organic waste and environmental remediation	In the framework of Circular Economy and Climate Change crisis, anaerobic digestion is pointed as a key technology to contribute to our sustainability. Our project is aimed to demonstrate that the anaerobic digestion process can be further improved by using nanomaterials. This improvement can be achieved through two strategies. By one side, nanoparticles can be used to improve the biological process of anaerobic digestion by its addition to the biological process. On the other side, it is possible to obtain valuable products from the CO2 contained in biogas (such as methanol, lactic acid or formaldehyde). The goal of this proposal is to produce and characterize different types of nanoparticles (Fe, Co, Ni, …) test them in batch anaerobic digestion processes and select the best nanoparticles to perform anaerobic digestion in continuous mode at 5L scale and pilot (100 L) scale and to obtain valuable products from the remaining CO2.
Paqui Blánquez	Associate professors	School of Engineering	paqui.blanquez@uab.cat	Environmental Science and Technology	Chemical, biological and environmental department	Groundwater bioremediation	Study and validation of bioremediation techniques for the treatment of groundwater contaminated with organohalide compounds, from laboratory to in-situ studies.

Genetics

Sebastián E. Ramos Onsins	Tutor Genetics Program CRAG Researcher (Centre de Recerca en Agrigenòmica)	CRAG building-Campus UAB Carrer Vall Moronta s/n E-08193 Cerdanyola (Barcelona)	sebastian.ramos@cragenomica.es	Genetics	Plant and Animal Genomics / CRAG (CSIC-IRTA-UAB-UB)	Comparative Genomics and Evolution	The key role of polyploidy as a mechanism of adaptation and domestication in plants. Many of the more important crops used to sustain and feed the human population and the domestic animals are or have suffered from polyploidization events. Understanding the effect produced in fitness of domestic crops by polyploidy will allow to detect functional pathways and genes involved in their differential features, which is of great importance for genetic improvement programs. The study of the distribution of the selective effects at polyploid species has not been tackled, given the difficulties in sequencing and assembly polyploids, but also by the lack of analytical methods to infer the distribution of fitness effects in polyploids. Any work dealing on this topic would represent a significant novelty in the understanding of the effects of polyploidization on the evolution of the species. The candidate will acquire advanced knowledge in the fields of population genomics and molecular evolution, bioinformatics and program developing, and statistical methods during the development of this project. A couple of stays, one in Spain (to collaborate with teams working with empirical data) and one abroad (to collaborate in developing algorithmic methods) are expected.

Materials Science

Pablo Jesús Ordejón Rontomé	CSIC Research Profess	ICN2 Building, UAB Campus, 08193 Bellaterra, Cerdanyola del Vallès (Barcelona), Spain	pablo.ordejon@icn2.cat	Materials Science	Catalan Institute of Nanoscience and Nanotechnology (ICN2)	Theory and Simulation of the Behaviour of Materials	Simulation of thermal transport in nanostructured materials using first-principles electronic structure methods.
Pedro Gómez-Romero	Group Leader NEO-Ene	Edifici ICN2, Campus UAB, 08193 Bellaterra (Barcelona)	pedro.gomez@icn2.cat	Materials Science	Catalan Institute of Nanoscience and Nanotechnology (ICN2)	Zn-Air batteries. From materials to Electrocatalysis	Development of new bifunctional catalysts for the positive electrodes in Zn-Air batteries
Jordi García-Antón Aviñó; Jose Muñoz Martín	Profesor Titular de Universidad (Associate Professor), Investigador RyC	Office C7/325,1 (Dr. Jordi G.-A.) and Office C7/355 (Dr. Jose M.), Unitat Química Inorgànica, Dept. Química, Facultat de Ciències, Universitat Autònoma de Barcelona, 08193, Bellaterra (Barcelona), Spain	Jordi.GarciaAnton@uab.es JoseMaria.Munoz@uab.cat	Materials Science	Department of Chemistry	Functionalization of Emmerging Inorganic 2D Materials *via* Surface Engineering: Towards the Custom Preparation of (Photo)Electrocatalysts On-demand.	The chemistry of different emmerging inorganic 2D materials (*i.e.* , Germanane, MXene, Transition metal dichalcogenides) will be exploited for the custom preparation of (photo)electrocatalysts on-demand by taking advantage of surface engineering, where different active moieties (*e.g.* , functional inorganic nanoparticles, quantum dots, responsive molecular components) will be anchored for carrying out specific (multi-)task approaches, such as energy conversion and bio-sensors. See more info: www.seloxcat.com (bio of Jordi G.-A and Jose M.).
Dino Tonti	Cientif. Tit. ICMAB-CSI	ICMAB-CSIC C/ Til.lers s/n Campus UAB	dino@icmab.es	Materials Science	Department of Chemistry	Materials for energy	**Materials and characterization of redox-flow batteries for improved kinetics, durability and economical viability.** This electrochemical storage technology is being developed to overcome the cost of Li-ion batteries particularly for large scale applications, which still needs more cost effective and sustainable materials. This project will include the preparation of multifunctional collectors and electrolytes, and the development of operando methods to study material interactions and kinetics
Aránzazu González-Campo	Tenuared Scientist	ICMAB-CSIC C/ Til.lers s/n Campus UAB	agonzalez@icmab.es	Materials Science	Functional Surfaces and Interfaces / Institute of Materials Science of Barcelona (ICMAB-CSIC)	Development of curcuminoid-based sensors	Molecular and supramolecular nanomaterials and active surfaces are one of the fields that have attracted intensive research due to their potential applications in different fields. In this project we are interested in the preparation of materials based on Curcuminoids, which are derivatives of curcumin, for the preparation of sensors of metals and biological processes, due to their fluorescent performance. The synthesized CCMoids will be also anchored on surfaces and particles. Techniques of characterization in solution and in solid will be used
Maria Isabel Alonso	Research Scientist CSI	ICMAB-CSIC Campus UAB	isabel@icmab.es	Materials Science	Group of Nanostructured Optoelectronic Materials (ICMAB-CSIC)	Spectroscopy applied to nanomaterials (Materials for energy)	**Optical properties of nanostructured and patterned materials for applications in light trapping, light emission, and sensing.** The project consists in applying the scalable soft lithography nanoimprinting technique to fabricate photonic architectures with different designed functionalities compatible with emerging optoelectronic devices. Besides semiconductors and metals, other unconventional materials such as biopolymers and colloids are employed. Design is made by finite-differences time-domain (FDTD) software and characterization includes optical spectroscopy such as NIR-VIS reflectance and transmission, ellipsometry, Raman scattering, and photoluminescence.
Alejandro Rodolfo Goñi	ICREA Research Prof.	ICMAB-CSIC Campus UAB E-08193 Bellaterra	goni@icmab.es	Materials Science	Group of Nanostructured Optoelectronic Materials (NANOPTO)/ICMAB-CSIC	Materials for energy	**CO_2 conversion into chemicals of industrial interest by plasmon-assisted photogeneration of hot electrons:** This project aims at addressing the Grand Challenge of the mitigation of the greenhouse effects caused by massive CO_2 emissions through the development of a novel technology for the sustainable capture of CO_2 and its catalytic conversion into chemicals of industrial interest. The photocatalytic conversion of CO_2 will be accomplished in electrochemical cells self-powered from solar energy through the generation of hot electrons which are injected into the gas molecules driving the CO_2 reduction reactions. The hot electrons result from sunlight photoexcitation of plasmons at a nanostructured metallic cathode, serving as catalyst. The plasmonic nanostructure will be engraved onto an organic, CO_2-permeable membrane, leading to the formation of a gas-liquid-solid, three-phase reaction interface. The main objectives are to understand the fundamental processes triggered by hot-electron injection at the three-phase reaction interface and to design and test a plasmon-driven photo-catalytic convertor, serving as demonstrator.
Monica Lira-Cantu	ll Professor / ICN2 Grou	ICN2 Campus UAB	monica.lira@icn2.cat	Materials Science	ICN2, Nanostructured Materials for Photovoltaic Energy	Synthesis and application of Pb-free halide Perovskites for photovoltaics and photocatalysis.	Metal halide perovskites (MHPs) exploitation represents the next big frontier in photovoltaic technologies with one of the greatest power conversion efficiencies (> 25 %). The extraordinary optoelectronic properties of these materials also call for alternative utilizations, such as solar-driven photocatalysis to produce H_2 or the reduction of CO_2, that can address the challenges of a CO_2-free society. This project encompasses the synthesis and application of water-stable and Pb-free halide perovskites that can be employed in photovoltaics and photocatalysis. Single and tandem solar cells an minimodules will be fabricated on rigid and flexible substrates employing scalable solution processing methodologies.
Prof. Jordi Arbiol	ICREA Research Professor and Group Leader	Institut Català de Nanociència i Nanotecnologia (ICN2) Campus UAB Edifici ICN2 E-08193 Bellaterra (Barcelona)	arbiol@icrea.cat	Materials Science	Institut Català de Nanociència i Nanotecnologia, ICN2	Advanced Electron Nanoscopy	Correlation of the structure and composition of nanomaterials at atomic scale with their electrocatalytic properties at the nanoscale. The nanomaterials and nanostructures studied will be related to new nanomaterials for energy applicattions: e.g.: 2D nanostructures, nanoparticles,…
Mariona Coll	Tenured Scientist at ICI	Campus UAB E-08193	mcoll@icmab.es	Materials Science	Institut of Materials Science of Barcelona (ICMAB-CSIC)	Nanoengineering of functional oxides thin films and free-standing membranes by chemical deposition techniques. https://icmab.es/coll	Developing of novel complex oxides thin films and free-standing membranes by chemical deposition techniques. Understanding of the relationship between precursor chemistry and material properties including structure, morphology, optical, photovoltaic and electrical properties

Marta Mas Torrent	Full Professor CSIC	Campus UAB E-08193	mmas@icmab.es	Materials Science	Institut of Materials Science of Barcelona (ICMAB-CSIC)	Organic electronics/sensors	Organic electronic devices are raising a great deal of interest for low-cost and large area applications. Here, we plan to fabricate organic field-effect transistors and electrochemical field-effect transistors to be applied in sensing applications. This is an interdisciplinary project that ranges from the processing of materials and their characterisation to the fabrication of proof-of concept devices. The candidate should have a physics, chemistry or materials science background.
Anna Laromaine/ Anna Roig	Researcher ICMAB	Institut Ciencia de materials de Barcelona (ICMAB-CSIC) Campus UAB (Bellaterra) Spain	alaromaine@icmab.es; roig@icma	Materials Science	Institut of Materials Science of Barcelona (ICMAB-CSIC)	Biomaterials and nanocomposites	Project title: Soft functional nanocomposites of natural polymers for medical applications Implantation of engineered smart biomaterials are at the forefront of healthcare research, and those structures are gradually transitioning to biomimetic and bioactive platforms. Multidisciplinary efforts from materials science, biomedicine, cell therapies, and clinical methodologies are requested to improve current biomaterials. Soft nanocomposites using natural polymers with fine-tuned mechanical and functional properties are propitious alternatives to allografts, autografts, and synthetic polymers in the development of biomedical implants In this context, the main objective of this thesis is to enlarge the natural polymers landscape of soft nanocomposite implants by combining natural polymers and nanoparticles toward functional platforms for medical applications beyond the current state-of-the-art. We want to design sophisticated natural hydrogels and nanoparticles systems displaying a variety of shapes, topographies and porosities while also encompassing features such as biocompatibility, biointegrability, mechanical compliance, stimuli responsiveness or programmed biodegradation profiles. We suggest evaluating the performance of soft materials made of natural polymers, such as silk, collagen and polysaccharides such as cellulose, hyaluronic acid and chitosan and combine them with selected inorganic functional nanoparticles (NPs). We are looking for a highly motivated student with background in biotechnology/ biomedicine/ biochemistry/ nanoscience/ polymer science or chemistry that would like to work in an international and interdisciplinary group within an innovative project with interesting prospective applications. The student will have to speak perfect English with good teamwork skills. We encourage the application of student of the described backgrounds; acceptance will be based on an interview and reference letters.
Núria Crivillers	Científic Titular CSIC	Campus UAB E-08193 Bellaterra	ncrivillers@icmab.es	Materials Science	Institut of Materials Science of Barcelona (ICMAB-CSIC)	Novel organic materials for memories and energy storage	Electroactive organic materials show great potential for the fabrication of energy storage devices as well as memories. For this purpose we plan to design, prepare and characterise a wide range of organic and hybrid materials (i.e., covalent organic frameworks (COF), self-assembled monolayers, etc) based on electroactive building blocks. Organic radicals (OR) have awakened much interest for its wide applicability such as magnetic materials, imaging agents, catalyst, electrochemical active materials, among others. For this, OR will be investigated for the purpose of the project.
Albert Verdaguer Prats	CSIC Tenured Scientist	ICMAB Campus de la UAB Carrer dels Til·lers s/n E-08193 Bellaterra (Barcelona)	averdaguer@icmab.es	Materials Science	Institut of Materials Science of Barcelona (ICMAB-CSIC)	Sustainable Energy Conversion and Storage Systems	Designing of new functionalized materials and surfaces to control water freezing to be applied for energy saving in the ice-making industry.
Felip Sandiumenge		Campus de la UAB	felip@icmab.cat	Materials Science	Institut of Materials Science of Barcelona (ICMAB-CSIC)	Oxides for electronics and energy	This project focuses on nanoscale wrinkling phenomena in free-standing oxide ferroelectric membranes. Although wrinkles in 2D membranes made of ductile materials, such as metals and organics, have been used in a wide spectrum of applications ranging from microfluidics, optical devices, smart windows, adhesion or wettability, extension of this strategy to oxides is not obvious owing to their brittle character. However, the discovery a facile route to fabricate oxide ultrathin free-standing membranes has opened the door to a radically new landscape, particularly in ferroelectrics. Ferroelectrics exhibit spontaneous polarization that can be switched between two or more energetically equivalent orientations (domains) by external fields. The coupling between strain, polarization and domain-wall mobility in the process of wrinkling, offers a rich and largely unexplored playground for engineering nanodevices with special interest in nanoelectronics and energy. The present proposal focuses on structural and electronic aspects of wrinkling in ferroelectric membranes, using state-of-the-art atomic resolution transmission electron imaging and spectroscopy. You will join a multidisciplinary, multicultural and international team, which includes membrane preparation and functional characterization with local probes (Raman spectroscopy, PFM, conducting-AFM, Kelvin-probe, etc). This is an extensive team which works on a radical collaborative basis. No previous experience is needed.
Xavier Torrelles Albareda	Investigador Científic	ICMAB Campus UAB E-08193 Bellaterra	torrelles@icmab.es	Materials Science	Institut of Materials Science of Barcelona (ICMAB-CSIC)	Catalysis: materails for energy	Titanium oxide is of interest, among other reasons, for the photovoltaic conversion of light into electricity. Anatase is the most photoactive of the TiO2 polymorphs, and its (001) face is the most unstable of them. This instability is the cause of the atomic rearrangements that occur in the upper surface layers favoring the formation of Ti3+ ions, confirmed with synchrotron X-ray diffraction and XPS techniques, and could be one of the key factors of its high reactivity as a catalyst. In order to use this surface as model system to study the structure and electronic properties of this Anatase(001) surface, films with surface terrace sizes of the order of one micron will be grown using the PLD technique. The study of these surfaces will be complementary to an optimization of the surface area of these catalysts to improve their efficiency through the growthTiO2 nanotubes by means of bipolar electrochemistry. Doping effects, annealing treatments and electrochemical synthesis strategies will be followed in collaboration with other members of the group to optimize the catalytic properties, i.e. band gap, pore diameter and wall thickness of the nanotubes. The training will be accompanied by stays in collaborating laboratories to learn about different characterization techniques, that is, PLD, Raman, XPS (conventional and advanced), high pressure XPS techniques (conventional X-ray SPECS equipment).
David Amabilino	Tutor CSIC Profesor de	Institut de Ciència de Materials de Barcelona (CSIC)	amabilino@icmab.es	Materials Science	Institut of Materials Science of Barcelona (ICMAB-CSIC)	Materials Orgànics, Moleculars i Supramoleculars	The project will involve the preparation of sustainable supramolecular materials that are responsive to light irradiation, and that can store the energy captured and release it on demand. The synthesis of synthetic materials and their combination with natural materials will provide totally new composites for sustainable energy management. The complex soft materials will be optimised so that they can store and release heat minimising carbon impact.
Mariano Campoy Quiles	Research Scientist	ICMAB-CSIC Carrer dels Til·lers s/n E-08193 Bellaterra	mcampoy@icmab.es	Materials Science	Institut of Materials Science of Barcelona (ICMAB-CSIC)	Organic, Molecular and Supramolecular Materials	Solid state heat to electricity converters are attrackting strong attention for their capability to harvest waste heat from natural and human sources. Carbon thermoelectrics, based on materials such as semiconducting polymers or carbon nanotubes,rely on abundant materials and are good candidates for recovering heat at low and moderate temperatures. This PhD program will focus on the fabrication of organic thermoelectrics, and improvement of its properties by controlling the electronic doping, nanostructure and molecular orientation. It will include materials preparation using solution based methods, and also their full thermoelectric characterization, as well as spectroscopic and microscopic charcaterization. The program will be run in collaboration with several team members at Institute of Materials Science of Barcelona, and also with international collaborators. The group is a world leading expert in the field. Please, check our web: https://nanopto.icmab.es/
Florencio Sánchez	CSIC Research scientis	Institut de Ciència de Materials de Barcelona (ICMAB-CSIC) Campus UAB E-08193 Bellaterra 08193 (Barcelona)	fsanchez@icmab.es	Materials Science	Institut of Materials Science of Barcelona (ICMAB-CSIC)	Inorganic Materials and Nanomaterials, Functional Surfaces and Crystallographic Structures	The thesis, Ferroelectric binary oxide thin films for memory devices, will focus on new ferroelectric oxides based on HfO2 and ZnO. These new oxides are prime candidates for a next generation of non-volatile ferroelectric memories. The thesis will develop epitaxial films to understand and improve ferroelectric properties. The films will be grown by pulsed laser deposition, on perovskite oxide substrates and Si(001), and the thesis will involve an exhaustive structural and functional characterization of the ferroelectric HfO2 films. The specific objectives include i) the use of atoms such as Al and Ce for doping HfO2; ii) use of HfO2 films with a tailored amount of defects and with varied orientation to improve memory reliability; and iii) development of epitaxial wurtzite Zn(Mg)O films. The results derived of the thesis are expected to be published in more than 10 scientific papers in high-impact journals. The PhD student will join the Materials Science Institute of Barcelona (ICMAB-CSIC), www.icmab.es. The thesis will be supervised by Dr. F. Sanchez. Google scholar: https://scholar.google.es/citations?hl=es&user=DSHxiTkAAAAJ&view_op=list_works&sortby=pubdate

Ignasi Fina	CSIC Tenured scientist	Institut de Ciència de Materials de Barcelona (ICMAB-CSIC) Campus UAB E-08193 Bellaterra 08193 (Barcelona)	ifina@icmab.es	Materials Science	Institut of Materials Science of Barcelona (ICMAB-CSIC)	Microelectronics and Nanoelectronics, Microsystems and Nanosystems	There is an increasing demand of materials able to be integrated in the new era of devices in the age of the Internet of Things. These have further requirements of reliability and robustness. Ferroelectric materials show switchable by electric field spontaneous surface charge. This switchable charge can be used to modulate the conductivity of a so-called channel in a field effect transistor architecture device or of the tunneling current in ferroelectric tunnel junctions. As ferroelectricity steams from electronic processes, it is intrinsically robust and reliable, in addition of being energy efficient. The recent discovery of ferroelectricity in doped hafnium oxide, HfO2, which is a material compatible with industrial processes, makes this material ideal candidate to be implemented in full oxide electronic devices. ICMAB has the capability to growth such ferroelectric material (HfO2) with state-of-the-art crystalline quality. Thus, the framework of the present project is the development of full oxide devices based on highest quality ferroelectric oxide materials. During the project, the student will work on the development of materials involving extensive structural (high resolution x-ray diffraction, synchrotron techniques, etc.). Most importantly, electric characterization (resistance measurements, ferroelectric characterization, etc.) will be the core of the project. Electric characterization dynamics at the nanoscale will be performed using atomic force microscopy. Optical lithography at clean room facilities will be a final necessary step for device fabrication. The PhD will integrate a group with students and researchers with diverse expertise and aims. The project will also be integrated in in-going collaborations with MIT (USA), University of Cambridge (UK), and others. The thesis will be supervised by Ignasi Fina with an intensive production and several on-going projects regarding the topic during the last years. (Google Scholar: https://scholar.google.com/citations?user=e0qqw3YAAAAJ&hl=ca)
Martí Gich Garcia	Nanoscience and Nanot	ICMAB-CSIC Carrer dels Til·lers s/n E-08193 Bellaterra	mgich@icmab.es	Materials Science	Institut of Materials Science of Barcelona (ICMAB-CSIC)	Oxide Electronics	Improving the energy efficiency of computing is mandatory for making sustainable the exponential rise of data processing and storage. A critical step to confront this challenge is developing novel, fast, low-dissipative and ultrahigh density magnetic recording media for future data centers. Magnetic materials with large coercive fields still remain the main pillar in the development of new memories, but its high anisotropy which is good for increasing the information storage capacity also make it difficult to write the information. To solve this problem one can take advantage of the well-known phenomenon: when magnetic resonances are excited in the material the external field required to reverse its magnetization decreases significantly [1]. The aim of the PhD is to explore the use of this strategy in ferrimagnetic oxides with magnetic resonances in the range of millimetre waves, which present several advantages over the metals currently used in magnetic memories. The CSC fellow will work together with other team members in the context of two ongoing projects: "Ferrites-by-design for Millimetre wave and Terahertz Technologies (FeMiT)" and "Magnetic Multifunctional Ferroics for a sustainable data-driven society (MAGMUF)" (see descriptions at https://nn.icmab.es/projects/) References: [1] C. Thirion et al, Nat. Mater. 2(2003) 524.
Gabriele De Luca	Ramon y Cajal researcher (starting January 2023)	Campus UAB E-08193 Bellaterra (Barcelona)	gabriele.deluca@icn2.cat gabriele.deluca@gmail.com	Materials Science	Institut of Materials Science of Barcelona (ICMAB-CSIC) (in collaboration with ICN2)	Microelectronics and Nanoelectronics, Microsystems and Nanosystems	The pyrochlore oxide structure (chemical formula A2B2O7) can host a large variety of functionalities including metallic ferroelectricity, superconductivity and oxygen conductivity. A peculiarity of this system is the frustration built-in in its structure that may even result in exotic topological states, rarely observed in oxide systems, when a proper tuning between magnetism and frustration is achieved. Long-range ordered ferromagnetism has been reported for certain families of pyrochlore oxides (Manganates, Vanadates, Molybdates and Iridates) but, with the exclusion of Iridates, most of the research has been performed on bulk samples. Hence, not so much is known on how the ferromagnetic order evolves when these oxides are prepared in thin-film form, a prerequisite for any potential device application. Motivated by this lack of experimental reports, the aim of the project is to grow and characterize single-crystalline epitaxially-oriented ferromagnetic pyrochlore oxide thin films. To control their crystal structure with epitaxial strain, different single crystals and buffer layers will be employed. Films will be grown by PLD and/or magnetron sputtering. Structural characterization will include X-ray diffraction and scanning probe microscopy. Magnetic properties will be evaluated with SQUID, magneto-optical methods and synchrotron-based techniques.
Jose Luis Garcia Muñoz	* Tutor and Thesis Supervisor of the PhD programme in Materials Science (UAB). * Research Professor at the Institute of Materials Science of Barcelona (ICMAB-CSIC). * Group Leader of CMEOS group: Crystallography of Magnetic, Electronic Oxides and Surfaces. * Professor at the UAB Master in Advanced Nanoscience and Nanotechnology	Institut de Ciència de Materials de Barcelona (ICMAB-CSIC) Campus UAB E-08193 Bellaterra 08193 (Barcelona)	garcia.munoz@icmab.es	Materials Science	Lab. of Crystallography of Magnetic and Electronic Oxides / Institute of Materials Science of Barcelona (ICMAB-CSIC). http://departments.icmab.es/cmeos/	Inorganic Materials and Nanomaterials, Functional Surfaces and Crystallographic Structures	Title: "**Exploring mechanisms and properties in frustrated non-collinear magnets and multiferroics**" Frustration, or the inability to satisfy all interactions, leads to fascinating phenomena and properties in complex magnets (spin liquids, chiral spin orders, multiferroics, magnetic skyrmions, quantum magnets, topological magnetic materials with anomalous Hall effects, magnetoresistance, etc.). The discovery of new classes of frustrated materials in which the charge, orbital, magnetic or elastic orders and the magneto-electric properties are strongly coupled is attracting very much interest because of the possibility to manipulate magnetism by electric fields and vice-versa [1-4]. The CMEOS group (departments.icmab.es/cmeos/) investigates and develops strongly correlated magnetic materials of interest in fundamental Condensed Matter research and Solid State Physics for modern Information Technologies applications. [1] Advances in Physics 64:5-6, 519 (2015); [2] J. Phys.: Condens. Matter 28, 123001 (2016); [3] Physics Reports 895 (2021) 1–28; [4] Annu. Rev. Mater. Res. 44, 269 (2014) This PhD project (key areas: Solid State Physics, Solid State Chemistry, Nanotechnology) is focused on the fabrication and advanced characterization of novel frustrated non-collinear magnets with multiferroic, magnetoelectric and/or topological properties. Selected well-ordered solid-state oxides presenting geometric, magnetic or electronic frustration in structures favoring competing charge/orbital/spin orders, spin-orbit coupling, or topological phases will be investigated. The preparation methods may include ceramic synthesis (powders) and crystal growth (single-crystal growth using modern optical furnaces in our lab. and/or thin films by PLD). Besides using the conventional laboratory techniques for structural/magnetic/transport characterization, this project requires atomic level structural, magnetic and electronic structure information. The student will be trained in advanced X-ray synchrotron and neutron scattering techniques in european large installations (e.g. ESRF, ILL, ALBA, Diamond, PSI, etc..). These experiments (performed in large facilities as a function of temperature and under external magnetic or electrical fields) will be complemented with computational tools of great help to identify the driving mechanisms associated to the observed phase transitions and properties in selected frustrated non-collinear magnets. References (CMEOS): Romaguera et al, Phys. Rev. Research (2022); -Phys. Rev. B 106, 134403 (2022); - Mater. Res. Bull. 150 (2022) 111780; - J. Magn. Magn. Mater. 551 (2022) 169165; - Nature Comms. 12, 6265 (2021); -Acta Materialia 206, 116608 (2021). Phys. Rev. B 104, 054411 (2021). PRB 103, 214110 (2021); - PRB 99, 184444 (2019); - Acta Materialia 176, 53(2019); - Phys. Rev. Materials 3, 104407 (2019); - PRB 97, 235129 (2018); - PRB 98, 134430 (2018); - Chem. Mater. 29, 9705 (2017); - PRB 96, 104435 (2017); - PRB 96, 024409 (2017). Contact us for further details: garcia.munoz@icmab.es http://departments.icmab.es/cmeos/ *Laboratory of Crystallography of magnetic, electronic oxides and surfaces.* The Institute of Materials Science of Barcelona (ICMAB-CSIC, campus UAB) is a multidisciplinary research center focused on cutting-edge research in functional advanced materials.

Agustín Mihi	Tenured Scientist at ICI	Institute of Materials Science of Barcelona ICMAB-CSIC Campus UAB E-08193 Bellaterra (Barcelona)	amihi@icmab.es	Materials Science	Institute of Materials Science of Barcelona ICMAB- CSIC	Plasmonics, Colloidal chemistry, nanophotonics	We use nanoimprinting lithography and metal colloids to produce large are and high quality plasmonic crystals exhibiting sharp resonances for sensing, light emission and light trapping. See more about us here: https://enlightment.icmab.es/
Josep Nogues	ICREA Proffesor at ICN2	Institut català de Nanociencia i Nanotecnologia, Edifici ICN2, Campus UAB, E-08193 Bellaterra	josep.noques@icn2.cat	Materials Science	Magnetic Nanostructures/ICN2	Theranostic applications of magnetic-based nanostructures	"Many diseases are caused by the malfunction of cell electrical activity such as Parkinson´s disease, epilepsy, paralyzed muscles or the different retinal diseases. Current therapies are related with the use of stimulated devices but they present problems of bulkiness and wiring electrodes, non cell-specificity, complicated surgeries, etc…Here in this project we propose the design of new nanotherapies based on wireless excitable nanostructures with multiferroic and photovoltaic properties which leads to electric and mechanic stimulation. These nanostructures will be embedded in bioactive compounds such as soft polymers and hydrogels. These nanotherapies will be characterized by the cell specificity, minimal invasiveness, and controlled electric stimulation of excitable cells."
José Vidal Gancedo	Científico Titular ICMAB-CSIC	Institut de Ciència de Materials de Barcelona (ICMAB-CSIC) Campus UAB E-08193 Bellaterra (Barcelona)	j.vidal@icmab.es	Materials Science	Molecular Nanoscience and Organic Materials (NANOMOL Department). Institute of Materials Science of Barcelona (ICMAB-CSIC).	Nanoquímica y Nanomateriales	Development of metal-free contrast agents (CAs) for magnetic resonance imaging (MRI) based on persistent organic radicals. Nowadays Gd(III) chelates are by far the most widely used Cas for soft tissues imaging diagnosis. However, it is crucial to find alternatives to them to overcome their stablished toxicity. We are working on dendrimers, organic NPs, vesicles or AuNPs functionalized with organic radicals as alternative to Gd(III) chelates. The research work will consist in the synthesis of different types of metal-free contrast agents and their characterization by conventional characterization techniques such as FTIR, UV-Vis, Cryo-TEM, NMR, MALDI-TOF, CV, DLS, HPLC-SEC, etc., and more specific one as Electron Paramagnetic Resonance (EPR), as well as studies of relaxivity and toxicity, both "in vitro" and "in vivo".
Josep Fontcuberta	Research Professor at ICMAB-CSIC	Institut de Ciència de Materials de Barcelona (ICMAB-CSIC) Campus UAB E-08193 Bellaterra 08193 (Barcelona)	fontcuberta@icmab.cat	Materials Science	Multifunctional Oxides and Complex Structures at ICMAB-CSIC	Electron-phonon interactions in solid-state systems.	Electron-phonon interactions in solid-state systems. The present project focuses to some multidisciplinary problems in condensed matter in which the coupling of electrons to the phonons is relevant. First, we aim at investigating the polaronic contribution to transport in transparent conductive oxides (TCOs) based on 3d-metals, which we have shown recently is crucial to understand the transparence window in the visible spectra of these materials. Another study is aimed at the elucidation of the Cooper pairing mechanism leading to superconductivity, in two-dimensional electron gases in oxide interfaces (LaAlO3/SrTiO3, LaAlO3/KTaO3), which is hotly debated nowadays and one of the deepest challenges in the field. Finally, we address the study of the dynamics of light-matter interactions mediated by Jahn-Teller modes in manganites that we have demonstrated recently enables the control of spins by electromagnetic waves, of potential interest for applications in quantum physics. Oxygen isotopic substitution is a powerful experimental method to study the role of electron-phonon interactions in all these phenomena. Bearing this in mind, the successful candidate will contribute to developing the appropriate experimental set up and use it to synthesize isotopic-substituted oxide materials (vanadates, SrTiO3, KTaO3, manganites, among others) in combination with pulsed laser deposition to investigate the abovementioned topics. He or she will also use a broad scope of complementary techniques, including magnetotransport and magnetic characterization, optical spectroscopy and infrared spectroscopy. The present project aims at expanding the range of quantum materials, with emphasis on the physics of electron-phonon coupling.
Jose Santiso	ICN2 Researcher linked	ICN2, Campus UAB, 08193 Bellaterra, Barcelona. Spain	jose.santiso@icn2.cat	Materials Science	Nanomaterials Growth Unit at the Catalan Institute of Nanoscience and Nanotechnology, ICN2.	Thin film growth of multifunctional oxide materials in particular of room temperature ferromagnetic insulating materials with high frequency (GHz) spin dynamics	Study of the thin film growth of epitaxial Yttrium Iron Garnet (YIG) films and multilayers with low damping spin dynamics for spintronic and magnonic devices. Several aspects of the film cell structure and microstructure, such as epitaxial strain, point defects, composition gradients, interface quality, are critical to achieve the expected spin diffusion in these compounds. This project aims for analyzing in detail the thin films characteristics as a function of deposition conditions in view of optimizing their spin dynamics. Film characterization will combine HRXRD, HRSTEM, as well as FMR and inverse spin Hall and spin Seebeck analysis.
Marta Gonzalez	Associate professor	Room C3/232. Physics Department, Science Faculty, Universitat Autònoma de Barcelona, Bellaterra	marta.gonzalez@uab.cat	Materials Science	Physics Department	The Materials Science Doctoral Programme includes a wide range of reasearch lines, all of them focused on the study of new materials and characterization techniques. Three Departments are part of this doctoral programme: Physics, Chemistry and Geology, showing the multidisciplinarity of such a research topic.	The emergence of organic electronics in the last years has revolutionized the electronics industry. Now it is possible, for instance, to think about flexible screens or low-cost electronics. Still, organic electronics present many drawbacks, as can be the limit in temperature and time operation due to degradation or the low efficiency in some cases. There is however some options to increase the stability and improve the behaviour of the organic thin film glassy layers that integrate a device. For instance, it is possible to increase the stability of the glassy material increasing its relaxation time in several orders of magnitude just changing the deposition conditions of the thin film or the efficiency can improve considerably by orienting in the proper direction the molecules during the preparation. Our group has worked on the topic for several years, a sample can be found in the following publications: • Vila-Costa, A., Gonzalez-Silveira, M., Rodríguez-Tinoco, C. et al. Emergence of equilibrated liquid regions within the glass. **Nature Physics** (2022). https://doi.org/10.1038/s41567-022-01791-w • High-performance organic light-emitting diodes comprising ultrastable glass layers. J. Råfols-Ribé, P.-A. Will, Ch. Hänisch, M. Gonzalez-Silveira, et al. **Science Advances** Vol. 4, no. 5, eaar8332 (2018) https://www.science.org/doi/10.1126/sciadv.aar8332 The phD student would work first on a more fundamental part, were he/she would study the stability of these organic glasses and afterwards, the work could be focused on the manipulation of the properties of the glass to improve the efficiency of organic electronic devices.
Núria Aliaga-Alcalde	ICREA Professor	ICMAB-CSIC	nuria.aliaga@icrea.cat / naliaga@i	Materials Science	Tuneable and Low Cost Molecular Electronics / Functional Surfaces and Interfaces / Institute of Materials Science of Barcelona (ICMAB-CSIC)	Development of active molecular-based components for electronic nanodevices.	The synthesis of multifunctional molecules that can be inserted in electronic devices and the determination of their electronic response is the base of the following proposal, where the candidate will be trained in both, synthesis and electronic characterization, among others.
Anna Palau	Tenured Scientist at ICMAB-CSIC	Campus UAB	palau@icmab.es	Materials Science	Superconducting Materials and Functional Nanoengineered Structures (ICMAB-CSIC)	Superconducting materials for functional quantum devices	The project aims to explore different nanostructures based on high temperature superconductors combined with other functional oxides which may be used to design functional systems for quantum sensing and computing.
Microbiology							
Esther Julián Gómez	Professora agregada	Mycobacteria Research laboratory. Department of Genetics and Microbiology. C Building. Biosciences Faculty.	esther.julian@uab.cat	Microbiology	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
Physics							
Javier Rodriguez Viejo	Full Professor (UAB)/Group leader (ICN2)	Campus UAB E-08193 Bellaterra	javier.rodriguez@icn2.cat	Physics	ICN2	Energy harvesting	We propose to investigate **pyroelectric and electrocaloric** effects of single-crystal free-standing (anti-)ferroelectric oxide membranes using calorimetric chips as suitable platforms for direct measurements. We also aim to analyze the suitability of oxide AFE/FE membranes as potential materials towards an efficient **pyroelectric energy conversion of heat into electricity**
Eriksen, Martin Boerstad	Senior researcher, IFAE	Port d'Informació Científica Edificio D, Campus UAB, Carrer de Can Magrans S/N, E-08193 Bellaterra (Barcelona)	eriksen@pic.es	Physics	IFAE-PIC	Applied AI	Perhaps the largest open problems in astronomy is the accelerating Universe and the nature of dark energy and dark matter. These effects can be observed using the distributions and shapes of distant galaxies. This have stimulated current and upcoming large galaxy imaging surveys, including the LSST and Euclid surveys. Translating the distribution of galaxies into constraints on cosmology traditionally involves fitting measured correlations to models. This step depends crucially on the galaxy distance estimation, which might bias the final results. In this project we will develop novel deep learning techniques to jointly constrain the redshifts of hundreds of million of galaxies and the cosmological constraints.

Eriksen, Martin Boerstad	Senior researcher, IFAE	Port d'Informació Científica Edificio D, Campus UAB, Carrer de Can Magrans S/N, E-08193 Bellaterra (Barcelona), Spain	eriksen@pic.es	Physics	IFAE-PIC	Applied AI	Astronomical images mostly include significant noise and image blurring. For ground based telescopes, both effects are dominated by atmospheric distortions, while limited photons and the telescope optics are most important for satellite missions. Pushing the boundaries of what can be observed, noise and blurring will always be a limiting factor for the faintest and most distant galaxies. In previous projects we have applied unsupervised deep learning for denoising astronomical images. Here we want to extend this work to both denoise, deconvolve and combine multiple images using deep learning techniques. Our interdisciplinary group, Applied AI, is also interested in applying similar techniques for STEM and optical microscopy for material science and biology.
Julio Jonas Chaves Montero and Marc Manera Miret	Postdoctoral researcher at IFAE	The Barcelona Institute of Science and Technology, Campus UAB, E-08193 Bellaterra (Barcelona)	jchaves@ifae.es / mmanera@ifae.es	Physics	Institut de Física d'Altes Energies (IFAE)/Physics department	Astrophysics and observational cosmology	Cosmology from large galaxy surveys
Gervasi Herranz	CSIC Research Scientist at ICMAB-CSIC	Institute for Materials Science of Barcelona ICMAB-CSIC, Campus UAB E-08193 Bellaterra	gherranz@icmab.cat	Physics	Multifunctional Oxides and Complex Structures at ICMAB-CSIC	Light-matter interactions in quantum nanodevices	**Light-matter interactions in quantum nanodevices.** The successful candidate will study the dynamics of light-matter interactions in solids, with focus on the use of electromagnetic waves to control quantum spin states, which is fundamental for applications in quantum physics and technologies. He or she will use (magneto)-optical and ultrafast optical spectroscopy in a wide range of materials to analyse optically induced excitations and their dynamics down to the femtosecond scale. He or she will develop nano/mesoscopic devices that exploit electromagnetic control of spin states through resonant electromagnetic fields. The present project aims at expanding the range of quantum materials, with emphasis on the use of light to modulate and control their properties.For more information about the activities at the host lab, visit https://gervasi-herranz.blog/
Gervasi Herranz	CSIC Research Scientist at ICMAB-CSIC	Institute for Materials Science of Barcelona ICMAB-CSIC, Campus UAB E-08193 Bellaterra	gherranz@icmab.cat	Physics	Multifunctional Oxides and Complex Structures at ICMAB-CSIC	Many-body theory of light-matter interactions in quantum solids	**Many-body theory of light-matter interactions in quantum solids.** The successful candidate will apply many-body physics to the problem of light matter interactions in solids where spin-orbit coupling enables the control of spin states with light.. This topic is relevant for applications in quantum physics and quantum technologies. He or she will learn many-body techniques borrowed from quantum field theory applied to condensed matter physics (nonequilibrium Green's formalism, quantum path formalism) to calculate response functions that will be matched to experiments from collaborators (ultrafast optical spectroscopy). The candidate will also apply concepts from group-theory applied to the interaction of light with many-electron quantum states in solids, with focus on transition metal systems. The present project aims at expanding the range of quantum materials, with emphasis on the use of light to modulate and control their properties.For more information about the activities at the host lab, visit https://gervasi-herranz.blog/
F. Javier Rico Castro	Research Associate Professor at the Institut de Física d'Altes Energies (IFAE)	Insitut de Fisica d'Altes Energies Campus UAB Edifici Cn E-08193 Cerdanyola del Vallés (Barcelona)	jrico@ifae.es	Physics	Physics department	Astro-particle Physics: Gamma-ray Astronomy	The High Energy cosmic-Radiation Detection (HERD) facility is a next-generation cosmic ray detector proposed by China, Italy, Switzerland and Spain institutions to operate, starting ~2027 and for at least 10 years, in the Chinese Space Station (currently completing assembly in orbit). HERD main scientific goals are: the search for signatures of annihilation or decay products of dark matter particles; the determination of the physical mechanisms producing high-energy features in the cosmic ray spectrum; providing continuous, wide field-of-view monitoring of the high-energy gamma-ray sky above few 10s MeV. The PhD student will participate in the construction of the HERD detector, and in particular in: i) Development of the low-energy gamma-ray trigger system; ii) Assessment and optimization of the detector's capability for gamma-ray astronomy; iii) Development of the HERD gamma-ray scientific program
Angel Lizana Tutusaus	Associated Professor. Optics	Universitat Autònoma de Barcelona Department of Physics Group of Optics E-08193 Bellaterra (Barcelona)	angel.lizana@uab.es	Physics	Physics department	Optics & Photonics	Development of a **polarimetric microscope** and **methods for biological tissues imaging and automatic classification**. The instrument will be able to measure the Mueller matrix of biological samples at different wavelengths, from which different polarimetric observables, describing the physical properties of the sample, will be calculated. The polarimetric measures obtained with the instrument will be applied to train classification models, based on **machine learning algorithms**, for the **early detection of certain human pathologies**, as melanoma.
Juan Campos Coloma	Full professor. Optics	Universitat Autònoma de Barcelona Department of Physics Group of Optics E-08193 Bellaterra (Barcelona)	juan.campos@uab.es	Physics	Physics department	Optics & Photonics	Development of **cutting edge numerical methods and instrumentation for objects surface metrology**. The instrument to be developed consists of a **stereoscopic imaging system**, based on two CCD cameras, combined with an **imaging Mueller polarimeter**. The system will be capable to retrieve, after proper data computation, the profile of diffusive objects as well as the polarimetric information of the object. The surface and polarimetric data measurements of samples will be used for **biological tissues and pathologies classification** purposes.
Gustau Catalan	ICREA Research Professor at ICN2	ICN2-Institut Catala de Nanociencia i Nanotecnologia	gustau.catalan@icn2.cat	Physics	Physics department	Functional Properties of Materials	The project will be at the intersection between quantum materials and flexible electronics. We propose to make ultra-thin free-standing films of functional oxide materials and examine their physical properties at low temperature. The successful applicant should have a background in physics or similar discipline, with emphasis on solid state/materials physics. A good command of English is essential.
Pere Masjuan Queralt	Associate Professor	Institut de Física d'Altes Energies (IFAE), Campus UAB, Facultat Ciencies Nord, E-08193 Bellaterra (Barcelona)	pere.masjuan@uab.cat	Physics	Physics department	CP Violation at LHCb and BESIII and implications for low-energy Precision Observables	The observed mater-antimatter asymmetry in our Universe can only be partially explained by the Standard Model of Particle Physics via an asymmetry toward CP violation (CPV) mechanisms. The amount of CPV required is, therefore, not enough. From the experimental side, this is one of the targets of both LHCb and BESIII Collaborations. CPV measurements are then, widely recognized as a highly sensitive probe of the Standard Model with new sources and methods needed to account for the mater-antimatter asymmetry observed in the Universe. There is a long-term discussion involving the source of the strong phase needed to generate direct CPV in charmless B and D decays. It could be new physics or due to non-perturbative hadronic contributions that are difficult to calculate from first principles. In this project, we will explore novel methods which use Renormalization and Analyticity in full glory to unravel new dynamics of the hadronic final state interactions in heavy-meson hadronic decays.
Verònica Ahufinger Breto	Professora Titular d'Universitat	Science Faculty. Physics Dept. Campus UAB, E-08193, Cerdanyola del Vallès	veronica.ahufinger@uab.cat	Physics	Physics department	Quantum simulation	Theoretical (analytical and numerical) study non-trivial topological models in lattices loaded with interacting ultracold atoms (both on-site and long range interactions). Explore the interplay between nonlinearity and topology as well as the thermalization properties of the systems.
Aurelio Juste	Professor d'Investigació ICREA	Institut de Física d'Altes Energies, Edifici Cn, Facultat de Ciències UAB, E-08193, Bellaterra (Barcelona), Spain	juste@ifae.es	Physics	Physics Department / IFAE	Experimental particle physics (ATLAS)	"Exploring the Higgs sector with the ATLAS detector at the Large Hadron Collider" On July 2012 the ATLAS and CMS experiments at the Large Hadron Collider (LHC) announced the discovery of the long-sought Higgs boson, a particle responsible for the breaking of the electroweak symmetry and the generation of the mass of other known elementary particles. It is of critical importance to continue our exploration of the newly-discovered Higgs sector through precise measurements of the Higgs boson properties, particularly its coupling to the top quark, its self-coupling, as well as searching for additional Higgs bosons, light or heavy, as predicted by many extensions of the Standard Model such as Supersymmetry. These are among the highest priorities in particle physics research for the next decade, and in particular of the LHC. During Run 2 (2015-2018), the LHC delivered ~150 fb-1 of proton-proton collision data at an unprecedented center-of-mass energy of 13 TeV to the ATLAS and CMS experiments. During Run 3 (2022-2025) the center-of-mass energy has been further increased to 13.6 TeV and the integrated luminosity will reach ~300 fb-1, significantly enhancing its discovery potential. Undertaking a PhD in particle physics offers the chance to explore fundamental questions in nature and to use some of the world's most technologically advanced experimental and computing facilities. The successful candidate will join a competitive research group at the Institut de Física d'Altes Energies (IFAE) and will carry out a PhD thesis within the ATLAS collaboration in one of the above high-profile physics topics. The research will involve using state-of-art machine learning techniques and statistical tools. The IFAE group is a member of the ATLAS collaboration since 1992, where it has major responsibilities on the operation of several components of the detector (pixel detector, hadronic calorimeter and trigger system), as well as their upgrade for future LHC runs. The IFAE group is carrying out a broad and competitive physics program with multiple research lines, including the one above, where it is playing a leading role within the ATLAS collaboration. The successful candidate will also have the opportunity to work in a highly international environment at CERN (Switzerland) in collaboration with scientists from the best universities and research centers around the world.

Aurelio Juste	Professor d'Investigació ICREA	Institut de Física d'Altes Energies, Edifici Cn, Facultat de Ciències UAB, E-08193, Bellaterra (Barcelona), Spain	juste@ifae.es	Physics	Physics Department / IFAE	Experimental particle physics (ATLAS)	"Searches for Supersymmetry with the ATLAS detector at the Large Hadron Collider" Supersymmetry represents one of the most promising extensions of the Standard Model (SM), naturally explaining the stability of the electroweak scale, predicting the unification of gauge couplings at high energy and providing a dark matter candidate. Supersymmetric models postulate the existence of a supersymmetric partner for each SM particle, which can be searched directly at colliders. Particularly well motivated are searches for the stop, sbottom and gluino, the supersymmetric partners of the top quark, the bottom quark and the gluon, respectively, and especially the Higgsinos, which are predicted to be relatively light. As a result, the search for supersymmetric particles is among the highest priorities in particle physics research for the next decade, and in particular of the LHC. During Run 2 (2015-2018), the LHC delivered ~150 fb-1 of proton-proton collision data at an unprecedented center-of-mass energy of 13 TeV to the ATLAS and CMS experiments. During Run 3 (2022-2025) the center-of-mass energy has been further increased to 13.6 TeV and the integrated luminosity will reach ~300 fb-1, significantly enhancing its discovery potential. Undertaking a PhD in particle physics offers the chance to explore fundamental questions in nature and to use some of the world's most technologically advanced experimental and computing facilities. The successful candidate will join a competitive research group at the Institut de Física d'Altes Energies (IFAE) and will carry out a PhD thesis within the ATLAS collaboration in one of the above high-profile physics topics. The research will involve using state-of-art machine learning techniques and statistical tools. The IFAE group is a member of the ATLAS collaboration since 1992, where it has major responsibilities on the operation of several components of the detector (pixel detector, hadronic calorimeter and trigger system), as well as their upgrade for future LHC runs. The IFAE group is carrying out a broad and competitive physics program with multiple research lines, including the one above, where it is playing a leading role within the ATLAS collaboration. The successful candidate will also have the opportunity to work in a highly international environment at CERN (Switzerland) in collaboration with scientists from the best universities and research centers around the world.
Aurelio Juste	Professor d'Investigació ICREA	Institut de Física d'Altes Energies Edifici Cn, Facultat de Ciències UAB, E-08193, Bellaterra (Barcelona)	juste@ifae.es	Physics	Physics Department / IFAE	Experimental particle physics (ATLAS)	"Searches for leptoquarks with the ATLAS detector at the Large Hadron Collider" Leptoquarks are predicted by many new physics theories to describe the similarities between the lepton and quark sectors of the Standard Model and offer an attractive potential explanation for the lepton flavor anomalies observed at the LHCb experiment and the flavor factories. The ATLAS experiment at the Large Hadron Collider has a broad program of direct searches of leptoquark with multiple production/decay modes in a variety of final states. In this project, we propose a novel and broad search strategy focusing on the final states including tau leptons, which will allow to cover the majority of the most promising search channels in an ambitious and coherent way, thus maximizing the chances of discovery. During Run 2 (2015-2018), the LHC delivered ~150 fb-1 of proton-proton collision data at an unprecedented center-of-mass energy of 13 TeV to the ATLAS and CMS experiments. During Run 3 (2022-2025) the center-of-mass energy has been further increased to 13.6 TeV and the integrated luminosity will reach ~300 fb-1, significantly enhancing its discovery potential. Undertaking a PhD in particle physics offers the chance to explore fundamental questions in nature and to use some of the world's most technologically advanced experimental and computing facilities. The successful candidate will join a competitive research group at the Institut de Física d'Altes Energies (IFAE) and will carry out a PhD thesis within the ATLAS collaboration in one of the above high-profile physics topics. The research will involve using state-of-art machine learning techniques and statistical tools. The IFAE group is a member of the ATLAS collaboration since 1992, where it has major responsibilities on the operation of several components of the detector (pixel detector, hadronic calorimeter and trigger system), as well as their upgrade for future LHC runs. The IFAE group is carrying out a broad and competitive physics program with multiple research lines, including the one above, where it is playing a leading role within the ATLAS collaboration. The successful candidate will also have the opportunity to work in a highly international environment at CERN (Switzerland) in collaboration with scientists from the best universities and research centers around the world.
Aurelio Juste	Professor d'Investigació ICREA	Institut de Física d'Altes Energies Edifici Cn, Facultat de Ciències UAB, E-08193, Bellaterra (Barcelona)	juste@ifae.es	Physics	Physics Department / IFAE	Experimental particle physics (ATLAS)	"Searches for new strong dynamics with the ATLAS detector at the Large Hadron Collider" Finding an explanation to the stability of the electroweak scale against quantum effects has driven significant theoretical research, giving rise to proposed extensions of the Standard Model (SM) such as Supersymmetry. Alternative solutions can be found in the context of models involving a new strong interaction, giving rise to new heavy vector resonances, as well as heavy vector-like fermions. For instance, vector-like quarks would couple preferentially to the top quark, addressing the so-called "Hierarchy Problem". On the other hand, vector-like muons offer one of the best explanations for the anomaly in the measured muon anomalous magnetic moment. Direct searches for signatures of such new strong dynamics, such as vector like quark production, vector-like lepton production, or 4-top quark production, are among the highest priorities in particle physics research for the next decade, and in particular of the LHC. During Run 2 (2015-2018), the LHC delivered ~150 fb-1 of proton-proton collision data at an unprecedented center-of-mass energy of 13 TeV to the ATLAS and CMS experiments. During Run 3 (2022-2025) the center-of-mass energy has been further increased to 13.6 TeV and the integrated luminosity will reach ~300 fb-1, significantly enhancing its discovery potential. Undertaking a PhD in particle physics offers the chance to explore fundamental questions in nature and to use some of the world's most technologically advanced experimental and computing facilities. The successful candidate will join a competitive research group at the Institut de Física d'Altes Energies (IFAE) and will carry out a PhD thesis within the ATLAS collaboration in one of the above high-profile physics topics. The research will involve using state-of-art machine learning techniques and statistical tools. The IFAE group is a member of the ATLAS collaboration since 1992, where it has major responsibilities on the operation of several components of the detector (pixel detector, hadronic calorimeter and trigger system), as well as their upgrade for future LHC runs. The IFAE group is carrying out a broad and competitive physics program with multiple research lines, including the one above, where it is playing a leading role within the ATLAS collaboration. The successful candidate will also have the opportunity to work in a highly international environment at CERN (Switzerland) in collaboration with scientists from the best universities and research centers around the world.
Riccardo Rurali	Investigador Científic del CSIC	ICMAB-CSIC, Campus de Bellaterra	rrurali@icmab.es	Física	Theory and Simulation of Materials, ICMAB-CSIC	Theory and simulation of the behaviour of materials / Materials physics	PHONON TRANSPORT IN NANOSTRUCTURED MATERIALS - The goal of this project is providing a theoretical framework aimed at understanding and controlling the manipulation of heat flux within nanostructured materials, for application in phonon logic and for novel materials for clean and sustainable energy. The student will perform quantum numerical simulations in order to devise realistic approaches for the engineering of thermal diodes and thermal transistors, the fundamental building blocks of phononics. In electronics information is transferred with charge carriers, whose motion can be easily controlled with external fields. This is not the case of phononics, where phonons —the basic particles that carry heat— have no mass or charge: this is why we live in a world of electronic devices and heat is normally regarded as a source of loss. The goal of this project is reversing this viewpoint and move to a new paradigm where heat can be actively used to transfer energy, thus information, in a controllable way. This approach allows envisaging a truly zero-power analog of electronics, as in our world heat is indeed ubiquitous and phononics circuits will effectively need no power supply. Additionally, learning how to modulate the heat flow will have also important consequences in conventional electronics —where heat dissipation at the nanoscale is a major issue— or in devising efficient thermoelectric materials —where materials with low thermal conductivities must be engineered. The student will interact closely with experimental groups of the Institute that work on thermal transport in 2D materials and nanostructured semiconductors.
Aitor Mugarza	Research Professor at ICN2	Edifici ICN2 UAB Campus UAB E-08193 Cerdanyola del Vallès (Barcelona) 08193, Spain	aitor.mugarza@icn2.cat	Physics	Institut Català de Nanociència i Nanotecnologia (ICN2)	Atomically precise graphene nanoarchitectonics for sensing and optoelectronics	Our group has developed a method to synthesize atomically precise, graphene-based hybrid nanoarchitectures. The method is inspired in the synthesis of nanoporous graphene that we recently demonstrated (Moreno et al., Science 360, 199 (2018), nominated Molecule of the Year by ACS), and has been successfully tested in the realization of nanometer scale superlattice heterojunctions (Tenorio et al., Adv. Mater. 34, 2110099 (2022)). The study of this project will go one step further aiming at the realization of more complex hybrid nanoarchitectures that combine active quantum components with 1D graphene channels, from which the quantum variables could be addressed (read, manipulate) with electrical currents. The activity will be focused on the implementation of the hybrid nanoarchitectures that are successfully synthesized into field effect transistor devices for the characterization of their sensing and quantum properties. The project will tackle the on-surface synthesis of the hybrid nanoarchitectures, the characterization of the atomic and electronic structures by low-temperature scanning tunnelling microscopy and spectroscopy (STM/STS), and the realization and characterization of gate-modulated devices.

Jose Ramon Duran	Senior Postdoctoral Researcher at ICN2	Edifici ICN2 UAB Campus UAB E-08193 Cerdanyola del Vallès (Barcelona) 08193, Spain	joseramon.duran@icn2.cat	Physics	Institut Català de Nanociència i Nanotecnologia (ICN2)	optoelectronic nanodevices with atomically precise graphene nanostructures	The project aims at the realization of optoelectronic devices based on graphene nanostructures that are synthesized with atomic precision. The one nanometer scale nanostructuring that our group is able to perform with atomic precision brings graphene plasmonics to the NIR regime of interest for telecommunication. Excitons are also predicted to lie at the same energy regime due to the strong excitonic binding energy in low dimensional structures. Interestingly, both can be effectively modulated by gating. The main objective of the project will be the detection of plasmons and excitons in different type of nanodevice geometries and the demonstration of their gate modulation. The student will first learn how to synthesize the graphene nanostructures following the on-surface method developed in the group (Moreno et al. Science, 360 199 (2018)), which will be characterized by scanning tunneling microscopy. Then graphene nanostructures will be transfered the onto insulating substrates where the nanodevices will be fabricated. The integrity and performance of the devices will be characterized by Raman, FTIR, and electronic transport measurements.
Plant Biology and Biotechnology							
Marc Valls i Matheu	Professor Vinculat. Coordinator of the module "Agricultural Biotech" in the Master "Plant Biology, Genomics and Biotechnology".	Center for research in Agricultural Genomics (CRAG) Edifici GRAG Campus UAB E-08193 Cerdanyola (Barcelona)	marcvalls@ub.edu	Plant Biology and Biotech	Biologia Animal, Biologia Vegetal i Ecologia	Control of plant diseases (Control de Malalties Vegetals)	Bacterial wilt caused by Ralstonia solanacearum is a devastating disease in tomato, potato, peanut, banana, etc. In this project we will investigate the R. solanacearum fitness genes that enable this pathogen to grow in the rhizosphere microbiome. We will use different synthetic soil microbiome communities (syncoms) from a chinese collaborating lab and combine plant biology, microbiology and next generation sequencing to decipher pathogen virulence and susceptibility genes that can be used to control the disease.
Teresa Altabella and Albert Ferrer	Group leaders at Centre for Research in Agricultural Genomics (CRAG)	CRAG building-Campus UAB Carrer Vall Moronta s/n E-08193 Cerdanyola (Barcelona)	teresa.altabella@cragenomica.es albert.ferrer@cragenomica.es	Plant Biology and Biotechnology	Centre for Research in Agricultural Genomics (CRAG)	Plant Molecular Genetics:Sterol metabolism in plant development and stress responses	Glycosylated sterols (GS) are key structural and functional components of the plasma membrane (PM) lipid rafts, and their levels vary greatly among plant species and in response to developmental and environmental cues. Tomato plants contains very high levels of GS, and our main research interest is to elucidate their role in determining the lipid and protein composition of lipid rafts and, therefore, in the structure and the organization of these specialized PM subdomains. We offer a systems biology-based PhD project in which the combined use of transcriptomics, metabolomics, proteomics and metagenomics in tomato mutants with altered GS profiles will contribute new and fundamental information on the role of these lipids in governing PM properties and, consequently, PM-based plant cell functions and physiological processes, with special emphasis on their role in the root exudation process and its potential impact on the microbial communities living in the tomato rhizosphere.
Elena Monte	National Research Council (CSIC) Scientist / UAB Lecturer	CRAG building-Campus UAB Carrer Vall Moronta s/n E-08193 Cerdanyola (Barcelona)	elena.monte@cragenomica.es	Plant Biology and Biotechnology	Plant Development and Signal Transduction	Signal integration for yield improvement.	The PhD candidate will develop a project to understand how changing environmental cues (light, temperature) and endogenous signals (circadian clock, hormones) are sensed and integrated through interorganellar communication and (post)-transcriptional reprogramming, to provide resilience and increased yield in response to current environmental challenges. The project involves training in an array of cutting-edge technologies in imaging, genomic, biochemistry and computational analyses, in our facilities but also through international collaborations.
Ana Montserrat Martín Hernández	CRAG Researcher (Centre de Recerca en Agrigenòmica)	CRAG building-Campus UAB Carrer Vall Moronta s/n E-08193 Cerdanyola (Barcelona)	montse.martin@cragenomica.es	Plant Biology and Biotechnology	Centre for Research in Agrigenomics (CRAG)	Plant viruses: the resistance to Cucumber mosaic virus	Cucumber Mosaic virus (CMV) is a worldwide distributed virus able to infect economically important crops such as species from Solanaceae, Cruciferae and Cucurbitaceae families. Counteracting CMV is mostly based in the search for natural resistances. In melon, there are few sources of resistance and in tomato there are no relevant resistances. We are studying the resistance found in one melon accession, which we have characterized as a restriction of viral phloem entry, preventing a systemic infection. Se have mapped and cloned the major resistance gene, VPS41, which is involved in intracellular transport and are searching for additional host proteins involved in the resistance/susceptibility to CMV in melon. We aim to understand the CMV infection process in melon, analyse the role of the same host factors in other species, like tomato, and edit the correspondent genes by CRISPR/Cas to have melon and tomato lines with reduced susceptibility to CMV. The objective of this PhD thesis will be 1- to generate CRISPR tomato mutants in some of those host factors involved in CMV infection to generate mutant putatively resistant lines, and 2- to use those lines to study the role of those host factors in the infection.
Ivan Reyna-Llorens & Jae-Seong Yang	Researchers at CRAG (Centre de Recerca en Agrigenòmica)	CRAG building-Campus UAB Carrer Vall Moronta s/n E-08193 Cerdanyola (Barcelona)	Ivan.reyna-llorens@cragenomica.es jaeseong.yang@cragenomica.es	Plant Biology and Biotechnology	Centre for Research in Agrigenomics (CRAG)	Synthetic Biology	"Cell-free approaches to study plant transcriptional regulation" The student will develop novel methods for the study of transcriptional regulation. This project has relevant applications in the field of plant synthetic biology as it will help develop synthetic promoters and answer relevant questions in biology.
Robertas Ursache	Group Leader at CRAG (Centre de Recerca en Agrigenòmica)	CRAG building-Campus UAB Carrer Vall Moronta s/n E-08193 Cerdanyola (Barcelona)	robertas.ursache@cragenomica.es	Plant Biology and Biotechnology	Molecular Genetics Department /CRAG	Plant Cell Wall Remodelling and Adaptation	"The role of peroxidases and reactive oxygen species in the dynamics of an essential plant barrier - suberin". By using the optimized CRISPR/Cas gene editing tools, advanced plant histology, high-resolution microscopy and metabolomics, the student will investigate the role of selected peroxidase candidates with a specific expression pattern and potentially important function in suberin dynamics during normal growth and in response to abiotic stress.
Jae-Seong Yang	Researcher at CRAG (Centre de Recerca en Agrigenòmica)	CRAG Building - Campus UAB	jae-seong.yang@cragenomica.es	Plant Biology and Biotechnology	CRAG	Synthetic Biology	"A study of combinatorial gene expression regulation in microalgae with synthetic and computational biology" The student will conduct experimental and computational approaches to study transcription factor interactions and their combinatorial effect on gene expression. This project requires a combination of system-level analyses and the development of genetic engineering tools that will significantly advance our knowledge of fundamental questions about transcriptional regulation in Chlamydomonas and have a direct biotechnological application for industry.
Social and Curtural Anthropology							
Miranda Lubbers	Associate Professor and ICREA Acadèmia fellow	Department of Anthropology, Building B - Faculty of Arts Campus UAB E-08193 Cerdanyola del Vallès (Barcelona)	mirandajessica.lubbers@uab.cat	PhD program in Social and Cultural Anthropology	Department of Social and Cultural Anthropology	Social networks and Social Movements; Public Policies; Urban Space	The prospectie PhD student is invited to contribute to research at the COALESCE Lab (coalesce-lab.com), which uses a network or relational perspective to processes of societal cohesion, social exclusion, and political polarization. It conducts international research in these areas. The methodology can be qualitative, focused on the everyday relationships between citizens in diverse settings and how they contribute to (or mitigate) social cohesion or inclusion, quantitative (computational social science) to link micro- to macro-processes and structures, or mixed, as long as the topic fits clearly within the thematic areas of the COALESCE Lab. The PhD student can participate in (and draw on the data collected in) the ERC Advanced Grant Project "A network science approach to social cohesion in European societies", to work in an international team.
Strategic Communication, Advertising and Public Relations							
David Roca	Associate Professor	Communication School	david.roca@uab.cat	Strategic Communication, Advertising and Public Relations (* Doc. required)	Advertising, Public Relations and Aud. Com.	Advertising effectivinss in health prevention messages on addictive behaviors.	Effectiveness of alcohol counter-advertising messages in the prevention of unhealthy addictive behaviors as a cure for the debilitation of the young population in rural settings.