Workshop programme

Thursday, April 18th

09.00 – 09.45 Opening session

Introduction of the institutes by the directors/representatives
J-J. Toulmé & M. Lomas

09.45 – 11.00 Nanomaterials (chair : Reiko Oda)

09.45 · Alex Bittner : CIC nanoGUNE
"Self assembly"

10.10 · Luis Liz Marzán " CIC biomaGUNE
"BioNanoPlasmonics at CIC biomaGUNE"

10.35 · Hugo de Oliveira : BioTis
"Thermosensitive low molecular weight gels for tissue engineering: novel functionalities towards controlled stem cell differentiation"

11.00 – 11.30 Coffee break accompanied by posters from IECB PhDs/postdocs

11. 30– 13.00 Biostructures (Chair Jean-Louis Mergny)

11.30 · Valery Pavlov : CIC biomaGUNE
"Enzyme and nanoparticles"

11.55 · Valerie Gabelica : IECB
"Mass spectrometery and nucleic acid self-assembly"

12.20 · Mikel Valle : CIC bioGUNE
"CryoEM of heterogeneous ribosomal complexes"

12.45 · Juan Elezgaray : C'Nano GSO / CBMN
"DNA nanotech"

13.30 – 14.30 Lunch & posters

14.30 · Ijsbrand Kramer
Transbio

14.40 · Jean-Pierre Aimé
C'Nano GSO

14.50 – 16.30 **Biomolecules (Chair Cameron Mackereth)**

14.50 · Oscar Millet : CIC bioGUNE
"Molecular basis of congenital erythropoietic porphyria"

15.15 · Paola Fucini : CIC bioGUNE
"Exploring the realm of ribosome structural biology"

15.40 · Axel Innis : IECB
"Translation regulation of gene expression"

16.05 · Francisco Blanco : CIC bioGUNE
"Structure and function of the ING chromatin binding proteins"

16.30 – 17.00 Coffee break & posters

17.00 – 17.50 **Cell biology and imaging (Chair Anne Royou)**

17.00 · Jordi Llop : CIC biomaGUNE
"Labeled nanosystems: applications in toxicology, pharmacokinetics and theranostics"

17.25 · Denis Dupuy : IECB
"Genome regulation & evolution"

17.50 Closing remarks

Oral communications

Nanomaterials - chair : Reiko Oda

CIC NANOGUNE

Alexander Bittner
CIC nanoGUNE

Title: Self assembly

Group Activities

A. Plant viruses as scaffolds for nanoscale structures. The Tobacco mosaic Virus (TMV) is the example for self-assembly. Its coat proteins assemble to well-defined 18 nm thick tubes with 4 nm wide channels. We use the channel and outer surface for modifications with the aim of making new nanoscale devices such as conductive wires, ferromagnetic tubes, and small containers for liquids.

B. Electrospinning of self-assembling molecules to wires. The natural self-assembly of peptides to fibers is extended to electrospinning assembly in high electrical fields. We hope to find new pathways of molecular assembly, and to analyse formation mechanism for fibers of biological relevance.

C. Self-assembling organic spintronics. We design nanoscale devices that are compatible with deposition and organisation of organic conductors from solutions.

D. Porous carbon electrodes for electrochemical capacitors and batteries. Supercapacitors are nearly ideal energy storage devices for high power applications. The long-term stability is a big hurdle towards widespread use. We analyse chemical and electrochemical changes of the electrodes.

Nanomaterials - chair : Reiko Oda

CIC BIOMAGUNE

Prof. Luis Liz-Marzán
CIC biomaGUNE

Title: BioNanoPlasmonics at CIC biomaGUNE

An introduction will be provided regarding the mission and research lines of CIC biomaGUNE. Then, the talk will focus on the field of the Bionanoplasmonics Laboratory. This is related to metallic nanoparticles, which display optical properties related to localized surface plasmon resonances (LSPR), which give rise to well-defined absorption and scattering peaks in the visible and near-IR spectral range. Such resonances can be tuned through the size and shape of the nanoparticles, but are also extremely sensitive towards dielectric changes in the near proximity of the particles surface. Therefore, metal nanoparticles have been proposed as ideal candidates for biosensing applications. Additionally, surface plasmon resonances are characterized by large electric fields at the surface, which are responsible for the so-called surface enhanced Raman scattering (SERS) effect, which has rendered Raman spectroscopy a powerful analytical technique that allows ultrasensitive chemical or biochemical analysis, since the Raman scattering cross sections can be enhanced up to 10 orders of magnitude, so that very small amounts of analyte can be detected. In this communication, we present several examples of novel strategies to employ colloidal nanostructures comprising gold or silver and silica in various morphologies, as substrates for ultrasensitive detection of a wide variety of analytes, including relevant biomolecules such as prions or cancer markers, which may require the design of novel techniques for trapping them close to the metal nanostructures.

The BioNanoPlasmonics Laboratory is dedicated to the synthesis, assembly and applications of various types of nanoparticles with specific functionalities, in particular metal nanoparticles with novel (plasmonic) optical properties. By means of colloid chemistry techniques, the group led by Luis Liz-Marzán is able to design several composite, multifunctional nanoparticle colloids, which typically combine optical and magnetic properties within single particles or particle aggregates. One of the current central topics of the group is the development of platforms that can be used for ultrasensitive detection based on SERS. We are interested in the incorporation of such nanostructured substrates within devices for implementation of real detection techniques.

Nanomaterials - chair : Reiko Oda

BIOTIS

Hugo de Oliveira

Title: Thermosensitive low molecular weight gels for tissue engineering: novel functionalities towards controlled stem cell differentiation

Non-toxic, easy to use, injectable and degradable hydrogels are valuable biomaterials for tissue engineering and tissue repair applications. Here, we describe the biological properties of a new type of thermosensitive hydrogel based on low-molecular weight glycosyl-nucleosyl-Fluorinated (GNF) compound. Although human adult mesenchymal stem cells derived from adipose tissue (ADSC) cannot adhere to the gel surface or within the 3D gel scaffold, cell aggregates grow and differentiate normally when entrapped in the GNF-based gel. Moreover, this hydrogel stimulates osteoblast differentiation of ADSC in the absence of osteogenic factors. When implanted in mice, 3D gel-entrapped cell aggregates survive for several weeks in contrast with gel-free spheroids. Additionally it induces the ADSC differentiation towards alkaline phosphatase positive osteoblasts, depositing a calcium phosphate-rich matrix. As means to improve cellular integration we developed composite GNF/collagen gels and demonstrated improved attachment and proliferation, without compromising gel elasticity or osteoblastic differentiation potential. These data point GNF-based gels as a novel class of hydrogels with original properties, in particular osteogenic potential, susceptible of providing new therapeutic solutions for bone tissue engineering applications. New strategies considering novel hydrogel-based materials towards bone tissue engineering will be presented.

Biostructures - chair : Jean-Louis Mergny

CIC BIOMAGUNE

Valery Pavlov

Title: Enzyme and nanoparticles

The postgraduate studies Dr. Valery Pavlov were carried out at the Chemistry Department of the Hebrew University of Jerusalem (Israel) in the group of Prof. Itamer Willner and at the Department of Inorganic Chemistry at the University of Heidelberg (Germany) in the group of Prof. Roland Kraemer. The research he has been carrying out is focused in the development of telomerase biosensors for cancer diagnosis, catalytic DNA utilization to detect amplified DNA, enzymatic generation of metallic nanoparticles and the design and preparation of self-replicating nanodevices based on DNA and peroxidases.

Design and preparation of new biomaterials to be applied on Biomedicine. Valery Pavlov´s lab is focused on designing and preparation of new biomaterials for biomedical applications. These biomaterials include:

1 - Artificial complex biochemical systems (multicomponent biocatalytic systems, signal-responsing biosystems, self-organizing / self-structuring functional biosystems).

2 - Biomedical applications of artificial biochemical systems (targeted drug delivery, multicomponent responsive systems for medical applications).

3 - Bionanoengineering, functional interfaces composed of biomaterials & nano-objects, supra-molecular hybrid systems with complex molecular/biomolecular architecture.

4 - Novel biomaterials for biomedical applications (aptamers, DNAzymes).

Biostructures - chair : Jean-Louis Mergny

INSTITUT EUROPEEN DE CHIMIE ET BIOLOGIE

Valérie Gabelica

Title: Mass spectrometery and nucleic acid self-assembly

There is now increasing evidence that specific nucleic acid structures modulate gene expression. Understanding the structure-function relationships in nucleic acids requires innovative biophysical tools. The team develops native mass spectrometry and ion mobility spectrometry to probe nucleic acid assembly and interactions with ligands. The objective of the project is to characterize the binding affinity, specificity, and ligand binding mode (conformational adaptability of the target, and ligand-induced conformational changes) for a variety of DNA and RNA structures, including G-quadruplexes. The biophysical approaches, developed here for a specific purpose (G-quadruplex nucleic acid ligands), will also be widely applicable to other supramolecular assemblies.

Valérie Gabelica studied Chemistry and obtained her PhD in Sciences in 2002 at the University of Liège (Belgium). After a postdoc in Frankfurt (Germany) as an Alexander von Humboldt fellow, she rejoined the Mass Spectrometry Laboratory in Liège as an FNRS postdoctoral fellow, and obtained a permanent position as an FNRS research associate in October 2005. She joined the IECB in 2013 as a visiting scientist, with the support of an Atip-Avenir grant. Her main research interests are fundamental aspects of mass spectrometry and its application to non-covalent complexes in general and nucleic acid complexes in particular, with implications from physical chemistry to molecular biology.

Biostructures - chair : Jean-Louis Mergny

CIC BIOGUNE

Mikel Valle

Title: CryoEM of heterogeneous ribosomal complexes

We observe working biological assemblies to understand their functioning. One of our interests is the structural characterization of ribosomes during translation, with the aim of understand the mechanisms which govern protein synthesis. By means of cryo-electron microscopy (cryoEM) we can obtain 3D maps of such macromolecules under nearly physiological conditions. The cryoEM maps are three dimensional averages, and heterogeneous samples impose a serious burden. During the last decade new tools to deal with heterogeneity have been developed. We have implemented some of them within the structural studies of ribosomes. Some results will be discussed.

Biostructures - chair : Jean-Louis Mergny

C'NANO GSO/CBMN

Juan Elezgaray
Title: DNA nanotech

DNA-based nanostructures built from a long single stranded DNA scaffold, known as DNA origami, are at the basis of many applications. Those range from the control of single-molecule chemical reaction networks to the organization, at the nanometer scale, of various macromolecular structures such as proteins and carbon nanotubes. Despite widespread development of these nanostructures, many basic questions concerning the mechanisms of formation of the origami have not yet been addressed. For instance, the robustness of different designs against factors, such as the internal topology, or the influence of the staple pattern, are handled empirically. We have developed a model for the folding and melting processes of DNA origami that is able to reproduce accurately several thermodynamic quantities measurable from UV absorption experiments. We show that cooperativity is key to quantitatively understand the folding process. The model can also be used to design a new distribution of crossovers that increases the robustness of the DNA template, a necessary step for technological development.

INSTITUT EUROPEEN DE CHIMIE ET BIOLOGIE

Ijsbrand Kramer
Title: TransBio

IJsbrand Kramer is professor at the University of Bordeaux, working at the IECB. His research interests are in the field of signal transduction, in the context of endothelial cells and inflammation. He also studies how images impact on students' understanding in cellular and molecular biology and how education is going to deal with internet. He is co-author of "Signal Transduction", now a reference book in research and education, and he is co-director of TRANSBIO.

TRANSBIO is a trans-national "research, development & innovation" project sponsored by Europe as part of the INTERREG-SUDOE programme (priority 1, "innovation"). The objective is to create an interactive network of research labs, companies, technology platforms and science transfer organizations, combined with a shared higher education programme. The goal is to have better tools to promote innovation and to improve visibility of the research and development activities. In the long run, this type of project should improve investment in the South-West region and reduce the newly-emerging North-South divide.

C'NANO GSO

Jean-Pierre Aimé

Title: Network Cnano

The main objective of the Aimé group is based on studies and fabrication of nanometer scale objects and systems. Nanometer size is the ultimate, smaller size, at which information can be processed in life

systems. BioInspired strategy provides the capability to conceive and fabricate hierarchical molecular structures and circuitries with which will be design new interacting tools with our environment and life systems. Our main topics are: - Imaging nano systems and nano objects: development of a High Speed Atomic force microscope machine. - Study and fabrication of BioInspired self assembled and self organized systems based on DNA Origami - Carbon nanotubes mechanical properties and their use as

nanoprobe. - nanofluidic: nanomechanical properties of nanometers drop and meniscus. The fast technical developments of Nanosciences/Nanotechnologies and BioInspired fabrication methods open new routes to investigate life systems and initiate new ethical questions that force to develop collaborative works. Two years ago, we start a common work with a Philosopher, focused on the place of nanoscience in the history of sciences on one hand and on learning processes on the other hand. The latter because the conception and fabrication of bioinspired systems, not a so long term vision, provide the opportunity to design learning, self-organised, structures.

The Network Cnano (Centers of Competence in Nanosciences) gathers 7000 researchers coming from all the domains including societal and philosophical concerns. Cnano comprises Six regional networks and a National Structure. The regional networks are Grand-Ouest, Ile de France, Grand Est, Rhône Alpes Auvergne, PACA and Grand Sud Ouest. As a network it ensures both a National Coherence and a Solid Local Basis. The main missions are those the fast development of NanoSciences and NanoTechnologies forces to consider as priorities:- to Foster Interdisciplinarity; - to enforce links with National and Proximity Technology Facilities - to develop Science-Society exchange;-to facilitate Valorisation of Research;- to promote International Exchange;- to promote Outreach and Training.

Cnano Grand Sud Ouest includes Limousin, Aquitaine, Midi Pyrénées and Languedoc Roussillon and 900 researchers.

Biomolecules - chair : Cameron Mackereth

CIC BIOGUNE

Oscar Millet

Title: Molecular basis of congenital erythropoietic porphyria

Congenital erythropoietic porphyria (CEP) is a rare autosomal disease related to deleterious mutations in uroporphyrinogen III synthase (UROIIIS), the fourth enzyme of the biosynthetic route of the haem group. Uroporphyrinogen III synthase catalyses the cyclization of the linear tetrapyrrol preuroporphyrinogen (HMB), inverting the configuration in one of the aromatic rings. Decreased levels of uroporphyrinogen III constitute the enzymatic defect and are accompanied by the metabolic defect: in the absence of the enzyme (or when ill-functioning), HMB spontaneously degrades to the by-product uroporphyrinogen I, which cannot lead to the haem group. This degradation occurs fast and results in the accumulation of the metabolites in the body (in the limbs and underneath the eyes), producing some of the most severe symptoms observed in CEP patients. In our laboratory we are using NMR spectroscopy and other techniques to understand the molecular basis of this pathology. The final goal of the project is to find reversible competitive inhibitors of the human porphobilinogen deaminase and to evaluate its potential use against congenital erythropoietic porphyria.

Biomolecules - chair : Cameron Mackereth

CIC BIOGUNE

Paola Fucini

Title: Exploring the realm of ribosome structural biology

The protein content of the cell strongly determines what a cell is and how it will react to its external environment. The ability of the cell to ensure and orchestrate the coordinated appearance of a required functional protein is, therefore, essential for its own existence. Protein synthesis in all living cells, takes place on the ribosome, a macromolecular complex that totals, in E. coli, 2.3 MDa. Because of its fundamental role for the cell, the translational apparatus is strictly regulated. Indeed a large number of translation factors, chaperones, and assembly factors have been identified that modulate gene expression by binding to and interacting with the ribosome. Furthermore, the fundamental nature of the translation makes the ribosome one of the major targets for antibiotic inhibition.Using X-ray crystallography (within our group) or CryoEM and NMR (in collaborative studies), the main aim of our research is to understand from a structural point of view how the various components of the translational apparatus interact with each other to guide and regulate ribosome activity or to ensure that the de-novo synthesized polypeptide nascent chain acquires its functional structure.

Our research projects encompass four main research areas:

1) Factors involved in the very basic steps of protein synthesis

2) Ribosome Assembly

3) The crystal structure of various antibiotics in complex with the ribosome

4) The cross-talk between the nascent chain and the ribosome, and co-translational folding.

Biomolecules - chair : Cameron Mackereth

INSTITUT EUROPEEN DE CHIMIE ET BIOLOGIE

Axel Innis

Title: Translation regulation of gene expression

During protein synthesis, the nascent polypeptide must travel nearly 100 Å down a narrow tunnel within the large ribosomal subunit before it is released into the intracellular milieu. Long thought to be a passive conduit for proteins, the exit tunnel has emerged in recent years as a functional environment in which polypeptides begin to acquire their secondary structure and signals encoded within the nascent peptide are relayed to the peptidyl transferase center of the ribosome to modulate its activity. In its most extreme form, nascent chain "talkback" can bring protein synthesis to a complete halt through the formation of stable interactions between a so-called arrest peptide and the ribosomal exit tunnel. In many cases, translational arrest is also dependent upon the presence of a small cofactor – such as an amino acid or an antibiotic – acting in concert with the peptide that is being synthesized. This property of the ribosome is used to regulate a number of cellular processes, such as: (i) the sensing of soluble tryptophan by a ribosome-associated TnaC peptide, (ii) the induction of drug-resistance cassettes by macrolide antibiotics (e.g. ermC) and (iii) the targeting of the SecA pre-protein translocase's expression to the cell membrane by the nascent SecM polypeptide.

Despite a wealth of biochemical and genetic data on nascent chain-mediated translational arrest, a full mechanistic picture of the underlying processes is still lacking. Thus, our goal is to understand – from a structural and biochemical perspective – how nascent polypeptides modulate the activity of the ribosome. To do so, we rely on customized cell extract-based and pure bacterial in vitro translation systems to produce 70S ribosome nascent chain complexes for structural and biochemical studies. A key achievement to date has been the study of TnaC-mediated translational arrest by single particle cryo-EM, which showed for the first time that nascent polypeptides adopt distinct conformations within the ribosomal exit tunnel. More recently, we have turned our attention to capturing high-resolution snapshots of bacterial ribosomes undergoing arrest during the translation of short macrolide resistance peptides. Finally, we will also seek to expand the repertoire of known arrest sequences in order to measure the functional diversity of nascent chain-mediated arrest phenomena and assess its impact on the regulation of both prokaryotic and eukaryotic gene expression.

Axel Innis did his PhD on the structural biology of TGF-□-like growth factors, their receptors and their inhibitors in the Department of Biochemistry of the University of Cambridge, under the supervision of Prof. Sir Tom Blundell (1998-2002). He then joined the group of Dr. R. Sowdhamini at the National Centre for Biological Sciences as a visiting fellow (TIFR, Bangalore, 2002-2004), where he developed a method for identifying functionally important sites in proteins. Following his time in India, Dr. Innis joined the laboratory of Prof. Thomas A. Steitz at Yale University (2004-2012). There, he chose to tackle a poorly understood aspect of bacterial translation: the regulation of ribosomal protein synthesis by the nascent polypeptide. He joined IECB as a group leader in January 2013.

Biomolecules - chair : Cameron Mackereth

CIC BIOGUNE

Francisco Blanco

Title: Structure and function of the ING chromatin binding proteins

We study the structure-function of proteins relevant for the onset and progression of cancer. Our main work consists on the structural characterization of proteins involved in chromatin dynamics and cell adhesion by means of NMR and other biophysical techniques. The proteins of the family INhibitors of Growth (ING1-5) form part of chromatin remodelling complexes modulating the transcription levels of their target genes. Their primary biological function is the inhibition of cell growth and proliferation, and enhance apoptosis in response to genotoxic stress. We have characterised the structure of ING4, which has a conserved N-terminal coiled-coil dimerization domain, a central flexible region, and a C-terminal PlantHomeoDomain (PHD). ING4 recruits the histone acetylation complex HBO1 to chromatin sites with the histone H3 trimethylated at lysine 4 (H3K4me3), which results in the acetylation of histone H3 at lysine 9. The PHD binds H3K4me3 peptides with a Kd=1μM, but because ING4 is a dimer (and therefore a bivalent "reader" of this "histone code" mark) the global affinity of the molecular recognition event is larger, and could be even larger in the context of the nucleosome. Mutations in the PHD abolish the tumour suppression activity of ING4, and dimerization through its N-terminal domain is essential for apoptosis induction upon DNA damage. Because of the strong sequence conservation at the N-terminal dimerization domain among the ING proteins, ING4 could form heterodimers with other members of the family, especially with ING5, the closest in sequence similarity. Proliferating cellular nuclear antigen (PCNA) is an essential factor for DNA replication and repair and the effector through which several cell cycle and apoptosis signals are realized. PCNA forms a homotrimeric ring that embraces the DNA duplex and acts as a docking platform for multiple proteins in a coordinated way. We have assigned the backbone NMR spectrum of the 98 kDa human PCNA molecule and are currently investigating the interaction of PCNA with ING1 and other proteins. We have characterized the binding of peptides and small molecules designed to compete for the binding to the I-domain of the integrin lymphocyte function-associated antigen-1 (LFA-1) to the intercell adhesion molecule-1 (ICAM-1). These interactions plays a key role in autoimmune diseases and cancer. We have found that these ligands bind to the I-domain of LFA-1, but not to MIDAS (metal ion dependent adhesion site), the site of binding of ICAM-1. They bind instead to the IDAS (I-domain allosteric site), suggesting that they act as allosteric inhibitors, in a similar way as lovastatin. Meganucleases recognize long DNA sequences and produce double strand breaks (DSB) at single sites in whole genomes. These rare cutting endonucleases can be engineered to repair defective genes ex vivo by promoting efficient gene targeting through DSB-induced homologous recombination. We study the structure of novel meganucleases designed to repair genes causing human monogenic diseases.

Cell biology and imaging - chair : Anne Royou

CIC BIOMAGUNE

Jordi Llop

Title: Labeled nanosystems: applications in toxicology, pharmacokinetics and theranostics

Jordi Llop Roig got his degree in (Analytical) Chemistry at the Ramon Llull University (Barcelona) in 1996 and his degree in Chemical Engineering at Institut Químic de Sarrià (Barcelona) in 1997. Between 1998 and 2002 he worked on his PhD Thesis (Synthesis of mixed cobalt complexes incorporating one pyrrolyl and one dicarbollide unit: evaluation of their properties) at Barcelona Material Sciences Institute (ICMAB-CSIC) under the supervision of Lluís Victori Companys and Francesc Teixidor Bombardó, getting a PhD in Chemistry at Ramon Llull University in 2002. in 2002, he worked as postdoctoral researcher at Navarra University Hospital (CUN) working with Iván Peñuelas and in 2003 at Uppsala University PET Center in the group of Bengt Langstrom. In 2004 he went back to Spain to work as Production Manager of the Radiopharmaceutical Laboratory at Institut d'Alta Tecnologia (IAT-PRBB, Barcelona). Since October 2007, he is Head of Radiochemistry and group leader at the Molecular Imaging Unit of CIC biomaGUNE.

Currently, he has 6 PhD students and 2 technicians, working in 4 main research lines:

- Development of PET tracers labelled with Nitrogen-13 and their evaluation as potential diagnostic agents for neurodegenerative disorders.
- Development of new PET tracers with application in Boron Neutron Capture Therapy
- Development of new strategies for the synthesis of labelled nanoparticles with potential diagnostic and/or theranostic applications.
- Implementation of microfluidic synthesis systems for the preparation of 18F- and 13N-labelled compounds.

Cell biology and imaging - chair : Anne Royou

INSTITUT EUROPEEN DE CHIMIE ET BIOLOGIE

Denis Dupuy

Title: Genome regulation & evolution

Our goal is to perform a systematic and quantitative analysis of post-transcriptional regulation in vivo in C. elegans. More specifically, we combine quantitative analysis methods with genome wide RNAi screens to systematically identify all the genetic components involved in post-transcriptional regulation and characterize their functional interactions. We use transgenic animals carrying two fluorescent markers to visualize the respective contribution of transcriptional and post-transcriptional regulation events for every gene considered. The data collected in the course of this project will constitute the first high-throughput in vivo quantitative analysis of post-transcriptional regulation in a metazoan organ

Denis Dupuy initially trained in Biology at University of Pau and got his Master of Science in Molecular and Cell Biology at Université Bordeaux Segalen. He did his Ph.D. thesis in human genetics in the laboratory of Dr. Benoit Arveiler at the University of Bordeaux (1998-2001) working on positional cloning of schizophrenia susceptibility gene. He then joined the group of Dr Marc Vidal, at the Dana-Farber Cancer Institute (Harvard Medical School, Boston, USA) for a post-doctoral training in systems biology. There, he acquired the tools and methods needed to perform systematic analysis of spatiotemporal gene expression in vivo in C. elegans.

Poster session

Poster presentations from groups at IECB

P1. Cécile Quéré (Dupuy Group) - In vivo reporters for spatiotemporal regulation of genes by microRNA

P2. Adrien Dupin (Fribourg Group) - 3'-end mRNA processing: structural characterization

P3. Laure Bataille (Garanger Group) - Precision Polymer Materials from Recombinant Protein-like Polymers based on the Elastin Motif

P4. Charlotte Drappier (Garanger Group) - Towards biofunctional nanoparticles from polymer-b-peptide chimeras

P5. Karolina Pulka (Guichard Group) - Foldamer Chemistry Approach Towards Pro-apoptotic TRAIL mimetics

P6. Juliette Fremaux (Guichard Group) - Synthesis of aliphatic oligourea foldamers as potential mimics of long alpha-helical peptide segments

P7. Claire Venin (Guichard Group) - Virtual screening and crystallography : tools for the design of sPLA2 inhibitors based on 1,3,5-triazepane-2,6-dione skeleton

P8. Neil Owens (Guichard Group) - Sequencing of oligourea foldamers by tandem mass spectrometry

P9. Mike Singleton (Huc Group) - Helical aromatic oligoamide foldamers as synthetic second coordination spheres for biologically inspired hydrogen production catalysts

P10. Simon Dawson (Huc Group) - Microwave assisted solid phase synthesis of quinoline oligoamide foldamers

P11. Jean Dessolin (Laguerre Group) - Structure-based virtual screening for drug discovery

P12. Heddy Soufari (Mackereth Group) - Structure of yeast Fpr4p catalytic domain and histone H3 proline isomerization

P13. Santosh Kumar Upadhyay (Mackereth Group) - Structure and function of human FKBP25

P14. Samir Amrane (Mackereth/Mergny Groups) - Molecular details of nucleic-acid binding by SUP-12 in muscle-specific alternative splicing of egl-15

P15. Silvain Tollis (McCusker Group) - Combined mathematical modeling and imaging experiments reveal an endocytosis-based corralling mechanism that promotes robust polarity

P16. Gilmar Salgado (Mergny Group) - Probing G-quadruplex structures inside living cells using NMR spectroscopy

P17. Amandine Renaud de la Faverie (Mergny Group) - SELEX and G-quadruplex: the hidden links

P18. Abdelaziz Kerkour (Mergny Group) - Study of G-quadruplex nucleic acids by NMR

P19. Jun Zhou (Mergny Group) - Tri-G-quadruplex: controlled assembly of a G-quadruplex structure from three G-rich strands

P20. Dimitro Dedovets (Oda Group) - Composite-silica/titania nano-helices for sensing applications

P21. Guillaume Le Saux (Oda Group) - Smart devices design by grafting multifunctionalized molecules bearing anti-inflammatory agents and molecules able to enhance neovascularization

P22. Jiaji Cheng (Oda Group) - Template-assisted synthesis of plasmonic nano-helices

P23. Cyril Bosset (Quideau Group) - New binaphthylic iodanes for asymmetric oxygenation reactions

P24. Dong Tien Tran/Hélène Carrie (Quideau Group) - Development of an affinity-based proteomic strategy for the elucidation of proanthocyanidins biosynthesis

P25. Emilie Petit (Quideau Group) - Chemical studies of the oxidation of wine-related catechols and pyrogallols

P26. Mourad El Assal (Quideau Group) - Oxidative dearomatization of phenols using hypervalent iodine derivatives

P27. Romain Coffinier (Quideau Group) - Development of salen-type iodanes for asymmetric oxygenation reactions

P28. Emilie Montembault (Royou Group) - Cell elongation, an adaptive response clearing long chromatid arms from the cleavage site

P29. Nicholas Derive (Royou Group) - BubR1 function during acentric chromosome segregation

P30. Leyla El Ayoubi (Teichmann Group) - Novel enzymatic activity associated to the RPC62 subunit of human RNA polymerase III

P31. William Palau (Toulmé Group) - Direct evidence for RNA-RNA interactions at the 3' end of the hepatitis C virus using surface plasmon resonance

P32. Aref Hassan (Toulmé Group) - Aptamers as tools for biomedical imaging

CIC bioGUNE
Bioterizteiko Berkuntza Kooperatiboko Zentroa
Centro de Investigación Cooperativa en Biociencias

SFR TecSan

CIC biomaGUNE
Biomaterialetako Berkuntza Kooperatiboko Zentroa
Centro de Investigación Cooperativa en Biomateriales

Institut Européen de Chimie et Biologie
I E C B

CIC nanoGUNE
nanoscience cooperative research center

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