Société de Chimie Thérapeutique

NEWSLETTER 2015

EDITORIAL

Understanding targets and mechanisms

Drug discovery is evolving rapidly even if the goal remains the same: identify new efficient and safe drugs to treat patients. And if there is still a lot to do to tackle unmet medical needs, more and more tools are also available for the researchers to identify the right biological target and the drug that will interact positively with this target.

Today, the drug discovery activities start from patients with major focus on the human disease tissues and their differences with the corresponding normal tissue. With the rise of genomic and proteomic tools, more and more data can be generated from these tissues. Companies and hospitals are creating their own bio-bank in order to valorise the expertise they develop day after day in treating patients in a specific disease area. A lot of patient databases are also created and can be queried and analysed to further understand the role of a target or a specific pathway within a disease. The constantly growing patient data available, combined with the flow of genomic data and the power of the informatics tools opened new avenues to identify novel targets and better understand the pathways and the link with the disease. Not surprisingly, big pharma companies recently signed major partnerships with famous informatics companies (Johnson and Johnson with IBM, Abbvie with Google) illustrating the attractiveness of combining cloud computing, genomic analysis and drug development.

This patient based approach has also the advantage to give access more rapidly to some potential biomarkers in the clinical trials and also to lead to a better patient stratification, giving the treatment all the chances to be evaluated on putative responders and thus reducing the attrition rate.
Around the world, some geographical areas are gathering all these partners close together and thus are prone to become “clusters of innovation” for the identification of novel targets and new drugs.

So understanding the targets and mechanisms is a critical exercise in drug discovery. Part of this work is related to the identification the natural substrate of a given target (as for example “de-orphanizing” a GPCR), to the understanding the scope of a biological pathway with identification of the targets involved, and to the validation of these targets using chemical and biological tools. This target and mechanism knowledge also helps to further assess target engagement in the in vivo models used in LO phase.
In a molecular approach, it is also important to understand better the conformational impact of a receptor on the signal transduction, and to lock a receptor in a given conformation thus triggering one or the other signalling pathway and checking the impact on the disease outcome. Last but not least, understanding the target is useful to select the drug discovery strategy: orthosteric *vs.* allosteric modulators, small molecules *vs.* antibodies, covalent binding *vs.* reversible inhibition.

Clearly, there is a lot to understand on the biological targets and mechanisms to better and quicker design new drugs. All this knowledge on targets can be developed through a tight collaboration between biologists, bioinformatics, translational sciences, physicians and medicinal chemists. And there are numbers of novel techniques available through innovation in the academy world or technology driven biotechs. More and more, big pharma companies develop partnerships and collaborations and some of them are adapting their internal organisation in order to be more reactive to the outside world and make the best use of these external innovations a quick and efficient manner in their field of research.

Biotechs, academia, hospitals and pharma

companies have common interest to work together and combine their efforts to cover the unmet medical needs.

As medicinal chemists, we are in the heart of drug discovery, interacting with many different disciplines. Hope this RICT symposium will favour contacts amongst the medicinal chemists themselves so that we can learn from each other and thus contribute by our exchanges during conferences, posters or break to future innovation in drug discovery.

Photo

Dr Pierre Deprez
Galapagos, Paris

Société de Chimie Thérapeutique

OUR HOSTS

CBSA: BIOORGANIC CHEMISTRY AND AMPHIPHILIC SYSTEMS

Université d'Avignon et des Pays de Vaucluse

Institut des Biomolécules Max Mousseron, UMR-5247 CNRS

RICT 2015 Local Organising Committee

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The team CBSA located at the University of Avignon is composed of 6 permanent researchers for a total amount of 14 people including post-doctoral and engineer researchers as well as master students. The team belongs to the "Institut des Biomolécules Max Mousseron" (IBMM UMR-5247), which is a research institute of international renown working at the junction of chemistry and biology. Our research is mostly focused on the design and synthesis of amphiphilic compounds for a wide range of biomedical applications with a particular emphasis on two topics:

1. **Chemical alternatives to classical detergents for the study of membrane proteins (MPs):**

Over the past two decades, we have developed molecular tools for the handling and characterization of MPs. In close collaboration with biochemists, we have pioneered the synthesis of detergent-like fluorinated surfactants that keep MPs soluble and stable for long period of time. For the same purpose, we have also developed series of totally non-ionic amphiphilic polymers that exhibit promising properties (WO 2011/058195A1). In April 2015, our team received a financial support from the ANR (LabCom) for the creation of Chem2Stab, a unique research laboratory that associates chemists of the team and chemists and biochemists of the start-up

CALIXAR (Lyon). The main goal of Chem2Stab is to develop new reagents allowing proteomic studies for the validation of new pharmaceutical targets. Research and development conducted within the frame of Chem2Stab are therefore intended to improve the quality and performance of drugs and vaccines developed from therapeutic targets or antigens.

2. Therapeutic improvement and theragnostics:

Our group is also engaged in various medicinal chemistry topics including drug delivery, cell targeting and prodrug design. To achieve such goals we have been searching for the adequate combination of bioavailability improvement, ligand/receptor selective affinity and/or multivalency through variable tailored-made amphiphilic architectures.

Our work has been mainly directed towards the design of therapeutic tools for inflammatory and/or angiogenesis related pathologies. This ranges from the development of nitrone-based antioxidant agents to prevent oxidative stress and associated pathologies, to the design of Thalidomide analogues for the treatment of CNS pathologies associated to both inflammation and vascular remodeling like multiple sclerosis.

More recently, we applied our experience on tumors targeting (by means of ligand-based interactions or EPR effect-associated accumulation) and fluorinated surfactants to develop stable ultrasound-sensitive perfluorocarbon/water nanoemulsions devoted to early detection of tumor development and controlled/targeted chemotherapy.

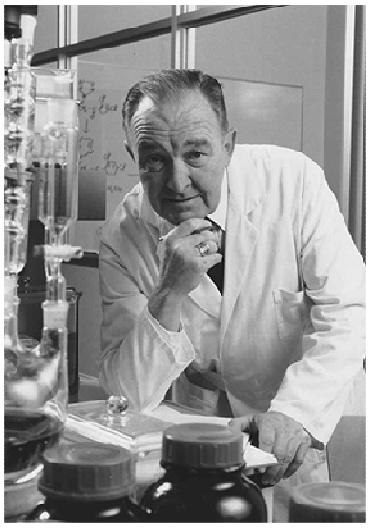
Despites its modest size, our team benefits from national/international recognition and financial support: ANR (grant proposal Nanobiotechnologies from “Investissements d'Avenir”; LabCom Program Chem2Stab), Eranet II program (Euronanomed), Région PACA LabEx CheMISyst, Institut Carnot Star.

Société de Chimie Thérapeutique

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.

This year the Paul Ehrlich Prize goes to Dr Sylviane MULLER



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

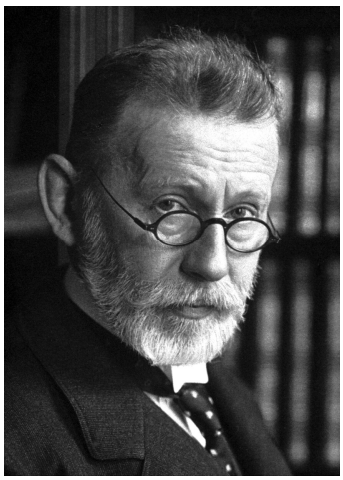
Janssen is a division of Johnson & Johnson Pharmaceutical Research and Development. Their strategy is to identify the biggest unmet medical needs and match them with the best science, internal or external, to find solutions for patients worldwide. The activity of Janssen is focused on discovering, developing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

JANSSEN-CILAG,
Société par Actions Simplifiée au capital social de
2.955.669 Euros, immatriculée au Registre du Commerce
et des Sociétés de Nanterre sous le n° B 562 033 063,
dont le siège social est au 1, rue Camille Desmoulins,
TSA 93003, 92787 Issy-les-Moulineaux.

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

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.

Dr Sylviane MULLER, Paul Ehrlich Prize 2015 Laureate

Sylviane Muller is a Distinguished Class Research Director in the French *Centre National de la Recherche Scientifique* (CNRS) and Professor at the Institute of Advanced Studies of the Strasbourg University and also in charge of the chair *Therapeutic Immunology*. She is deputy director of the CNRS Molecular and Cellular Biology Institute (IBMC) in Strasbourg (France), Chair and Director of the CNRS Unit entitled *Immunopathology and Therapeutic Chemistry*, and Head and Coordinator of the Drug Discovery Center for Cancer and Inflammation *Medalis* awarded *'Laboratory of Excellence*'.
Sylviane Muller defended a doctoral degree in Molecular Biology in 1978 and a thesis in Science in 1984 in Strasbourg. She has been a post-doctoral fellow for two years at the Max-Planck Institute for Immunobiology in Freiburg (Germany).

Entering the CNRS in 1981 she was interested in studying the immunochemistry of chromatin and progressively in the immunopathologic and therapeutic aspects of Lupus, an autoimmune chronic disease that affects more than 5 million patients in the world.
In 2001, Sylviane Muller took the direction of her own CNRS research team at IBMC, where she concentrated her activity on systemic lupus erythematosus, which represents a prototype of autoimmune rheumatic disease.

Dr Muller's team is interested in understanding the molecular and cellular pathways involved in autoreactive lymphocytes activation and the events leading to cell death/living phenomena (apoptosis, autophagy) that are central in Lupus. Combining fundamental knowledge of Lupus with a long-lasting experience in peptide immunochemistry, Sylviane Muller and her team were able to develop a very novel strategy, based on synthetic peptides, designed to modulate the aberrant immune response and restore immune system functions in Lupus mice and patients. Her team discovered the therapeutic effect of peptide P140 on Lupus and a candidate drug has been

developed from P140: the Lupuzor™. The results of this peptide-based substance in Phase IIb clinical trials involving more than 150 Lupus-patients gave extremely promising results and Phase III clinical trials have started in 2015.

Dr Sylviane Muller is the co-author of 249 publications in peer-reviewed journals and 97 review articles and chapters. Her scientific activity has led to ~30 patents (most are licensed). She is the co-founder of two companies, namely Neosystem (1986) became Polypeptide, a leading peptide development and manufacturing company and more recently ImmuPharma (2002). ImmuPharma holds the exclusive license of Lupuzor™ and listed on the London Stock Exchange.

She is a member of the editorial board of several scientific journals and of international scientific Societies. Dr Muller gave numerous lectures in Europe and the US, and participated to many international meetings as an invited speaker. She co-organized ten international congresses in the field of autoimmunity and lupus. She received the CNRS Silver Medal (2009), the CNRS Innovation Award (2015) and she is *Chevalier de l'Ordre de la Légion d'Honneur* (2010).

Société de Chimie Thérapeutique

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 drug discovery and related sciences from target identification to drug registration. The SCT is also involved in advancing medicinal chemistry by initiating cooperation, networking, providing training and rewarding scientific excellence. The SCT is interested in developing and maintaining scientific contacts with industrial and academic research groups, medicinal chemistry 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** or **four** dedicated **scientific events** from which the most important is the "***Rencontres Internationales de Chimie Thérapeutique"*** **RICT** an international congress devoted to the main scientific areas in medicinal chemistry. Generally these highly successful meetings bring together more than 25 internationally recognized speakers from Europe, Asia and North-America presenting their outstanding results in every aspect of modern medicinal chemistry.

In 2015 the **51st RICT** entitled "*Drug Discovery and Selection: Understanding Targets and Mechanisms"* is held in Avignon, in Provence. For this meeting we propose a dense scientific program with 23 plenary lectures and 4 short communications and we hope to welcome more than 450 attendees coming from more than 40 countries.

Each year the "**Ehrlich Prize"** is attributed to researchers or teams for their outstanding contribution to medicinal chemistry. This work is presented by the Ehrlich Prize Laureate at the RICT meeting. We are pleased to announce that for the second time the "**Pierre Fabre Award for Therapeutic Innovation"** will also be attributed to a young, talented researcher.

Thematic days were launched some years ago to cater to special demands of pharmaceutical R&D. In line with our previous thematic symposia, in April 2015 we organised a successful **SCT Spring One-Day Meeting** entitled "*Chemical Biology: Bioorthogonal Chemistry Contributing to Molecular Therapeutic Innovation"* with more than 120 attendees of main pharmaceutical companies, biotechs, academic groups from France and from some neighbouring European countries.

Special scientific days (***Journées de Jeunes Chercheurs***, **JJC**) are organised for young PhD students and postdocs each year. In accordance with the decision of our Board this year the SCT **Young Research Fellows Meeting** (**YRFM**) was organised in Paris-Biocitech at the beginning of February. This two and a half-day meeting knew an unprecedented success offering the opportunity for more than 320 PhD students and postdocs registered from 40 countries, to present their results in 33 oral communications and poster sessions. The **YRFM** provides unique occasion for attendees to meet human resources representatives of pharmaceutical companies, small biotechs, start-ups for simulated job interviews. Special service to ameliorate their CV and round-tables on career orientation have also been organised.
The **forthcoming 23rd YRFM** will be held in Lille in February 2016.

For several years the SCT has been engaged in supporting young talented researchers in medicinal chemistry. 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.

In the frame of our collaborations with neighbouring countries, a **common scientific day** with the Medicinal Chemistry and Chemical Biology Division of the Swiss Chemical Society on the theme *"The Expanding Toolbox of Medicinal Chemistry: From Chemical Biology to Clinical Applications"* will be held on October 16, 2015. in Dijon (Burgundy)

To modernize our Society a series of measures has been introduced. SCT Board was reorganised, a **Scientific Advisory Board** (SAB) covering the main fields of medicinal chemistry was set up to promote the attractiveness and quality of our events. Partnership contracts were established with pharmaceutical companies, public and governmental institutions as well as sister societies in neighbouring countries.
Our web site has been refurbished, communication of ongoing activities has been intensified to encourage subscriptions and thus power up the position of the SCT within the European Federation of Medicinal Chemistry and French Federation for Chemical Societies.

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

Prof Janos Sapi
SCT President

Dr Luc Van Hijfte
SCT Vice-President

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.

You can also add information to the site 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.

The SCT Communication Board:

Dr. Frédéric Schmidt (Institut Curie, Paris)
Pr. Nicolas Willand (Université de Lille 2)
Dr. Aline Moulin (Flamel Technologies)

Société de Chimie Thérapeutique

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 a pharmaceutical company of Johnson & Johnson)
   This prestigious award is attributed each year to researchers of international reputation or research teams for their outstanding contributions to medicinal chemistry.

2. **SCT Prize for Young Medicinal Chemist** (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 Research Fellows Meeting (Journées de Jeunes Chercheurs, JJC).

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. **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.

Grants attributed each year by the SCT

1. **Congress Grants**
   Several grants are offered each year for young medicinal chemists to attend meetings such as the ACS (American Chemical Society) Meeting and RICTs.
   These grants are attributed to Young Medicinal Chemists who presented the best talks and the best posters. Other grants to attend meetings are also given at the RICTs rewarding poster presentations.

2. **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 was: "*Role of epigenetic modifications in the pathogenesis of type 2 diabetes"*

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!

Pr Alain Gueiffier
SCT General Secretary
Université de Tours

Pharma Societies, Our Partners

Provence Technologies small molecule business unit specializes in the chemical synthesis and development of small molecules. With a growth of 10% every year it benefits from excellent track records published on our website.
Our core competences are:

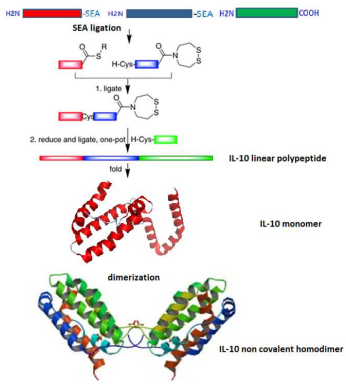
- Scouting of innovative routes/chemical synthesis, from mg to kg
- Process R&D and optimization for scale up to pilot production
- Isolation and characterization of impurities
- Development of full chemical package prior to GMP production

In 2014, the business unit set up a 60L kilolab to increase its capacity and strengthen its position in chemical development up to kg-scale and in process optimization for pilot scale productions

Our market: pharma, biotech, cosmetics, agrochemicals.
For more information, please visit our website: **www.provetech.com**

- Approved cGMP API production
- 2,500 sq.m facility
- 300 sq.m dedicated to GMP Peptide Synthesis.

Provence Technologies Peptide business unit (ex Synprosis, now Provepep) specializes in the chemical synthesis (SPPS) of long peptides (>100 aa).
With a strong immunology culture, Provepep has developed several polyepitopic peptides for vaccines against infectious disease, cancer and is able to produce under GMP conjugated peptides, MAP peptides and lipopeptides.
Provepep also works in the field of toxins with the synthesis of 60 mer peptides 2, 3 fingers containing up to 4 disulfur bridges.
Provepep possesses a unique technology of native ligation SEA allowing the company to offer an alternative to recombinant technology with an efficient, qualitative and cost-effective solution.
Current high valued R&D programs focused on biosimilar market include IL -10. IL-10 is known for direct activities in immunology to foster tolerance for immune responses. It is also being investigated in collaboration with a research group in Barcelona for new applications in oncology. Provepep already successfully synthesized tens of mg GMP of IL-10 (160mers containing 2 disulfide bridges obtained by SPPS using our SEA technology)



For more information please visit our website: **www.provepep.com**

A Life Sciences company which uses antibodies and fluorescence to develop bioassays for *in vitro* Diagnostics and Drug Discovery.

http://www.cisbio.com

Cisbio Bioassays located in Parc Marcel Boiteux (Codolet, Gard, France) is a privately held life sciences company committed to improving human healthcare. With over 200 employees worldwide and more than 30 years of experience in *in vitro* diagnostics and drug discovery, we provide creative technological solutions and partner with the global scientific community. Our portfolio of 500+ proprietary assays and reagents is used by pharmaceutical and biotech companies, academia and contract research organizations worldwide to help generate effective therapies.

Cisbio Bioassays has facilities in France, the United States, Japan and China, as well as a network of sales offices and distributors across the globe. Our relationship with customers is at the core of our activity, and we provide a hands-on and collaborative approach that contributes to successful drug discovery research projects.

In the 1990s, we took opportunity of the unique luminescent properties of Rare-Earth cryptates developed by Jean-Marie Lehn (Nobel prize in chemistry 1987), and launched **HTRF®** (Homogeneous Time Resolved Fluorescence), a breakthrough technology whose advanced properties continue to enhance and accelerate the drug discovery process. Our R&D teams regularly expand HTRF's field of applications through new tools that help us all to understand biological functions better.

We develop and manufacture *in vitro* diagnostic products such as RIA and ELISA kits in the fields of **oncology, diabetes, hypertension, fertility, reproduction and growth**.
We create and market life sciences kits, reagents & services for drug discovery research in the fields of **GPCRs, epigenetics, biomarkers**, **kinases & cell signaling, protein-protein interactions.** These reagents are used by all major pharmaceutical companies and biotechs to discover new drugs. More recently, we have developed **Tag-lite®**, a unique fluorescence-based assay platform to investigate GPCR and RTK ligand binding, using *in situ* labeling of receptors in their biological environment.

Cisbio Bioassays is involved in a number of industry-academic collaborations through ANR projects (DIMHER 2008-2011, CHROMOS 2009-2012, GLUSENS 2010-2014, RSignal 2014-2018), FUI (Cell2lead 2010-2013, UmAbHER3 2012-2015, MISR-Test 2012-2015) together with ICM/IRCM and IGF (Montpellier), INSERM (Strasbourg), CRCM/INSERM (Marseille), and ITN-Marie Curie "TOPBIO" (2010-2014).

Through our dedication to innovation in technologies, products and associated services, ***Cisbio Bioassays*** will continue to respond to the as-yet unmet technical needs of customers, as well as to the existing and future medical concerns of a global patient base.
http://www.cisbio.com

Avignon "City of Popes"

During the period 1309–77, the popes took up residence at Avignon instead of at Rome, primarily because of the current political conditions. Indeed, distressed by factionalism in Rome and pressed to come to France by Philip IV, Pope Clement V moved the papal capital to Avignon, which at that time belonged to vassals of the pope.
This turning point in the story of the city, which occurred in the 14th century, marked the city definitively and ensured its international renown. The city's architectural physiognomy would be changed forever and still contributes to its economic growth.

It was in the pontificate of the Avignon pope, John XXII (1316-34), of his civil name Jacques Duèze, that the subject of drinking potable gold regularly for the heath as youth elixir (vide infra) became forbidden. On July 22, 1317, John issue a bull, Spondet, forbidding the practice of science of alchemy and imposing fine of counterfeiters pretending to make genuine gold or silver. Thus, that anyone making counterfeit gold or silver would have to pay the same amount in real gold or face imprisonment and he branded mark of infamy. Cleric engaged in alchemy would be deprive of their benefices [1].

Fresque représentant Jean XXII

Gold's supposed powers of regeneration go back to antiquity. Pliny the Elder (AD 23-79) describes the preparation of two remedies using gold and their therapeutic properties. In the 13th century, alchemists like Michael Scot, Roger Bacon, and Arnaud de Villeneuve wrote about "Aurum potabile"—drinkable gold—and how to obtain it. Drinkable gold was also well known in the 16th century French Court, and Alexandre de la Tourette dedicated his book [2] on the subject to King Henri III. In the 17th century, many doctors and chemists like Jean Beguin and Christophe Glaser published gold recipes.

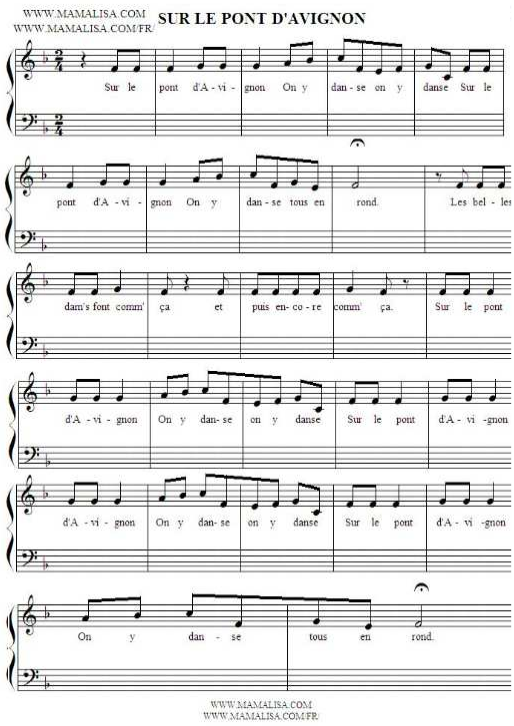
Despite this local 'interdiction", in other parts of the kingdom, potable gold was still used. Indeed, one of the most famous consumer was Diane de Poitiers (1499-1566), the unique daughter of Jean de Poitiers, who was probably the most beautiful and the most healthy woman of France. She became notorious as the latter's favorite of the king Henry II of France (1519-1559). In 2008, during an archaeological dig in the cemetery of Anet, skeletons were excavated near a monument to Diane de Poitiers. Diane de Poitiers remains were identified from the other skeletons by some physical particularities (arthritic lesions, ante mortem tooth lose, consolidated tibia and fibula fractures…) for which Ambroise Paré treated her. The most surprising became from analysis of Diane's hair which have been preserved at the castle. Coupled mass spectrometry showed a great concentration of gold in these hairs and Diane's hair diameter was around 65 µM instead of 80-90 µM. Hair thinning is relevant from a symptom of chronic gold intoxication and Diane is known to have undergone a long course of gold treatment, hoping it was an elixir of youth [3].

Coming back to Avignon, it must be emphasized that the Popes' Palace is one of the most visited national heritage spots in France: approximately 650,000 visitors per year. It has a surface area of 15,000 m^2, making it one of the biggest medieval buildings in Europe, its towers rising up about 50 m high - The Trouillas Tower, recently renovated, was a prodigious feat by the workers and architects of that period. Another, and certainly not the least, particularity is the Palace's main courtyard with its 1500m^2.

Another particuliarity, the fact that since 1947, under the impulsion of Jean Vilar, the Palace's main courtyard has been put at the disposal of the Avignon Theatre Festival. This festival is an international event for the performing arts - theatre, dance, readings, music — which takes place each year during the month of July.

Finally, In romantic counterpoint, Pont d'Avignon – of nursery-rhyme fame – spans halfway across the Rhône: as represented on the following musical score.

Have a good stay!



Dr Claude Monneret
Institut Curie, Paris

Sources

[1] [The rise of alchemy in fourtheen century England. Plantagenet Kings and the Search for the Philosopher's Stone; Jonathan Hugues Editor.2012.

[2) Alexandre de La Tourette, *Bref discours des admirables vertus de l'or-potable*, P. Roussin, 1575, 94 p.

[2] P. Charlier et al. Fatal alchemy. *Brit J Med* 2009; 339: 1402.

- 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 (3.43) is one of the highest of all medicinal chemistry journals.

Pr Hervé Galons
Université de Paris Descartes

Société de Chimie Thérapeutique

Upcoming events

Upcoming events organized under the auspices of the SCT:

SCT - Swiss Chemical Society Medicinal Chemistry & Chemical Biology Division Joint Meeting
October 16 2015, Dijon (Burgundy)

SCT Young Research Fellows Meeting (Journées de Jeunes Chercheurs, JJC)
February15-17, 2016, Lille

Frontiers in Medicinal Chemistry 2016: SCT – GDCh - DPhG Joint Meeting
March 13-16, 2016, Bonn (Germany)

52nd International Conference on Medicinal Chemistry RICT 2016
July 6-8 2015, Caen (Normandy)

For more information: www.sct-asso.fr
