

Institute/Company of the research group	Name of the research group/Company	Availability	Web /Description	Brief description of the project in which the student will participate:
ARIAN INTERNATIONAL PROJECTS	International marketing	Jul+Aug+Sep	http://www.pcb.ub.edu/homePCB/live/ct/p3095.asp	The assignment involves working in the consulting area for the internationalization of companies. Tasks: - management of the data base - Support in the design of strategic plans of internationalization - Support in the research of business information. - Implementation of the strategy of communication - Issuing of reports
AWS Truepower	Wind Developer Services	Jul+Aug+Sep	www.awstruepower.com	PROFILE Applicants must have completed or be studying a Degree in Physics or Engineering and a clear interest in Meteorology. Knowledge and experience on the use of relational databases will be an advantage. WORK For meteorological and climatological studies, it's essential to work effectively with time series, whatever they come from real measurements or modeling, but often they are treated as separated entities. The project being offered consists in the design and implementation of a database for meteorological purposes. The aim is to implement a database for treating all time series the same way, and allowing the development of parallel tools for filtering, manipulation and crossing of different sources of data. The student selected will learn the different sources of data used in meteorology and climatology and the way we use them routinely in wind energy studies.
Bionure Farma, S.L.	Bionure Farma, S.L.	Jul+Sep	www.bionure.com	Bionure develops a well balance portfolio with highly innovative programs and the best partners at international level: Neuroprotective therapies : Treatment of Multiple Sclerosis (MS) and other neurodegenerative diseases (Amyotrophic Lateral Sclerosis, Parkinson disease, Alzheimer disease) Combination therapy with immunomodulatory drugs for the treatment of MS Diagnostic method for establishing the prognosis and response to therapy in MSNew therapies for retinal diseases (glaucoma , macular degeneration, diabetic retinopathy…)
Computer Simulation and Modeling Laboratory (CosMoLAB)	Quantum Simulation of Biological Processes	Jul+Aug+Sep and the week	http://www.pcb.ub.es/sqbio	Title of the project: Unraveling the mechanism of drug activation in Mycobacterium tuberculosis catalase-peroxidase by means of quantum mechanics/molecular dynamics simulations. Summary: Tuberculosis is an infectious disease that affects one third of the world's population. It was discovered in 1992 that the multi-functional catalase-peroxidase (KatG) activates the main drug used to treat tuberculosis, isoniazid (INH). However, the enzyme mechanism of action and the drug activation mechanism, necessary to bypass enzyme mutations responsible for INH-resistance, are not known yet. In our project we model these mechanisms by means of QM/MM Car-Parrinello molecular dynamics (CPMD) simulations (see e.g. http://www.cecam.org/workshop-515.html) in comparison with monofunctional catalase and peroxidase enzymes. The student will learn how to perform a QM/MM CPMD simulation in the native and mutated enzymes. The project is performed in close collaboration with Prof. Ignacio Fita and Dr. Xavi Carpena (http://www.youtube.com/watch?v=KZMykYJ4pgk) from the group of protein crystallography of the Institute of Biomedical Research (IRB). It is desirable that the student has an interest either in computational biology or quantum mechanics. The project will be developed in our local computers and the student will learn the Linux operating system, as well as the CPMD (Car-Parrinello Molecular Dynamics), AMBER (classical molecular dynamics) and VMD (Visual Molecular Dynamics) programs. No previous experience is needed
Dept. Estratigrafia, Paleontologia i Geociències Marines	GRC Geociències Marines	Jul+Aug+Sep	http://geomar.geo.ub.es/	Climatic and oceanographic changes: Micropaleontological and biogeochemical proxy analyses.
IBEC - Institute for Bioengineering of Catalonia	Nanoprobes and Nanoswitches	Jul+Aug+Sep	www.ibecbarcelona.eu/nano	Development of Optical Nanoswitches for Neurobiology: We work on nanoengineered molecular actuators, with special emphasis on photoisomerizable molecules capable of switching on and off protein activity with light. Nanoswitches can be chemically attached to a protein, or be freely diffusible as pharmacological compounds. Our fields of interest are Neurotransmission (fundamental mechanisms of exocytosis and endocytosis), Nanomedicine and Neurorehabilitation.
IBEC - Institute for Bioengineering of Catalonia	Integrative Cell and Tissue Dynamics	Jul+Aug+Sep	www.ibecbarcelona.eu	We will study how biochemical signals and physical forces interplay at cell-cell junctions to drive collective cell migration. We will place particular emphasis at the interaction between cancer cells and cancer-associated fibroblasts.
IBMB	Mechanisms of tubulogenesis	Jul+Aug+Sep	http://www.ibmb.csic.es/index.php?pg=laboratorio&	The aim of our lab is to analyse the cellular mechanisms that underlie epithelial morphogenesis, with special focus on tracheal development in Drosophila, and to understand how these cellular mechanisms are genetically controlled. One of the approaches we carry out consists of investigating the role of new players during the formation of the embryonic tracheal system. To this end we are characterising several genes that came out from different screens in the lab. One of these screens identified the putative target genes of a transcription factor with a critical role in tracheal formation. The student will be involved in the characterisation of some of these target genes using genetic, molecular, cell biology and imaging techniques.
IBMB-CSIC	Chromatin regulation of human and viral gene expression	Jul+Sep	http://www.ibmb.csic.es/home/ajordan	chromatin affecting a gene promoter dictates accessibility to transcription factors and RNA polymerase, and many chromatin modifying enzyme families act to overcome difficulties imposed by chromatin. Seven linker histone H1 variants exist in human somatic cells (H1.0, H1.1 to H1.5, and H1X), with distinct prevalence depending on the cell type analyzed and along differentiation, that bind to linker DNA contributing to higher order chromatin compaction. In addition, H1 seems to be actively involved in the regulation of gene expression. It is not well known whether the different variants have specific roles or regulate specific promoters. We have explored this by inducible shRNA-mediated knock-down of each of the H1 variants in a human breast cancer cell line. Rapid inhibition of each H1 variant was not compensated by changes of expression of other variants. Thus, specific phenotypes are observed in breast cancer cells depleted of individual histone H1 variants. Moreover, knock-down of each H1 variant alters expression of a different, reduced subset of genes, with more genes being repressed than activated suggesting a local positive role of H1 on gene expression control. By taking advantage of specific antibodies for H1 variants we are investigating the distribution in particular promoters and genome-wide of the different H1 variants, as well
IBMB-CSIC	Molecular signaling and chromatin function	TBC	http://www.ibmb.csic.es/index.php?pg=laboratorio&	"Epigenetic defects in mental retardation. Role of histone demethylase PHF8"
Institute for Research in Biomedicine	Combinatorial chemistry for the discovery of new compounds	Jul+Aug+Sept	http://www.irbbarcelona.org/index.php/en/research/	Recently it has been identified the histone demethylase, PHF8, whose mutations are associated with mental retardation and autism. However the PHF8 function and the molecular mechanisms responsible for its role in mental retardation are not clearly established. In the proposed project we would like to identify PHF8 associated proteins that modulate its activity.
				Solid-phase peptide synthesis using enzymatic labile protecting groups. Application to the side-side chain cyclic peptides

Institute for Research in Biomedicine	Bioinformatics/ Biostatistics Unit	Jul+Aug+Sept	http://www.irbbarcelona.org/index.php/en/research/	RNA-sequencing is a technology that offers the potential to study alternative splicing at an unprecedented resolution. The potential usefulness of the approach depends critically on the sequencing depth, i.e. the available sample size. Unfortunately, it is not possible to determine the sample size necessary to answer the scientific questions before observing the data. The goal of the project is to perform sequential sample size calculations, i.e. to use the available data to determine the benefits derived from extending experimentation.
Institut de Biologia Molecular de Barcelona - CSIC	Spatial control of cell cycle entry	July-August	www.ibmb.csic.es	Molecular competition and cell size control Coordination of growth and proliferation ensures proper mass/ploidy ratios independently of the cell type and the nature of signaling inputs. As in many metazoans, budding yeast cells exert this coordination essentially during G1, where they are assumed to reach a critical size to traverse Start and initiate DNA replication. We have uncovered a mechanism that regulates G1 phase whereby the Cln3 cyclin, which is the most upstream activator of Start in budding yeast, is retained bound to the endoplasmic reticulum (ER) in early and mid G1, being only released in late G1 by the Ydj1 chaperone to enter the nucleus and activate transcription of the G1/S regulon. On the other hand, Ydj1 is strictly required for protein translocation through the ER membrane, a key limiting step for cell growth in size. Here we hypothesize that competition at the molecular level for shared limiting factors such as Ydj1 subordinates cell proliferation to growth rate and determines cell size at Start. We will test our hypothesis by functional analysis of the Start network components at a single-cell resolution level, and by identification of new molecular determinants of the ER retention/release device. Compelled by our recent results, we will also study an analogous mechanism and its relevance for cell size control in mouse cells.
Institut de Biologia Molecular de Barcelona IBMB-CSIC	Molecular mechanisms of signaling through G prot	Jul+Sep	http://www.ibmb.csic.es/	The principal goal of our group is the study of the signal transduction processes regulated by G proteins. In particular we are interested in pathways that are implicated in cell migration with the last objective to gain knowledge of pathologies like metastasis or others associated to inflammation. The student will be integrated in the group participating in a project that will utilize a variety of cellular and molecular techniques.
Institut de Biologia Molecular de Barcelona, IBMB-CSIC	Proliferation and differentiation of the nervous system	Jul+Aug+Sep	http://www.ibmb.csic.es/index.php?pg=laboratorio&id=1	Background: The cerebral cortex is a complex, highly organized, and layered structure that is responsible for higher-level functions. The ability to integrate sensory information from the environment and generate appropriate motor movement and behaviours require the establishment of appropriate cortical circuits during development. Mental retardation (MR) is the most debilitating symptom in Down syndrome (DS). Alterations in the cerebral cortex, including hypocellularity and altered cortical lamination have been reported in DS brains but the aetiology of these alterations is not well understood. One of the main questions in DS research is to identify which of the dosage-sensitive gene(s) in chromosome 21 are responsible for each of the DS phenotypes. A candidate gene for MR in DS is DYRK1A. This gene encodes a protein kinase with pleiotropic functions. Animal models with a DYRK1A/mbb loss-of function mutation present developmental delay and microcephaly. The recent identification of mutations involving DYRK1A in 3 patients that have microcephaly and MR showed the importance of this gene for normal human brain growth. We have shown that adult mutant mice that carry either 1 (Dyrk1a ^{-/-} mice) or 3 (BAC-tgDyrk1a mice) copies of the mouse Dyrk1a gene present alterations in cortical cellularity (Guedj et al. Neurobiol Dis. 2012; Fotaki et al. Mol Cell Biol. 2002). Objective: The general objective of the project is to study the role of DYRK1A in corticogenesis and the impact that reduced or increased dosage of the gene has on cortical neurogenesis and gliogenesis. Methodology: The study involves: i) the in vivo analysis of the cerebral cortex of different mutant mouse strains (Dyrk1a ^{+/-} , BAC-Tgdyrk1a and Ts65Dn) and ii) the in vitro analysis of the proliferative and differentiation potentials of wild-type and mutant cortical progenitor. Different techniques will be used along the project including classical histological techniques, immunohistochemistry, transfection of cultured cells, RT-PCR and western blotting.
Institut de Biologia Molecular de Barcelona-CSIC, ICREA	Gene expression and signaling	Jul+Aug+Sep	http://www.ibmb.csic.es/home/gjimenez	Ras/MAPK signaling pathways play critical roles in development and cancer, but how they control expression of downstream genes remains incompletely understood. Using genetic and biochemical approaches, we will study the transcriptional responses induced by Ras/MAPK signals during Drosophila development. These responses depend on molecules and regulatory mechanisms that are well conserved in evolution, making our analyses potentially applicable to other animal species, including humans.
Institut de Biomedicina de la Universitat de Barcelona (IBUB)	Nuclear Receptors as Drug Targets	Jul+Aug+Sep	http://www.ub.edu/ibub/eva_estebanez.html	We are working at the moment in a couple of nuclear receptors, which are transcription factors, implicated in prostate cancer and glioblastoma. We are trying to define their network of protein interactions by means of different structural and functional methods as well as trying to solve their atomic structures using X-ray crystallography.
Institut for Research in Biomedicine	Gene Translation Laboratory	Jul+Aug+Sept	http://www.irbbarcelona.org/index.php/en/research/	The project is focused on the development an animal model of MELAS disease in Drosophila, where we have shown that a mix of anti-oxidants helps to relieve the symptoms of the disease. We now need to identify which specific anti-oxidants are more effective both in flies and in cells. More can be learned in Guitart et al., JBC 2010.
Institute for Research in Biomedicine	Design, synthesis and structure of peptides and proteins	Jul+Aug+Sept	http://www.irbbarcelona.org/index.php/en/research/	The process of amyloid-b (Ab) protein aggregation plays a central role in the origin and progression of Alzheimer's disease (AD). Ab aggregation is a highly complex multistep process that involves the sequential formation of different types of amyloid aggregates such as oligomers, protofibrils and mature fibrils. Discrimination among different types of Ab aggregate species is an important challenge in establishing the culprit species responsible for the neurotoxicity observed in AD. We are exploring the use of small molecules as tools to modulate Ab aggregation, stabilize certain aggregate species or influence structural changes in aggregate pathways.
Institute for Research in Biomedicine	Structural biology of protein & nucleic acid complexes and molecular machines	Jul+Aug+Sept	http://www.irbbarcelona.org/index.php/en/research/	Our group is devoted to the structural analysis, by X-ray diffraction, of several DNA-binding proteins and complexes. These proteins play key roles in different biological processes such as DNA translocation, replication and transcription. In our lab, we crystallize most of these proteins in complex with their DNA targets in order to understand, at the molecular level, their function. The "Passa l'Estiu al Parc" Student will participate in the cloning, expression, purification or crystallization of one of these proteins or protein-DNA complexes, with the final goal of their structural characterization using X-ray diffraction.
Institute for Research in Biomedicine	Design, synthesis and structure of peptides and proteins	Jul+Aug+Sept	http://www.irbbarcelona.org/index.php/en/research/	Protein-protein interactions (PPIs) are emerging as a new type of very promising protein targets in medicinal chemistry. Cyclic peptides are privileged structures in this field due to this ability to disrupt PPIs. We propose the chemical synthesis of some cyclic peptides and the study (NMR) of their interaction with the target protein.
Institute for Research in Biomedicine	Growth control and cancer metastasis	Jul+Aug+Sept	http://www.irbbarcelona.org/index.php/en/research/	Intricate signalling networks control cell division, differentiation, movement, organization and death. Understanding how cells read and transform these signals into changes in cell behaviour is a major research focus of our group. In particular, cancer cells disobey these signals during tumour progression and metastasis. Metastasis is the final step in 90% of all fatal solid tumours. It is therefore a grave public health problem and consequently a field of our interest.
Institute for Reserach in Biomedice	Asymmetric synthesis	Jul+aug+Sept	http://www.irbbarcelona.org/index.php/en/research/	Development of new chiral ligands and/or application to the preparation of biologically active compounds.
Instituto de Biología Molecular de Barcelona (IBMB-CSIC)	Endocytosis	July to September	http://www.ibmb.csic.es/index.php?pg=laboratorio&id=1	The selected student will develop a small scientific project trying to understand how endocytic uptake is spatially organized in response to intracellular signals guiding cell cycle progression or in response to changes in the extracellular environment, in yeast. Alternatively, the student will be implicated in a project trying to understand the molecular function of a previously uncharacterized human protein that might be an effector of the Rab4 GTPase and control the Arp2/3 dependent actin polymerization associated to endocytic recycling from the early endosomes. Depending on the selected project, the student will be introduced to live-cell imaging, biochemistry, genetics and/or molecular biology techniques.
Medichem, S.A.	Medichem, S.A.	Jul+Aug (except 13-26)+Sep	www.medichem.es	The student will participate in the development of industrial procedures for the synthesis of active pharmaceutical ingredients (APIs). This includes tasks such as optimization of organic reactions and work-up procedures, polymorphism and solid state studies, analytical method development, etc.

				<p>Meteosim S.L. was founded in 2003 as a spin-off company of the University of Barcelona (Dept. of Astronomy and Meteorology). Meteosim is specialized in the development and application of mesoscale and microscale atmospheric numerical models. Meteosim offers a wide range of services based in its own meteorological model (Mesoscale Atmospheric Simulation System, MASS).</p> <p>PROFILE Applicants must have completed or be studying a Master degree in Meteorology (or similar). Applicants must also have a sound knowledge (user level) of Linux, Fortran and GIS (Geographic Information Systems). She/he should show good teamwork skills, the ability to work independently and positive attitude towards effort and continuous learning.</p> <p>WORK She/he will contribute to implement emission models as well as to adapt different air pollutant dispersion models. Tasks will include: - to carry out a bibliographical review of the guides of reference to implement emission inventories as well as current plans at European level to improve air quality. - to adapt various types of information needed to implement air quality model systems in GIS. - to run Gaussian dispersion models with the objective of evaluating the contribution of different sources to atmospheric pollution.</p>
Meteosim SL	Air Quality	Jul+Aug+Sep	http://www.meteosim.com/	
Nutrition and Food Safety Research Institute of the University of Barcelona (INSA-UB)	Autoimmunity and Tolerance	Jul+Sept	http://www.ub.edu/dpfsiv/grups/autoimmunitat.htm	<p>The student will be incorporated in the research of the Autoimmunity and Tolerance group. The research of the group for these months will be focused on immunonutrition in experimental animals. Rats will be fed some specific diets and changes in the intestinal immune system will be measured. Experience in immunological and molecular technologies will be appreciated.</p>
Nutrition and Food Safety Institute of the University of Barcelona (INSA-UB)	Amines, polyamines, and other food bioactives compounds	Jul+Sept	http://www.ub.edu/farmacia/recerca/linies/index.htm	<p>Nutrition and Food Science Department. Faculty of Pharmacy. Avda Joan XXIII s/n 08028 Barcelona</p> <p>APPLICATION OF ULTRA HIGH PRESSURE HOMOGENIZATION (UHPH) TO PRODUCE HIGH QUALITY VEGETABLE MILKS.</p> <p>Vegetable milk consumption is experiencing a noticeable increase due to it being considered as a healthy product. Soy milk and almond milk have often been used as an alternative to dairy milk for people who have intolerance to dairy products or an allergy to milk proteins. Nowadays, they are known to have important health benefits that can contribute to the reduction of chronic illnesses which are prevalent in many people. This is due, above all, to such characteristics as their fat fraction, their richness in antioxidant (flavonoids, tocopherols and polyamines) and other bioactive compounds, without forgetting their outstanding nutritional profile.</p> <p>The aim of the project is to use an emerging technology, Ultra high Pressure Homogenization (UHPH), to obtain soy and almond vegetable milks. It is also intended to compare UHPH with technology conventionally used with these kind of products (pasteurization and UHT).</p> <p>The optimum UHPH conditions will be sought in order to produce good quality products whether intended for refrigeration or for long-term storage at room temperature. UHPH has the necessary aspects of a good technology: food preservation, excellent physical stability and maintenance of good nutritional quality and sensory characteristics. These benefits are possible due to the fact that UHPH allows the combination of the mechanical effect of ultrahomogenization with mild temperature treatment, with both effects acting over a short time. Moreover, it has the advantage of being a continuous process.</p> <p>In summary, the objective is to study the effects of UHPH on the most relevant quality aspects of the selected vegetable milks: sensory characteristics, physical and microbial stability, nutritional and toxicological evaluation.</p> <p>In the first part of the project, range of previously studied UHPH conditions will be applied which at least guarantee the obtention of fresh products, similar to those produced by pasteurization of vegetable milks.</p> <p>However, some process variables have been introduced which could improve the product quality and presumably obtain their sterilization.</p> <p>In the second part of the study, once a set of optimum UHPH treatment conditions have been established for the different products, an in-depth study will be performed, which will comprise aspects such as microbiology, shelf life determination of the products, UHPH induced changes in vegetable milk components (major components and some bioactive components of interest), potential toxicological, mutagenic and allergenic components. This will be done while always comparing the UHPH processed products with the conventionally obtained, which will give important information about the two kinds of vegetable milks of soy and almond. These two products are both of vegetal origin but they have different compositional profile and probably different recommended consumption for different population sectors</p>
Nutrition and Food Safety Research Institut of the University of Barcelona (INSA-UB) at dept. of Physiology, Fac. Pharmacy	Fisiologia Digestiva i Adaptacions Nutricionals (FIDAN)	July + September		<p>- Regulation of epithelial functions by the myofibroblast layer in the colon, both in vivo and in a cell co-culture model in vitro. Specifically, we are interested in the role of hormones of the Renin-angiotensin-aldosterone system in the regulation of cell proliferation and permeability in the distal colon. We study the expression of ENaC and tight-junction proteins in colonocytes and the expression of hormone receptors at different levels.</p> <p>- The study of the functional properties of dietary ingredients, using animal models of intestinal inflammation. We study the anti-inflammatory effects of dietary supplementation with plasma fractions in animal models. Specifically, we use the S. aureus enterotoxin B (SEB) rat model on intestinal inflammation and KO and chemical models of colitis in both rats and mice.</p> <p>-Characterization of senescence accelerated mouse-prone (digestive and absorptive functions, mucosal permeability) and the study of dietary supplements on the changes that take place in the gastrointestinal system during senescence.</p> <p>The student will participate in on the study of intestinal permeability in animals fed different diets, using flux chambers to measure the flux of tracers across the mucosa,</p>
Nutrition and Food Safety Research Institute of the University of Barcelona (INSA-UB)	Aromas and quality factors in food and beverages	Jul+Sept	http://www.ub.edu/insa/web/eng/recerca/grups/arp	<p>Extraction of antioxidants and essential oils from grape pomace and less as food ingredients with added value: characterization of wine by-products (such as nitrogen, organic extract, ammonium, essential oils and polyphenols).</p> <p>Extract encapsulation and release studies.</p> <p>Location: Wine Laboratory (Dep. Nutrition. Faculty of Pharmacy) and Dept. of Chemical Engineering (Faculty of Chemistry)</p>
Nutrition and Food Safety Research Institute of the University of Barcelona (INSA-UB)	Bioanalysis	Jul+Sept	www.ub.edu/dqa	<p>The candidate will become involved in a project related to the separation and identification of bioactive peptides and proteins in commercially available and novel functional foods, using conventional and micro liquid chromatography and capillary electrophoresis time-of-flight mass spectrometry (LC- or microLC-TOF-MS and CE-TOF-MS). He will participate in the optimization of sample pretreatment, separation and confirmation methods, as well as in the interpretation of the complex chromatographic and electrophoretic fingerprints to be obtained.</p>
Omnia Molecular	Omnia Molecular	Jul+Aug+Sep	www.omniamol.com	<p>Omnia Molecular is a biotechnological company located at the Barcelona Science Park (Spain), which has developed a new strategy for discovery of active molecules with applications as anti-infectives. Our technology applies a completely novel approach to the selection of new anti-infective candidates. Our proprietary cellular assay simultaneously screens compounds for several parameters, leading to a fast and efficient detection of high quality hits. Our approach accelerates and improves the discovery of antibiotics and can be applied to any cellular pathogen.</p> <p>The student will participate in activities such as: Cellular culture (human cell lines) Enzymatic assays Microbiology studies Molecular biology</p>

Parc Cientific Barcelona	Nanotechnology Platform	Jul+Aug+Sep	http://www.pcb.ub.edu/homePCB/live/en/p905.asp	<ol style="list-style-type: none"> 1. Characterization of biomineralization on membranes for periosteum regeneration 2. Fabrication of microchip for stem cell studies 3. Biological characterization of novel hydrogel material for tissue engineering
Parc Cientific Barcelona (PCB)	Drug Discovery Platform	Jul+Aug+Sep	http://www.pcb.ub.edu/homePCB/live/en/p2333.asp	The Drug Discovery Platform at Parc Cientific Barcelona (PCB) is coordinating a research project on discovery of new drugs for rare diseases through repurposing, which involves the generation of a chemico-biological-rare diseases annotated database. In addition, the Drug Discovery Platform at PCB coordinates the ChembioBank initiative in Spain, which is building a chemical library with compounds from academic / commercial sources, and characterizing these compounds with virtual and experimental screening procedures.
Parc Cientific de Barcelona	Unitat Mixta Almirall-PCB	JU+ Aug+Sep	http://www.pcb.ub.edu/homePCB/live/ct/p516.asp	<p>Research on organic synthesis of compounds that may be interest in HTS tests. The student will be involved in Organic synthesis of heterocyclic compounds which may be interesting for HTS campaigns. Also analytical chemistry will be used to reach the purity criteria needed for this. All this project will be held in a medicinal project undergoing at the mixed Unit with Almirall.</p>
SOM Biotech SL	SOM Biotech SL	Jul+Aug+Sept	www.sombiotech.com	The student will participate in a program to develop new indications/applications of already known drugs (repositioning), helping in the virtual screening of molecules and in the design and coordination of development plans. No lab work is required.