Société de Chimie Thérapeutique

RICT2018 54th
INTERNATIONAL CONFERENCE ON MEDICINAL CHEMISTRY
INTERFACING CHEMICAL BIOLOGY AND DRUG DISCOVERY

NEWSLETTER 2018

EDITORIAL

A new landscape of chemical modalities in Chemical Biology and Drug Discovery

Over the last decades, major scientific progress has enabled the discovery of drugs that significantly improve patients' lives through improved standard of care. In some cases, curing a disease has become a reality as illustrated by the field of Hepatitis C and in some rare cases, cancer. In other therapeutic areas such as respiratory, pain or diabetes, medicines are helping to control a disease or its associated symptoms. In this respect, the next, and more desirable, level of aspiration is to reverse and cure these diseases rather that continuing to look for marginal improvements in standard of care. This ambition calls for a focus on exciting but highly complex novel biology around regenerative medicines and requires to develop our understanding in cell regulation and proliferation. Interestingly, these processes are highly synergistic with many aspects of oncology. In fact, novel biology is today at the centre of all therapeutic areas. In parallel, and to further foster a patient- and disease-centric paradigm, genomics analyses carried out on patient samples are promising a long list of novel, often unprecedented targets, whose causality has however to be demonstrated.

To address these targets and develop our biology understanding, chemical probes are required for both target-centric and phenotypic approaches. With this prospect in mind, small molecules play a major role, considering the breadth of modulators available for a wide range of targets. However, many targets originating from genomics or from the study of biological pathways are orphan from ligands and are not the prime applicable space for small molecules, typically due to their large surface area. Protein-protein interactions, and in particular transcription factors, remain a major challenge, despite some isolated examples of success. In this respect, other chemical modalities are better suited. These so-called 'New Modalities' cover many chemical classes including a new generation of usually hyper-modified peptides, macrocycles, a renaissance of natural products, and nucleic acid-based molecules.* In addition, these modalities can be combined and linked to generate further New Modalities.

This range of molecules enable the interrogation of biological systems in complementary ways. Beyond the classical agonism/antagonism approach that can be achieved with small molecules, peptides and macrocycles, other mode-of-actions are being accessed with other modalities. Antisense oligonucleotides can in particular decrease or even deplete protein levels both for intracellular and secreted proteins. Excitingly, modified mRNA provides the opportunity to intracellularly express a protein, for example to upregulate protein levels. Another exciting avenue is to leverage classical modalities such as small molecules differently. The so-called proteolysis targeting chimeras (PROTAC) connect two small molecules to drug a protein target in a different way, through protein degradation. This example illustrates how classical and potentially New Modalities can be brought together, creating additional New Modalities to manipulate cell biology.

This emerging picture of chemical biology and drug discovery is this year again reflected in the program of the RICT conference. Alongside small molecules, New Modalities are being covered, including through the lens of drug delivery. Across therapeutic areas,

chemical modalities are been approached with the necessary expansion of the chemical biology and drug discovery toolkit, including chemical and fluorescent probes, kinetics and synthesis. Novel biology is also being unveiled such as novel ways to regulate molecular targets such as GPCRs, and novel screening approaches towards these. The conference program further reflects how the boundaries between chemical biology and 'traditional' medicinal chemistry are increasingly blurring. It also aligned with the need to close the loop between drug discovery and clinical settings, moving closer to patients. Performing *in vivo* chemistry is one approach which may enable shorter feedback to preclinical research and further foster a paradigm of personalised medicines.

The RICT conference also provides drug discovery scientists with the possibility to prepare for the changing landscape of drug modalities. The breadth of knowledge and skills required today, and even more in the future, may appear daunting for medicinal chemists. It however represents an opportunity to tap into their vast creativity and answer biological questions in the most appropriate way, both for science and for the benefits of patients. Even for larger modalities, such as oligonucleotides where drug design is typically following sequence-base rules rather than the arguably innovative design seen in small molecules, chemists can further contribute to these modalities. Many areas including formulation, or for enabling the delivery and uptake of these modalities to the right cell types and tissues, benefit from a medicinal chemist's insights and mindset towards structure-property relationships. For example, antisense oligonucleotides tend to distribute to liver, spleen and kidney and chemists can design solutions to access other tissues and cells through targeted delivery with drug conjugates. These conjugates, which are another good example of mixed modalities, contain small molecules components such as a linker but also possibly small molecules as targeting ligands, providing evidence that applying a breadth of 'traditional' organic and medicinal chemistry expertise is possible.

Overall, medicinal chemists and chemical biologists have the opportunity to be the drivers of an integration of chemical spaces, bringing together modalities, and seeing the range of solutions to address biological questions and for therapeutics as a continuum of modalities. Scientists are equipped like never before to manipulate cell biology, and will undoubtedly further develop their knowledge during the RICT conference.

Eric Valeur, PhD MBA
Director of New Modalities & Innovation
Medicinal Chemistry, Cardiovascular, Renal and Metabolic Diseases, IMED Biotech Unit, AstraZeneca, Sweden.

Reference:
*New Modalities for challenging targets in Drug Discovery. Valeur, E.; Gueret, S.; Adihou, H.; Gopalakrishnan, R.; Lemurell, M.; Waldmann, H.; Grossmann, T.N.; Plowright, A.T. *Angew. Chem. Int. Ed.*, **2017**, *56*, 10294-10323.

OUR HOSTS

University of Strasbourg

The University of Strasbourg is a highly praised research actor at international level especially in chemistry and medicine with 4 Nobel prize awardees still in activity, the Chemistry Research Foundation (FRC) and the Drug Discovery Center, LabEx Medalis. The University of Strasbourg is a highly fertile and remarkably inventive hub and as such was confirmed 'University of Excellence' in 2016. The local organizing committee (LOC) is mainly composed of senior scientists from the University of

Strasbourg, the University of Haute Alsace (Mulhouse) and the CNRS. All members of the LOC are strongly involved in medicinal and biological chemistry research programs, especially in the fields of cancer, inflammation, pain, infection and rare diseases.

From left to right

Sophie Siegel, CAMB, UMR 7199 and LIT, UMR 7200, sophie.siegel@unistra.fr;
Dr Bruno Didier, LIT, UMR 7200 and PCBIS, UMS 3286, bruno.didier@unistra.fr;
Prof. Line Bourel, CAMB, UMR 7199, line.bourel@unistra.fr;
Dr Dominique Bonnet, LIT, UMR 7200, dominique.bonnet@unistra.fr;
Dr Pascal Villa, PCBIS, UMS 3286, pvilla@unistra.fr.

Dominique Bonnet (Chairman of the LOC), is head of the Integrative Chemical Biology and Pharmacognosy (CBIP) team, within the Laboratory for Therapeutic Innovation (LIT, UMR 7200). The CBIP team belongs to the Laboratory of Excellence 'MEDALIS Drug Discovery Center', one of the two French academic research centers of excellence in the field of chemical biology and medicinal chemistry. The objective of CBIP team is to design and synthesize efficient and specific probes to study the molecular mechanisms of Life and to open novel therapeutic routes with a special interest for G protein coupled receptors. A strong expertise exists on the design of innovative fluorescent probes for *in vitro* and *in vivo* imaging but also on original heterocyclic chemistry to explore chemical space and to provide access to molecular diversity. Combined with an expertise in medicinal chemistry, the strategies developed by the CBIP team have resulted in the discovery of innovative drug candidates, especially in the fields of inflammation, cardiovascular, pain and autism. https://medchem.unistra.fr/chimie-biologie-integrative-et-pharmacognosie-cbip/ and http://medalis.unistra.fr

Sébastien Albrecht is assistant professor at the Molecular Innovation and Applications Laboratory (LIMA, UMR 7042) and member of the 'Medicinal & Phytopharmaceutical Chemistry' team (MPC). Sebastien's research interests are focused on the synthesis and biological evaluation of novel compounds as inhibitors of metalloproteases with particular emphasis on inhibiting the M1(alanyl) and M17(leucyl) aminopeptidase families. Aminopeptidases are involved in many metabolic disorders (angiogenesis, inflammation, autoimmune diseases, and cognitive decline) and are essential for the development of some pathogenic agents (*Plasmodium, Toxoplasma, Neisseria*). The MPC team is also involved in the optimization of novel fast acting, transmission blocking anti-malarial agents identified through phenotypic screening efforts and exploration of their mode of action. http://lima.unistra.fr

Line Bourel is professor in medicinal chemistry. Early embarked on combinatorial chemistry and automatized high-throughput synthesis (Institut Pasteur de Lille), Line evolved toward synthetic vaccines and bioconjugate chemistry, first as a professor assistant (Faculty of Pharmacy of Lille - Institut de Biologie de Lille), then as a full professor (Faculty of Pharmacy of Strasbourg). Line develops her researches in the field of nanoparticle chemical labeling toward drug delivery, antiviral and anticancer synthetic vaccine, chemical biology and biophysics issues. Line has also evolved toward the chemical design of new

formulations (original nanoparticles, biocompatible polymeric biomaterials) for reparative medicine, targeting chronic inflammatory diseases and cancer. http://camb.cnrs.fr

Bruno Didier works at the Laboratory for Therapeutic Innovation (LIT, UMR 7200) as compounds and chemical libraries manager. Bruno is also working in the integrative chemical biology PCBIS Platform of Strasbourg for all post-HTS medicinal chemistry issues, like structure/activity relationships, physico-chemical analyses, hit selection. Bruno is also involved in the standardization of different activities concerning the French Academic Chemical Library.
https://www.chimiotheque-nationale.cn.cnrs.fr

Sophie Siegel is administrative manager in support for 2 labs: UMR 7199 (Conception and Application of Bioactive Molecules) and UMR 7200 (Laboratory for Therapeutic Innovation). Sophie is in charge of human resources and administrative management, communication and events organization.

Pascal Villa is the head of the CNRS-University of Strasbourg laboratory **'**UMS 3286 PCBIS'. Pascal's lab is specialized in the drug discovery process, starting from the development of biological assays and high throughput screening to early ADMET (physico-chemical properties of molecules and pharmacokinetics) under ISO9001 compliance. Pascal is member of Laboratory of Excellence 'MEDALIS Drug Discovery Center' focusing on drug discovery and development and of the National infrastructure 'ChembioFrance'. Pascal's work has led to the discovery of several compounds in pre-clinical evaluations or clinical phases (olesoxime in phase 3 against spinal muscular atrophy; chalcone-4 which got an orphan drug designation against WHIM syndrome). https://www.pcbis.fr

---

Paul Ehrlich Prize

The **Paul Ehrlich Prize** sponsored by **Janssen-Cilag** is attributed to researchers of international reputation or research teams for their important contributions to medicinal chemistry.

janssen | PHARMACEUTICAL COMPANIES OF Johnson&Johnson
Les Patients comptent sur nous

Janssen represents the Pharmaceutical R&D Division of Johnson & Johnson. Their strategy is to identify the biggest unmet medical needs and match them with the best science, internal or external, to find solutions for patients worldwide. The activity of Janssen is focused on discovering, developing and delivering differentiated medicines in five therapeutic areas: neuroscience, infectious diseases and vaccines, oncology, immunology and cardiovascular/ metabolism.

Dr Paul Janssen, Founder, Janssen Pharmaeutica, N.V.

Paul Ehrlich

More than hundred years ago Paul Ehrlich shared the Nobel Prize for Medicine or Physiology with Elie Metchnikov. Even if this award was the crowning recognition of his contributions to immunology, today he is considered to be the founder of medicinal chemistry.
Paul Ehrlich starts his research career by developing a method for selective staining of cells. From this work he pursues the idea that dyes form very specific bonds to cell receptors. This concept will lead him to the "side-chain theory" to explain the properties of antibodies. An organism infected by a toxin develops a huge number of "side-chains" which will prevent a repeated infection.
From the principle of the "key and lock" and the "magic bullets" there is only one step for Paul Ehrlich to become director of the Royal Prussian Institute of Experimental Therapy. There at first he devotes himself to the trypanosomes. The trypanosomes could indeed be successfully killed with the dye Tryptan Red. Hereafter he deals with Atoxyl, in current use for treating sleeping sickness presenting however intolerable side effects.

He engages himself in modifying its structure and carrying out tests which even nowadays would be considered as a high throughput *in-vivo* screening. He should go to the 606th analogue to obtain a really efficient compound evidenced on a model test on mice infected by trypanosome.
In 1905 the pathogen of the syphilis, the *Treponema pallidum* is identified and with a model infection on a rabbit Paul Ehrlich shows the efficiency of the compound 606 which he names Salvarsan. A test with 50 patients will produce remarkable results. Unfortunately, general usage of Salvarsan is accompanied by the occurrence of numerous side effects. A program involving the synthesis of a new series of 300 compounds which would today be qualified as "structure-properties relationship optimisation" results in the water soluble "compound 914" to make career under the name of Neosalvarsan.

Professor Sir Shankar Balasubramanian, Paul Ehrlich Prize 2018 Laureate

Sir Shankar Balasubramanian is the Herchel Smith Professor of Medicinal Chemistry at the University of Cambridge and senior group leader at the Cambridge Institute. He works on the chemistry, structure and function of nucleic acids. He is a co-inventor of the leading next generation DNA sequencing methodology, Solexa sequencing (now Illumina) that has made routine, accurate, low-cost sequencing of human genomes a reality and has revolutionised biology. He has worked on the identification, elucidation and manipulation of non-coding genetic elements, particularly four-stranded structures called G-quadruplexes. His work on the intervention of nucleic acid function using small molecules has revealed a number of molecular mechanisms that can be exploited, e.g. to modulate the biology of cancer. His more recent contributions include the development of methods for sequencing the epigenetic DNA bases 5-methylcytosine, 5-hydroxymethylcytosine and 5-formylcytosine at single base resolution, as part of a broader investigation of the importance of wider, natural DNA alphabet. His collective contributions span fundamental chemistry and its application to the biological and medical sciences.

Pierre Fabre Award for Therapeutic Innovation

Pierre Fabre is the 2nd largest private French pharmaceutical group and the 2nd largest dermo-cosmetics laboratory in the world. In 2016, it generated 2,282 million euros in revenues, of which 60% came from its international business and 40% from **Pierre Fabre Pharmaceuticals** division. Pierre Fabre, which has always been headquartered in the South-West of France, owns subsidiaries and offices in 47 countries, enjoys distribution agreements in over 130 countries and counts more than 13,000 employees worldwide. His fidelity to his native region is legendary, most of his production plants and research centers are located in *Occitanie*.

Pierre Fabre's portfolio represents a continuum of activities spanning from prescription drugs (oncology, primary care) and consumer health care products (family care, oral care, natural health) to dermo-cosmetics (Eau Thermale Avène, Pierre Fabre Dermatologie, Klorane, Ducray, René Furterer, A-Derma, Galénic, Elancyl). Marketed globally, Eau Thermale Avène is the leading dermo-cosmetics brand in Europe and in Asia. In oncology, Pierre Fabre generates over 90% of its revenue outside France.
In 2016, Pierre Fabre dedicated almost 180 million euros to R&D, shared between oncology, central nervous system, consumer health care, dermatology and dermo-cosmetics.

Dr Pierre Fabre, after obtaining his pharmacist diploma opened his own pharmacy in Castres (South-West of France) in 1951. Interested in studying the virtues of *Ruscus aculeatus* (an abundant plant in Castres region) he founded his Laboratory in 1962 by launching the first veinotonic natural product, Cyclo 3. A few years later, he strengthens his position in pharmaceutical branch by acquisition of *Inava Laboratories*. As part of diversification and opening towards dermo-cosmetic products *Klorane Laboratories* was bought in 1965.

This strategy continued and prestigious pharmaceutical and para-pharmaceutical brands have been acquired such as *Ducray* in 1969 and *René Furterer* in 1978. The main steps of international expansion were the opening of subsidiares in Spain, Portugal, Italy, Germany, the acquisition of *Genesis US* in 2002 and in 2006 the Brazilian *Darros Laboratorios*, specialized in oncology and dermo-cosmetic products.

Unique situation in France, Pierre Fabre is now mostly owned (86%) by the Pierre Fabre Foundation, a government-recognized public-interest foundation, and secondarily by its own employees.
In 2015, the independent French certification group AFNOR audited Pierre Fabre for its corporate social responsibility policy at the "exemplary" level, according to the ISO 26000 standard for CSR.

The name of Pierre Fabre is definitively associated with the spirit of "Therapeutic Innovation". Pierre Fabre Laboratories, in memory of its founder and in partnership with the French Medicinal Chemistry Society (SCT), has decided to recognize decisive actions, scientific discoveries, innovative technologies that result in substantial therapeutic innovations.

Professor Craig M. Crews, Laureate of Pierre Fabre Award for Therapeutic Innovation 2018

Dr Crews is the Lewis Cullman Professor of Molecular, Cellular and Developmental Biology and holds joint appointments in the departments of Chemistry and Pharmacology at Yale University. He graduated from the U.Virginia with a B.A. in Chemistry and received his Ph.D. from Harvard University in Biochemistry. Dr. Crews has a foothold in both the academic and biotech arenas; on the faculty at Yale since 1995, his laboratory pioneered the use of small molecules to control intracellular protein levels. In 2003, he co-founded Proteolix, whose proteasome inhibitor, Kyprolis™ received FDA approval for the treatment of multiple myeloma. Since Proteolix's purchase by Onyx Pharmaceuticals in 2009, Dr. Crews has focused on a new 'induced protein degradation' drug development technology, PROTACs, which served as the founding IP for his latest New Haven-based biotech venture, Arvinas, LLC. Currently, Dr Crews serves on several editorial boards and is an Editor of *Cell Chemical Biology*. In addition, he has received numerous awards and honors, including the 2013 CURE Entrepreneur of the Year Award, 2014 Ehrlich Award for Medicinal Chemistry, 2015 Yale Cancer Center Translational Research Prize, a NIH R35 Outstanding Investigator Award (2015) and the 2017 AACR Award for Outstanding Achievement in Chemistry in Cancer Research.

OUR ACTIVITIES

The **French Medicinal Chemistry Society** (Société de Chimie Thérapeutique, **SCT**) was founded in 1966 with the aim to disseminate scientific results and promote interdisciplinary knowledge in the major pharmaceutical research and development domains, covering the whole panel of implication of chemical sciences in drug discovery and related sciences from target identification to drug registration. The SCT is also involved in advancing medicinal chemistry / chemical biology by initiating cooperation, networking, providing training and coaching, and rewarding scientific excellence. The SCT is interested in developing and maintaining scientific contacts with industrial and academic research groups, medicinal chemistry and chemical biology related associations, federations, both on national and international level. The SCT is an active member of the European Federation of Medicinal Chemistry.

Our Society organises each year **three** to **four** dedicated **scientific events** from which the most important is the "***Rencontres Internationales de Chimie Thérapeutique - International Conference on Medicinal Chemistry", the* RICT,** an international congress devoted to the main scientific areas in medicinal chemistry and chemical biology. Generally, these outstanding meetings bring together more than 25 internationally recognized speakers from Europe, Asia and North-America, to present their outstanding results in every aspect of modern medicinal chemistry / chemical biology.

In 2018 the **54rd RICT** entitled "*Interfacing Chemical Biology and Drug discovery"* is held in Strasbourg. For this meeting we propose a dense scientific program with 23 plenary lectures and 6 keynote lectures and we hope to welcome more than 400 attendees coming from more than 30 countries worldwide.

The SCT pays special attention to our community of young scientists and students, as they will ensure the future endeavours in drug discovery. Each year, special scientific days (***Journées de Jeunes Chercheurs***, Young Researchers Fellows Meeting, **JJC-YRFM**) are organised for young PhD students and postdocs. This year the SCT **Young Researchers Fellows Meeting** (**YRFM**) were organised in Orléans in February 2018. This two and a half-day meeting has been very successful and it gave the opportunity for more than 200 PhD students and postdocs registered from 24 countries, to present their results in 30 oral communications and poster sessions. The **YRFM** provides unique occasion for attendees to present their work, exchange with peers, and meet representatives of pharmaceutical companies, small biotechs and start-ups. At the meeting, special work-groups are organized for CV improvement, simulated job interviews and round-tables on career guidance. The **forthcoming 26th YRD** will be held February 20-22, 2019 in Paris.

The SCT continues to promote the added value of chemical sciences within drug research and development, both focusing on the development of new drugs, but as well on the elaboration of synthetic tools allowing better unravelling and understanding the biological processes. In this line, we have organized a thematic day "Chemical Biology, Contribution to Molecular Therapeutic Innovation: Conjugates and Drug Discovery Chemistry, new challenges for targeted therapies", that was held on December 7th, 2017 in Paris.

For several years the SCT has been engaged in supporting young talented researchers in medicinal chemistry and chemical biology. By offering reduced registration and accommodation fees and the possibility of poster and career sessions, SCT encourages young scientists to attend these prestigious meetings. The best posters are rewarded by the "*Prix de Vocation*" allowing the awardees to participate free of charge in the next RICT.

For our more senior researchers, each year the "**Ehrlich Prize"** is attributed to researchers or teams for their outstanding contribution to medicinal chemistry. We also award the "**Pierre Fabre Award for Therapeutic Innovation"**. Both recipients are presenting their top-level work at the RICT meeting.

In recent years the SCT continued its transformation in order to better meet the expectations of researchers, academic and industrial partners. Thus, in 2015 a 'Business Development Unit' under the guidance of Dr Pascal George was created in order to build interactions with SMEs, CROs and Biotechs and deals with their specific demands (advise, coaching, expertise…). The Business Development Unit counts today 5 members, all recognized for their expertise in different domains of drug discovery and/or business development, and we have set in place quite a number of contact with SMEs, SATTs, incubators, etc …

We maintain a transparent communication of ongoing activities on our web-site, to show the strong dynamic behind our activities, to draw interest from the scientific community seeking to network and exchange, in order to encourage subscriptions and thus power up the position of the SCT within the European Federation of Medicinal Chemistry.

For inscription and for more information on our activities, events please feel free to visit our website **www.sct-asso.fr**.

Dr Luc Van Hijfte
SCT President

Prof. Sébastien Papot
SCT Vice-President

News from the SCT Communication

A new SCT website is online

The SCT website has been completely redesigned as a platform presenting the activities of the Society as well as a relay of communication between members. On the homepage (http://www.sct-asso.fr, see below), you will find various information about the Society, prices, job offers, links, and texts written by SCT members on the left-hand menu. The meetings and events organized by the SCT are located on the right-hand menu, while the member access with the directory and SCT registration is in the center.

We can also publish information on the our website by contacting us at communication@sct-asso.fr

The SCT now has its Twitter Account

SCT was already present on LinkedIn, now we are also on Twitter: **@SCT_asso**

Our Twitter account will smoothly gain in productivity. Following our tweets will help you get at your fingertips news about SCT activities, meetings and other events as well as information from our members and partners.

With this added feature, the SCT will keep you alert and informed on various topics in our SCT expertise domain.

We are pleased to welcome Mrs **Marie-Madeleine Le Floch**, the new SCT secretary. She will answer any practical questions you have at the email address: **secretariat@sct-asso.fr**

The SCT Communication Board:

Dr. Frédéric Schmidt (Institut Curie, Paris)
Prof. Nicolas Willand (Université de Lille 2)

SCT Awards, Prizes

Awards, Prizes attributed by the SCT and its sponsors

For more information visit our website: **www.sct-asso.fr**

1. **Ehrlich Prize** with Lecture on RICTs (Sponsored by Janssen Pharmaceutical R&D a division of Janssen-Cilag) is attributed each year to researchers of international reputation or research teams for their outstanding contributions to medicinal chemistry.

2. **The Pierre Fabre Award for Therapeutic Innovation** is awarding a talented researcher who has accomplished a decisive action, a scientific discovery, an innovative technology contributing to a substantial therapeutic innovation. This prize is sponsored by the company "Pierre Fabre Médicament", in memory of its founder.

3. **Best Poster Award** for young medicinal chemist (Sponsored by Laboratoires Servier).
   Two prizes are offered each year for the best two posters presented by young researchers at the RICT. The recipients are invited to deliver a talk at the next SCT Young Research Fellows Meeting (*Journées de Jeunes Chercheurs*, JJC).

4. **SCT Award for Young Researchers in Medicinal Chemistry** (Sponsored by Laboratoires Servier). This award ("*Prix d'Encouragement à la Recherche en Chimie Thérapeutique*") is for researchers no older than 36. The recipient of this prize is invited to give a talk at the SCT Young Researchers Days (*Journées de Jeunes Chercheurs*, JJC).

Grants attributed each year by the SCT and its sponsors

Research Grants (sponsored by Laboratories Servier)

Each year a call for project is launched by Servier. The SCT announces the subject of the call for project and organizes the selection of the applications. This year the subject is: "Metabolic remodeling in age related diseases"

One or two projects are selected each year by a Jury including scientists from Servier and from the SCT. Financial support corresponds to a 3-year PhD Fellowship or a 2-year Postdoctoral Fellowship.

Other companies are strongly encouraged to propose calls for project!

Prof. Christian Cavé
SCT Treasurer, Châtenay-Malabry

Pharma Societies, Our Partners

Société de Chimie Thérapeutique

Drug Discovery Center

Drug development in an academic environment:
the laboratory of Excellence MEDALIS (http://medalis.unistra.fr)

The number of innovative new medicines approved by the US FDA and other regulatory bodies is decreasing. Externalizing pre-clinical discovery activities allows pharmaceutical companies to concentrate their internal effort on the clinical phases while capitalizing on the scientific creativity of the larger scientific community for pre-clinical discovery. In this context, we created a fully integrated Drug Discovery Center, Medalis, with four action lines: Drug Discovery Research dealing with the scientific project, Drug Discovery Platforms providing research infrastructure, Drug Discovery Transfer managing the industrial exploitation and, Drug Discovery Education developing and running innovative education programs.

This laboratory of excellence (LabEx) has been recognized in 2011 by the French 'Investissement d'Avenir' program and funded for 10 years.

Based on strong basic research, Medalis aims to generate a drug discovery pipeline capable of taking molecules for the treatment of **cancer and inflammation** all the way through the pre-clinical stage. These molecules will be available for licensing to established pharmaceutical or biotechnology companies, or to start-ups arising directly from the Medalis project. Pr. Sylviane Muller is the scientific coordinator of Medalis and heads its Executive Committee, which is co-chaired by Dr Alain Wagner. Ten teams constitute the Medalis partnership. They work in 6 different academic structures located in two different Campus in Strasbourg. In total, Medalis represents 200 people (half have tenure positions and half are PhD students/post-docs). In 5 years, 5 start-ups have been created and 2 more are planned in 2018/19:

- **Inoviem Scientific (www.inoviem.com)**

  Created in 2011, Inoviem Scientific is a privately owned biotech contract research organization (CRO). It has developed groundbreaking technologies for drug-target interaction analysis under physiological conditions and in human tissue.

- **HifiBio (www.hifibio.com)**

  Created in 2012, HifiBio has developed ultra-high throughput screening technologies based on microfluidics. One of these technologies, CelliGO™, can be used for the ultra-high-throughput selection of antibodies from single B cells displaying functional modulation of a target cell.

- **Syndivia (www. Syndivia.com)**

  Syndivia is a biotechnology company that provides best-in-class bioconjugation technologies for the development of antibody-drug conjugates. Syndivia won the France Tech Transfer Invest Award for 2017.

- **Peptimimesis (www.peptimimesis.com)**

  PeptiMimesis is a strategic partner in the design, discovery and early development of therapeutic transmembrane peptides. PeptiMimesis will develop its pipeline against key targets in the fields of oncology and immuno-oncology and is open to the initiation of new collaborations with pharma partners on receptors of interest.

- **Adaptherapy (www.adaptherapy.com)**

  ADAPTHERAPY® was founded to improve healthcare for all through the use of personalized and precise information. As an innovative biotechnology company, ADAPTHERAPY® works actively towards the goal of precision medicine, by helping clinicians to select the most suitable therapy for each individual patient with cancer and other complex diseases.

Strasbourg is a central place for drug development, located at the heart of the European Pharmaceutical Industry in the Upper Rhine Valley. The University of Strasbourg has received the "initiative of Excellence" (IdEx) label in 2011 together with two other French Universities only. A strong Drug Discovery Center will support this strategic position of Strasbourg.

CONECTUS
FOURNISSEUR OFFICIEL D'INNOVATIONS

Tech transfer and collaborative research management

How Conectus helps alsatian laboratories to bring their technologies to market, and innovative companies to find the research capabilities they need

Conectus Alsace is the tech transfer organization for an internationally recognized research ecosystem:

Alsatian research includes 4 active Nobel prizes and many high-level research labs (IdEx, LabEx and EquipEx labels) in varied domains such as biomedical health, neurosciences, health technologies, chemistry, materials, robotics, information technologies, and human and environmental sciences.
Conectus is the bridge for companies to access those research capabilities, with two main ways to collaborate with academic researchers.

Access innovative technologies

Conectus identifies innovations within academic labs.
It then secures them with the relevant intellectual property strategy, AND financially invests in those technologies to develop proof of concept and bring them closer to the market, preparing them for licensing to external companies or under the form of startups. Those investments generally last 18 to 24 months and can amount to up to 350,000€.
Conectus also works with companies during those projects through co-conception, where a private partner contributes to defining the investment project based on market and industrial requirements, in exchange for a free licensing option.

Collaborate with academic researchers

Conectus can identifiy the relevant labs, service platforms, and researchers based on companies' R&D requirements.
It then organizes the initial meeting. Furthermore, it will sign and manage the resulting contract to accelerate the contracting procedure and ensure the focus on the actual R&D work.

Polyplus-transfection® SA is an established biotechnology company that develops and commercializes innovative solutions for *in vitro* and *in vivo* delivery of nucleic acids for their use in R&D, bioproduction of therapeutic proteins and viruses, and for direct in vivo gene transfer therapies.

Headquartered in Illkirch, outside Strasbourg in France, Polyplus-transfection® was founded in 2001 as a spin-off from the Genetic Chemistry Laboratory - Faculty of Pharmacy, University of Strasbourg. The company has established itself as a leader in its niche market since the pioneering role of its main founder, Prof. Jean-Paul Behr in the development of DNA-binding molecules relevant to biotechnology and gene therapy.

At Polyplus-transfection®, we are passionate about science and are committed to delivering the best delivery technologies and scientific support to scientists; their success is our success. Building on more than 15 years of experience as Delivery Experts, we are at the leading edge of technology to offer tailored delivery methods for rising applications in Life Sciences. With our latest addition – jetCRIPSR™ RNP transfection reagent – to our research portfolio, we now provide complete and tailored solutions to enable scientists to choose among the best-in class delivery methods for targeted genome editing. Further to developing cutting-edge reagents for R&D, we recently launched an advanced protein expression system – FectoCHO™ Expression System – to address the growing demand in the biopharmaceutical market for an efficient and flexible transient expression system.

At Polyplus-transfection®, we are proud to say that our reagents are involved in a **growing number of clinical trials** worldwide. We strive to contribute and enable scientists to develop breakthrough therapies to improve human health by: providing reliable and advanced delivery solutions, and accompanying them every step of the way from fundamental research to clinical applications.

ISO 9001-certified since 2002, we supply our proprietary range of reagents through a worldwide distributor network. Our Scientific Support Team is just an e-mail away: support@polyplus-transfection.com.

For more information, visit our Website at www.polyplus-transfection.com

PRESTWICK CHEMICAL

Creative Medicinal Chemistry

Prestwick Chemical is a French contract research organization (CRO) located in Strasbourg. The company founded in 1999 by P**rof. Camille-Georges Wermuth**, provides **medicinal chemistry services** and **screening libraries** to accelerate small molecule drug discovery.

***Contract research services in medicinal chemistry*: From Hit discovery to pre-clinical candidate selection.**

Prestwick's team develops innovative medicinal chemistry strategies tailored to clients' needs. We offer a complete coverage of **early drug discovery** steps: virtual screening, hit identification / hit series validation, **hit to lead** and **lead optimization**.
Our services are customer oriented and optimally tailored for **pharma, biotech companies, TTOs or academia**, keeping customer satisfaction at the core of our activity.
Our expertise is awarded by an outstanding track record of achievements which positions the company as a privileged and reliable partner. For **more than 17 years**, we successfully delivered 40+ research programs that led to the development of 10 **clinical candidates** (Phase I to III) and **one drug** on the market. Our expertise covers all major target classes (enzymes such as kinases, receptors such as GPCRs, ion channels, Protein-protein interactions) and therapeutic areas (CNS, Oncology, Anti-inflammatory, Metabolism, Antibacterial/Antiviral).
Included in our **global offer** or developed independently, **Prestwick Chemical** proposes also dedicated services such as computational chemistry, synthetic chemistry, focused chemical libraries production, and analytical services.

***Screening libraries (compound collections)*:**

Prestwick has a large portfolio of **smart Libraries** designed to ensure maximal chemical diversity, possibly to access new IP while remaining within reach of both low and high throughput screening processes. They are constantly updated and improved. Our clients have reported **high quality** hit generation rate.
The **Prestwick Chemical Library®**, a unique collection of **1280 small molecules** (**95% of approved off-patent drugs**) is our flagship and is mentioned in 350+ publications worldwide. **New innovative collections** continuously feed our portfolio: Our **Prestwick Drug-Fragment library** has been designed to optimize the chance of success in Hit finding using Fragment-based Drug Discovery.

For more information, please contact us at infochem@prestwickchemical.com
or visit our new website www.prestwickchemical.com

PCBiS

From Hit to Lead

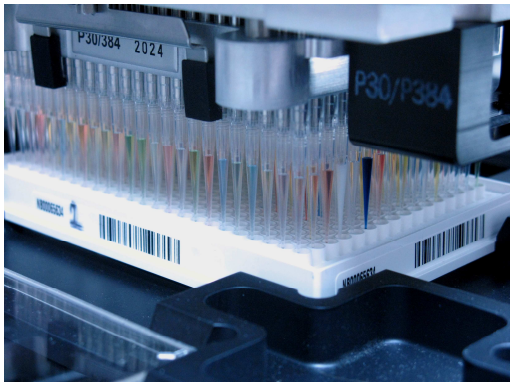
With almost 20 years of experience, the platform of chemical biology of Strasbourg (PCBIS) is a CNRS-University of Strasbourg laboratory giving access to competencies and know-how to researchers focusing on bioactive molecules aiming at becoming pharmacological tools or drug candidates.

Gathering several labels (IBiSA, National research infrastructure “Chembiofrance”, drug discovery center in the context of the laboratory of excellence Medalis), PCBIS has the capacity to handle projects starting **from the hit identification to the pre-clinical step**s and offers a wide range of services on a routine basis.
Sensitive to the need to improve the quality of our services, we have been engaged in a quality management system for more than 10 years and are **ISO 9001** and **NF X50-900** certified.

Our dedicated team is divided in 4 departments:

- **Target libraries:** The "*Target Libraries*" service sets up miniaturized assays, produces and validates biological models (target-based or cell-based). This can be done from cloning to protein expression (soluble proteins and stable or transient cell lines)

- **High Throughput Screening (HTS):** The "*HTS*" service validates and runs automated screening of chemical libraries in order to identify active compounds.



- **Chemical libraries:** The "*Chemical librairies*" service manages compound collections, performs structure activity relationship (SAR) analysis and contributes to hit optimization.

- **ADME-Tox:**

The "*TechmedILL*" service determines the physicochemical and pharmacokinetics properties of compounds (solubility, log D, pKa, chemical and plasmatic stability, membrane permeability, metabolism, CYP, BBB, PK *in vivo…*) as well as cellular toxicity.

For more information, visit our website at www.pcbis.fr
To contact us: pvilla@unistra.fr.

Alsace BioValley is a French competitiveness cluster which has for mission to federate, develop and promote health players through innovation. The cluster actively participates in development projects of the health sector and supports its members in their R&D innovation approaches enabling them to access high national and international added-value expertise (regulatory, clinical studies ...). It also contributes to the networking of its members and develops the ecosystem's visibility, in order to boost market access.

Alsace BioValley relies on a dynamic network of French, German and Swiss companies to succeed, as well as leading academic and clinical research, and an integrated network of partners that are key players in innovation.

The priorities of the cluster are:
- Medicine: from development to production
- Medical Technologies: medical robotics, imaging, implantable devices
- e-Health: from prevention of pathologies to individual-patient monitoring

Alsace BioValley is also actively contributing to the Nextmed project, a Medical Technology Campus which aims to create in Strasbourg, in only one place, an ecosystem of excellence dedicated to developing the future health technologies.

Alsace BioValley
550, bld Gonthier d'Andernach
67400 Illkirch, France
+33 (0)3 90 40 30 00
international@alsace-biovalley.com

Let us change paradigm in pharmacology by bridging over clinic and preclinic with label free drug-target interaction analysis

inoviem scientific

CREATIVE TECHNOLOGIES FOR EFFICIENT THERAPEUTICS

Toxicity issues and lack of efficacy are the main reasons why molecules are falling after years of development. Is there a way to predict and prevent this curse? How can we find a remedy against this poor attrition rate?

Target deconvolution, clinical mechanism of action elucidation and identification of biomarkers for the stratification of patients are part of the value that makes Inoviem a partner of choice for pharmaceutical industry.

Inoviem Scientific drives science forward by providing innovative technologies to pharmaceutical companies and biotechs, helping them to secure and speed up the development of their pharmaceutical compounds.

Founded in 2011 by the Dr. Pierre Eftekhari, the activity is in exponential growth, as demonstrated by its big pharma panel and international client portfolio. Expertise in clinical physiology, strong insights into virology, epigenetics, and neurology, among other domains, characterize this devoted and dynamic team in which more and more companies trust.

The technology created by the founder and developed by the team not only identifies ON- and OFF-targets of a drug candidate, but also every binding partner within a functional interactome. The innovation resides in the fact that the technology is label-free and performed directly on human tissues to keep a physiological or pathological environment.

The more accomplished technology is NPOT® standing for Nematic Protein Organisation Technique and is based on Kirkwood-buff theory. A transient pH gradient enables molecules to migrate until they reach their equilibrium. The system is challenged by the interaction between the molecule and its partners triggering conformational changes and steric jams that will finally form a visible heteroassembly. Proteins are sequenced by mass spectrometry and analyzed by experts that reconnected them with their signaling pathways and networks to apprehend the compound's native MoA.

The technology is robust on any kind of therapeutic agent (small molecules, peptides, antibodies, dendrimers) and proved itself in identifying cytosolic targets as well as membrane proteins such as GPCRs.

Crucial and accurate information generated by NPOT® is taken into account for strategical decision along the whole value chain from preclinical phases to clinical. Three molecules are now in clinical phases based on NPOT® results (1).

As a historic client, NPOT® technology has been quoted by Abbvie in a review on "Emerging approaches for the Identification of Protein Targets of Small Molecules" published in the Journal of Medicinal Chemistry (2).
Their goal? Improve the state of human health.

(1) Julien Beyrath *et al.*, (2018), "KH176 Safeguards Mitochondrial Diseased Cells from Redox Stress-Induced Cell Death by Interacting with the Thioredoxin System/Peroxiredoxin Enzyme Machinery", Scientific report, Nature, DOI:10.1038/s41598-018-24900-3

(2) Kenneth M. Comess *et al.*, (2018), "Identification of Direct Protein Targets of Small Molecules", Journal of Medicinal Chemistry, DOI: 10.1021/acs.jmedchem.7b01921

Create in 2005, Alsachim is one of the world leader in the synthesis of stable labeled internal standards (13C, 2H, 15N), stable labeled building blocks, APIs (Active Pharmaceutical Ingredient) and metabolites used in bioanalysis studies. The French company was founded in Illkirch (France) by Jean-François Hoeffler and Toufik Fellague. In 2017, Alsachim has joined Shimadzu group, world leader in analytical instrumentation, and thus, completes Shimadzu's products and solutions portfolio in the clinical market.

The Stable labeled internal standards expertise supporting Therapeutic Drug Monitoring

For 13 years, as a contract research and development organization, we support our customers to develop their R&D programs, in particular with custom synthesis service. Furthermore, to ensure the quality of our products, Alsachim take care of and control all the process: from R&D and manufacture, to the delivery. We supply our products to customers all over the world, spread throughout the chemical discipline including the pharmaceutical and biotech industry, clinical and bio-analytical CROs and related research institutions, in areas such as Health, Food and Environment.

Strong ALSACHIM expertise in chemistry lies in its ability to produce internal standard labeled with stable isotopes to quantify biological substances concentration. This strong asset led us to develop turnkey multiplex assay kits of different drugs, biomarkers by Liquid Chromatography coupled with Mass Spectrometry (LC/MS). Now Alsachim offers its high-quality chemical services to the field of Therapeutic Drug Monitoring, with notably DOSIMMUNE®, a reagent kit for the quantification of immunosuppressants in whole blood by LC-MS/MS

Discover ALSACHIM: www.alsachim.com
For more information, please contact us: contact@alsachim.com

Société de Chimie Thérapeutique

European Journal of Medicinal Chemistry

Published under the auspices of the French "Société de Chimie Thérapeutique" (SCT)

More than 3000 papers are submitted each year and approximately 900 are published.

The ***European Journal of Medicinal Chemistry*** is a global journal that publishes studies on **all aspects of medicinal chemistry**:

- organic synthesis;
- biological behavior;
- pharmacological activity;
- drug design;
- QSAR; molecular modeling;
- drug-receptor interactions;
- molecular aspects of drug metabolism;
- prodrug synthesis and drug targeting.

It provides a medium for publication of original papers, laboratory notes, short or preliminary communications, and invited reviews.

The impact factor of EJMC (4.519) is one of the highest of all medicinal chemistry journals.

Prof. Hervé Galons
Université de Paris Descartes

Société de Chimie Thérapeutique

Upcoming events

Upcoming events organized under the auspices of the SCT:

26th SCT Young Research Fellows Meeting (Journées de Jeunes Chercheurs, JJC)

February 20-22, 2019, Paris

55th International Conference on Medicinal Chemistry RICT 2019

July 3-5, 2019, Nantes, France

For more information: ***www.sct-asso.fr***
