

SCHOOL OF PHARMACEUTICAL SCIENCES
GENEVA - LAUSANNE

ANNUAL REPORT 2015



UNIVERSITÉ
DE GENÈVE

Ecole de Pharmacie
EPGL
Genève – Lausanne

Unil

UNIL | Université de Lausanne

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Mrs Florence VON OW

INFORMATIC STAFF

Mr Loris FRANCO
Mr Francisco MABIALA (auxiliary)
Mr Yann MANET

ABBREVIATIONS

| | |
|-----------------|---|
| <i>PO</i> | <i>Full Professor</i> |
| <i>PAS</i> | <i>Associate Professor</i> |
| <i>PAST</i> | <i>Assistant Professor</i> |
| <i>PT</i> | <i>Adjunct Professor</i> |
| <i>PI</i> | <i>Visiting Professor</i> |
| <i>PD</i> | <i>Privat-Docent</i> |
| <i>MER / CC</i> | <i>Senior Lecturer</i> |
| <i>CE</i> | <i>Lecturer</i> |
| <i>CS</i> | <i>Research Associate and Senior Research Associate</i> |
| <i>MA</i> | <i>Senior Research and Teaching Assistant</i> |
| <i>POSTDOC</i> | <i>Postdoctoral Scholar</i> |
| <i>ASS</i> | <i>Research and Teaching Assistant</i> |

RESEARCH UNITS



BIOPHARMACEUTICS

Prof Gerrit BORCHARD, PO
Dr Olivier JORDAN, MER

LIFE SCIENCES MASS SPECTROMETRY

Prof Gérard HOPFGARTNER, PO (*until 31.7.2015*)
Dr Emmanuel VARESIO, MER

PHARMACEUTICAL ANALYSIS CHEMISTRY

Prof Jean-Luc VEUTHEY, PO
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Dr Davy GUILLARME, CC

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Prof Eric ALLEMANN, PO
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PHARMACOGNOSY

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Prof Pierre-Alain CARRUPT, PO (*until 30.09.2016*)
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PROTEOMIC CLINICAL

Prof Denis HOCHSTRASSER, PO

CLINICAL PHARMACOLOGY

Prof Pierre DAYER, PO (*until 30.09.2015*)
Prof Jules DESMEULES, PAS (*promoted PO 1.10.2015*)

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Dr Christian SIERRA, CE (*until 31.7.2015*)
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Alessandra RECCHIA
Maria SEBASTIAN MORELLO
Francesca TESSARO
Barbara THEILER
Elena TRATTA
Katleen VAN BUTSELE
Yogesh VEGUNTA

BUDGET

| | | |
|--|----------------------|--------------|
| *STAFF SALARY ¹ | 12'022'125.-- | (TABLE 1) |
| OPERATIONAL BUDGET OF THE SECTION | 1'182'411.-- | (TABLE 2) |
| TOTAL BUDGET SALARY AND OPERATIONAL | 13'204'536.-- | ¹ |
| FACULTY INVESTMENT | (REPORT TO 2016) | |
| SECTION INVESTMENT | 260'155.-- | |
| TOTAL INVESTMENT FUNDS | 260'155.-- | (TABLE 3) |
| SWISS NATIONAL SCIENCES FOUNDATION | 730'581.-- | |
| OTHERS FUNDS | 2'284'256.-- | |
| TOTAL EXTERNAL FUNDS | 3'014'837.-- | (TABLE 4) |
| TOTAL BUDGET EPGL | 16'479'528.-- | ² |

*STAFF 2015

NUMBER OF PEOPLE WORKING AT EPGL DURING 2015 : 226

¹ With social security contributions

² including :

- contribution Etat VD CHF 5'075'407.--

- subsidies "universitaire intercantonale" AIU CHF 1'450'000.--

BUDGET

TABLE 1 STAFF SALARY CHF 12'022'125

With social security contributions
Including :- contribution Etat VD CHF 5'075'407.—

- Assistants and post-doctorals : 139 persons
- Technical and administrative staff : 39 persons
- Lecturers : 29 persons
- Professors : 19 persons

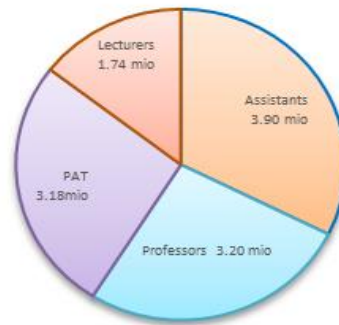


TABLE 2 OPERATIONAL BUDGET OF THE SECTION CHF 1'182'411

- Education budget chf 110'000
- Investment chf 260'155
- Operating budget chf 70'000
- Operating budget TP chf 120'000
- Operating budget of Laboratories chf 933'002

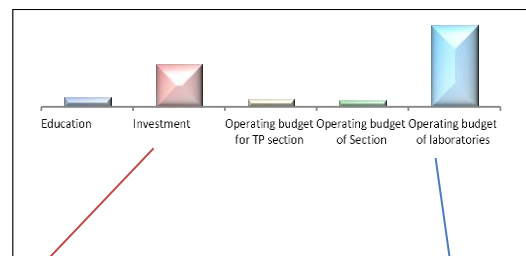
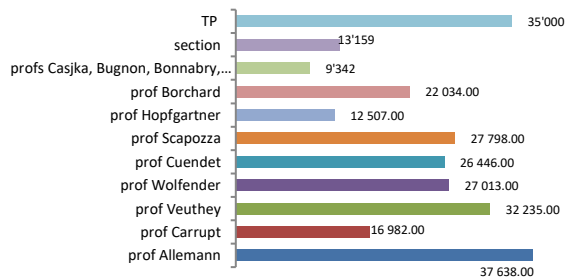


TABLE 3 TOTAL INVESTMENT FUNDS CHF 260'154



OPERATIONAL BUDGET OF LABORATORIES CHF 933'00

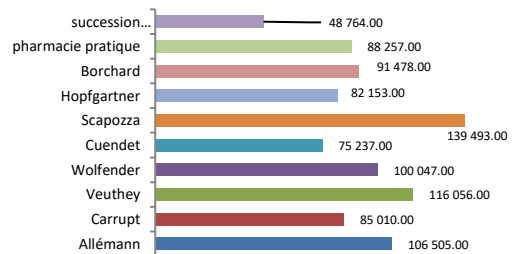
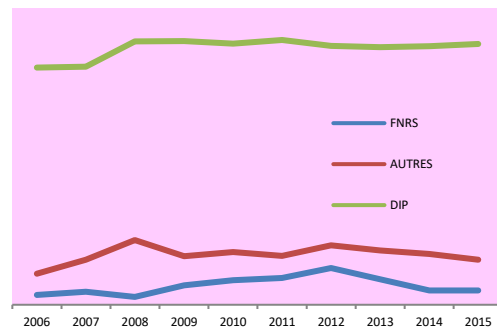


TABLE 4 TOTAL PUBLIC AND EXTERNAL FUNDS CHF 3'014'837

- FNRS chf 730'581
- Autres chf 2'284'256
- DIP chf 13'204'536



2015 AT A GLANCE

| | |
|------------------|----------|
| Total budget CHF | 16.4 Mio |
|------------------|----------|

| | |
|------------------------------|------------|
| Staff (headcount) | 233 |
| Students: | 413 |
| - Bachelor | 278 |
| - Master | 135 |
| - Master of advanced studies | 4 |
| Ph.D. students | 100 |

| | |
|---|-----|
| Publications with impact factor | 144 |
| Publications without impact factor | 25 |
| Books and chapters | 17 |
| Presentations & posters | 183 |
| Congress | 208 |
| Number of projects at FNRS and assimilated | 41 |
| Projects of collaboration with the industry | 44 |
| Ph.D. Thesis presented in 2015 | 16 |
| Patents | 4 |
| Awards | 23 |

BIOPHARMACY



PROFESSOR GERRIT BORCHARD

DR OLIVIER JORDAN, SENIOR LECTURER

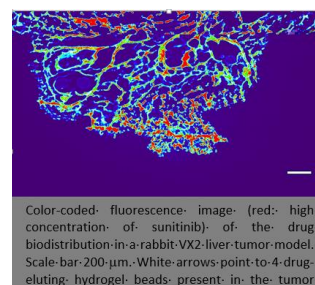
GENERAL DESCRIPTION OF THE UNIT

The Biopharmaceutics group of EPGL in 2015 is a multidisciplinary and international group dedicated to the study of interaction of drugs and drug carrier systems with their biological environment, especially the immune system. Scientific projects include the physicochemical characterization of such drugs and carriers, the optimization of formulation methods, the establishment of cell based-assays, the utilization of suitable ex-vivo and in vivo models, and translational research to allow for clinical testing. The Biopharmaceutics group has gained expertise in the treatment and prevention of infectious diseases through its work on vaccines, and has accumulated considerable knowledge in interventional cancer therapy. The former line of research is dedicated to the development of particle-based vaccines against tuberculosis, which are equipped with novel adjuvants addressing the innate immune system (e.g., Toll-like and NOD-like receptors). Work in cancer therapy is focused on a superparamagnetic iron oxide nanoparticle (SPIONs) based combined approach of heat induction and chemotherapy, and on chemoembolization using (biodegradable) beads loaded with anti-angiogenic drugs. In addition, a program on the elucidation of critical quality parameters driving the biodeposition of iron carbohydrate nanoparticles has been continued in 2015. More fundamental work is done in the area of drug interaction with the (innate) immune system. Here, we are attempting to elucidate the mechanisms underlying the inflammatory and immune response to aggregates of therapeutic proteins, especially observed after subcutaneous injection (injection site reactions, ISR). We have also recently unraveled the interplay of epithelial tight junction regulation and ligation of receptors of the innate immune system (e.g., Toll-like receptors). The Biopharmaceutics group has access to all equipment necessary for the execution of the projects described above, either in-house or through cooperation within EPGL, the University of Geneva or with outside partners. It entertains a multitude of cooperative projects with academic institutions (basic research and clinical) as well as with industrial partners. Through the active participation in various learned societies and scientific committees, FABIO has the opportunity to shape the future of biopharmaceutical sciences and science policies.

SPECIFIC RESEARCH FIELDS

Cancer therapy

Our laboratory has developed a strong expertise in the treatment of tumors through local delivery of anti-angiogenic agents, which inhibit the growth of new tumor vessels. In the clinical setting, this is performed by injecting small drug-eluting hydrogel beads into the vascular bed of liver tumors, by a minimally invasive procedure called chemoembolization. In vitro characterization of drug release and correlation to rabbit pharmacokinetic studies showed the ability to introduce an antiangiogenic drug - sunitinib - into target tissues, keeping low systemic drug concentration to avoid side effects. An efficacy study was completed, showing the benefit of the approach in terms of tumor growth in a rabbit model. Drug mapping techniques – fluorescence and mass spectroscopic imaging – supplied novel insight into drug biodistribution in the liver, revealing an extended residence of the drug and its metabolites in the tumor tissue. The feasibility of loading poorly soluble drugs using liposomes (Innogap awarded project) or large monoclonal antibodies using polyelectrolyte multilayers has been shown in vitro, paving the way to novel chemoembolization applications.



Color-coded fluorescence image (red: high concentration of sunitinib) of the drug biodistribution in a rabbit VX2 liver tumor model. Scale bar: 200 μ m. White arrows point to 4 drug-eluting hydrogel beads present in the tumor.

Publications from this work were awarded with 2 international prizes by interventional oncology societies, and a third award recognizing the strength of the translational network built with our CHUV collaborators. An industrial partner has completed preclinical studies and clinical trials are envisioned.

In the frame of another oncology project with a Swiss NanoTera consortium, we are designing imaging agents to detect early prostate cancer metastases. To this end, we functionalized superparamagnetic iron oxide nanoparticles (SPIONs) with targeting moieties to specifically target solid tumor metastases in lymph nodes. We showed that an aptamer targeting prostate-specific membrane antigen (PSMA) attached to the SPIONs had the ability to detect lymph node prostate cancer cells in vitro. On targeting to cancer cells, SPIONs are able to deliver heat under magnetic field excitation, allowing a local hyperthermia treatment. This theranostic approach will be further tested in a rodent tumor model. In the future, our expertise in cancer therapy and nanomedicine will be combined with our expertise in immunomodulation, resulting in multi-pronged approaches for cancer therapy.

2015 AT A GLANCE

| | |
|---|----|
| Publications with impact factor | 14 |
| Publications without impact factor | 3 |
| Books and chapters | 3 |
| Posters presentations | 18 |
| Congresses | 27 |
| Number of projects at FNRS and assimilated | 2 |
| Projects of collaboration with the industry | 2 |
| PhD Thesis presented in 2015 | 3 |
| Awards | 4 |

STAFF

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Emmanuelle SUBLET

Kevin ULDRY (*apprentice laborant*)

RESEARCH FUNDS

SWISS RESEARCH PROGRAM SWISS RESEARCH PROGRAM

NANO TERA MAGNETO

"From superparamagnetic nanoparticles until tools for the treatment of cancer" SNSF reference number:

20NA21_145919

Co-investigators: O. JORDAN

Allocation 2015: CHF 98'000.--

Total allocation : CHF 393'500.--

Duration: 4 years

Starting date: 01.04.2013te: 01.04.2013

NOVEL MICELLAR DRUG CARRIER SYSTEMS FOR GENE THERAPIES

SNSF reference number: 200021_157033

Co-Investigators: M. MOELLER, G. BORCHARD, A. DANANI

Allocation 2015: CHF 40'775.--

Duration: 3 years

Starting date: 01.09.2015

INDUSTRY AND ASSIMILATED

| Code | Service - Development - Research | Total Amount for 2015 (CHF) |
|--------------|----------------------------------|-----------------------------|
| Aptissen | Research | 9'480.- |
| Vifor | Research | 69'616.- |
| total | | 79'096.- |

PUBLICATIONS

THE TOP TEN JOURNALS IN THE FIELD (WITH IMPACT FACTOR)

| | |
|--|------|
| Drug Discovery Today | 6.69 |
| Annals of the New York Academy of Sciences | 4.31 |
| Molecular Pharmaceutics | 4.38 |
| International Journal of Pharmaceutic | 3.65 |
| Carbohydrate Polymers | 4.07 |
| Journal of Vascular Surgery | 3.62 |
| European Journal of Pharmaceutics and Biopharmaceutics | 3.85 |
| Journal of Vascular Interventional Radiology | 2.40 |
| Journal of Ocular Pharmacology and Therapeutics | 1.47 |
| Journal of Nanomaterials | 1.75 |

SCIENTIFIC PUBLICATIONS (WITH IMPACT FACTOR)

1. S. HEUKING, L. BRUNNER, CH. BARNIER-QUER, N. COLLIN, G. BORCHARD, Nanocarriers for DNA Vaccines : Co-Delivery of TLR-9 and NLR-2 Ligands Leads to Synergistic Enhancement of Proinflammatory Catokine Release. *Nanomaterials*. (2015) 10.3390(nano) 504 2317. 1.75
2. V. PATRULEA, L.A. LAURENT-APPLEGATE, V. OSTAFE, O. JORDAN, G. BORCHARD: "Optimized synthesis of O-carboxymethyl-N,N,N-trimethyl chitosan." *Carbohydrate Polym.* 122 (2015) 46-52. 4.07
3. Y. SELCAN, S. MÜHLEBACH, G. BORCHARD: "Regulatory challenges and approaches to characterize nanomedicines and their follow-on similars." *Nanomedicine* 10 (2015) 659-74. 4.07

4. V. PATRULEA, V. OSTAFE, G. BORCHARD, O. JORDAN. "Chitosan as a starting material for wound healing applications" (invited review) *Eur J Pharm Biopharm* 97:417-426 (2015). 3.85
5. K. FUCHS, P. E. BIZE, A. DENYS, G. BORCHARD, O. JORDAN. "Sunitinib-Eluting Beads for Chemoembolization: Methods for In Vitro Evaluation of Drug Release" *Int J Pharm.* 482 (2015) 68-74. 3.65
6. O. SAKR, O. JORDAN, G. BORCHARD. "Novel Layer-by-Layer Deposition Technique for the Preparation of Double-Chambered Nanoparticles formulation". *J Pharm Sci* 104:2637-40 (2015). 2.59
7. O. SAKR, O. JORDAN, G. BORCHARD. "Sustained protein release from hydrogel microparticles using layer-by-layer (LbL) technology". *Drug Deliv.* 7:1-9 (2015). 2.55
8. J. PRADAL, M. F. ZULUAGA, P. MAUDENS, J. M. WALDBURGER, C. A. SEEMAYER, E. DOELKER, C. GABAY, O. JORDAN, E. ALLÉMANN. "Intra-articular bioactivity of a p38 MAPK inhibitor and development of an extended-release system". *Eur J Pharm Biopharm*, 93:110-117 (2015). 3.85
9. J. PRADAL, P. MAUDENS, C. GABAY, C.A. SEEMAYER, O. JORDAN, E. ALLÉMANN. "Effect of particle size on the biodistribution of nano- and microparticles following intra-articular injection in mice". *Int J Pharm*, 498:119-129 (2015). 3.65
10. S. KADERLI, E. VIGUIER, D. WATRELOT-VIRIEUX, T. ROGER, R. GURNY, L. SCAPOZZA, C. BOULOCHER, O. JORDAN. "Efficacy study of two novel hyaluronic acid-based formulations for viscosupplementation therapy in an early osteoarthritis rabbit model". *Eur J Pharm Biopharm*, 96:388-395 (2015). 3.85
11. S. KADERLI, C. BOULOCHER, E. PILLET, A.L ROUGEMONT, T. ROGER, E. VIGUIER, R. GURNY, L. SCAPOZZA, O. JORDAN. "A novel biocompatible hyaluronic acid-chitosan hybrid hydrogel for osteoarthrosis therapy". *Int J Pharm* 483:158-168 (2015). 3.65
12. E. CARENZA, O. JORDAN, P. MARTÍNEZ-SAN SEGUNDO, R. JIŘÍK, Z. STARČUK, G. BORCHARD, A. ROSELL, A. ROIG. "Encapsulation of VEGF165 in magnetic PLGA nanocapsules for potential local delivery and bioactivity into human brain endothelial cells" *J. Mater. Chem. B* 3:2538-2544(2015). 4.72
13. G. AGUSTI, O. JORDAN, G. ANDERSEN, E. DOELKER, Y. CHEVALIER "Radiopaque iodinated ethers of poly(vinyl iodobenzyl ether)s: Synthesis and evaluation for endovascular embolization" *J Appl Polym Sci* 132:41791 (2015). 1.76
14. A.G. SARRAF, S. CHERKAoui, O. JORDAN, R. GURNY, E. DOELKER. "Controlled drug release from melt-extrudates through processing parameters: A chemometric approach" *Int J Pharmaceutics* 481:9-17 (2015). 3.65

SCIENTIFIC PUBLICATIONS (WITHOUT IMPACT FACTOR)

1. K. FUCHS, O. JORDAN. "Drug-eluting beads loaded with anti-angiogenic agents for chemoembolization: Interesting findings from the lab for IRs" *Interventional News*, September 2015.
2. P. MAUDENS, C. THAUVIN, O. JORDAN, E. ALLEMANN. "L'arthrose à genoux", *Pharmajournal* 24, November 2015.
3. B. FLÜHMANN, D. J .A. CROMMELIN, J. S. B. DE VLIENER, G. BORCHARD, S. MÜHLEBACH, S. E. MCNEIL, S. V. WEINSTEIN, V. P. SHAH. "Non-Biological Complex Drugs (NBCDs) and their follow-on versions: time for an editorial section." *GaBI J.* 4 (2015).

BOOKS CHAPTERS

1. O. SAKR, O. JORDAN, G. BORCHARD. "siRNA-Based Therapeutics: Delivery" In Encyclopedia of Biomedical Polymers and Polymer Biomaterials, 1st Ed.; Mishra, M., Ed.; Taylor & Francis: New York, Vol. 10, p. 286-7307 (2015).
2. E. G. FINE, O. JORDAN, P. AEBISCHER. "Nerve Repair: Biomaterials" In: Saleem Hashmi (editor-in-chief), Reference Module in Materials Science and Materials Engineering. Oxford: Elsevier; pp. 1-8 (2015).
3. G. BORCHARD. "Drug nanocrystals" in: D.J.A. Crommelin and J. de Vlieger (eds.), Non-biological complex drugs; the science and the regulatory landscape. Springer, New York, NY, pp. 171-189 (2015).

PRESENTATIONS

POSTERS PRESENTATIONS

1. S. EHRENBERGER, G. BORCHARD, H. HOFMANN, O. JORDAN "In-Situ Forming Implant for Application of Local Hyperthermia in Cancer" NanoTera Annual Meeting, Bern, Switzerland, May 4-5, 2015.
2. S. EHRENBERGER, D. BONVIN, M. MIONIC, H. HOFMANN, G. BORCHARD, O. JORDAN "Injectable Nanocomposite for Embolization and Magnetically Induced Local Hyperthermia" European Summit of Clinical Nanomedicine and Targeted Medicine (CLINAM), Basel, Switzerland, June 28- July 1, 2015.
3. S. EHRENBERGER, D. BONVIN, M. MIONIC, H. HOFMANN, G. BORCHARD, O. JORDAN "In-Situ Forming Implant for Local Delivery of Superparamagnetic Iron Oxide Nanoparticles for Application of Induced Hyperthermia" Controlled Release Society (CRS) Annual Meeting, Edinburgh, Scotland, July 26-29, 2015.
4. S. EHRENBERGER, E. SUBLET, G. BORCHARD, O. JORDAN "Aptamer as Targeting Ligand for the Detection of Prostate-Specific Membrane Antigen-Positive Cells" 8th Swiss Pharma Science Day, Bern, Switzerland, August 19, 2015.
5. K. FUCHS, P.E. BIZE, R. DURAN, A. DENYS, O. DORMOND, G. BORCHARD, O. JORDAN "Anti-Angiogenic Strategies for Chemoembolization of Liver Tumors" Controlled Release Society (CRS) Annual Meeting, Edinburgh, Scotland, July 26-29, 2015.
6. K. FUCHS, P. E. BIZE, R. DURAN, A. DENYS, O. DORMOND, G. BORCHARD, O. JORDAN "Anti-Angiogenic Strategies for Chemoembolization of Liver Tumors" 8th Swiss Pharma Science Day, Bern, Switzerland, August 19, 2015.
7. A. KISS, K. FUCHS, P. E. BIZE, R. DURAN, A. DENYS, G. BORCHARD, O. JORDAN, G. HOPFGARTNER "Study of sunitinib elution from hydrogels in rabbit VX2 tumor samples by MALDI-SRM imaging and fluorescence microscopy". OurConIII: Imaging Mass Spectrometry Conference 2015, Pisa, Italy, October 27-29, 2015.
8. K. FUCHS, P. E. BIZE, R. DURAN, A. DENYS, O. DORMOND, G. BORCHARD, O. JORDAN "Anti-Angiogenic Strategies for Chemoembolization of Liver Tumors" 8th Swiss Pharma Science Day, Bern, Switzerland, August 19, 2015.
9. P. MAUDENS, C. THAUVIN, O. JORDAN, E. ALLÉMANN "Nanocrystals-Polymer Particles for Efficient Osteoarthritis Treatment" 8th Swiss Pharma Science Day, Bern, Switzerland, August 19, 2015.
10. V. PATRULEA, L. A. APPLGATE, V. OSTAFE, O. JORDAN, G. BORCHARD. "RGDC-functionalized chitosan for wound healing promotion: optimized synthesis, cytotoxicity and gel formulation". EUFEPS Annual Meeting 2015. June 15th – June 17th, 2015 Geneva (Switzerland).
11. V. PATRULEA, L. A. APPLGATE, V. OSTAFE, O. JORDAN, G. BORCHARD. "Novel chitosan derivatives formulations for wound healing" The European Summit for Clinical Nanomedicine and Targeted Medicine (Clinam). June 28th – July 1st, 2015 Basel (Switzerland).

12. V. PATRULEA, L.A. APPLGATE, V. OSTAFE, O. JORDAN, G. BORCHARD. "Immobilized RGDC Peptide Nano-Formulations for Wound Healing" Swiss Pharma Science Day 2015. August 19th, 2015 Bern (Switzerland).
13. O. S. SAKR, O. JORDAN, G. BORCHARD. "Controlled Release of a Model Protein from Microspheres Using Layer-by-Layer (LbL) Technology". Annual Meeting of the Controlled Release Society (CRS). July 26-29, Edinburgh (Scotland).
14. O. S. SAKR, S. BERNDT, M. CUENDET, O. JORDAN, G. BORCHARD. "Arming Embolic Beads with anti-VEGF antibodies using LbL technology: In vitro loading and release studies". Annual Meeting of the European Federation for Pharmaceutical Sciences (EUFEPS) June 15-17, Geneva (Switzerland).
15. T. DI FRANCESCO, E. PHILIPP, G. BORCHARD. "Non Biological Complex Drugs: are there differences between originators and similar?". The European Summit for Clinical Nanomedicine and Targeted Medicine (Clinam) June 28th – July 1st, 2015 Basel (Switzerland).
16. T. DI FRANCESCO, E. PHILIPP, G. BORCHARD. "Physicochemical characterization of Non Biological Complex Drugs: Venofer[®] and Iron Sucrose Similar". Annual Meeting of the European Federation for Pharmaceutical Sciences (EUFEPS). June 15-17, Geneva (Switzerland).
17. F. GROELL, O. JORDAN, G. BORCHARD. "Hydrogels in three-dimensional cell culture as a scaffold to mimic human subcutaneous tissue" Annual Meeting of the European Federation for Pharmaceutical Sciences (EUFEPS). June 15-17, Geneva (Switzerland).
18. J. POECHEIM, C. BARNIER QUER, N. COLLIN, G. BORCHARD. "Functionalized nanocarriers for DNA vaccination to enhance Th1 immune responses against *M. tuberculosis*". 4th Global Forum on TB Vaccines. April 21-24, Shanghai (China).

CONGRESSES & SYMPOSIA

1. K. FUCHS, P.E. BIZE, O. DORMOND, A. DENYS, G. BORCHARD, O. JORDAN. "Anti-Angiogenic Strategies for Chemoembolization of Liver Tumors" Joint Meeting Pharmaceutical Technology of Switzerland, University of Basel, Basel, Switzerland, January 22, 2015.
2. K. FUCHS, P. E. BIZE, A. DENYS, G. BORCHARD, O. JORDAN. "Sunitinib-Eluting Beads for Chemoembolization: Methods for In Vitro Evaluation of Drug Release". European Conference on Interventional Oncology (ECIO), Nice, France, April 22-25, 2015.
3. K. FUCHS, P. E. BIZE, R. DURAN, A. DENYS, O. DORMOND, G. BORCHARD, O. JORDAN. "Antitumor effect and drug distribution profile of anti-angiogenic sunitinib embolization beads in the rabbit" Annual Meeting of the European Federation for Pharmaceutical Sciences (EUFEPS), Geneva, Switzerland, June 15-17, 2015.
4. O. JORDAN "In situ forming implants for SPION-mediated hyperthermia: a minimally invasive, multimodal tumor treatment". COST Multifunctional Nanoparticles for Magnetic Hyperthermia and Indirect Radiation Therapy (RADIOMAG) symposium, Limassol, Cyprus, Oct 26-29, 2015.
5. V. PATRULEA, L. A. APPLGATE, V. OSTAFE, O. JORDAN, G. BORCHARD. "Peptide decorated chitosan derivatives for directed wound healing applications" JOINT MEETING PHARMACEUTICAL TECHNOLOGY, 22nd January 2015, Basel (Switzerland).
6. P. MAUDENS, C. THAUVIN, O. JORDAN, E. ALLÉMANN "Nanocrystals-Polymer Particles: a Novel Drug Delivery System for Knee Osteoarthritis Treatment" European Nanomedicine Meeting, Grenoble, France, December 7-9, 2015.
7. G. BORCHARD. "Nanomedizin - Wer hat's erfunden?" Pharmaceutical Society Zurich, Switzerland, December 2015.
8. G. BORCHARD. "Epithelial tight junction regulation: the role of the innate immune system." Seminars on Drug Discovery and Development, Department of Pharmaceutical Sciences, University Basel, Switzerland, November 2015.
9. G. BORCHARD. "Innovation in the Pharmaceutical Industry" National Pharmacy Student Weekend, Geneva, Switzerland, October 2015.

10. G. BORCHARD "Non-biological complex drugs (NBCD) Working Party at EDQM: Pharmacopoeial activities for iron sucrose". Training session on Nanotechnology, Vifor Pharma, Geneva, Switzerland, October 2015.
11. G. BORCHARD. "Nanomedicine(s): Potential of Nanotechnology in Medicine." Training session on Nanotechnology, Vifor Pharma, Geneva, Switzerland, October 2015.
12. G. BORCHARD. "Layer-by-layer technology in drug delivery." International Symposium on Microencapsulation (IMS2015), Northeastern University, Boston, MA, USA, October 2015.
13. G. BORCHARD. "Scientific considerations of complex drugs." MENA Regulatory Conference on Bioequivalence, Biowaivers, Bioanalysis, Dissolution and Biosimilars, Amman, Jordan, September 2015.
14. G. BORCHARD "Non-biological complex drugs: A biopharmacist's perspective." Current Issues in Medicine and Pharma 13th Annual International Conference, Albany College of Pharmacy and Health Sciences, Albany, NY, USA, August 2015.
15. G. BORCHARD "Less is more? Nanoscale systems for the delivery of a tuberculosis DNA vaccine." 8th CLINAM European Summit for Clinical Nanomedicine and Targeted Medicine, Basel, Switzerland, June 2015.
16. G. BORCHARD. "Immunobiopharmaceutics: the role of the immune system in drug delivery." 11th International Symposium on Pharmaceutical Sciences (ISOPS-11), University of Ankara, Turkey, June 2015.
17. G. BORCHARD. "Quality of non-biological complexes and their follow-ons: A case study in the pharmacopoeial context." FY 2015 Regulatory Science Initiatives Part 15 Public Meeting, Food and Drug Administration (FDA), Rockville, MD, USA, June 2015.
18. G. BORCHARD. "Fundamental science to assess quality of Non-biological complex drugs (NBCDs) and their follow-ons." European Joint Research Centre (EJRC), Ispra, Italy, May 2015.
19. G. BORCHARD. "Komplexe Arzneistoffe, moderne Arzneiformen – Bedeutung für die Apotheke?" Lecture to undergraduate students, Institute of Pharmaceutical Sciences, Karl-Franzens University Graz, Austria, April 2015.
20. G. BORCHARD. "Nanomedicine - The devil's in the details." Austrian Pharmaceutical Society and Galenus Foundation, Graz, Austria, April 2015.
21. G. BORCHARD. "Non-biological complex drugs (NBCDs): fundamental science to regulatory framework." 6th International Congress Bionanomed, Graz, Austria, April 2015.
22. G. BORCHARD. "Die Ecole des Sciences Pharmaceutiques Genève-Lausanne (EPGL)." University of Bern, Switzerland, March 2015.
23. G. BORCHARD. "Biopharmacie: Influencer la biologie par la (nano)technologie." Faculty of Medicine, University of Geneva, March 2015.
24. G. BORCHARD. "Protein drug formulations: The immunogenicity issue." CRS Local Chapter Germany Meeting, Muttenz, Switzerland, February 2015.
25. G. BORCHARD. "Galenik Heute & Morgen." pharmaDavos 2015, Davos, Switzerland, February 2015.
26. G. BORCHARD. "Scientific and regulatory aspects of non-biologic complex drugs (NBCDs)." University of Applied Sciences of Southern Switzerland (SUPSI), Manno, Switzerland, January 2015.
27. G. BORCHARD. "Functionalized nanocarriers for DNA vaccination against *M. tuberculosis*." National University of Singapore, January 2015.

THESIS PRESENTED

INTRA-MUROS THESIS

1. Viorica PATRULEA,
Medical and environmental application of chitosan
University of Geneva
Thesis N° 4862 – December 1, 2015
Directors : Prof G. BORCHARD, UniGe, prof V. OSTAFE, West University of Timisoara, Romania.
2. Omar Shoukry SAKR
Layer-by-Layer (LbL) coatings for controlled delivery of biologicals
University of Geneva
Thesis N° 4874 – Novembre 12, 2015
Directors : Prof. G. BORCHARD, Dr. O. JORDAN, UniGe
3. Johanna POECHEIM
Adjuvanted trimethyl chitosan based nanoparticle formulations to improve immunogenicity of DNA vaccines
University of Geneva
Thesis N° 4909 – September 26, 2015
Director : prof G. BORCHARD, UniGe

AWARDS & DISTINCTIONS

S. EHRENBERGER, D. BONVIN, M. MIONIC, H. HOFMANN, G. BORCHARD, O. JORDAN. 2nd poster award: "Injectable Nanocomposite for Embolization and Magnetically Induced Local Hyperthermia" European Summit of Clinical Nanomedicine and Targeted Medicine (CLINAM), Basel, Switzerland, June 28- July 1, 2015

A. DENYS, P.E. BIZE, G. BORCHARD, K. FUCHS, O. JORDAN. Award of Excellence and Innovation in IR Handed over at the Annual Meeting of the Cardiovascular and Interventional Radiological Society of Europe (CIRSE) September 26-30, Lisbon (Portugal).

First prize poster award by AKB foundation: P. MAUDENS, C. THAUVIN, O. JORDAN, E. ALLÉMANN "Nanocrystals-Polymer Particles for Efficient Osteoarthritis Treatment" 8th Swiss Pharma Science Day, Bern, Switzerland, August 19, 2015.

Poster Award: S. EHRENBERGER, D. BONVIN, M. MIONIC, H. HOFMANN, G. BORCHARD, O. JORDAN "Injectable Nanocomposite for Embolization and Magnetically Induced Local Hyperthermia" 8th Meeting of the European Society for Clinical Nanomedicine (CLINAM), Basel, Switzerland, July 2015.

PHARMACEUTICAL ANALYSIS CHEMISTRY



PROFESSOR SERGE RUDAZ

PROFESSOR JEAN-LUC VEUTHEY

DR DAVY GUILLARME, SENIOR LECTURER

GENERAL DESCRIPTION OF THE UNIT

The group focuses its activities on separation techniques mainly liquid chromatography (LC), capillary electrophoresis (CE) and supercritical fluid chromatography (SFC) coupled with various detectors, including mass spectrometry (MS) for the analysis and bioanalysis of pharmaceutical and biopharmaceutical compounds. New chromatographic supports and sample preparation approaches are evaluated and original strategies to gain selectivity and/or sensitivity of the analytical process are developed. Reduction of the total analysis time is also studied. Special focus is given to environmentally friendly analytical techniques (green chemistry). The research of this group also focuses on the development and the use of methods for mathematical and statistical analysis of data produced from chemical instrumentation. The use of chemometric tools for developing analytical methods, determining optimized or robust conditions, as well as for analyzing data with pattern recognition techniques are applied in many projects within the School of Pharmaceutical Sciences and numerous external academic and/or industrial collaborations. Three main fields are currently developed, namely Design of experiments (DOE), method validation, and data mining (exploratory data analysis). For the latter, numerous important collaborations are under progress, particularly in the field of metabolism, metabolomics, and toxicology.

SPECIFIC RESEARCH FIELDS

- ✚ Research areas consist in:
 - ✚ pharmaceutical and drugs of abuse analysis
 - ✚ doping substances analysis
 - ✚ chiral separation of pharmaceutical products
 - ✚ study of the impact of sample preparation procedures in the analytical process
 - ✚ characterization of large biomolecules (proteins, mAbs, ADC's)
 - ✚ biomedical analysis
 - ✚ drug metabolism
 - ✚ affinity chromatography
 - ✚ UHPLC , CE and SFC
 - ✚ separation techniques
 - ✚ screening method for metabolomic purpose
 - ✚ data mining
- ✚ Liquid chromatography (LC)
- ✚ Capillary electrophoresis (CE)
- ✚ Supercritical fluid chromatography (SFC)
- ✚ Hyphenation to mass spectrometry (MS)
- ✚ Sample preparation
- ✚ Validation
- ✚ Chemometrics
- ✚ Metabolomics
- ✚ Toxicology

2015 AT A GLANCE

| | |
|---|----|
| Publications with impact factor | 30 |
| Publications without impact factor | 2 |
| Book and chapters | 4 |
| Posters presentations | 42 |
| Congresses & Symposia | 44 |
| Number of projects at FNRS and assimilated | 6 |
| Projects of collaboration with the industry | 5 |
| Ph.D. Thesis presented in 2015 | 4 |
| Awards | 8 |

STAFF

| | | |
|--|---|---|
| LECTURERS | Julie SCHAPPLER | |
| EXCELLENCE FELLOWSHIP | Virginie HOUBART | |
| SENIOR RESEARCH ASSOCIATE | Szabolcs FEKETE | Fabienne JEANNERET |
| SENIOR RESEARCH AND TEACHING ASSISTANTS | Julien BOCCARD | |
| POSTDOCTORAL SCHOLARS | Victor GONZALEZ-RUIZ Florence MEHL Alexandre GRAND-GUILLAUME PERRENOUD | Marco RANDAZZO David TONOLI |
| RESEARCH AND TEACHING ASSISTANTS | Alban BUJARD Nicolas DROUIN Vincent DESFONTAINE Yoric GAGNEBIN | Aurélie PERIAT Julian PEZZATTI Dany SPAGGIARI Stéphanie ROMAND |
| INTERNSHIP STUDENTS – CO-SUPERVISION (CO-TUTELLE) | Leire AZURMENDI El-Hadji Assan DIOP Nicolas GUICHARD | Ameena JESAIMANI Linnéa LAGERSTEDT Niloufar MARSOUSI |
| ADMINISTRATIVE STAFF | Nicole DECREY | Sylvia PASSAQUAY |
| TECHNICAL STAFF | Christophe FRANCEY Etienne JACOT-DESCOMBES <i>(apprentice laborant)</i> | Emilie REGINATO Cédric SCHELLING |

RESEARCH FUNDS

SCAHT

Swiss Center for Applied Human Toxicology (SCAHT). An untargeted steroidomic approach for toxicological studies. In core project: Endocrine disruptors and steroid modulation. 2012-2014
 Main applicant : prof S. RUDAZ
 Total Funding : CHF 570'000
 Allocation 2015 : CHF 190'000
 Duration : 3 years
 Starting date : 01.01.2014

SCHMIDHEINY

Financing of a mass spectrometer miniaturized by type simple quadripole
Allocation 2015 : CHF 30'000.--

SOCIETE ACADEMIQUE

Financing of mass spectrometer miniaturized by type simple quadripole
Allocation 2015 : CHF 30'000.--

NESTLE

Evaluation of SFC for the characterization of natural products.

Main applicant : prof. J.-L. VEUTHEY

co-applicant : Dr D. GUILLARME

Total amount : CHF 529'707

Allocation 2015 : CHF 90'389

Duration : 36 months

Starting date : septembre 2015

FIRMENICH

Collaboration with prof. J.-L. WOLFENDER

Main applicant : J.-L. WOLFENDER

Co-applicant : S. RUDAZ

Total funding : 158'000

Allocation 2015 : chf 122'860

Duration : 3 years

Starting date : 01.01.2015

WADA

Detection of prohibited substances by ultra-high performance supercritical fluid chromatography :
drawbacks and benefits for anti-doping drug testing.

Main applicant : prof. R. NICOLI

Co-applicants : prof J.-L. VEUTHEY, Dr D. GUILLARME

Total funding : CHF 110'000

Allocation 2015 : Salary of teaching assistant and furniture

Starting date : 2015

INDUSTRY AND ASSIMILATED

| Code | Service - Development - Research | Total Amount for 2015 (CHF) |
|-------------------------------|---|-----------------------------|
| Teoxane SA Geneva-Switzerland | Service – Analytical investigations and dosages | 138'933 |
| Stragen | Service | 6'081 |
| Nestlé | Contract of prestation | 13'391 |
| Chimimétrie | Service | 5'500 |
| M. Fillet | Service | 3'273 |
| | total | 167'178 |

DEVICES IN LEND

| DEVICE | ENTERPRISE /LABORATORY | LENDING PERIOD | LOCALISATION | INSURANCE CONTRAT |
|--|---------------------------|-------------------|--------------|----------------------|
| UPLC (DAD) (110'000 Chf.) | AGEMEL | Dès le 24.03.2010 | 13A | Non |
| HPLC Waters Série 1500 (50'000 Chf.) | AGEMEL | Dès le 18.05.2011 | 120A | Non |
| CE Agilent (70'000 Chf.) | LCT-Unige-Sciences II | Dès le 03.07.2006 | I16 | Oui |
| CE Agilent (70'000 Chf.) | IUML-LAD-Lausanne | Dès le 17.04.2008 | I18 | Non |
| G7100 Series Capillary Eletrophoresis with CE-MS interfact kit (90'000 Chf.) | Agilent | Dès le 05.05.2010 | 110 | Oui |
| Agilent technologies G1310A 1200 series isocratic pump (20'000 Chf.) | Agilent | Dès le 15.05.2010 | 110 | Oui |
| APPI Spray Chamber (50'000 Chf.) | Agilent | Dès le 01.11.2013 | I10 | Non |

PUBLICATIONS

THE TOP TEN JOURNALS IN THE FIELD (WITH IMPACT FACTOR)

| | |
|--------------------------------|------|
| Trends in Analytical Chemistry | 6.61 |
| Anal Chem | 5.82 |
| Analytica Chimica Acta | 4.51 |
| J. Chromatography A | 4.25 |
| Analyst | 3.90 |
| Anal Bioanal Chem | 3.57 |
| Talanta | 3.51 |
| Eur. J. Pharm. Sci. | 3.35 |
| J Am Soc Mass Spectro | 3.19 |
| Electrophoresis | 3.16 |

SCIENTIFIC PUBLICATIONS (WITH IMPACT FACTOR)

1. L. NOVAKOVA, M. RENTSCH, A. GRAND-GUILLAUME-PERRENOUD, R. NICOLI, M. SAUGY, J.-L. VEUTHEY, D. GUILLARME. Ultra-high performance supercritical fluid chromatography coupled with tandem mass spectrometry for screening of doping agents. I: Investigation of mobile phase and MS conditions. *Anal. Chim. Acta*, 853, 637-646 (2015). 4.51
2. L. NOVAKOVA, M. RENTSCH, A. GRAND-GUILLAUME-PERRENOUD, R. NICOLI, M. SAUGY, J.-L. VEUTHEY, D. GUILLARME. Ultra-high performance supercritical fluid chromatography coupled with tandem mass spectrometry for screening of doping agents. II: Analysis of biological samples. *Anal. Chim. Acta*, 853, 647-659 (2015). 4.51
3. E. TYTECA, V. DESFONTAINE, G. DESMET, D. GUILLARME. Possibilities of retention modeling and computer assisted method development in supercritical fluid chromatography. *J. Chromatogr. A*, 1381, 219-228 (2015). 4.25
4. B. BOBÁLY, A. BECK, J. FEKETE, D. GUILLARME, S. FEKETE. Systematic evaluation of mobile phase additives for the LC MS characterization of therapeutic proteins. *Talanta*, 136, 60-67 (2015). 4.25
5. B. BOBALY, D. GUILLARME, S. FEKETE. Evaluation of new superficially porous particles with carbon core and nanodiamond-polymer shell for proteins characterization. *J. Pharm. Biomed. Anal.*, 104, 130-136 (2015). 3.51

6. S. FEKETE, A. BECK, J. FEKETE, D. GUILLARME. Method development for the separation of monoclonal antibody charge variants in cation exchange chromatography, Part II: pH gradient approach. *J. Pharm. Biomed. Anal.*, 102, 282-289 (2015). 2.82
7. S. FEKETE, A. BECK, J. FEKETE, D. GUILLARME. Method development for the separation of monoclonal antibody charge variants in cation exchange chromatography, Part I: Salt gradient approach. *J. Pharm. Biomed. Anal.*, 102, 33-44 (2015). 2.82
8. S. FEKETE, A. BECK, E. WAGNER, K. VUIGNIER, D. GUILLARME. Adsorption and recovery issues of recombinant monoclonal antibodies in reversed-phase liquid chromatography. *J. Sep. Sci.*, 38, 1-8 (2015). 2.59
9. A. PÉRIAT, I. S. KRULL, D. GUILLARME. Applications of hydrophilic interaction chromatography to amino acids, peptides, and proteins. *J. Sep. Sci.*, 38, 357-367 (2015). 2.59
10. M. W. DONG, D. GUILLARME, S. FEKETE, R. RANGELOVA, J. RICHARDS, D. PRUDHOMME, N. P. CHETWYN. Analysis of Complex Pharmaceuticals by Ultrahigh-Pressure Liquid Chromatography: Case Studies and Quality Control Implications. *LC-GC Europe*, 28, 88-97 (2015). 0.65
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SCIENTIFIC PUBLICATIONS (WITHOUT IMPACT FACTOR)

1. S. FEKETE, A. BECK, D. GUILLARME. Chromatographic characterization of biopharmaceuticals: recent trends and new tools, *American Pharmaceutical Review*. *Am. Pharm. Rev.*, 18, 59-63 (2015).
2. B. BOBALY, Z. MARTA, J. FEKETE, D. GUILLARME, S. FEKETE. Chromatography columns in the separation of protein variants. *Curr. Chromatogr.*, 2, 136-144 (2015).

BOOKS OR BOOKS CHAPTERS

1. Future science e- book project "Identification and Data Processing Methods in Metabolomics. S. RUDAZ Editor, (184 pages), doi: 10.4155/8781910420287. Future Science LTD, San Diego, CA 92101-4495, USA (2015) ISBN: 978-1-910420-28-7.
2. From raw signals to identified metabolites: recent tools for enhancing LC-MS untargeted metabolomic data processing. D. TONOLI, F. JEANNERET, J. BOCCARD, S. RUDAZ. In Future science e- book project "Identification and Data Processing Methods in Metabolomics". Serge Rudaz Editor, Future Science LTD, San Diego, CA 92101-4495, USA (2015). ISBN: 978-1-910420-28-7.
3. UHPLC separations using sub-2µm particle size columns. J. SCHAPPLER, J. L. VEUTHEY, D. GUILLARME. In *Fast Liquid Chromatography-Mass Spectrometry Methods in Food and Environmental Analysis*, 3-32 (2015). Imperial College Press. ISBN: 978-1-78326-493-3.

4. Nonaqueous Capillary Electrophoresis. J. SCHAPPLER, S. RUDAZ. In *Analytical Separation Science 2:II:10:581–606* (2015). Wiley-VCH Verlag GmbH & Co. DOI: 10.1002/9783527678129.assep037.

PRESENTATIONS

POSTERS PRESENTATIONS

1. D. TONOLI, C. FÜRSTENBERGER, J. BOCCARD, D. HOCHSTRASSER, F. JEANNERET, A. ODERMATT, S. RUDAZ. Endocrine disruptor evaluation in H295R cells using steroidomic footprinting based on UHPLC qualitative and quantitative high resolution - mass spectrometry. *Chimie XVI*, Geneva, Switzerland, January 20-21, 2015.
2. Y. GAGNEBIN, J. SCHAPPLER, J. BOCCARD, S. RUDAZ. Analyse métabolomique de l'urine: stratégies de normalisation en UHPLC-QTOF-MS. *Chimie XVI*, Geneva, Switzerland, January 20-21 2015.
3. F. JEANNERET, J. BOCCARD, D. TONOLI, O. SORG, J. H. SAURAT, D. HOCHSTRASSER, S. RUDAZ. Evaluation and identification of dioxin exposure biomarkers using UHPLC-QTOF, multivariate analysis and in vitro metabolism. *Chimie XVI*, Geneva, Switzerland, January 19-21 2015.
4. N. DROUIN, S. RUDAZ, J. SCHAPPLER. Développement d'un nouveau dispositif d'extraction électromembranaire. *SEPT 15*, Paris, France, March 31 – April 2, 2015.
5. V. DESFONTAINE, J. L. VEUTHEY, D. GUILLARME. Evaluation de nouvelles phases stationnaires, de la nature de la phase mobile et du solvant d'injection dans le but d'améliorer la forme de pics de composés basiques d'intérêt pharmaceutique. *SEP15*, Paris, France March 31 – April 2, 2015.
6. J. SCHAPPLER, E. REGINATO, M. CHAU LAI, E. A. DIOP, S. RUDAZ. Analyse qualitative et quantitative de contrefaçons par électrophorèse capillaire, une approche simultanée par double injection. *SEP 2015*, Paris, France, March 31 - April 2, 2015.
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10. S. O. SARR, A. DIOP, E. A. DIOP, S. M. NDIAYE, R. GUEYE, D. FALL, B. NDIAYE, S. RUDAZ, Y. M. DIOP. Apport de l'électrophorèse capillaire à la réduction des déchets de solvants organiques issus de l'analyse pharmaceutique: une aubaine pour les pays à ressources limitées? *Journées annuelles de chimie (JAC) du Sénégal, Dakar, Sénégal, June 2, 2015.*
11. Y. GAGNEBIN, J. SCHAPPLER, J. BOCCARD, S. RUDAZ. Analyse métabolomique de l'urine en UHPLC-QTOF-MS: Influence des stratégies de prétraitement et de normalisation. *9^e Journées Scientifiques du RFMF, Lille, France, June 9-11 2015.*
12. Y. GAGNEBIN, J. SCHAPPLER, J. BOCCARD, S. RUDAZ. Normalization strategies for metabolomics analysis of urine samples by UHPLC-QTOF-MS. *HPLC 2015, Geneva, Switzerland, June 21-24, 2015.*
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18. V. DESFONTAINE, J. L. VEUTHEY, D. GUILLARME. Evaluation of new stationary phase chemistries and analytical conditions for the analysis of basic compounds in SFC. HPLC 2015, Geneva, Switzerland, June 21 – 22, 2015.
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24. F. MEHL, S. BIERI, P. ZIMMERLI, D. ORTELLI, P. EDDER, S. RUDAZ. Data fusion for vegetable oils authentication. SFSM2015, Neuchâtel, Switzerland, June 23-24, 2015.
25. E. A. DIOP, E. F. QUEIROZ, S. KICKA, T. DIOP, T. SOLDATI, S. RUDAZ, J. L. WOLFENDER. Medicinal plants traditionally used in Senegal for tuberculosis treatment: Mycobacterial growth assay of the extracts. XIXth International Congress "Phytopharm 2015" Bonn, Germany, July 21-24, 2015.
26. M. RODRIGEZ-ALLER, D. GUILLARME, J. L. VEUTHEY, R. GURNY. Improving the availability and reducing the risk of systemic complications of cyclosporine An ocular formulations using a water-soluble prodrug. Controlled release society (CRS 2015) – Edimburg, UK, July 26-29, 2015.
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28. N. DROUIN, S. RUDAZ, J. SCHAPPLER. Electromembrane extraction: a new technical development. Swiss Pharma Science Day, Lausanne, Switzerland, August 20 August, 2015.
29. Y. GAGNEBIN, J. SCHAPPLER, J. BOCCARD, S. RUDAZ. Normalization strategies for metabolomics analysis of urine samples by UHPLC-QTOF-MS. Swiss Pharma Day, Lausanne, Switzerland, August 20, 2015.
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31. D. SPAGGIARI, R. CANAVESI, Y. DAALI, S. RUDAZ. Extensive CYP450-based cocktail approach for toxicological in vitro inhibition screening: example for pesticides. Société Suisse de Chimie Clinique – 2015, Geneva, Switzerland, September 23-25, 2015.

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33. D. TONOLI, P. STRAJHAR, J. BOCCARD, G.M. RANDAZZO, F. JEANNERET, D. KRATSCHMAR, D. HOCHSTRASSER, A. ODERMATT, S. RUDAZ. UHPLC high-resolution Mass Spectrometry for the evaluation of steroid perturbation: focus on 22 feature identification. Société Suisse de Chimie Clinique (SSCC), Geneva, Switzerland, September 23-25, 2015.
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35. Y. GAGNEBIN, J.SCHAPPLER, J. BOCCARD, S. RUDAZ. Normalization strategies for metabolomics analysis of urine samples by UHPLC-QTOF-MS. Société Suisse de Chimie Clinique (SSCC), Geneva, Switzerland, September 23-25, 2015.
36. Y. GAGNEBIN, J. SCHAPPLER, J. BOCCARD, S. RUDAZ. Metabolomics analysis of urine samples by UHPLC-QTOF-MS: impact of pre-treatment and normalization strategies. Urinomics-Nephromics 2015, Lisbon, Portugal, September 28-30, 2015.
37. N. MARSOUSI, Y. DAALI, P. FONTANA, S. RUDAZ, C. F. SAMER, J. DESMEULES. Co-administration of Ticagrelor and ritonavir : individualized therapy using PBPK approach. 20th North American ISSX Meeting, Orlando, Florida, USA, October 18 - 22, 2015.
38. D. TONOLI, P. STRAJHAR, J. BOCCARD, F. JEANNERET, G. RANDAZZO, D. KRATSCHMAR, A. ODERMATT, S. RUDAZ. Steroidomic footprinting based on UHPLC-MS for the characterization of endocrine disrupting chemicals in H295R cells. 3rd Congress on Steroid Research. Chicago, USA, November 15-18, 2015.
39. F. MEHL, G. MARTI, P. MERLE, E. DELORT, L. BAROUX, H. SOMMER, J. L. WOLFENDER, S. RUDAZ, J. BOCCARD. Integrating metabolomic data from multiple analytical platforms for a comprehensive characterisation of lemon essential oils. Swiss Metabolomics Society, Basel, Switzerland, December 1, 2015.
40. F. JEANNERET, J. BOCCARD, D. TONOLI, O. SORG, J. H. SAURAT, D. HOCHSTRASSER, S. RUDAZ. Evaluation and identification of dioxin exposure biomarkers using a metabolomic approach based on UHPLC-QTOF, multivariate analyses and in vitro metabolic syntheses. Swiss Metabolomics Society, Basel, Switzerland, December 1, 2015.
41. D. TONOLI, P. STRAJHAR, J. BOCCARD, G. RANDAZZO, F. JEANNERET, D. KRATSCHMAR, A. ODERMATT, S. RUDAZ. Steroidomic footprinting based on UHPLC high-resolution MS for the evaluation of endocrine disrupting chemicals in H295R cells: a focus on identification. 1st meeting of the Swiss Metabolomics Society. Basel, Switzerland, December 1st, 2015.
42. B. PONTE, N. BARARPOUR, D. TONOLI, J. BOCCARD, P. LESCUYER, P.-Y. MARTIN, S. RUDAZ, S. DE SEIGNEUX. Urinary metabolomic to identify new biomarkers of chronic kidney disease. 47th Annual Meeting of the Swiss Society of Nephrology, Basel, Switzerland, December 3-4, 2015.

ORAL PRESENTATIONS

1. M. HANAFI, J. BOCCARD, S. OUERTANI, G. MAZEROLLES, S. RUDAZ. Nway PLS for regression or discrimination: new properties and some clarifications. Chimométrie, Geneva, Switzerland, January 20-21, 2015.
2. F. MEHL, G. MARTI, P. MERLE, E. DELORT, L. BAROUX, H. SOMMER, J. L. WOLFENDER, S. RUDAZ, J. BOCCARD. Analyse multitableaux pour l'intégration de données métabolomiques: application aux huiles essentielles de citron. Chimométrie, Geneva, Switzerland, January 20-21, 2015.
3. G. M. RANDAZZO, D. TONOLI, J. BOCCARD, G. GUILLARME, P. A. CARRUPT, G. CRUCIANI, S. RUDAZ. Retention Time Prediction in Reversed Phase Liquid Chromatography: a tool to help steroid Identification. Chimométrie, Geneva, Switzerland, January 20-21, 2015.

4. F. FAUVELLE, J. BOCCARD, A. DEPAULIS, C. DERANSART. Evaluation de la susceptibilité à l'épilepsie chez 3 souches de rats par métabolomique par RMN HRMAS. Société Française de Résonance Magnétique en Biologie et Médecine (SFRMBM), Grenoble, France, March 18-20, 2015.
5. S. FEKETE, D. GUILLARME. Superficially porous particles with carbon core and nanodiamond-polymer shell for protein separations. Pittcon 2015 – New Orleans, USA, March 21-24, 2015.
6. D. TONOLI, P. STRAJHAR, J. BOCCARD, D. HOCHSTRASSER, J. JEANNERET, A. ODERMATT, S. RUDAZ. Teroidomic footprinting based on UHPLC qualitative and quantitative high-resolution MS for the evaluation of endocrine disrupting chemicals in H295R cells. 7th MSACL conference, San Diego, USA, March 28 - April 4, 2015.
7. G. BONVIN, S. RUDAZ, J. SCHAPPLER. NACE-MS pour l'analyse de composés acides en ESI négatif. Congress SEP 15 - Sciences séparatives et couplages, Paris, France, March 30 – April 2, 2015.
8. A. PERIAT, J. L. VEUTHEY, D. GUILLARME. HILIC-MS vs. RPLC-MS: quel gain en sensibilité peut-on espérer et pourquoi? Congress SEP 15 - Sciences séparatives et couplages, Paris, France, March 30 – April 2, 2015.
9. J. L. VEUTHEY, D. GUILLARME. Les particules superficiellement poreuses (core-shell, fused-core): évolution ou révolution. Congress SEP 15 - Sciences séparatives et couplages, Paris, France, March 30 – April 2, 2015.
10. A. BUJARD, P. A. CARRUPT, J. SCHAPPLER, S. RUDAZ. PAMPA to predict both passive intestinal absorption and affinity constant. Ph.D day, Geneva, Switzerland, June 6, 2015.
11. D. GUILLARME. The use of modern supercritical fluid chromatography in pharmaceutical analysis. Royal Society of chemistry, London, UK, March 2015.
12. D. GUILLARME. Techniques Employed in Biopharmaceutical Analysis – What, Why and How – Part II IEX, HIC and SEC. Webinar Chromacademy, April 2015.
13. D. STOLL, D. C. HARMES, J. DANFORTH, E. WAGNER-ROUSSET, S. FEKETE, D. GUILLARME, A. BECK. Online Selective Comprehensive Two-Dimensional Liquid Chromatography – Mass Spectrometry for Efficient, High Resolution Characterization of Therapeutic Monoclonal Antibodies. Minnesota chromatography forum meeting – Minneapolis, USA, May 2015.
14. D. GUILLARME. Reversed phase, size-exclusion and ion exchange chromatography for biomolecules characterization. Royal society of chemistry/ Medimmune - Cambridge, UK, May 2015.
15. N. DROUIN, S. RUDAZ, J. SCHAPPLER. Dynamic Electromembrane extraction (d-EME): a new technical development. VIII^{ème} Journée scientifique du Club Jeune de l'AFSEP, Lyon, France, May 29, 2015.
16. J. BOCCARD, S. RUDAZ. Analysis of metabolomic data from designed experiments using ANOVA Multiblock Orthogonal Partial Least Squares. 9^e Journées Scientifiques du RFMF, Lille, France, June 9, 2015.
17. D. GUILLARME. UHPLC: où en sommes-nous 10 ans après sa commercialisation? Club de chromatographie Île de France - Paris, France, June 2015.
18. E. TYTECA, V. DESFONTAINE, G. DESMET, D. GUILLARME. Possibilities of retention modelling and computer assisted method development in SFC. HPLC 2015 – Geneva, Switzerland, June 21-25, 2015.
19. J. L. VEUTHEY, A. GRAND-GUILLAUME PERRENOUD, V. DESFONTAINE, D. GUILLARME. New insights in SFC and SFC-MS for the analysis of drug substances. HPLC 2015 – Geneva, Switzerland, June 21-25, 2015.
20. D. STOLL, D. HARMES, E. WAGNER-ROUSSET, S. FEKETE, D. GUILLARME, A. BECK. Online Selective Comprehensive Two-Dimensional Liquid Chromatography–Mass Spectrometry for Efficient, High Resolution Characterization of Monoclonal Antibodies. HPLC 2015 – Geneva, Switzerland, June 21-25, 2015.
21. S. FEKETE, J. L. VEUTHEY, K. HORVATH, D. GUILLARME. Estimation of frictional heating and temperature related effects on the retention of peptides and proteins under ultrahigh pressure conditions. HPLC 2015 – Geneva, Switzerland, June 21-25, 2015.

22. S. RUDAZ, D. TONOLI, C. FÜRSTENBERGER, J. BOCCARD, F. JEANNERET, D. HOCHSTRASSER, A. ODERMATT. Steroidomic footprinting based on UHPLC qualitative and quantitative high-resolution MS for the evaluation of endocrine disrupting chemicals in H295R cells. HPLC 2015. Geneva, Switzerland, June 21-25, 2015.
23. S. RUDAZ. Evaluation and identification of dioxin exposure biomarkers using UHPLC-QTOF, multivariate analysis and in vitro metabolism. Metabolomics, San Francisco, USA, 2015, June 29 – July 1, 2015.
24. J. L.VEUTHEY, D. GUILLARME. The superficially porous particles: evolution or revolution? RDPA 2015 – Perugia, Italy, June 28- July 1, 2015.
25. D. SPAGGIARI, S. ROMAND, Y. DAALI, S. RUDAZ. Various cocktail approaches for extensive phenotyping of microsomal metabolic enzymes. RDPA 2015, Perugia, Italy, June 28-July 1, 2015.
26. V. DESFONTAINE, W. FARRELL, C. AURIGEMMA, J. L.VEUTHEY, D. GUILLARME. Evaluation of new stationary phase chemistries in sub-2µm and Core-Shell material for the analysis of basic compounds in SFC - SFC 2015 – Philadelphia, USA, July 22-24, 2015.
27. V. DESFONTAINE, J. L. VEUTHEY, D. GUILLARME. Evaluation of new UHPSFC stationary phase chemistries for the analysis of basic compounds. SFC 2015, Philadelphia, USA, July 22-24, 2015.
28. A. GRAND-GUILLAUME PERRENOUD, D. GUILLARME, J. L. VEUTHEY, D. BARRON, S. MOCO. UHPSFC-QTOF-MS as a first line analytical tool for natural bioactive compound analysis. SFC 2015 – Philadelphia, USA, July 22-24, 2015.
29. N. DROUIN, S. RUDAZ, J. SCHAPPLER. Dynamic Electromembrane extraction (d-EME): a new technical development. SCS Fall Meeting 2015, Lausanne, Switzerland, September 4, 2015.
30. J. L. VEUTHEY, D. GUILLARME, S. FEKETE. Analytical Characterization of Biopharmaceuticals Using New Chromatographic Approaches. 10th Balathon Symposium on high-performance separation methods – Sofiok, Hungary, September 2-4, 2015.
31. S. FEKETE, A. BECK, S. HEINISCH, A. CORGIER, M. SARRUT, J. L. VEUTHEY, D. GUILLARME. Innovative chromatographic approaches for the characterization of antibody-drug conjugates. 10th Balathon Symposium on high-performance separation methods – Sofiok, Hungary, September 2-4, 2015.
32. A. PERIAT, J. L. VEUTHEY, D. GUILLARME. Performance of HILIC-MS vs. RPLC-MS for the analysis of pharmaceutical compounds. 10th Balathon Symposium on high-performance separation methods – Sofiok, Hungary, September 2-4, 2015.
33. S. RUDAZ. Steroidomics par LC-MS/MS, une stratégie analytique performante pour la mesure des perturbations endocriniennes. 19^{ème} Journées scientifiques CCCTA, Les Diablerets, Switzerland, September 4, 2015.
34. S. RUDAZ, C. ROHRBASSER, P. BONNABRY, J. SCHAPPLER. Low-cost analytical device based on capillary electrophoresis for counterfeit detection and sub-standard drug quality control. Euroanalysis XVIIIth, Bordeaux, France, September 6-10, 2015.
35. F. JEANNERET, D. TONOLI, D. HOCHSTRASSER, J. H. SAURAT, O. SORG, J. BOCCARD, S. RUDAZ. Strategy to identify and validate urinary steroid biomarkers obtained by untargeted LC-MS/MS metabolomics: application to human cases of dioxin exposure. MSAC 2015 EU, Salzburg, Austria, September 8-11, 2015.
36. S. RUDAZ. A metabolomic study for the evaluation and identification of biomarkers of dioxin exposure in human urine. 2nd Int. Caparica Conference on Urinomics, Lisboa, Portugal, September 28-30, 2015.
37. A. PERIAT, J. L. VEUTHEY, D. GUILLARME. Possibilités et limites de la chromatographie d'interaction hydrophile. Journée scientifique du Club AfSep Lyonnais, Lyon, France, October 13, 2015.
38. N. VASILEV, J. BOCCARD, G. LANG, U. GRÖMPING, S. GOEPFERT, S. RUDAZ, S. SCHILLBERG Simultaneous factors treatment reveals elicitor-metabolite networks. International Conference on Natural Products Utilization, Plovdiv, Bulgaria, October 14-17, 2015.
39. D. GUILLARME. Liquid chromatography and its application to the analysis of intact biopharmaceuticals. 1st I mass PharmaNetwork – Verona, Italy, October 26-28, 2015.

40. [D. STOLL, D. HARMES, J. DANFORTH, E. WAGNER-ROUSSET, S. FEKETE, D. GUILLARME, A. BECK. Two-Dimensional Liquid Chromatography Strategies Coupled with Mass Spectrometry for Efficiency, High Resolution Characterization of Therapeutic Monoclonal Antibodies. Eastern Analytical Symposium – Somerset, USA, November 16-18, 2015.](#)
41. A. GRAND-GUILLAUME-PERRENOUD. Evaluation of suitable chromatographic tools and conditions for natural product analysis. NIHS-UNIGE joint symposium 2015, Geneva, Switzerland, November 20, 2015.
42. [A. GRAND-GUILLAUME-PERRENOUD. UHPSFC-QToF-MS as a first line analytical tool for natural bioactive compound analysis. Waters Users Meeting on SFC 2015, Prague, Czech Republic, December 4, 2015.](#)
43. D. GUILLARME, J. LVEUTHEY. Method transfer from HPLC to UHPLC: rules, benefits, applications and eventual problems. Pacifichem – Honolulu, USA, December 10-20, 2015.

CONGRESSES & SYMPOSIA

1. Chimiométrie XVI, Geneva, Switzerland, January 20 – 21, 2015
2. [SFRMBN, Grenoble, France, March 18-20, 2015](#)
3. Pittcon 2015, New Orleans, USA, March 21-24, 2015
4. [7th MSACL conference, San Diego, USA, March 28-April 4, 2015](#)
5. Royal Society of Chemistry, London, United Kingdom, March, 2015
6. [Webinar Chromacademy, April 2015](#)
7. SEP15, Paris, France, March 31 – April 2, 2015
8. [International IOCD Samposium, Marrakech, Morocco, April 7-10, 2015](#)
9. MSB 2015, Pudong Shanghai, China, April 26-29, 2015
10. [Minesota chromatography forum meeting, Minneapolis, USA, May, 2015](#)
11. Royal Society of Chemistry/Medimmune, Cambridge, United Kingdom, May, 2015
12. [Journée scientifique du Club Jeune de l'AFSEP, Lyon, France, May 29, 2015](#)
13. Journées annuelles de chimie (JAC), Dakar, Sénégal, June 2, 2015
14. [Ph.D Day, Geneva, Switzerland, June 6, 2015](#)
15. Journées scientifiques du RFMF, Lille, France, June 9-11, 2015
16. [Club de chromatographie Île de France, Paris, France, June, 2015](#)
17. HPLC 2015, Geneva, Switzerland, June 21 – 24, 2015
18. [SFSM2015, Neuchâtel, Switzerland, June 23 – 24, 2015](#)
19. Swiss Food Meeting, Neuchâtel, Switzerland, June 23 – 24, 2015
20. [Phytopharm 2015, Bonn, Germany, July 21-24, 2015](#)
21. CRS 2015, Edimburg, United Kingdom, July 26-29, 2015
22. [Metabolomics, San Francisco, USA, June 29 – July 1, 2015](#)
23. Congress RDPA, Perugia, Italy, June 28 – July 1, 2015
24. [SFC 2015, Philadelphia, USA, July 22-24, 2015](#)
25. Swiss Pharma Science Day, Lausanne, Switzerland, August 20, 2015

26. [10th Balathon Symposium on high-performance separation methods, Sofiok, Hungary, September 2-4, 2015](#)
27. SCS Fall meeting 2015, Lausanne, Switzerland, September 4, 2015
28. [19^{ème} Journées Scientifiques du CCCTA, Les Diablerets, Switzerland, September 6-7, 2015](#)
29. ITP 2015, Helsinki, Finland, August 30-September 9, 2015
30. [Euroanalysis XVIIIth, Bordeaux, France, September 6-10, 2015](#)
31. MSAC 2015 EU, Salzburg, Austria, September 8-11, 2015
32. [Société Suisse de chimie Clinique, Geneva, Switzerland, September 23-25, 2015](#)
33. Urinomics-Nephromics 2015, Lisbon, Portugal, September 28-30, 2015
34. [Journée scientifique du Club AfSep Lyonnais, Lyon, France, October 13, 2015](#)
35. International Conference on Natural Products Utilization, Plovdiv, Bulgaria, October 14-17, 2015
36. [20th North American ISSX Meeting, Orlando, Florida, USA, October 18-22, 2015](#)
37. 1st Imass PharmaNetwork, Verona, Italy, October 26-28, 2015
38. [3rd Congress on Steroid research, Chicago, USA, November 15-18, 2015](#)
39. Eastern Analytical Symposium, Somerset, USA, November 16-18, 2015
40. [NIHS-UNIGE Joint Symposium 2015, Geneva, Switzerland, November 20, 2015](#)
41. Swiss Metabolomic Society, Basel, Switzerland, December 1, 2015
42. [47th Annual Meeting of the Swiss society of Nephrology, Basel, Switzerland, December 3-4, 2015](#)
43. Waters Users meeting on SFC 2015, Prague, Czech Republic, December 4, 2015
44. Pacifichem, Honolulu, USA, December 10-20, 2015

CONTINUING EDUCATION & OPEN TO THE PUBLIC LECTURES

1. [D. GUILLARME. Transfert de méthode en chromatographie liquide. Interchim, Monluçon, France, January 2015.](#)
2. [J. L. VEUTHEY. L'analyse dans le domaine du dopage: une course perdue d'avance? Rotary Club, Genève, Suisse, February 23, 2015.](#)
3. [D. GUILLARME. Introduction à la chromatographie en phase liquide \(HPLC\). CCCTA course, Geneva, Switzerland, March 2015.](#)
4. [D. GUILLARME. Cours de chromatographie en phase liquide. Bayer, Gaillard, France, March 2015.](#)
5. [D. GUILLARME. Choix technologiques et développement de méthodes en HPLC. CCCTA course, Geneva, Switzerland, April 2015.](#)
6. [D. GUILLARME. Gyakorlati problémák az ultra-nagynyomású folyadékkromatográfiában. Egis, Hungary, April 2015.](#)
7. [S. RUDAZ. « Apport de la fusion de données analytiques dans la caractérisation d'huiles essentielles de citron au moyen de différentes plateformes d'analyses ». Congress SEP 15 - Sciences séparatives et couplages, March 30 - April 2, 2015, Paris, France.](#)
8. [S. RUDAZ. «UPLC-TOF-MS fingerprinting and data mining».Metabolomics workshop, Leiden University, April 11-17, 2015.](#)
9. [D. GUILLARME. Les nouvelles tendances HPLC : comment améliorer sa productivité au laboratoire ? CCCTA course, Geneva, Switzerland, May 2015.](#)

10. D. GUILLARME. Analysis of Therapeutic Proteins Using State-of-the-Art Column Technology HPLC 2015 – Geneva, Switzerland, June 21-25, 2015.
11. D. GUILLARME. Choix technologiques et développement de méthodes en HPLC (2 days). CIMO, Monthey, Switzerland, June 2015.
12. J. L. VEUTHEY. New strategies in pharmaceutical analysis. Conférence de prestige de l'Axe formulation et analyse du médicament de l'University of Montréal. Montréal, Canada, October 6, 2015.
13. J. L. VEUTHEY. Biopharmaceuticals: A Challenge in Pharmaceutical Analysis. University of Montréal, Montréal, Canada, November 17, 2015.
14. J. L. VEUTHEY. L'analyse anti-dopage: une course perdue d'avance? Association des Alumni des university of Geneva and Lausanne, Montréal, Canada, November 18, 2015.
15. J. L. VEUTHEY. L'électrophorèse capillaire. Conférence donné pour l'Axe formulation et analyse du médicament de l'University of Montréal, Montréal, Canada, November 23, 2015.
16. D. GUILLARME. Innovative strategies for the analysis of pharmaceutical compounds. EPGL-NIHS mini Symposium, Geneva, Switzerland, November 2015.
17. J. L. VEUTHEY. Quoi de neuf dans la lutte anti-dopage? Lions Club, Genève, Switzerland, December 15, 2015.
18. D. GUILLARME. Les nouvelles tendances de la chromatographie liquide (2 days). IDECOS course, Nice, France, December 2015.
19. J. BOCCARD, S. RUDAZ. Initiation à l'analyse multivariée. ccCTA course, Geneva, Switzerland, March 17, 2015
20. S. RUDAZ. UPLC-TOF-MS fingerprinting and data mining. Leiden University, The Netherlands, April 15-17, 2015.

THESIS PRESENTED

INTRA-MUROS THESIS

1. Aurélie PERIAT
Utilisation de la chromatographie HILIC pour l'analyse de composés d'intérêt pharmaceutique
University of Geneva
Thesis N° 4871 – December 11, 2015
Directors: J. L. VEUTHEY, D. GUILLARME
2. Dany SPAGGIARI
In vitro assessment of human hepatic cytochrome P450 activities using liquid chromatography-mass spectrometry
University of Geneva
Thesis N° 4860 – December 2, 2015
Directors: S. RUDAZ, J. L. VEUTHEY
3. Lucie RYCKEWAERT
Identification and characterization of novel sirtuin inhibitors against aging-related diseases
University of Geneva
Thesis N° 4822 – September 8, 2015
Directors: J. L. VEUTHEY, P. A. CARRUPT, C. A. SIMOES-PIRES
4. Alban BUJARD
Studies of PAMPA permeability values and its application for protein - drug interaction determination
University of Geneva
Thesis N° 4845 – November 3, 2015
Directors: S. RUDAZ, P. A. CARRUPT

THESIS JURY

1. **Didier COELHO GRACA**
Hemoglobinopathies diagnostic and therapeutic follow-up by top-down mass spectrometry.
Scientific direction: Prof. D. HOCHSTRASSER, Prof. Y. TSYBIN, University of Geneva, Switzerland.
Jury member: S. RUDAZ
2. **Cédric HUBERT.**
Gestion du risque associé au cycle de vie des méthodes analytiques.
Scientific direction: Prof. Ph. HUBERT, University of Liège, Belgium.
Jury member: S. RUDAZ
3. **Emilie CHORIER.** Mise au point de méthodes d'analyse de substances critiques potentiellement présentes dans les produits et procédés de la filière cuir.
Scientific direction: Prof. A. BERTHOT, University Claude Bernard 1, Lyon, France.
Jury member: S. RUDAZ
4. **EVIN DANISMAN.**
Environmental Risk Assessment of Psychiatric Drugs.
Scientific direction: Dr. N. CHÈVRE, Lausanne University, Switzerland.
Jury member: S. RUDAZ
5. **AUDREY MARÉCHAL.**
Colonnes monolithiques multimodales photofonctionnalisées dédiées aux techniques séparatives miniaturisées.
Scientific direction: Prof. DESMESMAY, University Claude Bernard 1, Lyon, France.
Jury member: S. RUDAZ
6. **MATTHIEU BOIRET.**
Détection de composés faiblement dosés par imagerie Raman.
Scientific direction: Prof. ROGER, INRA, Montpellier, France.
Jury member: S. RUDAZ
7. **ALEXANDRA GAUBERT.**
Vers une méthodologie de la déformulation des mélanges complexes combinant outils analytiques et chimiométriques : Application aux détergents.
Scientific direction: Prof. CASABLANCA, Dr. BORDES, University Claude Bernard 1, Lyon, France.
Jury member: S. RUDAZ
8. **LUC BESSON.**
Inférence de source de traces d'essence retrouvées dans des débris d'incendies : évaluation de la contribution de la chromatographie en phase gazeuse couplée à la spectrométrie de masse à rapport isotopique.
Scientific direction: Prof. O. DÉLÉMONT, Ecole des Sciences Criminelles, Lausanne University, Switzerland.
Jury member: S. RUDAZ.
9. **CHRISTOPHE ROUSSEL.**
HDR IRM métabolique utilisant la DNP comme méthode de polarisation. ENS Cachan, Paris, France.
Jury member: S. RUDAZ
10. **SAMYA BEKRI.**
Greffages des capillaires par multicouches ou polyzwitterions pour l'analyse de protéines.
University of Montpellier, France, December 2015.
Jury member : J. SCHAPPLER

AWARDS & DISTINCTIONS

1. **F. MEHL, S. BIERI, P. ZIMMERLI, D. ORTELLI, P. EDDER, S. RUDAZ,** 1^{er} prix meilleur poster "Data fusion for vegetable oils authentication" à Swiss Food Science Meeting, June 23-24, 2015, Neuchâtel, Switzerland.

2. N. DROUIN, S. RUDAZ, J. SCHAPPLER, Prix de la meilleure communication par affiche. "Développement d'un nouveau dispositif d'extraction électro-membranaire" Congress SEP'15, March 31- April 2, 2015, Paris, France.
3. Y. GAGNEBIN, J. SCHAPPLER, J. BOCCARD, S. RUDAZ, Best poster communication "Analyse métabolomique de l'urine: stratégies de normalisation en UHPLC-QTOF-MS" Annual Congress Chimométrie XVI, January 21-22, 2015, Geneva, Switzerland.
4. E. A. DIOP, E. FERREIRA QUEIROZ, S. KICKA, T. DIOP, T. SOLDATI, S. RUDAZ, J. L. WOLFENDER, Award for excellence in poster presentation, 3rd price, "Medicinal plants traditionally used in Senegal for tuberculosis treatment: Mycobacterial growth assay of the extracts", XIXth International congress "Phytopharm 2015, July 21-24, 2015, Bonn, Germany.
5. E. A. DIOP, E. FERREIRA QUEIROZ, S. KICKA, D. TAHIR, T. SOLDATI, S. RUDAZ, J. L. WOLFENDER, Best poster award, "Screening of medicinal plants used in Senegal for Tuberculosis treatment: an innovative host-pathogen assay model", International IOCD Symposium, April 7-10, 2015, Marrakech, Morocco.
6. S. RUDAZ. Fellow of Swiss Society of Pharmaceutical Sciences SGPhW. Outstanding contribution to the advancement of Pharmaceutical Sciences, University Hospital of Bern, Switzerland.
7. D. GUILLARME, J. L. VEUTHEY elected among the 100 most influential people in analytical sciences – ranking reported in the analytical scientist, 2015, 33, 30-47.
8. S. RUDAZ, J. SCHAPPLER, runners up of the Humanity in Science Award "Low-cost analytical device based on capillary electrophoresis for counterfeit drug detection and sub-standard drug quality control".

PHARMACEUTICAL BIOCHEMISTRY



PROFESSOR YOGESHVAR KALIA

PROFESSOR LEONARDO

SCAPOZZA

DR REMO PEROZZO, SENIOR LECTURER

GENERAL DESCRIPTION OF THE UNIT

The Pharmaceutical Biochemistry group includes two distinct fields of research linked to molecular therapeutics discovery and delivery.

The first is the Pharmaceutical Biochemistry/Chemistry field in which the research is focused on understanding ligand-macromolecule interactions to develop new therapeutic strategies including new chemical entities, new targets using an interdisciplinary approach based on the combination of Biochemistry/Biophysics and Chemistry with Computational Chemistry/Molecular Modelling. Additionally an *in vivo* activity in the field of rare disease has been added in order to be able to do preclinical Proof of Concept.

The second is in the field of drug delivery and focuses on the topical and transdermal delivery of therapeutic agents by investigating the effect of molecular properties on both passive and active transport processes. In addition, innovative approaches to increase the range of therapeutic agents that can be delivered across the skin and so provide new treatment options are also investigated.

SPECIFIC RESEARCH FIELDS

The research in the field of pharmaceutical biochemistry/chemistry covers three main topics, namely Cancer, Neglected Diseases, Rare Diseases and Antibiotics Research.

- In Cancer Research we have two main objectives, namely the development of a thymidine kinase based safety and monitoring tool for stem cells therapy and the development of inhibitors of the tyrosine kinase domain of oncogenic fusion proteins involved in signalling pathways.
- Within the research area of Neglected Diseases and Rare Diseases we aim at elucidating and validating new potential drug targets for developing therapeutic strategies against orphan diseases e.g. dystrophy/SMA and the major parasitic diseases of the Third World e.g. Malaria, Tripanosomiasis and Leishmaniosis as well as finding potential lead compounds against such diseases.
- Within the area of Antibiotic Research the objective is to find compounds inhibiting bacterial virulence with novel mechanisms of action.

Further minor activities based on molecular recognition-based approaches for improving antibody formulation are on-going.

The research in the field of cutaneous drug delivery includes:

- Development of new formulations to increase local and systemic bioavailability of topical and transdermal therapeutics.
- Investigation of the influence of physicochemical properties on electrically-assisted transport across the skin.
- Synthesis and characterisation of prodrugs optimised for transdermal iontophoretic administration.
- Development of new techniques for the non-invasive delivery of biotechnology-derived therapeutics across the skin ("pharmaceutical biotechnology").

- Evaluation of dermal exposure, risk assessment and the development of predictive mathematical models.
- Investigation of new therapeutic applications.

2015 AT A GLANCE

| | |
|---|----|
| Publications with impact factor | 24 |
| Posters presentations | 15 |
| Congresses & Symposia | 18 |
| Number of projects at FNRS and assimilated | 13 |
| Projects of collaboration with the industry | 11 |
| Ph.D. Thesis presented in 2015 | 1 |
| Patents | 1 |

STAFF

SENIOR RESEARCH ASSOCIATE

Olivier DORCHIES
Thibaut DE SMEDT

Béatrice KAUFMANN
Oscar Vadas

SENIOR RESEARCH AND TEACHING ASSISTANTS

Magali ZEISSER

Laurence NEFF

POSTDOCTORAL SCHOLARS

Yvonne ARNOLD
Sergio DEL RIO SANCHO
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Kiran SONAJE
Cesar SERNA JIMENEZ

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Maria LAPTEVA
Vegunta YOGHESH
Mayank SINGHAL
Somnath KANDEKAR
Monica TESTONI (external)

EXCELLENCE FELLOWSHIP

Salwa MOSAD SOLIMAN

INTERNSHIP STUDENTS – CO-SUPERVISION (CO-TUTELLE)

Laura CURTI
Giuseppina PISIGNANO

Cecilia DALLAVALLE

ADMINISTRATIVE STAFF

Carole SPIESS

TECHNICAL STAFF

Aurélie BAGUET
Sylvie GUINCHARD
Olivier PETERMANN
Benjamin KIENNING (*apprentice*)

Aurélie GOUILLER
Ophélie PATTHEY-VUADENS
Samuel EPSY (*apprentice*)

RESEARCH FUNDS

SWISS NATIONAL SCIENCE FOUNDATION

Identification and analysis of the putative AMP-activated protein kinase (AMPK) in blood-stream form of *Trypanosoma brucei* (SNF No. 31003A-140722)

Main applicant: R. PEROZZO

Co-applicant: L. SCAPOZZA

Total allocation: CHF 237'840.-

Allocation 2015: CHF 74'380.-

Duration: 3 years

Starting date: 1.9.2012

How kinases define specificity in lipid signalling? (SNF PZ00P3_148269/1 Ambizione)

Main applicant: O. VADAS

Co-applicant: L. SCAPOZZA

Total allocation: CHF 600'000.-

Allocation 2015: CHF 183'361.-

Duration: 3 years

Starting date: 1.1.2014

EU FUNDING

Scaffolds for alternative delivery (SADEL) (FP7-HEALTH-2011)

Main applicant: L. SCAPOZZA

Total allocation: Euro 643'544.-

Allocation 2015: CHF 216'705.-

Duration: 5 years

Starting date: 1.1.2012

CTI

CTI-13933.2 PFLS-LS: "Development of novel hydrocolloid patches for use with P.L.E.A.S.E.® fractional laser ablation system for the intraepidermal "needle-less" delivery of biotechnology therapeutics"

Main applicant: Y. KALIA

Total allocation: CHF 431'148.-

Allocation 2015: CHF 86'229.-

Duration: 2 years

CTI 16447.2 PFLS-LS: "Inhibitory therapeutics of Death Receptor 3 (DR3) for treatment of autoimmune disorders"

Main applicant: L. SCAPOZZA

Total allocation: CHF 238'063.-

Allocation 2015: CHF 238'063.-

Duration: 1 year

Starting date: 01.09.2014

CTI-14416.1 PFLS-LS: "Development of a new alcohol-free gel product for the controlled transdermal delivery of testosterone to treat sexual dysfunction"

Main applicant: Y. KALIA

Total allocation: CHF 206'470.-

Allocation 2015: CHF 4'593.-

Duration: 2 years

Starting date: 1.10.2012

CTI-13933.2 NGX: "Development of novel hydrocolloid patches for use with P.L.E.A.S.E.® fractional laser ablation system for the intraepidermal "needle-less" delivery of biotechnology therapeutics"

Main applicant: Y. KALIA

Total allocation: CHF 141'200.- (Industrial partner contribution to CTI no. 13933.2)

Allocation 2015: CHF 141'200.-

Duration: 2 years

Starting date: 1.9.2013

CTI-14931.1 PFLS-LS: "Development of a physiological model for drug permeation in the gastrointestinal tract using porcine intestinal mucosa: A new efficient method for drug screening and identification of lead candidates"

Main applicant: Y. KALIA

Total allocation: CHF 200'640.-

Allocation 2015: CHF 13'079.-

Duration: 2 years

Starting date: 1.7.2013

CTI-14931.1 DEBIO: "Development of a physiological model for drug permeation in the gastrointestinal tract using porcine intestinal mucosa: A new efficient method for drug screening and identification of lead candidates"

Main applicant: Y. KALIA

Total allocation: CHF 40'000.- (Industrial partner contribution to CTI no. 14931.1)

Allocation 2015: CHF 0.-

Duration: 2 years

Starting date : 1.7.2013

FOUNDATIONS

Using RNA secondary structure as a therapeutic target for Spinal Muscular Atrophy: a new drug discovery approach. Fondation SMA Europe

Main applicant: L. SCAPOZZA

Total allocation: Euro 122'500.-

Allocation 2015: Euro 62'500.-

Duration: 2 years

Starting date: 1.1.2015

Investigations on tamoxifen and the roles of estrogen receptors in mouse models of muscular dystrophies. Fondation DPP-NL

Main applicant: L. SCAPOZZA and O. Dorchies

Total allocation: CHF 263'237.-

Allocation 2015: CHF 139'044.-

Duration: 2.5 years

Starting date: 1.7.2014

Enhancing estrogenic signalling to fight devastating muscular dystrophies: Mechanisms of action and repurposing estrogenic drugs approved for Human use. Fondation AFM-Téléthon

Main applicant: L. SCAPOZZA and O. Dorchies

Total allocation: CHF 172'452.-

Allocation 2015: CHF 46'043.-

Duration: 3 years

Starting date: 1.9.2014

Enhancing estrogenic signalling to fight muscular dystrophies: Mechanisms of action and repurposing clinically approved drugs. Fondation Suisse de recherché sur les maladies musculaires

Main applicant: L. SCAPOZZA and O. Dorchies

Total allocation: CHF 106'118.-

Allocation 2015: CHF 53'059.-

Duration: 2 years

Starting date: 1.1.2014

INDUSTRY AND ASSIMILATED

| Code | Service - Development - Research | Total Amount for 2015 (CHF) |
|---------|----------------------------------|-----------------------------|
| Ind-1 | R&D | 59'114.- |
| Ind-2 | R&D | 12'848.- |
| Ind-3 | R&D | 132'562.- |
| Ind-4 | R&D | 13'009.- |
| Ind-5 | R&D | 33'250.- |
| Ind-6 | R&D | 65'021.- |
| Coll-7 | R&D | 37'000.- |
| Coll-8 | R&D | 14'500.- |
| Coll-9 | R&D | 77'129.- |
| Coll-10 | R&D | 2'641.- |
| Coll-11 | R&D | 32'993.- |
| | total | 480'067.- |

DEVICES IN LEND

| DEVICE | ENTERPRISE /LABORATORY | LENDING PERIOD | LOCALISATION | INSURANCE CONTRAT |
|----------------------------|---|----------------|--------------|-------------------|
| FDSS /microcell- Hamamatsu | Alpine Institute for Drug Discovery SA / Institut for Arthritis Research | 01.09.2014- | CMU B07.1519 | |

PUBLICATIONS

THE TOP TEN JOURNALS IN THE FIELD (WITH IMPACT FACTOR)

| | |
|--------------------------|-------|
| Cancer Res. | 7.86 |
| J. Biol. Chem. | 4.77 |
| J. Med. Chem. | 5.25 |
| Cancer Gene Ther. | 2.80 |
| Proteins | 3.39 |
| Biochemistry-US | 3.42 |
| Protein Sci. | 2.80 |
| J. Chem. Inf. Model | 4.68 |
| Protein Expres. Purif. | 1.59 |
| J. Mol. Model | 1.80 |
| Adv. Drug Deliv. Rev. | 11.50 |
| J. Control. Rel. | 5.73 |
| Mol. Pharmaceut. | 5.78 |
| Pharm. Res. | 4.10 |
| AAPS J. | 5.09 |
| Expert Opin. Drug Del. | 4.90 |
| Eur. J. Pharm. Biopharm. | 4.27 |
| Int. J. Pharm. | 3.35 |
| J. Pharm. Sci. | 3.06 |
| Eur. J. Pharm. Sci. | 3.21 |

SCIENTIFIC PUBLICATIONS (WITH IMPACT FACTOR)

1. M. PASTORE, Y. N. KALIA, M. HORSTMANN, M. ROBERTS, Transdermal patches: history, development, and pharmacology, *Br J Pharmacol.* 172, pp 2179-2209 (2015) 4.84
2. M. LAPTEVA, M. MÖLLER, R. GURNY, Y. N. KALIA, Self-assembled polymeric nanocarriers for the targeted delivery of retinoic acid to the hair follicle. *Nanoscale.* 7(44), pp 18651-18662, (2015) 7.76
3. M. CINIER, M. Z. LABOUEBE, C. ROUSSEAU, J. V. RODRIGUEZ, A. CUNHA, N. T. TAN, R. GURNY, L. SCAPOZZA, O. KITTEN: "Oral delivery of a new class of non-antibody protein scaffold Nanofitins targeting TNF-alpha shows a strong preventive and curative anti-inflammatory effect in models of inflammatory bowel diseases", *J. Crohns Colitis*, 9, S17 (2015). 6.58
4. P. CWIEK, Z. LENI, F. SALM, V. DIMITROVA, B. STYP-REKOWSKA, G. CHIRIANO, M. CARROLL, K. HOLAND, V. DJONOV, L. SCAPOZZA, P. GUIRY, A. ARCARO: "RNA interference screening identifies a novel role for PCTK1/CDK16 in medulloblastoma with c-Myc amplification", *Oncotarget*, 6, 116-129 (2015) 5.00
5. P. B. M. DE ANDRADE, L. A. NEFF, M. K. STROSOVA, D. ARSENIJEVIC, O. PATTHEY-VUADENS, L. SCAPOZZA, J. P. MONTANI, U. T. RUEGG, A. G. DULLOO, O. M. DORCHIES: "Caloric restriction induces energy-sparing alterations in skeletal muscle contraction, fiber composition and local thyroid hormone metabolism that persist during catch-up fat upon refeeding", *Front. Physiol.*, 6, 14 (2015). 4.03
6. O. DORCHIES, E. GAYI, H. ISMAIL, L. NEFF, O. PATTHEY-VUADENS, L. SCAPOZZA, U. RUEGG: "The mdx(5Cv) dystrophic mouse: In depth longitudinal phenotyping", *Neuromusc. Disord.*, 25, S293 (2015). 3.10
7. E. GAYI, H. ISMAIL, L. NEFF, O. PATTHEY-VUADENS, T. SAIBARA, K. TODA, U. RUEGG, L. SCAPOZZA, O. DORCHIES: "Lack of estrogens aggravates the pathology in dystrophic mice", *Neuromusc. Disord.* 25, S290 (2015). 3.10
8. C. F. HARRISON, G. CHIRIANO, I. FINSEL, C. MANSKE, C. HOFFMANN, B. STEINER, A. KRANJC, O. PATTHEY-VUADENS, S. KICKA, V. TROFIMOV, H. OUERTATANI-SAKOUHI, T. SOLDATI, L. SCAPOZZA, H. HILBI: "Amoebae-Based Screening Reveals a Novel Family of Compounds Restricting Intracellular Legionella pneumophila", *ACS Infect. Dis.*, 1, 327-338 (2015). 2.73
9. C. F. HARRISON, S. KICKA, A. KRANJC, I. FINSEL, G. CHIRIANO, H. OUERTATANI-SAKOUHI, T. SOLDATI, L. SCAPOZZA, H. HILBI: "Adrenergic antagonists restrict replication of Legionella", *Microbiology-(UK)*, 161, 1392-1406 (2015). 2.73
10. S. KADERLI, C. BOULOCHER, E. PILLET, D. WATRELOT-VIRIEUX, T. ROGER, E. VIGUIER, R. GURNY, L. SCAPOZZA, M. MOLLER: "A novel oxido-viscosifying Hyaluronic Acid-antioxidant conjugate for osteoarthritis therapy: Biocompatibility assessments", *Eur. J. Pharm. Biopharm.*, 90, 70-79 (2015) 3.97
11. S. KADERLI, C. BOULOCHER, E. PILLET, D. WATRELOT-VIRIEUX, A. L. ROUGEMONT, T. ROGER, E. VIGUIER, R. GURNY, L. SCAPOZZA, O. JORDAN: "A novel biocompatible hyaluronic acid-chitosan hybrid hydrogel for osteoarthritis therapy", *Int. J. Pharm.*, 483, 158-168 (2015). 3.66
12. S. KADERLI, E. CHEREUL, E. VIGUIER, T. ROGER, M. MOLLER, L. SCAPOZZA, O. JORDAN, C. BOULOCHER: "refinement of preclinical studies for viscosupplementation therapy evaluation: Interest of complementary techniques to evaluate cartilage in a rabbit model of early osteoarthritis" *Osteoarthritis Cartilage*, 23, A404 (2015). 4.53
13. S. KADERLI, E. VIGUIER, D. WATRELOT-VIRIEUX, T. ROGER, R. GURNY, L. SCAPOZZA, M. MOLLER, C. BOULOCHER, O. JORDAN: "Efficacy study of two novel hyaluronic acid-based formulations for viscosupplementation therapy in an early osteoarthrotic rabbit model", *Eur. J. Pharm. Biopharm.*, 96, 388-395 (2015) 3.97

14. L. MOLOGNI, M. CECCON, A. PIROLA, G. CHIRIANO, R. PIAZZA, L. SCAPOZZA, C. GAMBACORTI-PASSERINI: "NPM/ALK mutants resistant to ASP3026 display variable sensitivity to alternative ALK inhibitors but succumb to the novel compound PF-06463922", *Oncotarget*, 6, 5720-5734 (2015) 5.00
15. A. B. NEEF, L. PERNOT, V. N. SCHREIER, L. SCAPOZZA, N. W. LUEDTKE: "A Bioorthogonal Chemical Reporter of Viral Infection", *Angew. Chem.-Int. Edit.*, 54, 7911-7914 (2015). 11.70
16. W. SEEBACHER, V. WOLKINGER, J. FAIST, M. KAISER, R. BRUN, R. SAF, F. BUCAR, B. GROBLACHER, A. BRANTNER, V. MERINO, Y. KALIA, L. SCAPOZZA, R. PEROZZO, R. WEIS: "Synthesis of 3-azabicyclo 3.2.2 nonanes and their antiprotozoal activities", *Bioorg. Med. Chem. Lett.*, 25, 1390-1393 (2015) 2.48
17. T. SEREDENINA, G. CHIRIANO, A. FILIPPOVA, Z. NAYERNIA, Z. MAHIOUT, L. FIORASO-CARTIER, O. PLASTRE, L. SCAPOZZA, K. H. KRAUSE, V. JAQUET: "A subset of N-substituted phenothiazines inhibits NADPH oxidases", *Free Radic. Biol. Med.*, 86, 239-249 (2015).
18. Y. WESTERMAIER, X. BARRIL, L. SCAPOZZA: "Virtual screening: An in silico tool for interlacing the chemical universe with the proteome", *Methods*, 71, 44-57 (2015). 3.50
19. M. TESTONI, E. ZUCCA, KH YOUNG, F. BERTONI "Genetic lesions in diffuse large B-cell lymphomas. *Ann Oncol.* 26(6):1069-80 (2015) 9.26
20. M. TESTONI, E. Y. CHUNG, V. PRIEBE, F. BERTONI, The transcription factor ETS1 in lymphomas: friend or foe?" *Leuk Lymphoma.* 56(7):1975-80 (2015)
21. S. CRETTON, I. BREANT, L. POURREZ, C. AMBUEHL, R. PEROZZO, L. MARCOURT, M. KAISER, M. CUENDET, P. CHRISTEN "Chemical constituents from *Waltheria indica* exert in vitro activity against *Trypanosoma brucei* and *T. cruzi*" *Fitoterapia* 105, pp 55-60 (2015) 2.40
22. SHYMANETS A. PRAJWAL, O. VADAS, C. CZUPALLA, J. LOPICCOLO, M. BRENOWITZ, A. GHIGO, E. HIRSCH, E. KRAUSE, R. WETZKER, L. WILLIAMS, C. HARTENECK, B. NURNBERG. "Different inhibition of Gbetagamma-stimulated class IB phosphoinositide 3-kinase (PI3K) variants by a monoclonal antibody. Specific function of p101 as a Gbetagamma-dependent regulator of PI3Kgamma enzymatic activity" *Biochem J* (469) / 59 / (2015) 3.56
23. C. ROUSSEAUX, M. CINIÈR, M. ZEISSER LABOUEBE, J. V. RODRIGUES, A.E. CUNHA, N. TRUONG TAN, R. GURNY, L. SCAPOZZA, O. KITTEN, "Mo1687 Oral Delivery of a New Class of Non-Antibody Protein Scaffold Nanofitins Targeting TNF-Alpha Shows a Strong Preventive and Curative Anti-Inflammatory Effect in Models of Inflammatory Bowel Diseases", *Gastroenterology*, Volume 148 (4), Pp S-685 (2015) 18.18
24. O. VADAS, J. E. BURKE. "Probing the dynamic regulation of peripheral membrane proteins using hydrogen deuterium exchange-MS (HDX-MS)" *Biochem Soc Trans* (43)/773/ (2015) 2.67

PRESENTATIONS

POSTERS PRESENTATIONS

1. C. ROUSSEAUX, M. CINIÈR, M. ZEISSER LABOUEBE, J. V. RODRIGUES, A.E. CUNHA, N. TRUONG TAN, R. GURNY, L. SCAPOZZA, O. KITTEN "Oral Delivery of a New Class of Non-Antibody Protein Scaffold Nanofitins Targeting TNF-Alpha Shows a Strong Preventive and Curative Anti-Inflammatory Effect in Models of Inflammatory Bowel Diseases" – DDW2015, Washington DC, May 17-19, 2015
2. M. ZEISSER LABOUEBE, M. CINIÈR, C. ROUSSEAUX, A. CUNHA, N. TRUONG TAN, O. KITTEN, R. GURNY, L. SCAPOZZA "Development of Nanofitin protein scaffold for the treatment of inflammatory bowel diseases." – EUFAPS annual meeting, Geneva, June 15-17, 2015
3. E. GAYI, H.M. ISMAIL, L.A. NEFF, O. PATTHEY-VUADENS, K. TODA, T. SAIBARA, U.T. RUEGG, L. SCAPOZZA, O. DORCHIES. "Lack of estrogens aggravates the pathology in dystrophic mice." World muscle Society, Brighton, UK, Sept 30th-Oct 4th 2015.

4. O. VADAS, H. DBOUK, O. PERISIC, J. M. BACKER, R. L. WILLIAMS "Regulation of PI3Kgamma downstream of GPCRs", Keystone symposia PI 3-kinase Signaling Pathways in Disease, Vancouver, Canada, January 13-18, 2015
5. N. DAHMANA, D. GABRIEL, L. KOWALCZUC, F. BEHAR-COHEN, R. GURNY, Y. N. KALIA. "Development of micellar formulations of spironolactone for the topical treatment of ophthalmic diseases." 12th International Symposium on Ocular Pharmacology and Therapeutics Clinical. Berlin, Germany, July 9-12, 2015
6. M. SINGHAL, S. DEL RIO-SANCHO, K. SONAJE, Y. N. KALIA. "P.L.E.A.S.E.® fractional laser ablation for the cutaneous deposition of triamcinolone acetonide loaded PLGA microparticles." Controlled Release Society Annual Meeting & Exposition 2015, Edinburgh, Scotland, July 26-29, 2015
7. K. SONAJE, Y. N. KALIA. "Targeted local chemotherapy of oral cancers: Topical iontophoresis for mucosal delivery of cationic liposomes." 45th Annual Meeting of the European Society for Dermatological Research, Rotterdam, The Netherlands, September 9-12, 2015
8. O. DORCHIES, E. GAYI, H.M. ISMAIL, L.A. NEFF, O. PATTHEY-VUADENS, U.T. RUEGG, L. SCAPOZZA. "The mdx5Cv dystrophic mouse: first in depth longitudinal phenotyping." World muscle Society, Brighton, UK, Sept 30th-Oct 4th 2015.
9. O. DORCHIES, J. REUTENAUER-PATTE, S. TARDY, H.M. ISMAIL, E. DAHMANE, L.A. DECOSTERD, D. PICARD, U.T. RUEGG, L. SCAPOZZA. "Preclinical evaluation of tamoxifen and other selective estrogen receptor modulators in mdx5Cv dystrophic mice." World muscle Society, Brighton, UK, Sept 30th-Oct 4th 2015.
10. B. KAUFMANN, P. CAVAILLER, M. TOWNSEND, I. CIGLENECKI, M. SHAH, G. SCHMIDT, S. CRISTOFANI, P. BOULLE, D. BERAN, L. SCAPOZZA. "A potential revolution in diabetes care: heat stability of insulin in tropical conditions." XVII Humanitarian Congress Berlin, Germany, October 9-10, 2015
11. C. AMBUEHL, P. GRAVEN, L. SCAPOZZA, R. PEROZZO. Recent progress in identification of Trypanosoma brucei AMPK, 32nd Swiss Trypanosomatid Meeting, Leysin, Switzerland, January 21-23, 2015
12. C. DALLAVALLE, D. ALBINO, G. CIVENNI, P. OSTANO, R. GARCIA-ESCUADERO, L. CURTI, G. CHIORINO, C.V. CATAPANO, G. M. CARBONE "microRNA-mediated silencing of COP1 and altered ubiquitination of key oncogenic transcription factors promote cancer stem cell (CSC) phenotype and prostate cancer progression". AACR 2015, Philadelphia, April 18-22, 2015
13. O. DORCHIES, E. GAYI, H.M. ISMAIL, U.T. RUEGG, L. SCAPOZZA. "Pharmacotherapy in a mouse model of Duchenne muscular dystrophy: Preclinical evaluation of tamoxifen and other selective estrogen receptor modulators" SSPT Spring Meeting 2015, Bern, 23 April 2015
14. I. PATMANIDIS, G. CHIRIANO, O. VADAS, L. SCAPOZZA "Structural insights into Phosphoinositide 3-kinase alpha (PI3K α) regulation using molecular dynamics simulations" LS2 annual meeting 2015, Zurich, January 29-30 2015
15. F. TESSARO, G. CHIRIANO, L. SLEPIKAS, R. PEROZZO, K. PERRON, E. TARASEVICIUS, L. SCAPOZZA "Structure-based discovery of new rhodanin derivatives as Staphylococcus aureus FabI inhibitors" LS2 annual meeting 2015, Zurich, January 29-30 2015

CONGRESSES & SYMPOSIA

1. M. CINIER, M. ZEISSER LABOUEBE, C. ROUSSEAUX, J.V. RODRIGUEZ, A. CUNHA, N. TRUONG TAN, R. GURNY, L. SCAPOZZA, O. KITTEN "Oral delivery of a new class of non-antibody protein scaffold Nanofitins targeting TNF-alpha shows a strong preventive and curative anti-inflammatory effect in models of inflammatory bowel diseases." - 10th congress of ECCO, Barcelona, February 18-21, 2015
2. M. CINIER, M. ZEISSER LABOUEBE, C. ROUSSEAUX, J.V. RODRIGUEZ, A. CUNHA, N. TRUONG TAN, R. GURNY, L. SCAPOZZA, O. KITTEN "Oral Delivery of Anti-TNF-Alpha Nanofitin Shows a Strong Preventive and Curative Anti-Inflammatory Effect in Models of Inflammatory Bowel Diseases." - 7th PEGS Europe Protein & Antibody Engineering Summit, Lisboa, November 2-6, 2015
3. O. VADAS "Regulation of PI3Kgamma downstream of GPCRs" Keystone symposia PI 3-kinase Signaling Pathways in Disease, Vancouver, Canada, January 13-18 2015

4. L. SCAPOZZA "Allosterism: Targeting the undruggable?" Drug Discovery & Development, University of Basel, Switzerland, November 18, 2015
5. L. SCAPOZZA "Allosterism: a way to address unmet medical needs?" Computational Advances in Drug Discovery, CECAM Workshop, EPFL, Lausanne, Switzerland, September 23, 2015
6. L. SCAPOZZA "Molecular recognition when biology meets chemistry towards developing novel therapeutic strategies" Drug discovery series 2015 , University of Napoli, Napoli, Italy, July 27, 2015
7. L. SCAPOZZA "There is no rational disease treatment without molecular understanding of events: the computational and experimental challenges to address flexible targets" EPGL-NIHS mini Symposium University of Geneva, Geneva, Switzerland, November 20th 2015
8. B. KAUFMANN P. CAVAILLER, M. TOWNSEND, I. CIGLENECKI, G. SCHMIDT, S. CRISTOFANI, P. BOULLE, D. BERAN, L. SCAPOZZA "A potential revolution in type 1 diabetes care: heat stability of insulin in tropical conditions." MSF Scientific Days, London, UK, May 7-8, 2015
9. L. SCAPOZZA "Heat stability of Insulin in the "real tropical life" MSF Workshop NCD, Bruxelles, February 4th, 2015
10. L. SCAPOZZA "A potential revolution in diabetes care: heat stability of insulin in tropical conditions" 3rd Meeting on Non-Communicable Diseases in Humanitarian Settings, Geneva, 27th November 2015
11. M. SINGHAL, S. DEL RIO-SANCHO, K. SONAJE, Y. N. KALIA. P.L.E.A.S.E.® fractional laser ablation; a needle-free approach for cutaneous deposition of drug loaded PLGA microparticles. 4th Galenus Workshop – Drug delivery to human skin. Saarland University and Helmholtz-Institute for Pharmaceutical Research, Saarbrücken, Germany, February 25-27, 2015
12. V. SANTER, S. DEL RIO-SANCHO, Y. N. KALIA. Visualization and quantification of intra-corneal triamcinolone acetonide biodistribution following topical iontophoresis: a new approach to treat corneal graft rejection. 12th International Symposium on Ocular Pharmacology and Therapeutics Clinical. Berlin, Germany, July 9-12, 2015.
13. Y. N. KALIA. Iontophoresis – Delivering charged molecules across biological membranes. University Claude Bernard Lyon 1, Lyon, France, October 14, 2015.
14. O.M. DORCHIES, H.M. ISMAIL, L.A. NEFF, O. PATTHEY-VUADENS, L. SCAPOZZA. "Exploring the impact of nutraceuticals on muscle function in health and disease." EPGL-NIHS mini Symposium, Geneva, November 20th 2015.
15. H. HAMED "Diapocynin, a putative NADPH oxidase inhibitor, ameliorates the phenotype of a mouse model of Duchenne muscular dystrophy" LS2 meeting, Zurich, Switzerland, January 29-30, 2015
16. L. CURTI 'EZH2 acts as an enhancer of ERG transcriptional and transforming activity'. Proste Cancer Retreat – Monte Verità, Ascona, Switzerland, May 22, 2015.
17. C. DALLAVALLE "MicroRNA deregulation promotes cancer stem cell phenotype and prostate cancer progression". Quinta Giornata della Ricerca della Svizzera Italiana, Lugano , February 27 2015
18. C. DALLAVALLE "miRNA-mediated STAT3 activation and disease progression in prostate cancer". NCCR Summer School on «RNA as Target and Drug», Saas-Fee, August 24 2015

CONTINUING EDUCATION & OPEN TO THE PUBLIC LECTURES

1. L. SCAPOZZA. Co-organizer of the Symposium entitled "Fortschritte in der Pharmakologie: Allergy and Autoimmunity" (ca 300 participants) February 5, 2015, Bern (Switzerland)

THESIS PRESENTED

INTRA-MUROS THESIS

1. Andrea CRISTIANI
“Molecular dynamics simulations and in silico mutagenesis: from in vitro to in silico and from clinics to molecular modeling”
Thesis No – University of Geneva
Director : L. SCAPOZZA

THESIS JURY

1. Hui Song PAK
« Data-independent mass spectrometry for the analysis of peptide mixture »
University of Geneva
Directors : D. HOCHSTRASSER, DR A. SCHERL,
Thesis N° 4764, January 19, 2015
Jury of thesis : Y. KALIA
2. Kyoko WATANABE
« Approaches for improving throughput and sensitivity of LC-ESI-MS/MS analysis for small molecules in biological samples »
University of Geneva
Director: G. HOPFGARTNER
Thesis N° 4893 – December 20, 2015
Jury of thesis : Y. KALIA
3. Laurène ROUSSEL
« Modulateurs moléculaires de l’absorption cutanée : analyse de la structure-activité de tensioactifs et caractérisation du transport cutané ».
University Claudé Bernard Lyon 1
Director: F. PIROT
Jury of thesis : Y. KALIA
4. Simon HUET
« Reconnaissance moléculaire : de l'in silico à l'in vitro, et vice versa »
University of Nantes
Director: Y.-H. SANEJOUAND
Jury of thesis : L. SCAPOZZA

PATENTS

L. SCAPOZZA, S. TARDY, M. FEYEU, K.-H. KRAUSE “Phenazopyridine Analogs And Methods Of Use Herewith”, U.S. Provisional Patent Application No. 62/141,068, 31/03/2015 (2015)

PYTOCHEMISTRY AND BIOACTIVE NATURAL PRODUCTS



PROFESSOR JEAN-LUC WOLFENDER

DR EMERSON FERREIRA-QUEIROZ, SENIOR LECTURER

GENERAL DESCRIPTION OF THE UNIT

The main research activities of the unit are related to the development of methodologies for the rapid isolation identification and bioactivity characterisation of natural products (NPs) at the microgram scale. State-of-the-art LC-MS and LC-MS/MS as well as microNMR techniques are used for dereplication purposes or de novo identification of NPs in crude extracts from different origins (plants, fungi, and microorganisms). Microfractionation methods in 96 well plates allow bioassays to be performed on LC peak in crude extracts, quantitative estimation of the well content and further structural determination by CapNMR. Rational large scale isolation strategies are developed for the rapid obtention of pure NPs in the mg scale for further testing bioactivities and mode of action. The range of biological activities studied in house or in collaboration covers mainly antifungal, antiprotozoal, antiinflammatory and antiepileptic activities. The interest of the group is also focused on plant metabolomics, in this respect the focus is on the investigation of bioactive NPs dynamically induced in various stress situations (fungi confrontation, biotic and abiotic stresses, metabolite elicitation...). With the idea to generate original sources of bioactive NPs other strategies including biotransformation or chemical derivatisation of crude extracts from common sources are also investigated. Finally the analytical and metabolomics methods are also used for studying the metabolisation of crude extracts in view of a better understanding of the mode of action (synergy, prodrugs) and the potential toxicity of phytopharmaceuticals or nutraceuticals. The main research activities of the unit are related to the development of methodologies for the rapid isolation identification and bioactivity characterisation of natural products (NPs) at the microgram scale. State-of-the-art LC-MS and LC-MS/MS as well

SPECIFIC RESEARCH FIELDS

- Search for new lead compounds from natural sources
- On-line identification of natural products by LC-UV-NMR-MS (dereplication)
- Rapid microfractionation of crude extracts for chemical and bioactivity profiling
- Plant metabolomics
- Search for original bioactive stress-induced natural products of various origin
- Study of antifungal compounds from pathogen fungi in co-culture
- Qualitative quantitative analysis of phytotherapeutics
- Study of the metabolisation of phytopreparation by metabolomics in relation with their mode of action
- Investigation of natural products involved in diseases associated with problems of ageing
- Search for new lead compounds for use against tropical parasitic diseases
- Investigation of methods for isolation of natural products using preparative chromatographic techniques

2015 AT A GLANCE

| | |
|---|----|
| Publications with impact factor | 16 |
| Books and chapters | 1 |
| Posters presentations | 19 |
| Congresses & Symposia | 28 |
| Number of projects at FNRS and assimilated | 5 |
| Projects of collaboration with the industry | 5 |
| Ph.D. Thesis presented in 2015 | 1 |
| Patents | 1 |
| Awards | 2 |

STAFF

LECTURER

Elisabeth RIVARA MINTEN

EXCELLENCE FELLOWSHIP

Nayara CORIOLANO Luis Leonardo SALDANHA
Patricia de OLIVEIRA-FIGUEIREDO Shuaizhen ZHOU

POSTDOCTORAL SCHOLARS

Pierre-Marie ALLARD Mariam MNATSAKANIAN
Paul COULERIE

RESEARCH AND TEACHING ASSISTANTS

Adlin AFZAN Quentin FAVRE-GODAL
Abdul-Elah ALFATTANI Daniel MAAG
Antonio AZZOLLINI Vera OLDRATI
Théo BRILLATZ Charlotte PETIT
Soura CHALLAL (until 30.04.2015) David RIGHI
Joëlle HOURIET

INTERNSHIP STUDENTS – Co- SUPERVISION (CO-TUTELLE)

Assane DIOP

TECHNICAL STAFF

Laurence MARCOURT

ADMINISTRATIVE STAFF

Natalie SCHREGLE

RESEARCH FUNDS

SWISS NATIONAL SCIENCE FOUNDATION

“Identification of novel modes of action of plant natural products targeting fungal human and phytopathogens” (CR2313_143733)

Main applicant: J.-L. WOLFENDER

Co-applicants: D. SANGLARD, CHUV - Co-applicant: K. GINDRO, ACW-Changins -

Co-applicant: E. FERREIRA QUEIROZ, UNIGE

Total funding: CHF 500'000.-

Allocation 2015: CHF 180'000.-

Duration: 30 months

Starting date: 2013

“Targeted and non-targeted metabolomic study of the wound response in Arabidopsis: investigation of the role of 13 lipoxygenases in long distance signalling” (200020_146200)

Main applicant: J.-L. WOLFENDER

Co-applicant: S. RUDAZ

Total funding: CHF 229'857.-

Allocation 2015: CHF 38'000.-

Duration: 24 months

Starting date: 2013

SINO SWISS SCIENCE AND TECHNOLOGY COOPERATION - SSSTC

Collaboration between the School of Pharmaceutical Sciences of the University of Shandong and Geneva Sino Swiss Science and Technology Cooperation Program (SSSTC) IP18-092011

Main applicant: J.-L. WOLFENDER

Total funding: CHF 40'000.-

Allocation 2015: CHF 27'000.-

Duration: 16 months

Starting date: 2015

INNOGAP, ROUND 13

“Molécules de plantes pour traiter les maladies parasitaires”

Main applicant: J.L. WOLFENDER

Total funding: CHF 22'155.--

Allocation 2015: CHF 22'155.--

Duration: 18 months

Starting date: 2015

JOINT INTERNATIONAL PROGRAM DEVELOPMENT FUND - JIPDF

“Conservation of Australian Aboriginal Bush Medicine through a Phytochemical Library: Case Study of the Hibbertia scandens (Willd.) Gilg.” Collaboration between the University of Sydney and the University of Geneva

Co-applicants: J. L. WOLFENDER and P. GROUNDWATER, Faculty of Pharmacy, University of Sydney

Total funding: CHF 8'325.-- (AUD 10'000.--)

Allocation 2015: CHF 8'325.--

Duration : 24 months

Starting date : 2015

INDUSTRY AND ASSIMILATED

| Code | Service - Development - Research | Total Amount for 2015 (CHF) |
|--------------|---|-----------------------------|
| S17072 | Fonds Industrie (J.L. Wolfender) – Research & Services | 112'170.12 |
| S17912 | Industry Partner from the Arc Lemanic (Acetobacter) (J.-L. Wolfender, M. Cuendet) | 25'485.94 |
| S18306 | Industry Partner from the Arc Lemanic (NIHS) (J.-L. Wolfender) | 94'275.18 |
| S18580 | Industry Partner from the Arc Lemanic (NITM) (J.-L. Wolfender) | 122'860.80 |
| S18785 | Industry Partner from France (SERENOA) (J.-L. Wolfender) | 31'588.64 |
| Total | | 386'380.68 |

DEVICES IN LEND

| Device | Enterprise /Laboratory | Lending period | Localisation | Insurance Contrat |
|-------------------|------------------------|----------------|--------------|-------------------|
| Puriflash 4100 MS | Interchim | 2014 | 3-333 | 150'000 |

PUBLICATIONS

THE TOP TEN JOURNALS IN THE FIELD (WITH IMPACT FACTOR)

| | |
|-------------------------|-------|
| Natural Product Reports | 10.98 |
| Trends Plant Sci | 10.89 |
| Food Chem | 4.05 |
| J. Nat. Prod. | 3.66 |
| Metabolomics | 3.66 |
| Mol. Biosyst. | 2.82 |
| Phytochemistry | 2.77 |
| Phytochem. Rev. | 2.68 |
| Phytochem. Anal | 2.49 |
| Molecules | 2.46 |

SCIENTIFIC PUBLICATIONS (WITH IMPACT FACTOR)

1. M. CECCARELLI, R. GERMANI, S. MASSARI, C. PETIT, A. NURISSO, J. L. WOLFENDER, L. GORACCI. "Phospholipidosis effect of drugs by adsorption into lipid monolayers". *Colloids Surf., B.*, 136: 175-184 (2015). 3.90
2. S. CHALLAL, E. F. QUEIROZ, B. DEBRUS, W. KLOETI, D. GUILLARME, M. P. GUPTA, J. L. WOLFENDER. "Rational and Efficient Preparative Isolation of Natural Products by MPLC-UV-ELSD based on HPLC to MPLC Gradient Transfer". *Planta Med.* 81(17): 1636-1643 (2015). 1.99
3. P. COULERIE, C. POULLAIN. "New Caledonia: a hot spot for valuable chemodiversity. Part1: Gymnosperms". *Chemistry and Biodiversity*, 12:841-856, (2015) 1.44
4. S. CRETTON, L. BRÉANT, L. POURREZ, C. AMBUEHL, R. PEROZZO, L. MARCOURT, M. KAISER, M. CUENDET, P. CHRISTEN. "Chemical constituents from *Waltheria indica* exert in vitro activity against *Trypanosoma brucei* and *T. cruzi*". *Fitoterapia.* 105: 55-60 (2015) 2.40
5. B. DAVID, J. L. WOLFENDER, D. A. DIAS: "The pharmaceutical industry and natural products: historical status and new trends." *Phytochem. Rev.*, 14, 299-315 (2015). 2.69
6. M. ERB, C. A. M. ROBERT, G. MARTI, J. LU, G. R. DOYEN, N. VILLARD, Y. BARRIÈRE, B. WADE FRENCH, J. L. WOLFENDER, T. C. J. TURLINGS, J. GERSHENZON. "A Physiological and Behavioral Mechanism for Leaf Herbivore-Induced Systemic Root Resistance.". *Plant Physiol.* 169(4): 2884-2894 (2015). 6.28
7. Q. FAVRE-GODAL, S. DORSAZ, E. F. QUEIROZ, L. MARCOURT, S. N. EBRAHIMI, P. M. ALLARD, F. VOINESCO, M. HAMBURGER, M. P. GUPTA, K. GINDRO, D. SANGLARD, J. L. WOLFENDER. "Anti-Candida Cassane-Type Diterpenoids from the Root Bark of *Swartzia simplex*." *J. Nat. Prod.* 78(12): 2994-3004 (2015). 3.66
8. M. M. F. QUEIROZ, G. MARTI, E. F. QUEIROZ, L. MARCOURT, I. CASTRO-GAMBOA, V. S. BOLZANI, J. L. WOLFENDER. "LC-MS/MS Quantitative Determination of Tetrapterys mucronata Alkaloids, a Plant Occasionally used in Ayahuasca Preparation ". *Phytochem. Anal.* 26(3): 183-188 (2015). 2.49
9. D. GASPERINI, A. CHAUVIN, I. F. ACOSTA, A. KURENDA, S. STOLZ, A. CHÉTELAT, J. L. WOLFENDER, E. E. FARMER. "Axial and Radial Oxylin Transport ". *Plant Physiol.* 169: 2244-2254 (2015). 6.28
10. C. GUTJAHR, R. J. H. SAWERS, G. MARTI, L. ANDRÉS-HERNÁNDEZ, S.-Y. YANG, L. CASIERI, H. ANGLIKER, E. J. OAKELEY, J.-L. WOLFENDER, C. ABREU-GOODGER, U. PASZKOWSKI. "Transcriptome diversity among rice root types during asymbiosis and interaction with arbuscular mycorrhizal fungi ". *PNAS.* 112(21): 6754-6759 (2015). 9.42

11. J. J. JANSEN, L. BLANCHET, L. M. C. BUYDENS, S. BERTRAND, J. L. WOLFENDER. "Projected Orthogonalized CHEMical Encounter MONitoring (POCHEMON) for microbial interactions in co-culture ". *Metabolomics*, 11(4): 908-919 (2015). 3.66
12. A. KOEHLER, D. MAAG, N. VEYRAT, G. GLAUSER, J. L. WOLFENDER, T. C. J. TURLINGS, M. ERB: "Within-plant distribution of 1,4-benzoxazin-3-ones contributes to herbivore niche differentiation in maize", *Plant Cell and Environment*, 38, 1081-1093 (2015). 6.17
13. F. LECERF-SCHMIDT, R. HAUDECOEUR, B. PERES, M. M. FERREIRA QUEIROZ, L. MARCOURT, S. CHALLAL, E. F. QUEIROZ, G. SOTOING TAIWE, T. LOMBERGET, M. LE BORGNE, J. L. WOLFENDER, M. DE WAARD, R. J. ROBINS, A. BOUMENDJEL "Biomimetic synthesis of Tramadol ". *Chem. Commun. (Cambridge, U. K.)* 51: 14451-14453 (2015). 6.56
14. D. MAAG, M. ERB, J. S. BERNAL, J. L. WOLFENDER, T. C. J. TURLINGS, G. GLAUSER. "Maize Domestication and Anti-Herbivore Defences: Leaf-Specific Dynamics during Early Ontogeny of Maize and Its Wild Ancestors ". *Plos One*. 10(8): e0135722 (2015). 3.05
15. F. MEHL, G. MARTI, P. MERLE, E. DELORT, L. BAROUX. H. SOMMER, J. L. WOLFENDER, S. RUDAZ, J. BOCCARD. "Integrating metabolomic data from multiple analytical platforms for a comprehensive characterisation of lemon essential oils ". *Flavour Fragrance J.* 30(2): 131-138 (2015). 1.69
16. J. L. WOLFENDER, G. MARTI, A. THOMAS, S. BERTRAND. "Current approaches and challenges for the metabolite profiling of complex natural extracts ". *J. Chromatogr. A*, 1382: 136-164 (2015). 3.92

BOOKS OR BOOKS CHAPTERS

1. J.-L. WOLFENDER, A. URBAIN, K. HOSTETTMANN. "Profiling, Isolation, Chemical Characterisation and Distribution of Gentianaceae Constituents". In *The Gentianaceae - Volume 2: Biotechnology and Applications*; Rybczyński, J. J., Davey, M. R., Mikuła, A., Eds.; Springer Berlin Heidelberg: Berlin, Heidelberg, pp 349-381 (2015).

PRESENTATIONS

POSTERS PRESENTATIONS

1. A. AZZOLLINI, Q. FAVRE-GODAL, E. F. QUEIROZ, D. RIGHI, J. ZHANG, S. WANG, D. GUILLARME, P. FAN, H. LOU, J.-L. WOLFENDER. "Efficient Isolation of Natural Products in Complex Matrices by Flash Chromatography-UV-MS". SEP 2015, 31 March 2015, Paris (France).
2. S. RUDAZ, F. MEHL, G. MARTI, P. MERLE, E. DELORT, L. BAROUX, H. SOMMER, J.-L. WOLFENDER, J. BOCCARD. "Apport de la fusion de données analytiques dans la caractérisation d'huiles essentielles de citron au moyen de différentes plateformes d'analyses.". 11ème Congrès Francophone de l'AFSEP sur les sciences séparatives et les couplages, 1-2 April 2015, Paris (France).
3. A. E. DIOP, E. F. QUEIROZ, S. KICKA, S. RUDAZ, T. DIOP, J.-L. WOLFENDER. "Screening of medicinal plants traditionally used in Senegal for the treatment of Tuberculosis with an innovative host-pathogen assay model". International symposium IOCD "The plant kingdom: source of drugs nutraceutical and cosmetics", 7-10 April 2015, Marrakech (Morocco).
4. A. AZZOLLINI, K. GINDRO, J.-L. WOLFENDER. "Revealing interactions in microbial communities by MS-based metabolomics for discovering new bioactive compounds". Microbiology retreat on Host-Pathogen interactions, 21 May 2015, Villars (Switzerland).
5. A. KOVAL, C. A. PIEME, E. F. QUEIROZ, J.-L. WOLFENDER, V. KATANAIEV. "Extracts from *Syzygium guineense* of Cameroon suppress Wnt signaling, proliferation and migration of triple-negative breast cancer cells". 9th World Congress on Polyphenols, 20-21 June 2015, Malta (Malta).

6. A. AZZOLLINI, Q. FAVRE-GODAL, E. F. QUEIROZ, D. GUILLARME, J.-L. WOLFENDER. "Method transfer from HPLC to High Resolution Flash Chromatography for precise purification of compounds of interest from grams of complex natural extract". 42nd International Symposium on High Performance Liquid Phase Chromatography and related Techniques HPLC 2015, 21-25 June 2015, Geneva (Switzerland).
7. P.-M. ALLARD, L.-F. NOTHIAS-SCAGLIA, M. LITAUDON, J.-L. WOLFENDER. "Mapping the chemical space of bioactive Euphorbiaceae species: UHPLC-HRMS2 analysis and molecular networks approaches". 42nd International Symposium on High Performance Liquid Phase Chromatography and related Techniques HPLC 2015, 21-25 June 2015, Geneva (Switzerland).
8. P. COULERIE, Y. RATINAUD, P.-M. ALLARD, E. F. QUEIROZ, J.-L. WOLFENDER, D. BARRON, S. MOCO. "An Automated 2D-LC-PDA/ELSD Fractionation Strategy of Plant Extracts to be used in Biological Screening". 42nd International Symposium on High Performance Liquid Phase Chromatography and related Techniques HPLC 2015, 21-25 June 2015, Geneva (Switzerland).
9. L. L. SALDANHA, A. AFZAN, E. F. QUEIROZ, W. VILEGAS, A. L. DOKKEDAL, J.-L. WOLFENDER. "Impact of seasonal and soil conditions on the phytochemical composition of *Myrcia bella* by UHPLC-TOFMS based metabolomics ". 42nd International Symposium on High Performance Liquid Phase Chromatography and related Techniques HPLC 2015, 21-25 June 2015, Geneva (Switzerland).
10. D. RIGHI, A. AZZOLLINI, E. F. QUEIROZ, J.-L. WOLFENDER. "Flash MS-targeted isolation of natural products under Normal/Reverse Phase conditions ". 42nd International Symposium on High Performance Liquid Phase Chromatography and related Techniques HPLC 2015, 21-25 June 2015, Geneva (Switzerland).
11. A. E. DIOP, E. F. QUEIROZ, S. KICKA, S. RUDAZ, T. SOLDATI, T. DIOP, J.-L. WOLFENDER. "Medicinal plants traditionally used in Senegal for tuberculosis treatment: Are they active against *Mycobacterium* strains?". XIX^{ème} International Congress "Phytopharm 2015", 21-24 July 2015, Bonn (Germany).
12. S. CRETTON, S. DORSAZ, Q. FAVRE-GODAL, A. AZZOLLINI, L. MARCOURT, J.-L. WOLFENDER, M. CUENDET, P. CHRISTEN. "Antifungal activity of quinoline alkaloids from *Waltheria indica*". 63rd International Congress and Annual Meeting of the Society for Medicinal Plant and Natural Product Research (GA), 23- 27 August 2015, Budapest (Hungary).
13. E. A. DIOP, E. F. QUEIROZ, S. KICKA, S. RUDAZ, D. TAHIR, J.-L. WOLFENDER. "Medicinal plants traditionally used in Senegal for tuberculosis treatment: Are they active against *Mycobacterium* strains?". 63rd International Congress and Annual Meeting of the Society for Medicinal Plant and Natural Product Research (GA), 23- 27 August 2015, Budapest (Hungary).
14. C. PETIT, P.A. CARRUPT, J.-L. WOLFENDER. "High-throughput prediction of passive intestinal absorption of natural products and plant extracts with the PAMPA assay". 63rd International Congress and Annual Meeting of the Society for Medicinal Plant and Natural Product Research (GA), 23- 27 August 2015, Budapest (Hungary).
15. Q. FAVRE-GODAL, S. DORSAZ, E. F. QUEIROZ, S. M. EBRAHIMI, L. MARCOURT, M. P. GUPTA, D. SANGLARD, J.-L. WOLFENDER. "Search for antifungal compounds using a susceptible strain of *Candida albicans* and in vivo activity with the *Galleria mellonella* model". 63rd International Congress and Annual Meeting of the Society for Medicinal Plant and Natural Product Research (GA), 23- 27 August 2015, Budapest (Hungary).
16. D. RIGHI, A. AZZOLLINI, E. F. QUEIROZ, J.-L. WOLFENDER. "Efficient normal phase MS directed purification of natural products at the preparative scale". Swiss Chemical Society Fall Meeting, 4 September, 2015, Lausanne (Switzerland).
17. P. COULERIE, Y. RATINAUD, P.-M. ALLARD, E.-F. QUEIROZ, J.-L. WOLFENDER, D. BARRON, S. MOCO. "An automated 2D-LC-PDA/ELSD fractionation strategy of plant extracts to be used in biological screening". Inaugural Symposium of the Phytochemical Society of Asia (ISPSA), 30 August - 2 September 2015, Tokushima (Japan).
18. A. AFZAN, N. KASIM, N. H. ISMAIL, A. M. ALI, N. MAT, J.-L. WOLFENDER. "Metabolomic Differentiation of *Ficus deltoidea* Varieties Using High Resolution Mass Spectrometry". Swiss Metbolomics Society, SMS 2015, 1 December 2015, Basel (Switzerland).

19. S. ZOU, C.-P. TANG, C.-Q. KE, Y. YANG, J.-L. WOLFENDER. "Metabolomic Investigation of *Stemona* Species Using UPLC-QToF Technologies". Swiss Metabolomics Society, SMS 2015, December 1, 2015, Basel (Switzerland).

CONGRESSES & SYMPOSIA

1. J.-L. WOLFENDER. "Metabolomics in natural product research: potential, challenges and future trends". PACCON 2015, Innovative Chemistry for Sustainability of the AEC and Beyond, 21 January 2015, Bangkok (Thailand).
2. J.-L. WOLFENDER. "Deciphering de novo induction of novel antifungal biomarkers in microbiome interactions by NMR and MS-based metabolomics". 27th meeting of the Israeli Society from Mass Spectrometry, 8 March 2015, Rehovot (Israel).
3. S. RUDAZ, F. MEHL, G. MARTI, P. MERLE, E. DELORT, L. BAROUX, H. SOMMER, J.-L. WOLFENDER, J. BOCCARD. "Apport de la fusion de données analytiques dans la caractérisation d'huiles essentielles de citron au moyen de différentes plateformes d'analyses". 11ème Congrès Francophone de l'AFSEP sur les sciences séparatives et les couplages, 1-2 April 2015, Paris (France).
4. J.-L. WOLFENDER. "Latest technological advances in Pharmacognosy: evolution or revolution ?". 11th International IOCD Symposium of the Working Group on Plant Chemistry, 8 April 2015, Marrakech (Morocco).
5. J.-L. WOLFENDER. "New Ways to Decipher Plant and Microbial Metabolomes". 15th Oxford International Conference on the Science of Botanicals ICSB 2015, 13 April 2015, Oxford MS (USA).
6. J.-L. WOLFENDER. "Metabolomics Strategies for the Search of Stress-induced Biomarkers in Plants and Fungi". 91st ACS Fame Meeting, 9 May 2015, Tampa (USA).
7. J.-L. WOLFENDER. "Introduction to Mass Spectrometry and to Metabolomics". 20th Annual Penn State Plant Biology Symposium: Plant Stress-Omics in a Changing Climate, 13 May 2015, Penn State College (USA).
8. J.-L. WOLFENDER, A. AZZOLLINI, P.-M. ALLARD. "Innovative metabolomics strategies for the identification of biomarkers in microbial metabolomes". Microbiology retreat on Host-Pathogen interactions, 21 May 2015, Villars (Switzerland).
9. E. F. QUEIROZ, J.-L. WOLFENDER. "Innovative Strategies in the Search for Bioactive Plant Constituents". 38th Annual Meeting of the Brazilian Chemical Society, 25-28 May 2015, Aguas de Lindoia (Brazil).
10. J.-L. WOLFENDER. "Searching for de novo induced bioactive metabolites in microbial interactions: a combined MS-based metabolomics and microNMR approach". 6th Congress of European Microbiologists (FEMS), 8 June 2015, Maastricht (Netherlands).
11. S. BERTRAND, J. J. JANSEN, J.-L. WOLFENDER. "How to detect metabolite stress induction in mixed metabolomes? Fungal co-culture as a school case". 9th Journée Scientifiques du Réseau Français de Métabolomique et Fluxomique 5, 9-11 June 2015, Lille (France).
12. J.-L. WOLFENDER. "New trends in the analysis of natural products for the detailed metabolite profiling of crude extracts". XIV Congresso Della Societa Italiana di Fitochimica, 12 June 2015, Padova (Italia).
13. J.-L. WOLFENDER. "From metabolomics to targeted isolation of key biomarkers - new trends in natural product research". 21st International Symposium on Separation Sciences (ISSS), July 2, 2015, Ljubjana (Slovenia).
14. C. PETIT, A. BUJARD, J. SKALICKA WOZNIACK, S. CRETTON, J. HOURIET, P. CHRISTEN, P. A. CARRUPT, J.-L. WOLFENDER. "Predicting transcellular passive absorption with PAMPA: challenges and perspectives in Natural Products Research". Summer University Network, 8-11 July, 2015, Perugia (Italy).
15. J.-L. WOLFENDER. "Metabolomics and innovative biological assays, new perspectives in the chemistry of natural products". 2^{ème} Symposium International AFERP-STOLON, 15 July 2015, Lyon (France) (Opening lecture).

16. C. PETIT, P. CARRUPT, J.-L. WOLFENDER. "High-throughput prediction of passive intestinal absorption of natural products and plant extracts with the PAMPA assay". 63rd International Congress and Annual Meeting of the Society for Medicinal Plant and Natural Product Research (GA), 23- 27 August 2015, Budapest (Hungary).
17. P. COULERIE, C. POULAIN. "Evaluation of Phytochemical Studies in the "hot spots" for Biodiversity - New Caledonia as a case study". Inaugural Symposium of the Phytochemical Society of Asia (ISPSA), 31 August 2015, Tokushima (Japan).
18. E. F. QUEIROZ, J.-L. WOLFENDER. "Rational and efficient preparative isolation of natural products by MPLC-UV-ELSD based on HPLC to MPLC gradient transfer". Inaugural Symposium of the Phytochemical Society of Asia (ISPSA), 31 August 2015, Tokushima (Japan).
19. J.-L. WOLFENDER. "Natural Product Research and Metabolomics: Two Side of the Same Coin". Inaugural Symposium of the Phytochemical Society of Asia (ISPSA), 31 August 2015, Tokushima (Japan).
20. J.-L. WOLFENDER. "Innovative metabolomics strategies for the identification of biomarkers in plant and microbial metabolomes". Congrès français de Spectrométrie de Masse et d'Analyse Protéomique (SMAP), 15 September 2015, Ajaccio (France) (Opening Lecture).
21. J.-L. WOLFENDER. "Challenges for a comprehensive metabolome characterization of medicinal plants". Summer School in Pharmaceutical Analysis, 17 September 2015, Rimini (Italy).
22. E. F. QUEIROZ, J.-L. WOLFENDER. "Innovative strategies for the efficient isolation of natural products at the preparative scale and discovery of potential new leads". 4th International Symposium on Plant, the source of research material, 20-22 September 2015, Lublin (Poland).
23. J.-L. WOLFENDER, P.-M. ALLARD, S. BERTRAND, N. BOHNI, O. SCHUMPP, K. GINDRO. "New efficient ways to perform dereplication of secondary metabolites in complex natural matrices". 2nd International Symposium on Profiling (ISPROF), 23 september 2015, Capparica (Portugal).
24. J.-L. WOLFENDER, P.-M. ALLARD. "Issues and prospects in the efficient dereplication of natural products". 2nd International Conference on Natural Products Utilization (ICNPU), 15 October 2015, Plovdiv (Bulgaria).
25. J.-L. WOLFENDER. "Metabolomics and innovative biological assays, new perspectives in natural products chemistry". XX Simposio Nacional de Química Orgánica (XX SINAQO) 2015, 12 November 2015, Mar del Plata (Argentina).
26. E. F. QUEIROZ, J.-L. WOLFENDER. "New ways to decipher plant and microbial metabolomes to identify bioactive natural products". NIHS-EPGL mini Symposium, 20 November 2015, Geneva (Switzerland).
27. J.-L. WOLFENDER, E. F. QUEIROZ. "New trends in the analysis of natural products for metabolomics and bioactivity guided isolation investigations ". Shandong University, 2 December 2015, Jinan (China).
28. J.-L. WOLFENDER. "New trends in botanical multi-components analysis and *in vitro* assays for investigating bioavailability of botanical products". Indena Scientific Seminar Series, 21 December 2015, Milan (Italy).

CONTINUING EDUCATION, WORKSHOPS & OPEN TO THE PUBLIC LECTURES

1. J.-L. WOLFENDER. "Confirmatory analysis and de novo structural identification". Workshop Plants and Metabolomics 2015, University of Leiden, 13-17 April 2015, Leiden (Netherland).
2. J.-L. WOLFENDER, S. RUDAZ. "Introduction to Metabolomics". University of Florida Metabolomics Workshop and Symposium, 11 May 2015, Gainesville (USA).
3. J.-L. WOLFENDER. "Introduction to mass spectrometry and to metabolomics". 20th Annual Penn State Plant Biology Symposium: Plant Stress-Omics in a Changing Climate, 13 May 2015, Penn State College (USA).
4. J.-L. WOLFENDER. "Metabolomic and medicinal plants ". Summer School of the University of Angers, Plant Science program, 30 June 2015, Angers (France).

5. J.-L. WOLFENDER, E. F. QUEIROZ, S. RUDAZ. "Introduction to Natural Product Metabolomics and to Efficient Isolation Strategies for Biomarker Identification". Workshop of the Phytochemical Society of Asia, 28-29 July 2015, Tokushima (Japan).
6. J.-L. WOLFENDER, E. F. QUEIROZ. "Medicinal plants and phytopharmaceuticals: History, cases studies, standardisation quality control, evidenced based approaches". Course for continuous education, Procter and Gamble, 24 September 2015, Geneva (Switzerland).
7. J.-L. WOLFENDER, E. F. QUEIROZ, D. GUILLARME. "Introduction to Natural Product Metabolite Profiling and Dereplication and to Efficient Isolation Strategies Bioactive Compounds". Natural product workshop series of the University of Shandong, 3-4 December 2015, Jinan (China).

THESIS PRESENTED

INTRA-MUROS THESIS

1. Soura CHALLAL
 "Identification of novel anticonvulsant compounds in medicinal plants combining innovative in vivo zebrafish assays and efficient chromatographic methods"
 University of Geneva
 Thesis No 4786 – April 27, 2015
 Director : J. L. WOLFENDER

INTRA-MUROS THESIS JURY

1. Jean-Christophe DEVAUD
 «Utilisation rationnelle des émulsions parentérales dans un Service de soins intensifs adulte»
 University of Geneva
 Thesis N° 4884 – November 23, 2015
 Director: F. SADEGHIPOUR, P. BONNABRY
 Jury of thesis : J. L. WOLFENDER
2. Aurélie PERIAT
 "Utilisation de la chromatographie d'interaction hydrophile pour l'analyse de composés d'intérêt pharmaceutique"
 University of Geneva
 Thesis N° 4871, December 11, 2015
 Director: J.-L. VEUTHEY, D. GUILLARME
 Jury of thesis : J. L. WOLFENDER
3. Daniel BIASSE
 "Venomics of the piscivorous cone snail C. consors : multidisciplinary techniques for drug discovery"
 University of Geneva
 Thesis N° 4808 – July 10, 2015
 Director: D. HOCHSTRASSER, Co-director: R. STÖCKLIN
 Jury of thesis : J.L. WOLFENDER

EXTRA-MUROS THESIS JURY

1. Jérôme MASSON
 « UHPLC-MS studies on the characterization of complex semi-volatile fractions from matrices of vegetal origin »
 University of Turin
 Director : P. RUBIOLO

2. Robert BRKLJACA
« Phytochemical profiling and anti-microbial studies of Australian marine and terrestrial organisms: The search for new natural product derived anti-biotic and anti-fungal agents »
RMIT University, Melbourne
Director: S. URBAN
3. [Ismaël MUNOZ CUERVO](#)
« Evaluation de la diversité du contenu phytochimique de trois espèces à racines et tubercules amyliacées tropicales, le taro, la grande igname et le manioc »
University Claude Bernard, Lyon 1
Director: L. LEGENDRE, UJM, Saint-Etienne (France)
Co-Director : V. LEBOT, CIRAD, Port Vila, Vanouatou
4. Andreas KLITGAARD
« Secondary metabolites from the saprotrophic fungus *Granulobasidium vellereum* »
Technical University of Denmark
Director: K. FOG NIELSEN
5. [Elodie BOUJU](#)
« Eco-purification de produits naturels par CPC: changement d'échelle et solvants alternatifs »
University Claude Bernard Lyon 1
Director: K. FAURE
6. Shalim RUKSHANA
« Effect of Plant Extracts on Laboratory Organisms and Biodegrading Agents found in the Industrial Effluent »
University of Bangladesh
Director: N. ILSAM

PATENTS

E. F. QUEIROZ, S. CHALLAL S, W. KLOETTI, J. L. WOLFENDER, Solvent heating system for preparative separations. EP15159628.5: (2015)

AWARDS & DISTINCTIONS

1. A. E. DIOP, E. F. QUEIROZ, S. KICKA, S. RUDAZ, T. DIOP, J.-L. WOLFENDER. "Screening of medicinal plants traditionally used in Senegal for the treatment of Tuberculosis with an innovative host-pathogen assay model". Best Poster price 2015, International symposium IOCD "The plant kingdom: source of drugs nutraceutical and cosmetics", 7-10 April 2015, Marrakech (Morocco)
2. [A. E. DIOP, E. F. QUEIROZ, S. KICKA, S. RUDAZ, T. SOLDATI, T. DIOP, J.-L. WOLFENDER. "Medicinal plants traditionally used in Senegal for tuberculosis treatment: Are they active against Mycobacterium strains?". 3rd place – Best Poster price 2015, XIXème International Congress "Phytopharm 2015", 21-24 July 2015, Bonn \(Germany\).](#)

PHARMACEUTICAL TECHNOLOGIES



PROFESSOR ERIC ALLEMANN

PROFESSOR NORBERT

LANGE

DR FLORENCE DELIE SALMON, SENIOR LECTURER

GENERAL DESCRIPTION OF THE UNIT

Research at the unit of Pharmaceutical Technology is focused on the delivery of therapeutic agents and contrast agents for medical imaging at the right site on the right time. Eric Allémann has activities in nanomedicine, energy-activated drug delivery systems, targeted-contrast agents for medical imaging. Norbert Lange leads research in photodetection, photodynamic therapy and enzymatically activated prodrug. Florence Delie leads research in nanomedicine and vectorization. In 2015, various collaborations were continued with the University Hospital of Geneva and the EPFL. Collaboration projects with established companies were continued and new ones initiated. Florence Delie leads research in nanomedicine and vectorization. Research at the unit of Pharmaceutical Technology is focused on the delivery of therapeutic agents and contrast agents for medical imaging at the right site on the right time. Eric Allémann has activities in nanomedicine, energy-activated drug delivery systems, targeted-contrast agents for medical imaging. Norbert Lange leads research in photodetection, photodynamic therapy and enzymatically activated prodrug. Florence Delie leads research in nanomedicine and vectorization. In 2015, various collaborations were continued with the University Hospital of Geneva and the EPFL. Collaboration projects with established companies were continued and new ones initiated. Florence Delie leads research in nanomedicine and vectorization.

SPECIFIC RESEARCH FIELDS

- ✚ Development of drug formulations for intra-articular delivery
- ✚ Enzymatically-activated prodrugs and supramolecular constructs
- ✚ Development of new contrast agents for MRI
- ✚ Polymeric photosensitizers projects
- ✚ Imaging of β -cells and amyloids
- ✚ Cancer targeted drug delivery systems

2015 AT A GLANCE

| | |
|---|----|
| Publications with impact factor | 8 |
| Publications without impact factor | 1 |
| Posters presentations | 16 |
| Congresses & Symposia | 7 |
| Number of projects at FNRS and assimilated | 4 |
| Projects of collaboration with the industry | 2 |
| Ph.D. Thesis presented in 2015 | 1 |
| Patents | 2 |
| Awards | 1 |

STAFF

LECTURERS

Pascal FURRER

EXCELLENCE FELLOWSHIP

Imène ATEB

SENIOR RESEARCH AND TEACHING ASSISTANTS

Andrej BABIC

POSTDOCTORAL SCHOLARS

Karolina JANIKOWSKA
Damei KE

Cédric THAUVIN

RESEARCH AND TEACHING ASSISTANTS

Jordan BOUILLOUX
Vineetha CHELLAKUDAM (*until 31.8.2015*)
Carlota DE LACERDA SALGADO (*since 1.9.2015*)
Viktorija HERCEG
Pierre MAUDENS

Ioanna MYLONAKI
Julie PRADAL (*until 31.3.2015*)
Nathalie STRANSKY-HEILKRON (*until 31.10.2015*)
Vassily VOROBIEV (*since 1.12.2015*)
Céline XAYAPHOUMMINE (*until 31.8.2015*)

ADMINISTRATIVE STAFF

Florence VON OW

TECHNICAL STAFF

Nathalie BOULENS
Brigitte DELAVY (*until 30.11.2015*)

Carole DUPRAZ
Marco PERDIGAO

RESEARCH FUNDS

FNRS

Targeted photoablation of breast cancer through urokinase-sensitizer prodrugs

Main applicant : H. ACHA-ORBEA

Co-applicant : N. LANGE

total funding : CHF 203'000

Allocation 2015 : CHF 55'825

Duration : 3 years

Starting date : 01.04.2013

Topical delivery of photosensitizers to atherosclerotic plaques and intra-arterial photodynamic therapy:
 a pre-clinical Main applicant : S. COOK
 Co-applicant : N. LANGE
 Total funding : CHF 200'040
 Allocation 2015 : CHF 133'800
 Duration : 3 years
 Starting date : 01.12.

MARIE CURIE

European Training Network for Excellence in Molecular Imaging in Diabetes
 Main applicant : E. ALLEMANN
 Total funding : CHF 591'000.--
 Allocation 2015 : CHF 0
 Duration : 4 years
 Starting date : 01.01.2012

FONDATION NOVARTIS CONSUMER HEALTH

Fondation Novartis Consumer Health
 Main applicant : E. Allémann
 total Funding : CHF 70'000
 Allocation 2015 : CHF 70'000
 Duration : 1 year
 Starting date : 1.04.2015

INDUSTRY AND ASSIMILATED

| Code | Service - Development - Research | Total Amount for 2015 (CHF) |
|-----------------|----------------------------------|-----------------------------|
| Divers Intérêts | Service | 59'352 |
| Sunstar | Service | 28'320 |
| | total | 87'672 |

PUBLICATIONS

THE TOP TEN JOURNALS IN THE FIELD (WITH IMPACT FACTOR)

| | |
|--|------|
| Biomaterials | 8.56 |
| Journal of Controlled Release | 7.71 |
| Nanomedicine | 5.42 |
| Bioconjugate chemistry | 4.52 |
| European Journal of Pharmaceutics and Biopharmaceutics | 3.85 |
| Pharmaceutical research | 3.42 |
| Journal of Pharmacology and experimental Therapeutics | 3.98 |
| International Journal of Pharmaceutics | 3.65 |
| European Journal of Pharmaceutical Sciences | 3.35 |
| Journal of Drug Targeting | 2.82 |

SCIENTIFIC PUBLICATIONS (WITH IMPACT FACTOR)

1. B. PETIT, Y. BOHREN, E. GAUD, et al. "Sonothrombolysis: The contribution of stable and inertial cavitation to clot Lysis". *Ultrasound Medicine and Biology*, 41(5), 1402-1410, 2015. 2.22
2. B. PETIT, F. YAN, P. BUSSAT, et al. "Fibrin degradation during sonothrombolysis: Effect of ultrasound, microbubbles and tissue plasminogen activator, *Journal of Drug Delivery Science and Technology*, 2015. 0.48

3. J. PRADAL, M. F. ZULUAGA, P. MAUDENS, J. M. WALDBURGER, C. SEEMAYER, E. DOELKER, C. GABAY, O. JORDAN "Intra-articular bioactivity of a p38 MAPK inhibitor and development of an extended release system, *European Journal of Pharmaceutics and Biopharmaceutics*, 93, 110-117, 2015. 3.85
4. S. MEYNIER, M. KRAMER, R. RIBAU, J. C. TILLE, F. DELIE, P. PETIGNAT, M. COHEN "Role of PAR-4 in ovarian cancer", *Oncotarget* 6, 22641-22652, 2015. 6.36
5. A. BABIC, V. HERCEG, I. ATEB, N. LANGE "A new class of 5-aminolevulinic acid derivatives", *Journal Controlled Release*, 2015. 7.70
6. L. VINET, S. LAMPRIANOU, A. BABIC, N. LANGE, F. THOREL, PL. HERRERA, X. MONTET, P. MEDA "Targeting GLP-1 receptors for repeated magnetic resonance imaging differentiate graded losses of pancreatic beta cells in mice, *Diabetologia*, 58;304-12, 2015. 6.67
7. K. MARINIC, D. MANOIL, A. FILIERI, JC. WATAHA, J. SCHRENZEL, N. LANGE, S. BOUILLGUET "Repeated exposures to blue light-activated eosin Y enhance inactivation of *E. faecalis* biofilms, in vitro, *Photodiagnosis Photodyn Ther.*, 12(3):393-400, 2015. 2.02
8. A. BABIC, S. LAMPRIANOU, L. VINET, N. STRANSKY-HEILKRON, C. XAYAPHOUMMINE, M. A. CAMPO, H. GLOMBIK, A. SCHULTE, HP. JURETSCHKE, X. MONTET, P. MEDA, N. LANGE "Multivalent glibenclamide to generate islet specific probes", *Biomaterials*, 75:1-12. 8.56

SCIENTIFIC PUBLICATIONS (WITHOUT IMPACT FACTOR)

1. Y.M. DUPERTUIS, F. DELIE, M. COHEN, C. PICHARD "In ovo method for evaluating the effect of nutritional therapies on tumor development, growth and vascularization", *Clinical Nutrition Experimental*. 2, 9-17, 2015.

PRESENTATIONS

POSTERS PRESENTATIONS

1. I. MOTTAS, A. MILOSEVIC, C. THAUVIN, F. DELIE, E. ALLEMANN, A. FINK, B. ROTHEN-RUTISHAUSER, C. BOURQUIN. Validating nanoparticle for cancer immunotherapy: The one plate / one day method, CIMT: Cancer Immunotherapy, Mainz, 2015.
2. C. THAUVIN, J. WIDMER, I. MOTTAS, C. BOURQUIN, F. DELIE, E. ALLEMANN. Nanoparticles in cancer immunotherapy: towards a systemic application of resiquimod, *Controlled Release Society*, Edinburgh, 2015.
3. I. MYLONAKI, F. STRANO, S. DEGLISE, F. SAUCY, J.-A. HAEFLIGER, E. ALLEMANN, O. JORDAN, F. DELIE. Perivascular administration of Atorvastatin from a Hydrogel / Microparticles formulation decreases stenosis in mice carotid arteries, *Controlled Release Society*, Edinburgh, 2015.
4. I. MOTTAS, A. MILOSEVIC, C. THAUVIN, F. DELIE, E. ALLEMANN, A. FINK, B. ROTHEN-RUTISHAUSER, C. BOURQUIN. Validating nanoparticles for cancer immunotherapy: The one plate / one day method, 12th Brupbacher Symposium, Breakthroughs in Cancer Research and Therapy, Zürich, 2015
5. P. MAUDENS, C. THAUVIN, O. JORDAN, E. ALLEMANN. Nanocrystal-Polymer Particles for Efficient Osteoarthritis Treatment, *Swiss Pharma Sciences Day*, Bern, 2015.
6. I. MYLONAKI, F. STRANO, S. DEGLISE, F. SAUCY, E. ALLEANN, J.-A. HAEFLIGER, O. JORDAN, F. DELIE. Perivascular administration of Atorvastatin from a Hydrogel / Microparticles formulation decreases stenosis in mice carotid arteries, 1st International Congress of Controlled Release Society, Athens, 2015.
7. I. MYLONAKI, F. STRANO, S. DEGLISE, F. SAUCY, E. ALLEMANN, J.-A. HAEFLIGER, O. JORDAN, F. DELIE. A new Perivascular Hydrogel-Microparticles Drug Delivery System to Prevent Restenosis in Cardiovascular Disease, *Bio Innovation Day*, Lausanne, 2015.

8. K. JANIKOWSKA, V. CHELLAKUDAM, A. BABIC, L. VINET, S. LAMPRIANOU, E. ALLEMANN, P. MEDA, N. LANGE. Synthetic Exendin-4 Analogues for Imaging Pancreatic Beta Cells, 16th Congress of the European Society for Photobiology, Aveiro, Portugal, September 2015.
9. I. ATEB, E. ALLEMAN, N. LANGE, A. BABIC. Squalene-PEG as self-assembly nanomaterial for photosensitizer delivery in theranostics, European Nanomedicine Meeting, Grenoble, 2015.
10. P. MAUDENS, C. THAUVIN, O. JORDAN, E. ALLEMANN. Nanocrystal-Polymer Particles: a Novel Drug Delivery System for Knee Osteoarthritis Treatment, European Nanomedicine Meeting, Grenoble, 2015.
11. F. STRANO, I. MYLONAKI, F. ALONSO, C. DUBUIS, F. DELIE, O. JORDAN, J.-A. HAEFLIGER, J. M. CORPATAUX, S. DEGLISE, F. SAUCY. A new biphasic drug delivery system to prevent the vascular graft failure, 102nd Annual Congress of the Swiss Society of Surgery, Berne, Switzerland, 2015.
12. V. CHELLAKUDAM, K. JANIKOWSKA, A. BABIC, E. ALLEMANN, N. LANGE. In vitro imaging of GLP-1R as an approach to non-invasive in vivo imaging of pancreatic islets, Swiss society of pharmacology and toxicology, Spring meeting, Berne, Switzerland, April 2015.
13. E. BOIX, N. LANGE, S. NONELL, M. L SAGRISTA, M. MORA. PLA targeted nanoparticles for photodynamic therapy, 16th ESP Congress, Aveiro, Portugal, September 2015.
14. A. BABIC, V. HERCEG, N. LANGE. New prodrugs for the systemic delivery of 5-aminolevulinic acid (5-ALA), 16th ESP Congress, Aveiro, Portugal, September 2015.
15. M. CHIBA, Y. ICHIKAWA, M. KAMIYA, N. LANGE, Y. URANO. Tumor selective PDT with an activatable photosensitizer targeted to gamma-glutamyl transpeptidase, 16th ESP Congress, Aveiro, Portugal, September 2015.
16. J. BOUILLOUX, A. BABIC, I ATEB, V. HERCEG, N. LANGE. In vitro assays of new proteolytically triggered drug delivery systems for selective photodynamic therapy, 16th ESP Congress, Aveiro, Portugal, September 2015.

CONGRESSES & SYMPOSIA

1. S. MEYNIER, F. DELIE, P. PETIGNAT, M. COHEN. Targeting membranous GRP78 through taxol-nanoparticles : Three in One against ovarian cancer, SFNano, Grenoble, France, 2015.
2. N. LANGE. New scaffolds for the Delivery of Protease Sensitive Photosensitizer Prodrugs, 27th ECS Meeting, Chicago, USA, June 2015.
3. G. BOSO, B. KORZH. H. ZBINDEN, D. KE, N. LANGE. Single Singlet-oxygen luminescence detection with inGaAs/InP single-photon detectors, Photon Workshop, Geneva, Switzerland, July 2015.
4. V. CHELLAKUDAM, K. JANIKOWSKA, A. BABIC, E. ALLEMANN, N. LANGE. In vitro imaging of GLP-1R as an approach to non-invasive in vivo pancreatic islet imaging, Belgian Molecular Imaging Congress.
5. N. LANGE. New scaffolds for the delivery of quenched photosensitizers, 16th ESP Congress, Aveiro, Portugal, September 2015.
6. J. BOUILLOUX, A. BABIC, G. BOSO, B. DEREKA, O. YUSHCHENKO, I. ATEB, V. HERCEG, H. ACHA-ORBEA, H. ZBINDEN, E. VAUTHEY, N. LANGE. Cyclopeptidic scaffolds as proteolytically triggered drug delivery systems for photodynamic therapy, 16th Congress, Aveiro, Portugal, September 2015.
7. A. BABIC, V. HERCEG, I. ATEB, N. LANGE. New prodrug strategies for targeted delivery of 5-ALA, 16th Congress, Aveiro, Portugal, September 2015.

CONTINUING EDUCATION & OPEN TO THE PUBLIC LECTURES

1. P. FURRER. « Cours de Master en pharmacie et master en pharmacie industrielle MIP (Drug Delivery and Drug Targeting) : Ophthalmic devices/dermopharmacy, EPFZ, Switzerland, December 1, 2015.
2. P. FURRER. "Cours et atelier de formation continue pour le CAP (Centre d'Animation des Pharmaciens de Suisse): Fabrication de médicaments en petites quantités: forms liquids et solides, University of Geneva, Switzerland, March 3, 2015).
3. P. FURRER. Cours et atelier de formation continue pour le CAP (Centre d'Animation des Pharmaciens de Suisse) : cosmétologie en coanimation avec le Dr. Ph. LAURENT, University of Geneva, Switzerland, March 17, 2015.
4. P. FURRER. Cours et atelier de formation continue pour le CAP (Centre d'Animation des Pharmaciens de Suisse) : dermopharmacie II, University of Geneva, Switzerland, May 8, 2015
5. P. FURRER. Fabrication de 12kg d'hydrogels, Hôpital des nounours, Geneva, Switzerland, April 16, 2015.
6. E. ALLEMANN. Nano- and micromedicines, Annual Bracco International Symposium, Archamps, France, 2015.
7. E. ALLEMANN. Microbubbles – from contrast agents to a therapeutic modality, Dunedin, New Zealand, 2015.

THESIS PRESENTED

INTRA-MUROS THESIS

1. Julie PRADAL
Intra-articular Extended Release Formulations of a p38 MAPK Inhibitor for the Treatment of Arthritic Diseases
University of Geneva
Thesis n° 4771 – March 4, 2015
Directors: E. ALLEMAN, O. JORDAN

THESIS JURY

1. Andre CRISTIANI, University of Geneva
2. Soura CHALLAL, University of Geneva
3. Isabelle ANGUISH, University of Geneva
4. Daniel BIASSE, University of Geneva
5. Alban BUJARD, University of Geneva
6. Anthony GROGNUZ, University of Lausanne
7. Omar SAKR, University of Geneva

PATENTS

1. A. BABIC, N. LANGE
5-ALA Derivatives and use thereof. P1881EP00, (2015)

AWARDS

1. P. MAUDENS, 1er prix Swiss Pharma Sciences Day, 2015

PHARMACOGNOSY



PROFESSOR MURIEL CUENDET

DR PHILIPPE CHRISTEN, SENIOR LECTURER

GENERAL DESCRIPTION OF THE UNIT

The pharmacognosy research unit is focused on the discovery of bioactive natural products. Compounds with cancer chemopreventive and antiparasitic activity are of particular interest. In these areas, the development of new and better drugs remains a principal need. As established by ample precedent, nature provides broad chemical diversity. Prevention is well developed in the field of cardiovascular disease, but similar drugs that could prevent cancer on this scale are still a long way off. A panel of in vitro bioassays indicative of inhibiting major stages of carcinogenesis (initiation, promotion and progression) is used. Mechanistic studies are then pursued with the most promising compounds. Also, most antiparasitic drugs available on the market (when available) have a limited efficacy and strong side effects. Some plant extracts having shown good in vitro and in vivo activity are currently being investigated to uncover the compounds responsible for the activity and their mechanism of action. The absorption and the metabolism of pure compounds and phytopreparations are also being evaluated in vitro and in vivo. The pharmacognosy research unit is focused on the discovery of bioactive natural products. Compounds with cancer chemopreventive and antiparasitic activity are of particular interest. In these areas, the development of new and better drugs remains a princi

SPECIFIC RESEARCH FIELDS

- ✚ Cancer chemopreventive screening of natural products: quinone reductase induction, epigenetic modulation, anti-inflammatory and anti-angiogenic activity
- ✚ Antiparasitic activity
- ✚ Activity-guided fractionation
- ✚ Absorption and metabolization studies of phytopreparations and pure natural products using Caco-2 cells and in vivo models
- ✚ In depth studies to uncover the mechanism of action of pure natural products and phytopreparations
- ✚ Natural products against multiple myeloma resistance

2015 AT A GLANCE

| | |
|---|---|
| Publications with impact factor | 5 |
| Publications without impact factor | 3 |
| Poster presentations | 9 |
| Congresses & Symposia | 9 |
| Number of projects at FNRS and assimilated | 2 |
| Projects of collaboration with the industry | 2 |
| Awards | 1 |

STAFF

REASERCH ASSOCIATE AND SENIOR

Sarah BERNDT

RESEARCH ASSOCIATE

CONFEDERATION FELLOWSHIP

Constant AHOUA (*until 31.08.2015*)

POSTDOCTORAL SCHOLARS

Sylvian CRETTON

Nicolas MARTIN (*until 30.11.2015*)

RESEARCH AND TEACHING ASSISTANTS

Constant AHOUA (*since 15.09.2015*)

Noémie SARAUX (*since 1.10.2015*)

Olivier CICLET

Chantal WALTER

Mark ISSA

Vincent ZWICK

Aymeric MONTEILLIER

ADMINISTRATIVE STAFF

Natalie SCHREGLE

TECHNICAL STAFF

Frédéric BORLAT

Colette SAUTY

RESEARCH FUNDS

FNRS

Functional genome analysis in a genetically intractable system: an interdisciplinary proof-of-concept study »

Main applicant: P. VIOLLIER, HUG.

Total allocation: CHF 1'200'000

Total allocation M. CUENDET: CHF 353'016

Allocation 2015: CHF 140'468

Duration: 3 years

Starting date: 2012

EU FUNDING

Integrated technologies for the discovery and development of cosmeceutical agents from plant biodiversity.
(NATPROTEC) IAPP-Marie Curie

Main applicant: M. CUENDET

Co-applicant: J. L. WOLFENDER

Total allocation for the entire project: Euros 1'813'624

Total allocation for M. CUENDET: CHF 263'225 (€ 222'131)

Allocation 2015: CHF 10'326

Duration: 4 years.

Starting date: 2012

INDUSTRY AND ASSIMILATED

| Code | Service - Development - Research | Total Amount for 2015 (CHF) |
|--------|---|-----------------------------|
| S17246 | Fonds Intérêts (M. Cuendet) – Research & Services | 43'737 |
| S17072 | Fonds Industrie (J.-L. Wolfender, M. Cuendet) – Research & Services | 112'170 |
| | total | 155'907 |

PUBLICATIONS

THE TOP TEN JOURNALS IN THE FIELD (WITH IMPACT FACTOR)

| | |
|----------------------|------|
| Cancer Res | 8.55 |
| Cancer Prev Res | 3.88 |
| J Nat Prod | 3.66 |
| J Ethnopharmacol | 3.05 |
| J Agr Food Chem | 2.85 |
| Phytochemistry | 2.47 |
| Bioorg Med Chem Lett | 2.48 |
| Molecules | 2.46 |
| Phytochem Analysis | 2.49 |
| Planta Med | 1.99 |

SCIENTIFIC PUBLICATIONS (WITH IMPACT FACTOR)

1. S. BIERI, C. MATHON, P. EDDER, P. CHRISTEN: "Occurrence of natural hepatotoxins in herbal teas" *Chimia* 69, 1102-1110, 231 (2015). 1.00
2. S. CRETTON, L. BRÉANT, L. POURREZ, C. AMBUEHL, R. PEROZZO, L. MARCOURT, M. KAISER, M. CUENDET, P. CHRISTEN: "Chemical constituents from *Waltheria indica* exert in vitro activity against *Trypanosoma brucei* and *T. cruzi*" *Fitoterapia* 105, 55-60 (2015). 2.40
3. L. MUSSO, R. CINCINELLI, V. ZUCO, F. ZUNINO, A. NURISSO, M. CUENDET, G. GIANNINI, L. VESCI, C. PISANO, S. DALLAVALLE: "Investigation on the ZBG-functionality of phenyl-4-yl-acrylohydroxamic acid derivatives as histone deacetylase inhibitors" *Bioorganic & Medicinal Chemistry Letters*, 25, 4457-4460 (2015). 2.48
4. J. T. NDONGO, M. E. ISSA, A. N. MESSI, J. NGO MBING, M. CUENDET, D. E. PEGNYEMB, C. G. BOCHET: "Cytotoxic flavonoids and other constituents from the stem bark of *Ochna schweinfurthiana*" *Natural Product Research*, 2, 1-4 (2015). 1.05
5. J. TAIBON, A. ANKLI, S. SCHWAIGER, C. MAGNENAT, V.I. BOKA, C. A. SIMOES-PIRES, N. ALIGIANNIS, M. CUENDET, A. L. SKALTSOUNIS, E. REICH, H. STUPPNER: "Prevention of false positive results: development of an HPTLC autographic assay for the detection of natural tyrosinase inhibitors" *Planta Medica*, 81, 1198-1204 (2015). 1.99

SCIENTIFIC PUBLICATIONS (WITHOUT IMPACT FACTOR)

1. R. AQUINO, T. MENCHERINI, P. PICERNO, P. CHRISTEN, C. CASTRO, P. VILLARROEL, C. DELPORTE, O. MUÑOZ: "Antioxidant activity of selected chemical constituents of *Quinchamalium chilensis*" *International Journal of Pharmaceutical Sciences and Nanotechnology* 8, 2775-2778 (2015).
2. S. CRETTON, L. BRÉANT, L. POURREZ, C. AMBUEHL, R. PEROZZO, L. MARCOURT, M. KAISER, M. CUENDET, P. CHRISTEN: "Waltheria indica constituents to tackle Chagas disease" *Atlas of Science* December 5 (2015).

3. B. Y. MICHEL, M. CUENDET, N. P. F. BARTHES, A. BURGER, P. BERTRAND, N. MARTINET: Détection des modifications de la méthylation de l'ADN et de la chromatine, *Revue Francophone des Laboratoires*, 473, 55-62 (2015).

PRESENTATIONS

POSTERS PRESENTATIONS

1. C. WALTER, A. FANDI, M. de BARSY, P. VIOLLIER, G. GREUB, P. CHRISTEN, K. PERRON, M. CUENDET Metabolomic and molecular biology approach to understand the development of *Waddlia chondrophila* as a genetically intractable organism model system, 2nd Retreat on Host-Pathogen Interactions, Villars-sur-Ollon, Switzerland, May 21-22, 2015.
2. M. de BARSY, C. WALTER, N. MARTIN, P. CHRISTEN, M. CUENDET, G. GREUB Identification of new drugs inhibiting growth of *Chlamydiales*. International congress on *Rickettsia* and other intracellular bacteria, Lausanne, Switzerland, June 13-16, 2015.
3. O. SAKR, S. BERNDT, O. JORDAN, M. CUENDET, G. BORCHARD Arming embolic beads with anti-VEGF antibodies using LbL technology: *in vitro* loading and release studies, EUFEPS Annual Meeting, Geneva, Switzerland, June 13-16, 2015.
4. L. RYCKEWAERT, S. BERNDT, G. CARPENTIER, L. SACCONNAY, A. KANNUNA, P. A. CARRUPT, M. CUENDET, A. NURISSO, C. A. SIMOES-PIRES Identification of two novel drug-like SIRT inhibitors with anti-angiogenic activity, 51st International Conference on Medicinal Chemistry, Avignon, France, July 1-3, 2015.
5. O.CICLET, N. J. MARTIN, C. CREPY-MARGLAIS, M. CUENDET Anthraquinones with potent quinone reductase inducing activity from the roots of *Morinda lucida*, 8th Swiss Pharma Science Day (SPSD), Bern, Switzerland, August 19, 2015.
6. M. E. ISSA, S. BERNDT, G. CARPENTIER and M. CUENDET. Bruceantin controls the proliferation of multiple myeloma cancer stem cells *in vitro*, Swiss Pharma Science Day, Bern, Switzerland, August 19, 2015.
7. L. ORY, V. ZWICK, P.-M. ALLARD, N. LECOULTRE, K. GINDRO, J. L. WOLFENDER, M. CUENDET New HDAC inhibitors from filamentous fungi: screening and bioassay-guided fractionation, Swiss Pharma Science Day, Bern, Switzerland, August 19, 2015.
8. C. WALTER, A. FRANDI, M. DE BARSY, P. VIOLLIER, G. GREUB, PH. CHRISTEN, K. PERRON, M. CUENDET Plant extract screening to discover new compounds against Chlamydiales. Swiss Pharma Science Day, Bern, Switzerland, August 19, 2015.
9. C. PETIT, A. BUJARD, K. SKALICKA-WOŹNIAK, S. CRETTON, J. HOURIET, P. CHRISTEN, P. A. CARRUPT, J. L. WOLFENDER High-throughput prediction of passive intestinal absorption of natural products and plant extracts with the PAMPA assay. 63rd Annual Meeting of the Society for Medicinal Plant Research, Budapest, Hungary, August 23-27, 2015.

CONGRESSES & SYMPOSIA

1. L. MUSSO, R. CINCINELLI, F. ZNINO, V. ZWICK, C. A. SIMOES-PIRES, A. NURISSO, M. CUENDET, S. DALLAVALLE Novel HDAC inhibitors with a phenylcinnamic scaffold: synthesis and evaluation of antitumor activity. 3rd Workshop of COST Action DM1106 (Chemical Approaches to targeting drug resistance in cancer stem cells), Athens, Greece, March 26-27, 2015.
2. M. CUENDET HDAC inhibitors from nature for cancer chemoprevention. 15th International Congress of the International Society for Ethnopharmacology, Petra, Jordan, May 5-8, 2015.
3. M. CUENDET Functional genome analysis in a genetically intractable system: an interdisciplinary proof-of-concept study, 2nd Retreat on Host-Pathogen Interactions Villars-sur-Ollon, Switzerland, May 21-22, 2015.

4. M. CUENDET HDAC inhibitors for cancer chemoprevention, American Society of Pharmacognosy 2015 Annual Meeting, Copper Mountain, USA, July 25-29, 2015.
5. S. CRETTON, S. DORSAZ, Q. FAVRE-GODAL, A. AZZOLINI, L. MARCOURT, J.-L. WOLFENDER, M. CUENDET, P. CHRISTEN Antifungal activity of quinoline alkaloids from *Waltheria indica*, 63rd International Congress and Annual Meeting of the Society for Medicinal Plant and Natural Product Research, Budapest, Hungary, August 23-27, 2015.
6. P. CHRISTEN. Reverse pharmacology as an alternative approach in the development of phytomedicine. The example of *Argemone mexicana*, Sino-Swiss Science Forum, Tianjin, China, September 16, 2015.
7. M. CUENDET. Search for new cancer chemopreventive agents from plants, Tianjin University of Traditional Chinese Medicine, Tianjin, China, September 16, 2015.
8. C. R. A. AHOUA, N. J. MARTIN, A. MONTEILLIER, W. M. KONÉ, B. BONFOH, P. CHRISTEN, M. CUENDET *Beilschmiedia mannii*, a plant consumed by chimpanzees (*Pan Troglodytes verus*) in Côte d'Ivoire, inhibits NF-Kb, 2nd International Conference on Natural Products Utilization: From Plants to Pharmacy Shelf, Plovdiv (Bulgaria) October 14-17, 2015.
9. M. CUENDET. Antimicrobial drug development, Workshop "Challenges in Medical Microbiology", CHUV, Lausanne, Switzerland, November 12, 2015.

THESIS

PRELIMINARY EXAMINER

1. Piaa KOKKONEN,
Studying sirtuin inhibitors with in silico and in vitro approaches
University of Eastern Finland

AWARDS & DISTINCTIONS

M. ISSA, Bruceantin controls the proliferation of multiple myeloma cancer stem cells *in vitro*, Swiss Pharma Science Day 2015, Bern, Switzerland, August 19, 2015. Award for the best poster in Pharmaceutical Biology

PHARMACOCEMISTRY

PROFESSOR PIERRE-ALAIN CARRUPT

DR DAVY GUILLARME, SENIOR LECTURER

GENERAL DESCRIPTION OF THE UNIT

The team of pharmacocemistry developed original theoretical and experimental methods able to quantify intermolecular interactions of a drug with its biological partners such as therapeutic targets or biological membranes. This research intended to accelerate the discovery of chemical compounds of therapeutic interest and to optimize the effectiveness, the selectivity and the safety of the selected drug candidates. They were centered on the development and validation of in silico and in vitro HTS filters to characterize physicochemical properties, passive membrane permeation and cellular efflux of new chemical entities. Virtual and in vitro HTS screening approaches were optimized to study the interactions with some specific bio-targets involved in neurodegenerative diseases like Alzheimer and Parkinson's diseases were measured in order to identify multifunctional drug candidates. The team of pharmacocemistry developed original theoretical and experimental methods able to quantify intermolecular interactions of a drug with its biological partners such as therapeutic targets or biological membranes. This research intended to acceler

SPECIFIC RESEARCH FIELDS

- ✚ Biochemical screening: enzyme Inhibition; antioxidant profiling of NCEs; antiapoptotic properties of NCEs; enzymatic hydrolysis of drugs and prodrugs; inhibition of hERG channel; inhibition of HDAC and SIRT proteins.
- ✚ Molecular modelling: Intermolecular interaction fields; indirect molecular modelling; direct molecular modelling.
- ✚ Physicochemical screening: Physicochemical profiling; antioxidant properties.
- ✚ Permeation screening: passive permeation profiling using PAMPA-membranes to mimic the skin, the intestinal barrier and the blood-brain barrier. 3D-QSAR models associated with proteins responsible of cellular efflux in membrane permeation or multi-drug resistance.

2015 AT A GLANCE

| | |
|---|----|
| Publications with impact factor | 13 |
| Posters presentations | 7 |
| Congresses & Symposia | 18 |
| Projects of collaboration with the industry | 1 |
| Ph.D. Thesis presented in 2015 | 3 |
| Awards | 5 |

STAFF

| | | |
|---|---|--|
| SENIOR RESEARCH | Claudia A. SIMOES PIRES | |
| VISITING SENIOR LECTURER | Laura GORACCI | |
| EXCELLENCE FELLOWSHIP | Alessandra NURISSO | |
| POSTDOCTORAL SCHOLARS | Carolina DOS SANTOS PASSOS | Giuseppe Marco RANDAZZO |
| RESEARCH AND TEACHING ASSISTANTS | Alban BUJARD Nathalie DESCHAMPS Charlotte PETIT Stéphanie ROMAND | Lucie RYCKEWAERT Lionel SACONNAY Vincent ZWICK |
| INTERNSHIP STUDENTS – CO-SUPERVISION (CO-TUTELLE) | Florine LECERF-SCHMIDT | |
| ADMINISTRATIVE STAFF | Sylvia PASSAQUAY | |
| TECHNICAL STAFF | Christophe FRANCEY | Emilie REGINATO |

RESEARCH FUNDS

INDUSTRY AND ASSIMILATED

| Code | Service - Development - Research | Total amount for 2015 (CHF) |
|------------|----------------------------------|-----------------------------|
| Cellipse | research | 2'514 |
| TotalTotal | | 2'514 |

PUBLICATIONS

THE TOP TEN JOURNALS IN THE FIELD (WITH IMPACT FACTOR)

| | |
|------------------------|------|
| Drug Discovery Today | 6.69 |
| J.Med.Chem | 5.45 |
| J.Chem.Info.Model | 4.07 |
| Curr Topics Med. Chem. | 3.45 |
| Eur.J.Med.Chem. | 3.43 |
| Chem.Med.Chem. | 3.10 |
| Bioorgan.Med.Chem. | 2.79 |
| J.Comp.Aided Drug Des. | 2.78 |

SCIENTIFIC PUBLICATIONS (WITH IMPACT FACTOR)

1. M. CECCARELLI, R. GERMANI, S. MASSARI, C. PETIT, A. NURISSO, JL. WOLFENDER, L. GORACCI. Phospholipidosis effect of drugs by adsorption into lipid monolayers. *Colloids and Surfaces B: Biointerfaces*, 2015, 136:175-184. 4.15
2. J. GRADINARU, S. ROMAND, L. GEISER, PA. CARRUPT, D. SPAGGIARY, S. RUDAZ. Inhibition screening method of microsomal UGTs using the cocktail approach. *Eur.J.Pharm.Sci.*, 2015, 71:35-45. 3.35
3. L. SACCONNAY, L. RYCKEWAERT, C. DOS SANTOS PASSOS, M. C. GUERRA, L. KATO, C. M. ALVES DE OLIVEIRA, A. HENRIQUES, P. A. CARRUPT, C. A. SIMOES PIRES, A. NURISSO. Alkaloids from *Psychotria* target sirtuins: in silico and in vitro interaction studies. *Planta Med.*, 2015, 81:517-524. 2.15
4. A. BUJARD, H. VOIROL, P. A. CARRUPT, J. SCHAPPLER. Modification of PAMPA model to predict passive gastrointestinal absorption and plasma protein binding. *Eur.J.Pharm.Sci.*, 2015, 77:273-278. 3.35
5. N. DESCHAMPS, C. A. SIMOES-PIRES, P. A. CARRUPT, A. NURISSO. How the flexibility of human histone deacetylases influences ligand binding: an overview. *Drug Discov. Today*, 2015, 20:736-742. 6.69
6. A. MOLINARO, O. HOLST, F. DI LORENZO, M. CALLAGHAN, A. NURISSO, G. D'ERRICO, A. ZAMYATINA, F. PERI, R. BERISIO, R. JERALA, J. JIMENEZ-BARBERO, A. SILIPO, S. MARTIN-SANTAMARIA. Chemistry of lipid A: at the heart of innate immunity. *Chemistry*, 2015, 21: 500-519. 6.64
7. R. FARINA, L. PISANI, M. CATTO, O. NOCOLOTTI, D. GADALETA, N. DENORA, R. SOTO-OTERO, E. MENDEZ-ALVAREZ, C. DOS SANTOS PASSOS, G. MUNCIPINTO, C. D. ALTOMARE, N. NURISSO, P. A. CARRUPT, S. CAROTTI. Structure-based design and optimization of multitarget-directed 2H-chromen-2-one derivatives as potent inhibitors of monoamine oxidase B and cholinesterases. *J. Med. Chem.*, 2015, 58: 5561-5578. 5.45
8. V. MARTEL-FRACHET, M. KERAMIDAS, A. NURISSO, S. DEBONIS, C. ROME, J.L. COLL, A. BOUMENDJEL, A. DIMITRIOS, D. A. SKOUFIAS, X. RONO. IPP51, a chalcone acting as a microtubule inhibitor with in vivo antitumor activity against bladder carcinoma. *Oncotarget*, 2015, 6: 14669-14686. 6.36
9. H. CHAPY, L. GORACCI, P. VAYER, Y. PARMENTIER, P. A. CARRUPT, X. DECLEVES, J. M. SCHERRMANN, S. CISTERNINO, G. CRUCIANI. Pharmacophore-based discovery of inhibitors of a novel drug proton-antiporter in human brain endothelial hCMEC/D3 cell line. *British J. Pharmacology*, 2015, 172: 4888-4904. 4.84
10. L. MUSSO, R. CINCINELLI, V. ZUCO, F. ZUNINO, A. NURISSO, C. CUENDET, G. GIANNINI, L. VESCI, C. PISANO, S. DALLAVALLE. Investigation on the ZBG-functionality of phenyl-4-yl-acrylohydroxamic acid derivatives as histone deacetylase inhibitors. *Bioorg. Med. Chem.*, 2015, 20: 4457-4460. 2.79
11. J. TAIBON, A. ANKLI, S. SCHWAIDER, C. MAGNENAT, VI BOKA, C. A. SIMOES-PIRES, N. ALIGIANNIS, M. CUENDET, A. L. SKALTSOUNIS, E. REICH, H. STUPPNER. Prevention of false positive results: development of an HPTLC autographic assay for the detection of natural tyrosinase inhibitors. *planta Med.*, 2015 81: 1198-1204. 2.15
12. C. DOS SANTOS PASSOS, L. C. KLEIN-JUNIOR, J. DE MELLO ANDRADE, C. METTE, A. T. HENRIQUES. The catechol-O-methyltransferase inhibitory potential of Z-vallesiachotamine by in silico and in vitro approaches. *Revista Brasileira de Farmacognosia*, 2015, 25: 382-386. 0.83
13. X. YAN, J. TANG, C. DOS SANTOS PASSOS, A. NURISSO, C. A. SIMOES-PIRES, M. JI, H. LOU, P. FAN. Characterization of lignanamides from hemp (*Cannabis sativa* L.) seed and their antioxidant and acetylcholinesterase inhibitory activities. *J. Agric. Food Chem.*, 2015, 63: 10611-10619. 2.91

PRESENTATIONS

POSTERS PRESENTATIONS

1. S. ROMAND, J. GRADINARU, L. GEISER, PA. CARRUPT, D. SPAGGIARY, S. RUDAZ. Inhibition screening method of microsomal UGTs using the cocktail approach. HPLC 2015, 23-25 September 2015, Geneva (Switzerland).
2. S. ROMAND, J. GRADINARU, L. GEISER, P. A CARRUPT, D. SPAGGIARI, S. RUDAZ. Inhibition screening method of microsomal UGTs using the cocktail approach. Assemblée annuelle SSCC2015, 23-25 September 2015, Geneva (Switzerland).
3. L. RYCKEWAERT, S. BERNDT, G. CARPENTIER, L. SACCONNAY, A. KANNUNA, P. A. CARRUPT, M. CUENDET, A. NURISSO, C. A. SIMOES PIRES. Identification of novel drug-like SIRT inhibitors with anti-angiogenic activity. 51st International Conference on Medicinal Chemistry, RICT 2015, 1-3 July 2015, Avignon (France).
4. L. RYCKEWAERT, L. SACCONNAY, G. M. RANDAZZO, C. PETIT, M. DAUMANTAS, P. A. CARRUPT, C. A. SIMOES PIRES, A. NURISSO. Hydantoins as novel drug scaffolds for SIRT inhibition: from virtual screening to activity assays. 51st International Conference on Medicinal Chemistry, RICT 2015, 1-3 July 2015, Avignon (France).
5. V. ZWICK. New HDAC Inhibitors from Filamentous Fungi: Screening and Bioassay-Guided Fractionation. Swiss Pharma Day, August 19, 2015, Berne (Switzerland).
6. C. DOS SANTOS PASSOS, C. A. SIMOES-PIRES, P. A. CARRUPT, A. NURISSO. Structural and thermodynamics rules behind ubiquitin-HDAC6 recognition highlight hotspots for selective drug design. FMC 2015, Frontiers in Medicinal Chemistry, July 1-3, 2015, Antwerp (Belgium).
7. G. M. RANDAZZO, S. HAMBYE, D. TONOLI, J. BOCCARD, D. GUILLARME, P. A. CARRUPT, G. CRUCIANI, S. RUDAZ. A new retention time prediction tool to help steroid identifications in reversed phase liquid chromatography. 42nd International Symposium HPLC, June 21-25, 2015, Geneva (Switzerland).

CONGRESSES & SYMPOSIA

1. C. A. SIMOES-PIRES. Natural and endogenous epigenetic regulators as promising therapeutic approaches. Einladung zum Minisymposium im Rahmen der Besetzung einer Juniorprofessur für "Pharmazeutische Biologie". Freie Universität Berlin, July 7, 2015, Berlin (Germany).
2. C. A. SIMOES-PIRES. Neuroactive alkaloids from Psychotria (Rubiaceae) are SIRT inhibitors. 63rd International Congress and Annual Meeting of the Society for Medicinal Plant and Natural Product Research (GA), August 25, 2015, Budapest (Hungary).
3. C. A. SIMOES-PIRES. Natural epigenetic regulators as promising therapeutic approaches SUN meeting, July 9th, 2015, Bettona (Italy).
4. A. NURISSO. The hunt for histone deacetylase (HDAC) modulators through in silico-driven strategies. SUN meeting, July 9th, 2015, Bettona (Italy).
5. A. NURISSO. The hunt for histone deacetylase (HDAC) modulators. Drug Discovery Unit, University of Dundee, August 14th 2015, Dundee (Scotland).
6. A. NURISSO. Identification of sirtuin inhibitors as promising anticancer agents: from screening to activity assay. 4th MedChem & CADD-2015 conference Atlanta, November 3, 2015, Atlanta (USA).
7. C. DOS SANTOS PASSOS. Protein-protein interactions with HDAC6 as a promising pharmaceutical target for neurodegenerative diseases. SUN meeting, July 9th, 2015, Bettona (Italy).
8. L. RYCKEWAERT. Two Novel SIRT inhibitors with anti-angiogenic activity. Summer University Network (SUN), July 8-10, 2015, Bettona (Italy).
9. S. ROMAND. Inhibition screening method of UGTs using the cocktail approach. PHD Day, Fondation Louis-Jeantet, June 8, 2015, Geneva (Switzerland).

10. V. ZWICK. UHPLC-MS/MS strategy for high throughput identification of selective HDAC inhibitors. PHD Day, Fondation Louis-Jeantet, June 8, 2015, Geneva (Switzerland).
11. N. DESCHAMPS. Pharmacophore modelling as an efficient approach for the discovery of new HDAC6-selective inhibitors. Summer University Network (SUN), July 8-10, 2015, Bettona (Italy).
12. L. SACCONNAY. Hydantoins as novel scaffold for SIRT inhibition: from virtual screening to activity assays. Summer University Network (SUN), July 8-10, 2015, Bettona (Italy).
13. A. BUJARD. PAMPA to predict both passive intestinal absorption and drug-protein. Summer University Network (SUN), July 8-10, 2015, Bettona (Italy).
14. S. ROMAND. Inhibition screening method of UGTs using the cocktail approach. Summer University Network (SUN), July 8-10, 2015, Bettona (Italy).
15. C. PETIT. Predicting transcellular passive absorption with PAMPA: Challenges and perspectives in Natural Products Research. Summer University Network (SUN), July 8-10, 2015, Bettona (Italy).
16. C. PETIT. High-throughput prediction of the passive intestinal absorption of natural products and crude plant extracts with the PAMPA assay. 63rd International Congress and Annual Meeting of the Society for Medicinal Plant and Natural Product Research (GA2015), August 23-27, 2015, Budapest (Hungary).
17. G. M. RANDAZZO. Retention time prediction in reversed phase liquid chromatography: a tool to help steroid identification. Summer University Network (SUN), July 8-10, 2015, Bettona (Italy).
18. G. M. RANDAZZO, D. TONOLI, J. BOCCARD, D. GUILLARME, P. A. CARRUPT, G. CRUCIANI, S. RUDAZ. Retention time prediction in reversed phase liquid chromatography: a tool to help steroid identification. Congress of Chimométrie XVI, January 21-22, Geneva (Switzerland).

CONTINUING EDUCATION & OPEN TO THE PUBLIC LECTURES

1. A. NURISSO. Chimie Médicinale et Innovation Pharmacologique, master recherche, University Joseph Fourier - Grenoble (UJF). Magisterial lectures and Practical Courses 20h.
2. A. NURISSO, C. DOS SANTOS PASSOS. Computer Aided Drug Design, Unité d'Enseignement (UE) de Master 2 Ingénierie Santé Médicaments (ISM), University Joseph Fourier - Grenoble (UJF). Conception of the module, magisterial lectures and Practical Courses 30h
3. C. DOS SANTOS PASSOS. Faculty of Pharmacy, bachelor in pharmaceutical sciences, San Pablo CEU, Madrid, Spain. Magisterial lectures 6h.
4. A. NURISSO. Organization of the "Summer University Network (SUN)". Meeting between the Laboratory of Cheminformatics and Molecular Modelling of the Department of Chemistry, Biology and Biotechnology, University of Perugia, and the Pharmacochimistry Unit of the School of Pharmaceutical Sciences, University of Geneva (July 8-11, 2015, Bettona, Italy).

THESIS PRESENTED

INTRA-MUROS THESIS

1. Lucie RYCKEWAERT
Identification and characterization of novel sirtuin inhibitors against aging-related diseases.
University of Geneva
Thesis N° 4822 – September 8, 2015
Directors : Prof. P. A. CARRUPT, Prof. J. L. VEUTHEY, Dr. C. A. SIMOES PIRES
2. Alban BUJARD
Studies of PAMPA permeability values and its application for protein – drug interaction determination
University of Geneva
Thesis N° 4845 – November 3, 2015
Directors : Prof. P. A. CARRUPT, Prof. S. RUDAZ

CO-TUTELLE THESIS

1. Florine LECERF-SCHMIDT
Conception et développement de nouveaux ligands des transporteurs ABCG2 et MRP1 dans le cadre de la résistance à de multiples drogues anticancéreuses.
Thesis N° 4840 - University of Grenoble.
Directors : Prof. P. A. CARRUPT, Dr. A. NURISSO, UniGe, Prof. A. BOUMENDJEL, Uni Grenoble

THESIS JURY

1. Improvement of molecular photoactivation technology and broadened clinical applications.
Olivier RICHOZ, Faculty of Medicine of the University of Geneva
Jury : A. NURISSO.

AWARDS & DISTINCTIONS

Lucie RYCKEWAERT, A. NURISSO Best poster prize, 51st International Conference on Medicinal Chemistry, RICT 2015, July 2015, Avignon (France).

L. RYCKEWAERT, S. BERNDT, L. SACCONNAY, N. DESCHAMPS, C. DOS SANTOS PASSOS, G. CARPENTIER, A. KANNUNA, P. A. CARRUPT, M. CUENDET, A. NURISSO, C. A. SIMOES-PIRES. Identification of two novel drug-like SIRT1 inhibitors with anti-angiogenic activity. Awarded by 'The French Society of Medicinal Chemistry.

Carolina DOS SANTOS PASSOS, FMC 2015 Frontiers in Medicinal Chemistry, Antwerp, Belgium, September 14-16, 2015.

C. DOS SANTOS PASSOS, P. A. CARRUPT, A. NURISSO. Structural and thermodynamics rules behind ubiquitin-HDAC6 recognition highlight hotspots for selective drug design. Awarded by the European Federation of Medicinal Chemistry (EFMC).

A. NURISSO, Excellence Fellowship, University of Geneva. Alessandra NURISSO, Excellence Fellowship, University of Geneva.

CLINICAL PHARMACEUTICAL

PROFESSOR CHANTAL CSJAKA

GENERAL DESCRIPTION OF THE UNIT

The mission of the Clinical Pharmacy unit is to promote optimisation of drug therapy revolving around three main axes :

Therapeutic individualisation by the comprehension of the demographic, physiopathologic, environmental or genetic determinants influencing therapeutic response or toxicity, b) Research on security and efficacy of drugs, in particular in vulnerable population (pediatrics, geriatrics, oncology) and c) Development of tools allowing for therapeutic optimisation. The methods used are based on quantitative and qualitative techniques, including modeling and simulations and epidemiological studies. The overall goal of the research is to increase the knowledge on the pharmacokinetics and pharmacokinetic-pharmacodynamic relationships of commercialized drugs at particular risk and to improve safety and efficacy in order to improve their use in clinical practice.

SPECIFIC RESEARCH FIELDS

The following achievements have been done in 2015.

- Drug individualisation. Several projects on the pharmacokinetic characterisation of antiretroviral and psychoactives drugs have been fulfilled, with direct implication in clinical practice. In the field of HIV, a new research line has been opened focusing on the modeling of metabolic traits, in collaboration with the Swiss HIV Cohort Study. It will provide a better comprehension of the development of drug-related toxicity in the HIV population. A SNF grant has been submitted to study drug-drug interaction of HIV drugs in the elderly population. In Oncology, the clinical study aiming at better defining therapeutic targets of tyrosine kinase inhibitors and adherence patterns of patients under long-term treatment is ongoing.
- Drug efficacy and security. The multicentric study evaluating antidepressant use during pregnancy and lactation and supported by the SNF has provided first analytical results on drug concentrations in blood and breast milk as well as new data on transplacental transfer of those drugs along with new insight of the genetic influence on it. Epidemiological studies evaluating drug risk during pregnancy are ongoing or have been fulfilled.
- Tools for drug optimisation in clinical practice. The collaborative project with the EPFL and the HEIG-VD supported by the Nano-Tera project of the SFN aiming at developing a software (www.ezechiel.ch) for Bayesian dosage adjustment is ongoing (ISyPeM: Intelligent Integrated Systems for Personalized Medicine, www.nano-tera.ch/projects/405.php and ISyPeM II, www.nano-tera.ch/projects/368.php). A start-up will be founded thanks to a cantonal support (Fonds InnoPACTT) received for that purpose

2015 AT A GLANCE

| | |
|---|---|
| Publications with impact factor | 8 |
| Publications without impact factor | 3 |
| Books and chapters | 1 |
| Posters presentations | 7 |
| Congresses & Symposia | 2 |
| Number of projects at FNRS and assimilated | 4 |
| Projects of collaboration with the industry | 1 |
| Awards | 1 |

STAFF

| | | |
|--|-------------------------------------|---|
| SENIOR RESEARCH ASSOCIATE | Monia GUIDI | Alice PANCHAUD (<i>until 31.7.2015</i>) |
| RESEARCH AND TEACHING ASSISTANTS | Catalina BARCELO Evelina CARDOSO | Etienne WEISSKOPF |
| INTERNSHIP STUDENTS-CO-SUPERVISION (CO-TUTELLE) | Anaïs GLATARD | Wenyuan XIONG |
| ADMINISTRATIVE STAFF | Dominique HUNZIKER | |

RESEARCH FUNDS

FNRS

Prediction of infant drug exposure to antidepressant drugs through breastfeeding using population pharmacokinetic modeling and simulation

Main applicant: C. CSAJKA

Co-applicants : J.F. TOLSA, C.B. EAP

Total Funding: CHF 288'000.-

Allocation 2015:

Duration 4 years

Starting date: 1.4.2012

Clinical Pharmacology and Pharmacogenetics In the Complex Care of HIV and HIV/HCV co-infected Individuals.

Main applicant: L. DECOSTERD

Co-applicant: C. CSAJKA

Total Funding: CHF 442'000.-

Allocation 2015: CHF .-

Duration 3 years

Starting date: 1.10.2012

Population kinetic modelling of metabolic traits in HIV infected (SHCS project) individuals

Main applicant: P. TARR

co-applicant: C. CSAJKA

Total Funding : CHF 55'800.-

Allocation 2015: CHF.-

Duration: 2 years

Starting date: 1.8.2014

FONDS DE PERFECTIONNEMENT DU CHUV

Comparative safety and effectiveness of atypical antipsychotics in Pregnancy . [grant for a fellowship at the school of Public Health, Harvard University]

Main applicant : A. PANCHAUD

Total funding : USD 48'000

Allocation 2015 : USD 24'000

Starting date : 01.08.2015

INDUSTRY AND ASSIMILATED

| Code | Service - Development - Research | Total Amount for 2015 (CHF) |
|---------|----------------------------------|-----------------------------|
| DEB-502 | Recherche | 32'400 |
| | total | 32'400 |

PUBLICATIONS

THE TOP TEN JOURNALS IN THE FIELD (WITH IMPACT FACTOR)

| | |
|---|------|
| Clinical Pharmacology and Therapeutics | 7.26 |
| Clinical Pharmacokinetics | 4.82 |
| Antimicrobial Agents and Chemotherapy | 4.47 |
| Pharmacogenetics and genomics | 2.85 |
| British journal of clinical pharmacology | 3.83 |
| The Journal of Clinical pharmacology | 2.55 |
| The Journal of antimicrobial chemotherapy | 4.91 |
| Therapeutic drug monitoring | 2.37 |
| Journal of clinical pharmacy and therapeutics | 1.83 |

SCIENTIFIC PUBLICATIONS (WITH IMPACT FACTOR)

1. E. PETIT-JEAN, T. BUCLIN, M. GUIDI, E. QUOIX, B. GOURIEUX, L.A. DECOSTERD, A. C. GAIRARD-DORY, G. UBEAUD-SÉQUIER, N. WIDMER. Erlotinib: another candidate for the therapeutic drug monitoring of targeted therapy of cancer? A pharmacokinetic and pharmacodynamic systematic review of literature. *Ther. Drug Monitoring* 2015; 37:2–21. 2.09
2. U. WINTERFELD, G. KLINGER, A. PANCHAUD, S. STEPHENS, J. ARNON, H. MALM, B. TE WINKEL, M. CLEMENTI, A. PISTELLI, E. MAŇÁKOVÁ, G. ELEFThERIOU, P. MERLOB, Y. C. KAPLAN, T. BUCLIN, L. E. ROTHUIZEN. Pregnancy outcome following maternal exposure to mirtazapine: a multicenter prospective study. *J. Clin. Psychopharmacol.* 2015; 35:250-9. 3.24
3. B. ROCHAT, E. DAHMANE, K. ZAMAN, C. CSAJKA. Improved investigations in drug safety by more in-depth individual pharmacokinetics using high-resolution mass spectrometry. *Ther Drug Monit.* 2015;37:141-6. 2.09
4. M. GUIDI, G. FOLETTI, P. MCLAREN, M. CAVASSINI, A. RAUCH, P. E. TARR, O. LAMY, A. PANCHAUD, A. TELENTI, C. CSAJKA, C. M. ROTGER. The Swiss HIV Cohort Study. Vitamin D time profile based on the contribution of non-genetic and genetic factors in HIV-infected individuals of European ancestry. *Antivir Ther.* 2015; 20:261-9. 3.02
5. F. VANDENBERGHE, M. GUIDI, E. CHOONG, A. VON GUNTEN, P. CONUS, C. CSAJKA, C. B. EAP. Genetics-Based Population Pharmacokinetics and Pharmacodynamics of Risperidone in a Psychiatric Cohort. *Clin Pharmacokinet.* 2015 ;54:1259-72. 5.05
6. A. LUPATTELLI, O. SPIGSET, I. BJÖRNSDÓTTIR, K. HAMEEN-ANTTILA, A. C. MÅRDBY, A. PANCHAUD, R. GJERGJA JURASKI, G. RUDOLF, M. ODALOVIC, M. DROZD, M. J. TWIGG, H. JUCH, M. E. MORETTI, D. KENNEDY, A. RIEUTORD, K. ZAGORODNIKOVA, J. L. M. PASSIER, H. NORDENG. Patterns and factors associated with low adherence to psychotropic medications during pregnancy--a cross-sectional, multinational web-based study. *Depression and Anxiety* 2015; 32:426-36 5.00
7. L. A. DECOSTERD, N. WIDMER, K. ZAMAN, E. CARDOSO, T. BUCLIN, C. CSAJKA. Therapeutic drug monitoring of targeted anticancer therapy. *Biomark Med.* 2015; 9:887-893. 2.17
8. E. WEISSKOPF, C. J. FISCHER, M. BICKLE GRAZ, M. MORISOD HARARI, J. F. TOLSA, O. CLARIS, Y. VIAL, C. B. EAP, C. CSAJKA, A. PANCHAUD. Risk-benefit balance assessment of SSRI antidepressant use during pregnancy and lactation based on best available evidence. *Expert Opin Drug Saf.* 2015:1-15. 2.89

SCIENTIFIC PUBLICATIONS (WITHOUT IMPACT FACTOR)

1. C. CSAJKA, A. PANCHAUD, B. GUIGNARD, J. BENEY, D. RENARD, A. SPINewINE. Prescription inappropriée chez le patient âgé: entre trop et trop peu de médicaments. *PharmaJournal* 2015; 15:5-7.

2. T. BUCLIN, C. CSAJKA, C. GUIDUCCI, L. A. DECOSTERD. Suivi thérapeutique pharmacologique des inhibiteurs de protéines kinases. *Innov. Ther. Oncol.* 2015 ; 1:12-23.
3. U. WINTERFELD, D. BAUD, A. PANCHAUD, L.E. ROTHUIZEN, F. LIVIO, R. STOLLER, T. BUCLIN. Exposition in utero au paracétamol et troubles du développement: Des doutes insuffisants pour changer nos pratiques! / Entwicklungsstörungen bei Kindern nach Anwendung von Paracetamol in der Schwangerschaft Unzureichende Datenlage für eine Änderung der Praxis! *Schweizerische Ärztezeitung – Bollettino Dei Medici Svizzeri* 2015;96:1494–1495 and *PharmaJournal* 2015;23:11-14

BOOKS OR BOOKS CHAPTERS

1. J. F. DELALOYE, A. PANCHAUD, E. WEISSKOPF, U. WINTERFELD, L. ROTHUIZEN, Y. VIAL, C. CSAJKA, T. BUCLIN, P. HOHLFELD. *Médicaments, grossesse et lactation*. 4e édition, Médecine & Hygiène, Genève, 2015.

PRESENTATIONS

POSTERS PRESENTATIONS

1. U. WINTERFELD, P. MERLOB, D. BAUD, V. ROUSSON, A. PANCHAUD, L. E. ROTHUIZEN, N. BERNARD, T. VIAL, L. M. YATES, A. PISTELLI, M. ELLFOLK, G. ELEFThERIOU, L. C. DE VRIES, P. BOZZO, A. P. JONVILLE-BERA, M. KADIOGLU, J. BIOLLAZ, T. BUCLIN. Pregnancy outcome following maternal exposure to pregabalin: A reason for concern? a collaborative entis and motherisk study. *Clinical Therapeutics* 2015 37:8 SUPPL. 1 (e1).
2. C. BARCELÓ, F. GASPAR, M. AOURI M. et al. Population pharmacokinetics analysis of elvitegravir and cobicistat in HIV-1 infected individuals. 1ère rencontre nationale des sciences pharmaceutiques cliniques, september 8, 2015, Lausanne.
3. A. FUCHS, E. GIANNONI, M. GUIDI, L. A. DECOSTERD, O. MARCHETTI, M. PFISTER, N. WIDMER, T. BUCLIN, C. CSAJKA. Population pharmacokinetic study to evaluate dosing strategies of imipenem in neonates and infants. Population Approach Group in Europe PAGE conference (poster), Hersonissos, Creta, June 2015.
4. U. WINTERFELD, P. MERLOB, D. BAUD, A. PANCHAUD, L. E. ROTHUIZEN, N. BERNARD, T. VIAL, L. M. YATES, A. PISTELLI, M. ELLFOLK, G. ELEFThERIOU, L. C. DE VRIES, P. BOZZO, A. P. JONVILLE-BERA, M. KADIOGLU, J. BIOLLAZ, T. BUCLIN. Pregnancy outcome following maternal exposure to pregabalin: a reason for concern? A collaborative ENTIS and Motherisk study. 83. SGIM Jahresversammlung 2015, May 20-22, 2015, Basel.
5. C. STAMPFLI, J. NOVY, P. ANDRÉ, L. E. ROTHUIZEN, C. CSAJKA, T. BUCLIN, A. O. ROSSETTI, L. A. DECOSTERD. Therapeutic Drug Monitoring of newer anti-epileptics in saliva: an attractive, minimally invasive approach for the management of epilepsy treatment and prevention. Swiss Society of Clinical Chemistry meeting (poster), September 23-25, 2015, Geneva.
6. E. WEISSKOPF, A. PANCHAUD, C. CSAJKA, C. B. EAP. Placental transfer of antidepressant medications and the Effect of maternal and fetal drug transporter polymorphisms. 20th North American ISSX Meeting. Orlando, USA, October 2015.
7. A. GLATARD, A. GHAMROUI, A. BODAR, M. GUIDI, F. VANDENBERGHE, N. SAIGI, DELACRETAZ, C. B. EAP, C. CSAJKA. Population pharmacokinetic model of amisulpride for individual dosing in schizophrenic patients. Swiss Symposium of Clinical Pharmaceutical Sciences, PMU Lausanne, September 2015.

CONGRESSES & SYMPOSIA

1. C. CSAJKA et al., Comité scientifique de l'association Ap2POP. «De la modélisation par approche de population à l'adapataion bayésienne des posologies », Lyon, september 2015.

2. C. CSAJKA et al. Comité scientifique. "1ère rencontre nationale des Sciences Pharmaceutiques Cliniques", Lausanne, september 2015.

CONTINUING EDUCATION & OPEN TO THE PUBLIC LECTURES

1. C. BARCELO. DDI predictor tool for drug-drug interaction predictions. Colloque interne Pharmacie – Pharmacologie clinique, CHUV, may 2015. A. PANCHAUD. Médicaments et grossesse. Colloque PMU.
2. E. WEISSKOPF. Nouveau-nés et exposition aux traitements maternels. Atelier détresse nutritionnelle nouveau-né du Service de Néonatalogie, CHUV.
3. C. CSAJKA. From pharmacokinetic modeling to dosing adjustment of anticancer therapies : focus on imatinib. Colloque du Département d'Onchologie, CHUV.
4. A. PANCHAUD. Médicaments et grossesse: pas toujours contre-indiqué. Séminaire scientifique CAP.
5. C. CSAJKA. Is the therapeutic drug monitoring of targeted therapies useful ? European Cancer Congress, september 25-29, 2015, Vienne.
6. C. CSAJKA. Quel avenir pour les Biosimilaires? Journée Internationales Pharmaceutiques de Casablanca, October 3, 2015.
7. C. CSAJKA. From PK modeling to Bayesian adaptive dosing of targeted anticancer therapies. EORTC-PAMM Winter Meeting, january 21-24, 2015, Marseille.
8. A. PANCHAUD. Mucoviscidose et grossesse: sécurité des médicaments. Après-midi romand de Mucoviscidose.
9. C. CSAJKA. Pharmacocinétique appliquée « les doigts sur le clavier ». Ecole Doctorale UNIGE, april 2015.
10. C. CSAJKA. Prescriptions inappropriées chez la personne âgée. CAS de pharmacie Clinique, Formation continue UNIGE, june 2015.
11. C. CSAJKA. Médicaments et Chutes en gériatrie. CAS de pharmacie Clinique, Formation Continue UNIGE, june 2015.
12. A. PANCHAUD. Médicaments et Allaitement. CAS de Pharmacie Clinique, Formation continue UNIGE, june 2015.
13. A. PANCHAUD. Médicaments, grossesse et allaitement. Pharmagenève, February 2015.
14. C. CSAJKA. Formation post-graduée FBM, ecole doctorale : Pharmacocinétique-génétique, décembre 2015
15. A. PANCHAUD. Formation post-graduée Psychiatrie : Psychopharmacologie, grossesse et allaitement
16. C. CSAJKA. Formation PG UNIGE : Cas de pharmacie clinique : Module Gériatrie-Grossesse-Pédiatrie
17. A. PANCHAUD. Formation PG UNIGE: Module : Optimisation of drug use in pregnant & lactating women
18. A. PANCHAUD. Module AANN, Néonatalogie-CHUV : Exposition néonatale aux traitements maternels
19. A. PANCHAUD. HECV Santé (sages-femmes): Utilisation appropriée des médicaments pendant la grossesse
20. A. PANCHAUD. Atelier de formation interprofessionnelle

THESIS PRESENTED

THESIS JURY

1. Diane Charlotte IMBS
Apport de la pharmacocinétique de population dans l'étude des interactions pharmacocinétiques impliquant le pazopanib.
University of Toulouse III – October 2015

AWARDS & DISTINCTIONS

A. PANCHAUD, The young clinical Science Research Award 2015. Faculty of Biology and Medicine, University of Lausanne.

COMMUNITY PHARMACY PRACTICE

PROFESSOR OLIVIER BUGNON

GENERAL DESCRIPTION OF THE UNIT

The fact of prescribing, recommending or swallowing a drug seems banal and yet there are many traps: side effects, insufficient effectiveness, too high costs, non-adherence, waste, lack of motivation, altered quality of life, etc. These topics, as well as the evolution of advanced pharmacy services are considered as priorities of action for academic and clinical activities of the Community Pharmacy Center of the PMU (Policlinique Médicale Universitaire), a unique place in Switzerland, which combines practice, research, development and education.

Olivier Bugnon, chief pharmacist of the Community Pharmacy Center of the PMU, is on the other hand an Associate Professor of the School of pharmaceutical sciences (University of Geneva, University of Lausanne); like this, he participates in the research and development of Community Pharmacy practice, a clinical pharmaceutical science which respects the public health priorities and the central role of the patient. His main teaching responsibility is the organization of the second year of the Master in Pharmacy (year of assistantship). He supervises the examinations of the Master and is member of the Federal Committee for the State Exam in Pharmacy. His research activities (8 PhD students in pharmaceutical sciences in 2015) explore ways of collaboration between physicians, pharmacists and other professionals to improve the responsible use of medicines (effectiveness, safety, efficiency, patient-related outcomes).

Internationally, the unit of Community Pharmacy Practice is represented especially within the International Pharmaceutical Federation (FIP), the European Society of Clinical Pharmacy (ESCP), the Pharmaceutical Care Networks in Europe (PCNE) and the European Society for Patient Adherence, COMpliance and Persistence (ESPACOMP)

SPECIFIC RESEARCH FIELDS

The research of the Group of Community Pharmacy Practice covers the three following areas:

1. PEOPLE- / PERSON-CENTERED AND INTEGRATED CARE

The global trend for health systems is people- and person-centeredness, coordination, networking and continuity of care. Pharmacists are at the interface of the treatments prescribed by the physicians and the OTC treatments. The evolution of their role turns towards collaborative pharmacy practice and e-health strategies, aiming at the global quality of the care and control of the health care costs. In 2015, the Community Pharmacy Center of the PMU worked on the following topics and projects:

- Quality circles physicians-pharmacists-nurses in nursing homes (cantonal projects in Fribourg and Vaud)
- *Risk evaluation and mitigation strategies – REMS* (e.g. multiple sclerosis patients, home-based subcutaneous immunoglobulin, patients with oral anticancer medications)
- *Exploration of e-Health* strategies facilitating the interprofessional collaboration and the person-centeredness (e.g. shared e-medication plan in the canton of Vaud; web-platform SISPha®)
- *Exploration of change management strategies facilitating the implementation of advanced cognitive pharmacy services* (e.g. implementation of the interprofessional SISCare® concept)
- Animation of the network of the pharmacists specialized in Addiction Medicine in the French-speaking part of Switzerland - COROPHA (project supported by the FOPH and COROMA)

The research on people-/person-centered and integrated care is closely linked to the two other areas « medication adherence » (e.g. oncology, multiple sclerosis) and « safety and cost effectiveness of drugs » (e.g. in geriatrics). This research involves cross-sectional scientific collaborations between pharmaceutical, medical, human and economic sciences.

2. MEDICATION ADHERENCE

The daily and prolonged taking of medicine is difficult for chronic patients, especially in case of side effects, complex treatments, lack of motivation, incomprehension or refusal of the treatment. Stopping or forgetting to take one's medicine is nevertheless a normal human behavior. The medication adherence defines itself as a dynamic active process in which the patient works to maintain his health in collaboration with the medical team.

The researchers of the Community Pharmacy Center of the PMU, in collaboration with various physicians and nurses, are interested in the scientific support and evaluation of the medication adherence in the routine care in domains like for example high blood pressure, VIH infections, diabetes, multiple sclerosis, oral anticancer medications, transplantations. The adherence programs (see M. Lelubre et al. *BioMed Research International. Volume 2015 (2015), Article ID 103546, 10 pages*) are concretized by:

- Motivational, semi-structured interviews, lead by a pharmacist;
- The measure of medication adherence through an electronic medication pillbox and it's relation with the effects of the therapy;
- The sharing of data collected in pharmacies (e.g. persistence, implementation, side effects, preferences of patients and their relatives) within the healthcare workforce.

The research on the medication adherence also contributes to the goals of the area « people-/person-centered and integrated care ».

3. SAFETY AND COST EFFECTIVENESS OF DRUGS

Drugs represent the option most frequently used by the physicians. The prescription formalizes the therapeutic plan with the concordance of the patient; it represents an essential communication tool for the collaboration with the pharmacist. Drug related problems experienced by the patients and medication errors are too frequent. They are usually a sign of system failure, a cost factor and breaks of the seamless care: many good reasons to study scientifically the provided services likely to manage drug risk as well as to improve safety, effectiveness and efficiency of the medicines.

This research area is naturally closely linked with the two other areas « medication adherence » and « people-/person-centered and integrated care ».

2015 AT A GLANCE

| | |
|---|----|
| Publications with impact factor | 5 |
| Publications without impact factor | 7 |
| Books and chapters | 8 |
| Posters presentations | 14 |
| Congresses & Symposia | 29 |
| Number of projects at FNRS and assimilated | 4 |
| Projects of collaboration with the industry | 8 |
| Ph.D. Thesis presented in 2015 | 2 |
| Awards | 1 |

STAFF

SENIOR LECTURER

Jérôme BERGER

RESEARCH ASSOCIATE AND SENIOR RESEARCH ASSOCIATE

Marie-Paule SCHNEIDER
VOIROL

RESEARCH AND TEACHING ASSISTANTS

Sebastian AMICO Anne-Sophie FAVRE

Claudine BACKES (*since
1.5.2016*)

INTERNSHIP STUDENTS – CO- SUPERVISION (CO-TUTELLE)

Noura BAWAB (*Student,
University libre de Bruxelles*)

ADMINISTRATIVE STAFF

Dominique HUNZIKER

RESEARCH FUNDS

FEDERAL OFFICE OF PUBLIC HEALTH (FOPH)

Elaboration of the Federal Exam for Pharmacy 2015
Participation des experts de la Section des sciences pharmaceutiques (University of Geneva,
University of Lausanne) - (Contract No. 15.013269 / 704.0001/ -685) -
Main applicant: O. BUGNON
Allocation 2015: CHF 280'150
Duration: 1 year

Scientific evaluation of a person-centered and integrated care concept for Type-2 Diabetes patients
(SISCare®-DT2]
(Contract No. 15.003846 / 604.0001/ -434)
Main applicants: O. BUGNON (PMU/EPGL) et C. ROSSIER (SISPha SA)
Total allocation : CHF 216'000
Allocation 2015: CHF 23'760
Duration: 4 years
Starting date: 2015

CANTONAL OFFICE OF PUBLIC HEALTH - VAUD

Development, implementation and evaluation of a the cantonal interprofessionnal programme
« Physicians-Nurses-Pharmacists quality circles in nursing homes »
Main applicant: O. BUGNON
Total allocation : CHF 270'000
Allocation 2015: CHF 30'000
Duration: 9 years
Starting date: 2007

Organisation and animation of a Quality circle physicians-pharmacists-nurses in the nursing homes of
the « Fondation Asile des Aveugles (FAA) »]
Main applicant: O. BUGNON et J. BERGER
Allocation 2015: CHF 26'500
Duration: 1 year
Starting date: 2015

INDUSTRY AND ASSIMILATED

| Code | Service - Development - Research | Total Amount for 2015 (CHF) |
|--------|----------------------------------|-----------------------------|
| C10G | Research and Development | 1'650 |
| TAS11 | Research and Development | 30'000 |
| CP3 | Formation | 6'000 |
| ME5 | Formation | 4'500 |
| S4H | Formation | 11'200 |
| ETC | Formation | 2'030 |
| MESHDO | Formation | 3'500 |
| PHA11 | Formation | 7'000 |
| | total | 65'880 |

PUBLICATIONS

THE TOP TEN JOURNALS IN THE FIELD (WITH IMPACT FACTOR)

| | |
|---|----------------|
| American Journal of Health System Pharmacy | 1.98 |
| Annals of Pharmacotherapy | 2.92 |
| Disease Management and Health Outcomes | 0.34 |
| International Journal of Pharmacy Practice | 1.26 |
| Journal of Clinical Pharmacy and Therapeutics | 1.53 |
| Journal of Managed Care Pharmacy | 2.68 |
| Patient Education and Counselling | 2.59 |
| Pharmacy Practice (www.pharmacypractice.org) | PR |
| Revue Médicale Suisse | Indexé Pub Med |

SCIENTIFIC PUBLICATIONS (WITH IMPACT FACTOR)

1. M. LELUBRE, S. KAMAL, N. GENRE, J. CELIO, S. GORGERAT, D. HUGENTOBLER HAMPAL, A. BOURDIN, J. BERGER, O. BUGNON, M. P. SCHNEIDER Interdisciplinary Medication Adherence Program: The Example of a University Community Pharmacy in Switzerland. *BioMed Research International*. Volume 2015 (2015), Article ID 103546, 10 pages **1.58**
2. T. R. GLASS, J. A. STERNE, M. P. SCHNEIDER, S. DE GEEST, D. NICCA, H. FURRER, H. F. GÜNTARD, E. BERNASCONI, A. CALMY, M. RICKENBACH, M. BATTEGAY, H. C. BUCHER, AND THE SWISS HIV COHORT STUDY. Effect of self-reported non-adherence to antiretroviral therapy on viral failure and mortality: The Swiss HIV Cohort Study. *AIDS*. 2015 Oct 23; 29(16):2195-200. **5.55**
3. A. ROTZINGER, I. LOCATELLI, O. BUGNON, A. FAYET MELLO, J. J. PARIENTI, M. CAVASSINI, M. P. SCHNEIDER. Switching from a two-tablet regimen of tenofovir/emtricitabine and efavirenz to a one-tablet regimen may affect patients' perceptions and drug management. *HIV Medicine* (2015) doi: 10.1111/hiv.12345 **3.98**
4. I. ANGUISH, P. BALLABENI, C. PERRAUDIN, O. BUGNON Main outcomes of a collaborative pharmacy practice model in nursing homes. Proceedings of the 43rd ESCP international symposium on clinical pharmacy patient safety: bridging the gaps. Copenhagen, Denmark, 22-24 October 2014. *Int J Clin Pharm* (2015) 37(1): 199-200. **1.35**
5. I. ANGUISH, J. F. LOCCA, C. BÜLA, S. ZUMBACH, O. BUGNON. Pharmacologic treatment of behavioral and psychological symptoms of dementia in nursing homes: update of the 2008 JAMDA recommendations. Letter to the Editor. *JAMDA* 16 (2015): 527-529; (<http://dx.doi.org/10.1016/j.jamda.2015.03.014>). **4.94**

SCIENTIFIC PUBLICATIONS (WITHOUT IMPACT FACTOR)

1. J. BERGER. Régimes végétariens et végétaliens – quelques conseils pour l’officine. PharmaJournal 22; 10.2015: 5-8. Vegetarismus une Veganismus – Empfehlungen in der Offizin. PharmaJournal 22; 10.2015: 8-11.
2. I. ANGLISH, A. NIQUILLE, J. F. LOCCA, O. BUGNON Pistes d’amélioration pour l’assistance pharmaceutique PharmaJournal 22; 10.2015: 25-26. Pharmazeutische Betreuung: Verbesserungsansätze PharmaJournal 22 ; 10.2015 : 27-28.
3. M. P. SCHNEIDER ESPACOMP: L’adhésion thérapeutique en question à Lausanne. Revue Compétence H+ Hospital Forum 2015; 3:32.
4. J. MARQUIS, S. DU PASQUIER, O. BUGNON, M. P. SCHNEIDER. Programme de soutien de l’adhésion thérapeutique Mieux comprendre les difficultés à implémenter une prestation pharmaceutique. PharmaJournal 2015; 19:13-17.
5. S. DU PASQUIER, O. BUGNON. Addiction: Etat des lieux dans les pays francophones. PharmaJournal 2015;19 : 19-21.
6. A. BOURDIN, J. BERGER, A. FRÜH, F. SPERTINI, O. BUGNON Immunoglobulines sous-cutanées et programme d’accompagnement: quel est l’intérêt des patients ? REV MED SUISSE 2015; 11: 831 – 835.
7. O. BUGNON. Cercles de qualité médecins-pharmaciens. Deltanews Vaud, Printemps 2015: 2 (www.reseau-delta.ch/canton-vaud).

BOOKS OR BOOKS CHAPTERS

1. R. GAUTHIER, J. BERGER Traitement de la rhinite aiguë non-allergique: quel traitement en premier choix ? News médicaments de la Pharmacie de la Policlinique Médicale Universitaire, Lausanne (October 2015) [Intranet]
2. L. OCHSENBEIN, Y. DUBOIS, J. BERGER Le calcium per os et ses interactions pharmacocinétiques News médicaments de la Pharmacie de la Policlinique Médicale Universitaire, Lausanne (November 2015) [Intranet]
3. R. GAUTHIER, J. BERGER Prévention et prise en charge de la rhinite médicamenteuse News médicaments de la Pharmacie de la Policlinique Médicale Universitaire, Lausanne (December 2015) [Intranet]
4. A. PANCHAUD, J. BERGER, O. BUGNON. Médicaments, grossesse et allaitement. BabyGuide – Le Manuel officiel Suisse : Grossesse, naissance et les trois premières années de l’enfant, Ed. BabyGuide, Le Mont-sur-Lausanne (Edition 2015).
5. J. BERGER, O. BUGNON Du bon usage des médicaments en pédiatrie BabyGuide – Le Manuel officiel Suisse : Grossesse, naissance et les trois premières années de l’enfant, Ed. BabyGuide, Le Mont-sur-Lausanne (Edition 2015).
6. V. PAVON CLEMENT, O. BUGNON Voyager durant la grossesse, avec des bébés ou des petits enfants. BabyGuide – Le Manuel officiel Suisse : Grossesse, naissance et les trois premières années de l’enfant, Ed. BabyGuide, Le Mont-sur-Lausanne (Edition 2015).
7. A. NIQUILLE, P. BALLABENI, S. AMICO, O. BUGNON Assistance pharmaceutique dans les établissements médico-sociaux du canton de Vaud - Rapport d’activités 2014 à l’intention des partenaires du projet pilote vaudois (Service de la santé publique, AVDEMS, FEDEREMS, GMEMS, SVPh), September 23, 2015.
8. A. NIQUILLE, S. AMICO, O. BUGNON Etude comparative 2013-2014: résultat de l’assistance pharmaceutique dans les EMS fribourgeois. Rapport à l’intention des partenaires à la Convention cantonale (Association fribourgeoise des institutions pour personnes âgées, santésuisse, curafutura, tarifsuisse, HSK et la Société des pharmaciens du canton de Fribourg), September 24, 2015

PRESENTATIONS

POSTERS PRESENTATIONS

1. M. LELUBRE, O. CLERC, M. GROSJEAN, K. AMIGHI, C. DE VRIESE, O. BUGNON, M. P. SCHNEIDER Design of an implementation study related to an interdisciplinary ART adherence program for HIV patients in community pharmacies. Poster presented at PCNE (Pharmaceutical Care Network Europe) February 4-6, 2015 Belgium
2. J.CELIO, F. NINANE, O. BUGNON, M. P. SCHNEIDER Interdisciplinary or multidisciplinary collaboration pharmacists-nurses and medication adherence programs: a review. Poster presented at PCNE (Pharmaceutical Care Network Europe). February 4-6, 2015 Belgium.
3. J. BERGER, N. BAWAB, J. DE MOOIJ, D. SUTTER WIDMER, N. SZILAS, C. DE VRIESE, O. BUGNON. An open randomised controlled study to explore the use of a serious game by fifth-year Belgian and Swiss pharmacy students. ESCP (European Society of Clinical Pharmacy) – SFPC (Société Française de Pharmacie Clinique) International Workshop “Acquisition of Pharmaceutical Skills: Simulation, Serious Games, Innovative Approaches”, June 22-23, 2015, Nice
4. N. HAMADA, J. BERGER, K. A. MAES, O. BUGNON. Documentation of Drug Related Problems in Community Pharmacies. Swiss Pharma Science Day 2015, August 19, 2015, Bern
5. M. LELUBRE, O. CLERC, M. GROSJEAN, K. AMIGHI, C. DE VRIESE, O. BUGNON, M. P. SCNHEIDER. Implementation study related to an interdisciplinary antiretroviral adherence program for HIV patients in community pharmacies: First results. Poster presented at « 1ère rencontre nationale des sciences pharmaceutiques cliniques ». Symposium organised by the CUSO, the School of pharmaceutical sciences of the university of Geneva and the university of Lausanne and the Department of pharmaceutical sciences of the university of Basel, September 1st, 2015, PMU de Lausanne.
6. J. BENDOVA, A. NIQUILLE, M. P. SCHNEIDER, O. BUGNON Development and evaluation of a support tool for validation of prescriptions at risk of QT interval prolongation at the Policlinique Médicale Universitaire of Lausanne (PMU) Poster presented at « 1ère rencontre nationale des sciences pharmaceutiques cliniques ». Symposium organised by the CUSO, the School of pharmaceutical sciences of the university of Geneva and the university of Lausanne and the Department of pharmaceutical sciences of the university of Basel, September 1st, 2015, PMU de Lausanne.
7. A. BOURDIN, J. BERGER, A. FRÜH, F. SPERTINI, O. BUGNON Subcutaneous immunoglobulin and integrated care program: what level of interest of patients? Poster presented at « 1ère rencontre nationale des sciences pharmaceutiques cliniques ». Symposium organised by the CUSO, the School of pharmaceutical sciences of the university of Geneva and the university of Lausanne and the Department of pharmaceutical sciences of the university of Basel, September 1st, 2015, PMU de Lausanne.
8. J. CELIO, F. NINANE, O. BUGNON, M. P. SCHNEIDER Interdisciplinary or multidisciplinary collaboration pharmacists-nurses and medication adherence programs: a review. Poster presented at « 1^{ère} rencontre nationale des sciences pharmaceutiques cliniques ». Symposium organised by the CUSO, the School of pharmaceutical sciences of the university of Geneva and the university of Lausanne and the Department of pharmaceutical sciences of the university of Basel, September 1st, 2015, PMU de Lausanne.
9. K. A. MAES, H. STUDER, J. BERGER, KE. HERSBERGER, M. L. LAMPERT. An instrument to document pharmacists’ intervention: the PharmDISC system. ESCP (European Society of Clinical Pharmacy) 44th European Symposium on Clinical Pharmacy, October 28 –30, 2015, Lisbon.
10. M. LELUBRE, S. KAMAL, N. GENRE, J. CELIO, S. GORGERAT, D. HUGENTOBLER HAMPAL, A. BOURDIN, J. BERGER, O. BUGNON, M. P. SCHNEIDER Interdisciplinary Medication Adherence Program: The Example of a University Community Pharmacy in Switzerland. Poster presented at Espacomp (European Society for Patient Adherence, COMPLIANCE, and Persistence) November 12-14, 2015 Praha.
11. J. CELIO, S. MAEDER, G. HALABI, P. BALLABENI, O. BUGNON, M. PRUIJM, M. P. SCHNEIDER. Chronic dialysis, medication adherence and beliefs about medicines: a comparison between patients born in Switzerland and migrant patients (Diana study) Poster presented at Espacomp (European Society for Patient Adherence, COMPLIANCE, and Persistence). November 12-14, 2015 Praha.

12. S. KAMAL, H. MONTENEGRO, O. BUGNON, M. P. SCHNEIDER Medication Adherence Programme at PMU Lausanne - A case study on People Centred and Integrated Health-Care Services (PCIHCS) Approach Poster presented at Espacomp (European Society for Patient Adherence, COMpliance, and Persistence) November 12-14, 2015 Praha.
13. K. A. MAES, H. STUDER, J. BERGER, K. E. HERSBERGER, M. L. LAMPERT. Improving patient safety through documentation of pharmaceutical interventions: the PharmDISC system. GSASA Conference, November 26-27, 2015, Zürich.
14. J. CELIO, S. MAEDER, G. HALABI, P. BALLABENI, O. BUGNON, M. PRUIJM, M. P. SCHNEIDER. Chronic dialysis, medication adherence and beliefs about medicines: a comparison between patients born in Switzerland and migrant patients (Diana study) Poster presented at 47th Annual Meeting of the Swiss Society of Nephrology. December 3-4, 2015 Basel

CONGRESSES & SYMPOSIA

1. M. SCHÜTZ LEUTHOLD, M. C. HOFNER Détection au quotidien – A la pharmacie. Journée annuelle du réseau vaudois contre la violence domestique ; Commission cantonale de lutte contre la violence domestique c/o Bureau de l'égalité entre les femmes et les hommes, en étroite collaboration avec le Service de prévoyance et d'aide sociale, January 29, 2015, Lausanne
2. O. BUGNON Pharmacie clinique en officine Roundtable – Dialog : Clinical Pharmacy meets Clinical Pharmacology. Swiss Academy of Pharmaceutical Sciences, Bern, February 6, 2015.
3. O. BUGNON Polymorbidité et polymédication en EMS: la réalité des chiffres. Symposium interdisciplinaire annuel des EMS fribourgeois et vaudois « Ni trop ni trop peu de médicaments en EMS: un défi pour la collaboration interprofessionnelle ». AFIPA, Société de Médecine du canton de Fribourg, Société des pharmaciens du Canton de Fribourg, AVDEMS, FEDEREMS, GMEMS et Société de Pharmacie du canton de Vaud. Sous le patronage des services de la santé publique des cantons de Fribourg et Vaud, March 5, 2015, Fribourg.
4. J. BERGER Quelles sources d'informations utiles en EMS pour une plus grande sécurité des médicaments? Symposium interdisciplinaire annuel des EMS fribourgeois et vaudois « Ni trop ni trop peu de médicaments en EMS: un défi pour la collaboration interprofessionnelle ». AFIPA, Société de Médecine du canton de Fribourg, Société des pharmaciens du Canton de Fribourg, AVDEMS, FEDEREMS, GMEMS et Société de Pharmacie du canton de Vaud. Sous le patronage des services de la santé publique des cantons de Fribourg et Vaud, March 5, 2015, Fribourg.
5. O. BUGNON Formation, recherche et innovation dans un "laboratoire" de pratique officinale. Colloque du Secrétariat d'Etat à la formation, à la recherche et à l'innovation (SEFRI), Bern. March 12, 2015.
6. O. BUGNON Introduction à la journée « Le plaisir d'entreprendre et d'embarquer une équipe avec soi! » avec le Colonel EMG Ian LOGAN. Symposia Pharmacie on top 2015. Organisation: MEPHA Pharma SA avec le soutien de SISPha SA. Montreux (16.3.2015), Lausanne-Bussigny (April 23, 2015), Lugano (June 8, 2015).
7. O. BUGNON L'innovation des pratiques en officine, le temps de passer à l'action. Conférence GIFAR, Session « S'inspirer des exemples étrangers pour réformer la protection sociale française », Paris, March 20, 2015.
8. O. BUGNON 1. Nouveautés en pneumologie; 2. Entretiens de type motivationnel pour soutenir l'adhésion thérapeutique. Formation continue aux pharmaciens. Ordre des Pharmaciens de Madagascar, Antananarivo, April 2, 2015.
9. O. BUGNON Adhésion thérapeutique: comment briser le tabou? 8th Iron Academy – Le diagnostic de la maladie silencieuse, Lausanne, April 23, 2015.
10. O. BUGNON Chairman of the Plenary symposium 4 "Collaborative interdisciplinary professional training for Person-Centered Primary Health Care". 8th Geneva Conference on Person-Centered Medicine: "Person-Centered Primary Health Care". Geneva, April 28, 2015.

11. O. BUGNON Collaborating towards the implementation of WHO's Global Strategy on People-centered and Integrated services. 8th Geneva Conference on Person-Centered Medicine: "Person-Centered Primary Health Care". Geneva, April 29, 2015.
12. J. BERGER, O. BUGNON. Méthodologies d'apprentissage – Serious games. Rencontre G3 (University of Montréal, ULB Bruxelles et Geneva): « Discussions autour des méthodes pédagogiques innovantes », School of Pharmaceutical Sciences, Geneva, May 4-5, 2015.
13. O. BUGNON Méthodologies d'apprentissage et évaluations : OSCE - Evaluation des stages. Rencontre G3 (University of Montréal, ULB Bruxelles et Geneva): « Discussions autour des méthodes pédagogiques innovantes », School of Pharmaceutical Sciences, Geneva, May 4-5, 2015.
14. O. BUGNON Polymédication (in)évitable. Jeudi de la PMU interdisciplinaire – Ensemble, évitons l'évitable. Organismes : PMU de Lausanne, AVASAD, CHUV, Lausanne, June 18, 2015.
15. S. MEIJD THALMANN, S. DAVID, L. YERSIN, D. NANCHEN, M. CHALIFOUR, O. BUGNON. Atelier interdisciplinaire « Ni trop, ni trop peu de médicaments ». Jeudi de la PMU interdisciplinaire – Ensemble, évitons l'évitable. Organismes : PMU de Lausanne, AVASAD, CHUV, Lausanne, June 18, 2015.
16. O. BUGNON. Atelier « Adhésion thérapeutique et gestion du risque médicamenteux : relever le défi interdisciplinaire des soins aux patients chroniques ». Les Journées Pharmaciens, Organisateur : MSD France, Marseille, June 18-19, 2015.
17. J. BERGER, N. BAWAB, J. DE MOOIJ, D. SUTTER WIDMER, N. SZILAS, C. DE VRIESE, O. BUGNON. "An open randomised controlled study to explore the use of a serious game by fifth-year Belgian and Swiss pharmacy students". ESCP (European Society of Clinical Pharmacy) – SFPC (Société Française de Pharmacie Clinique) International Workshop "Acquisition of Pharmaceutical Skills: Simulation, Serious Games, Innovative Approaches", June 22-23, 2015, Nice
18. O. BUGNON. Assistance pharmaceutique en EMS: retour d'expériences des projets interdisciplinaires fribourgeois et vaudois. KAV-Veranstaltung Alters- und Pflegeheime 2015, Bern, August 18, 2015.
19. O. BUGNON. Chairman de la 1^e rencontre nationale des sciences pharmaceutiques cliniques. Manifestation accréditée par la CUSO et l'école doctorale, School of Pharmaceutical Sciences, University of Geneva and University of Lausanne with collaboration with Department of Pharmaceutical sciences of University of Basel, PMU Lausanne, September 1st 2015.
20. C. PERRAUDIN, O. BUGNON, N. PELLETIER-FLEURY. Expanding professional pharmacy services in Europe: is it cost-effective? A systematic review for health policy considerations. 1^{ère} rencontre nationale des sciences pharmaceutiques cliniques, manifestation accréditée par la CUSO et l'école doctorale, School of Pharmaceutical Sciences, University of Geneva and University of Lausanne with collaboration with Department of Pharmaceutical sciences of University of Base, PMU de Lausanne, September 1st 2015.
21. A. BOURDIN, J. BERGER, A. FRÜH, F. SPERTINI, O. BUGNON. Subcutaneous immunoglobulin and integrated care program: what level of interest of patients? 1^{ère} rencontre nationale des sciences pharmaceutiques cliniques, manifestation accréditée par la CUSO et l'école doctorale, School of Pharmaceutical Sciences, University of Geneva and University of Lausanne with collaboration with Department of Pharmaceutical sciences of University of Base, PMU de Lausanne, September 1st 2015.
22. A. ZANCHI, M.P. SCHNEIDER ET J. CELIO. Néphropathie diabétique et adhésion thérapeutique. Forum Diabète 2015 «Les complications du diabète : une responsabilité partagée», September 3, 2015, CHUV à Lausanne.
23. O. BUGNON. Apport économique du pharmacien dans les thérapies chroniques. Forumofac.15 Le rendez-vous des pharmaciens : « Assureurs-pharmaciens : pistes de collaboration dans l'intérêt du patient. SwissTech Convention Center, EPFL, Lausanne, September 25, 2015.
24. M. P. SCHNEIDER, B. VAN DEN BEMT. Identifying and improving adherence: a shared effort for patients and every pharmacist. Workshop at 44th ESCP (European Society of Clinical Pharmacy) Symposium, Lisbon, Portugal, October 28-30, 2015
25. O. BUGNON, J. BERGER, A. NIQUILLE. Peut-on déprescrire en EMS ? Groupement des médecins travaillant en EMS, Société vaudoise de médecine, Lausanne, November 5, 2015.

26. M. LELUBRE, O. CLERC, M. GROSJEAN, K. AMIGHI, C. DE VRIESE, O. BUGNON, M. P. SCHNEIDER Implementation study of an interdisciplinary antiretroviral adherence program for HIV patients in community pharmacies. Workshop on implementation - ESPACOMP (European Society for Patient Adherence, COMpliance, and Persistence), November 12, 2015, Prague, Czech Republic.
27. C.PERRAUDIN, O.BUGNON, M. P.SCHNEIDER Exploring the costs and outcomes of an interdisciplinary HIV-adherence program in Switzerland ESPACOMP (European Society for Patient Adherence, COMpliance, and Persistence), November 12, 2015, Prague, Czech Republic.
28. L. ZULLIG, M. DE BRUIN, L. VAN DIJK, M. P. SCHNEIDER, S. DE GEEST. Advanced level course: Implementing and sustaining of adherence interventions in real world settings – A practical guide. ESPACOMP (European Society for Patient Adherence, COMpliance, and Persistence), Pre-conference educational day, November 12, 2015, Prague, Czech Republic.
29. S. KAMAL, H. MONTENEGRO, O. BUGNON, M. P. SCHNEIDER Medication Adherence Programme at PMU Lausanne - A case study on People Centred and Integrated Health-Care Services (PCIHCS) Approach. WCIC Conference, November 18-21, 2015, Mexico city

CONTINUING EDUCATION & OPEN TO THE PUBLIC LECTURES

1. O. BUGNON. Bonnes pratiques de prescriptions des analgésiques et des AINS. Cercle de Qualité médecins-pharmaciens d'Echallens, Echallens, February 19, 2015.
2. Y. DUBOIS, S. MEJDI, J. BERGER. Rapport d'activité d'assistance pharmaceutique 2014 Cercle de qualité des EMS de Clair-Soleil et Recordon; projet cantonal vaudois, Ecublens, March 10, 2015.
3. S. MEJDI, J. BERGER, D. HUGENTOBLER. Incontinence urinaire; cas pratiques de prise en charge Conférence pharmActuel, formation continue FPH, Lausanne, March 17, 2015.
4. O. BUGNON, A. NIQUILLE, C. ROSSIER. Bonnes pratiques de prescriptions en pneumologie. Cercle de Qualité médecins-pharmaciens de Lausanne-1, Paudex, March 18, 2015.
5. J.CELIO, F. NINANE, O. BUGNON, M. P. SCHNEIDER.- Programmes de soutien de l'adhésion thérapeutique et collaboration pharmacien-ne/infirmier-ère: revue de littérature Colloque semestriel de recherche PMU, Policlinique Médicale Universitaire, Lausanne, March 30, 2015.
6. Y. DUBOIS, J. BERGER. Pharmacie de ménage et bon usage des médicaments à domicile Colloques promotion de la santé - PMU, Lausanne, April 13, 2015.
7. J. BERGER, A. BOURDIN. Sclérose en plaque : options thérapeutiques et accompagnement des patients en officine Programme de formation continue UNIL-EPGL pour pharmaciens, Lausanne, April 30, 2015.
8. O. BUGNON. Le futur de l'officine avec la pharmacie clinique ambulatoire. PharmaMeeting Meet pharma, meet friends. aseph - association suisse des étudiants en pharmacie. PMU, Lausanne May 2, 2015.
9. Y. DUBOIS, S. MEJDI, J. BERGER. Traitement préventif de l'ostéoporose Cercle de qualité des EMS de Clair-Soleil et Recordon; projet cantonal vaudois, Ecublens, June 2, 2015.
10. A. LACHKAR, J. SAVARY, J. BESNARD, S. MEJDI, J. BERGER. Gérer la polymédication en EMS: cas pratiques rencontrés Conférence pharmActuel, formation continue FPH, Lausanne, June 9, 2015.
11. C. BIENVENU et O. BUGNON. ePatient, ePharma : comment le web modifie les relations. Programme EPGL/PharmaGenève de formation continue pour pharmaciens, Geneva, June 16, 2015.
12. O. BUGNON, A. NIQUILLE, C. ROSSIER. 1. Bilan général des données 2013-2014 ; 2. Bonnes pratiques de prescriptions des antidépresseurs. Cercle de Qualité médecins-pharmaciens de Lausanne-1, Paudex, June 17, 2015.
13. O. BUGNON. 1. Bilan général des données 2013-2014 ; 2. Bonnes pratiques de prescriptions des antidépresseurs. Cercle de Qualité médecins-pharmaciens d'Echallens, Echallens, June 23, 2015.
14. J. BERGER. Interactions médicamenteuses: comment les gérer pratiquement de manière efficace!? Séminaire CAP, formation continue FPH, Lausanne, September 15, 2015.

15. M. P. SCHNEIDER. Présentation des travaux de master de l'Unité de pharmacie communautaire de l'EPGL. Cycle de conférences de la Société vaudoise de pharmacie, September 24, 2015, Lausanne-Dorigny.
16. Y. DUBOIS, S. MEJDI, J. BERGER. Traitement des plaies Cercle de qualité des EMS de Clair-Soleil et Recordon; projet cantonal vaudois, Ecublens, September 29, 2015
17. O. BUGNON, A. NIQUILLE, C. ROSSIER. Bonnes pratiques de prescriptions des antidiabétiques. Cercle de Qualité médecins-pharmaciens de Lausanne-1, Paudex, September 30, 2015.
18. M. J. BARBALAT, V. PAVON CLEMENT, J. BERGER. Compléter et décrypter le carnet de vaccination: trucs et astuces Formation «Vaccins à jour?», Projet cantonal vaudois et Société vaudoise de Pharmacie, Paudex, October 5 and 8, 2015
19. J. BERGER. Déprescription médicamenteuse en pratique Conférence pharmActuel, formation continue FPH, Lausanne, October 6, 2015
20. O. BUGNON. Bonnes pratiques de prescriptions des antidiabétiques. Cercle de Qualité médecins-pharmaciens d'Echallens, Echallens, October 8, 2015.
21. A. NIQUILLE, S. AMICO, O. BUGNON. Assistance pharmaceutique dans les établissements médico-sociaux du canton de Fribourg – Présentation des résultats 2014 et perspectives 2015. Société des pharmaciens du canton de Fribourg, November 9, 2015.
22. M. SCHUETZ, L. NICOLET, J. BERGER. Patients transplantés: Cas pratiques de validation d'ordonnances Conférence pharmActuel, formation continue FPH, Lausanne, November 10, 2015
23. A. NIQUILLE, S. AMICO, P. BALLABENI, O. BUGNON. Assistance pharmaceutique dans les établissements médico-sociaux du canton de Vaud – Présentation des résultats 2014 et perspectives 2015. Société vaudoise de Pharmacie, Paudex, November 17, 2015.
24. O. BUGNON, A. NIQUILLE, C. ROSSIER. Bonnes pratiques de prescriptions des antibiotiques. Cercle de Qualité médecins-pharmaciens de Lausanne-1, Paudex, November 18, 2015.
25. M.P. SCHNEIDER et A. NIQUILLE. Assurer la qualité de la recherche orientée patients en sciences cliniques pharmaceutiques. Programme doctoral, EPGL, University of Geneva, November 19, 2015 – December 3, 2015 – December 10, 2015 – December 17, 2015.
26. Y. DUBOIS, S. MEJDI, J. BERGER. Prescription d'antibiotiques, neuroleptiques, antidépresseurs et antiémétiques chez le patient âgé Cercle de qualité des EMS de Clair-Soleil et Recordon; projet cantonal vaudois, Ecublens, November 24, 2015
27. O. BUGNON, C. BREMOND, M. GOLDSCHMIDT, C. ROSSIER, C. PERRAUDIN, J. BERGER. Plan de traitement réconcilié et partagé. Programme EPGL/Société vaudoise de Pharmacie de formation continue pour pharmaciens, Geneva, November 26, 2015.
28. O. BUGNON. Nouveautés pharmaceutiques en 2015: cas pratiques de validation d'ordonnances. Séminaire pharmActuel. PMU, Lausanne December 1st 2015.
29. J. BERGER. Oncologie et pharmacie d'officine - partie 1. Séminaire CAP, formation continue FPH, Cully, December 3, 2015

THESIS PRESENTED

INTRA-MUROS THESIS

1. A. ROTZINGER-GERTSCH.
Adhésion médicamenteuse lors de l'infection au VIH: Cinq études tirées de la pratique quotidienne d'une consultation d'adhésion.
University of Geneva
Thesis Nr : 4848 – June 25, 2015
Directors : Prof. O.BUGNON, Dr. M.P. SCHNEIDER

2. I. ANGUISH.
Integrated Pharmacists' Service in Nursing Homes of Canton Fribourg (Switzerland); a Twelve-year
Multilevel Analysis of Drug Costs, Mortality and Hospitalization Rates.
Thesis accepted (Nr : to be defined)
Directors : Prof. O. BUGNON et Dr. J. F. LOCCA

RADIO TELEVISION INTERVENTION

M. P. SCHNEIDER

L'adhésion thérapeutique.

Intervention dans l'émission radio TRIBU, RTS, 16.01.15

O. BUGNON

Intervention dans le magazine TEMPS PRESENT « La Pharmacie malade de la crise », RTS, 15.01.2015

Accessible sur : www.rts.ch/emissions/temps-present/sante/6351902-la-pharmacie-malade-de-la-crise.html

O. BUGNON

Animation en direct du forum du magazine TEMPS PRESENT « La Pharmacie malade de la crise », RTS, 15.01.2015

Accessible sur : <http://www.rtsforum.ch/tp/2149-pharmacie-malade-crise>

O. BUGNON

Intervention dans le magazine L'ANTIDOTE « Banalisation des médicaments : une pilule amère », CANAL9,
6.4.2015

Accessible sur : <http://canal9.ch/banalisation-des-medicaments-une-pilule-amere/>

Cette émission a été reprise par LA TÉLÉ le 16.4.2015 - Accessible sur : <http://www.latele.ch/lantidote>

Cette émission est aussi accessible sur les sites internet suivants :

MAG Santé du site planète SANTE: <http://www.planetesante.ch/Mag-sante/Medicaments-et-Examens/Banalisation-des-medicaments-une-pilule-amere>

YouTube : https://www.youtube.com/watch?v=rF4ej_4dKZ0

Addiction Valais: <http://www.addiction-valais.ch/?page=medias&IDNews=128577>

AWARDS & DISTINCTIONS

THE SECOND PLACE (2nd) POSTER AWARD IS PRESENTED TO Mélanie Lelubre for the poster presentation entitled:
Interdisciplinary medication adherence program: the example of a university community pharmacy in Switzerland
Authors: Mélanie Lelubre, Susan Kamal, Noëllie Genre, Jennifer Celio, Séverine Gorgerat, Denise Hugentobler Hampai,
Aline Bourdin, Jérôme Berger, Olivier Bugnon, Marie Schneider at the European Symposium on Patient Adherence,
COMpliance and Persistence, ESPACOMP 2015 Friday and Saturday, the 13th-14th November 2015 in Prague, Czech
Republic

HOSPITAL PHARMACY (CHUV)

PROFESSOR FARSHID SADEGHIPOUR

GENERAL DESCRIPTION OF THE UNIT

The CHUV hospital pharmacy group works in close collaboration with the HUG pharmacy and other hospital pharmacies to develop research and education activities in hospital and clinical pharmacy.

The undergraduate education is mainly focused on a full course (32 h) of hospital pharmacy dispensed during the 3rd year of the baccalaurean cursus. A post-graduate education (MAS) in hospital pharmacy is also proposed since 1999 on the HUG and CHUV sites, in collaboration with the Valais hospital. This three years program is a complete specialization in hospital pharmacy, associating theoretical and practical teachings, as well as a one year research project.

CHUV pharmacy also proposes positions for PhD students in pharmaceutical sciences, either for pharmacists having achieved their MAS, or in direct access. The topics are diversified among the research fields described below.

For more information: CHUV pharmacy: <http://www.chuv.ch/phae> (32 h) of hospital pharmacy dispensed during the 3rd year of the baccalaurean cursus. A post-graduate education (MAS) in hospital pharmacy is also proposed since 1999 on the HUG and CHUV sites, in collaboration with the Valais hospital. This three years program is a complete specialization in hospital pharmacy, associating theoretical and practical teachings, as well as a one year research project.

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For more information: CHUV pharmacy: <http://www.chuv.ch/pha>The CHUV hospital pharmacy group works in close collaboration with the HUG pharmacy and other hospital pharmacies to develop research and education activities in hospital and clinical pharmacy.

The undergraduate education is mainly focused on a full course

SPECIFIC RESEARCH FIELDS

Drug risk management

- Prospective risk analysis in hospital processes (FMECA method)
- Impact of information technologies on patient safety at prescription, dispensing and administration of drugs
- Impact of human factors on error rates at different steps of the medication use process.

Optimization of clinical use of drugs

- Securing and optimizing the drug use process by developing a clinical pharmacy activity
- Evaluation and improvement of specific administration techniques (i.e. enteral feeding tubes, nebulisation, intrathecal).
- Continuity of care at hospital discharge Detection, prevention, management and evaluation of drug incompatibilities

Development of hospital pharmaceutical forms

- Development of ready-to-use formulations adapted to hospital specificities, and validation of production processes.
- Formulation of pediatric parenteral nutrition

Pharmaceutical analysis

- Development and validation of generic separation methods for the dosage of active ingredients contained in hospital pharmaceutical formulations. Pharmacoeconomics and pharmacoepidemiology

2015 AT A GLANCE

| | |
|------------------------------------|----|
| Publications with impact factor | 13 |
| Publications without impact factor | 2 |
| Posters presentations | 17 |
| Congresses & Symposia | 15 |
| Thesis presented in 2015 | 1 |

STAFF

PRIVAT DOCENT

Pierre VOIROL

RESEARCH AND TEACHING ASSISTANTS

Isabelle ANGELSTORF
Christel BRUGGMANN
Jean-Christophe DEVAUD

Anne FOURNIER-HENRY
David PALMERO
Hanitra RAVELOJAONA

ADMINISTRATIVE STAFF

Dominique HUNZIKER

PUBLICATIONS

THE TOP TEN JOURNALS IN THE FIELD (WITH IMPACT FACTOR)

| | |
|-----------------------------|------|
| Pharmacoeconomics | 2.86 |
| Eur. J. Clin. Pharmacol. | 2.74 |
| Ann. Pharmacother. | 2.57 |
| Pharmacotherapy | 2.31 |
| Qual. Saf. Health Care | 2.16 |
| J.Pharm. Pharmacol. | 2.03 |
| Am. J. Health-Syst. Pharm. | 1.98 |
| Swiss Med.Wkly | 1.82 |
| Int. J. Qual. Health Care | 1.79 |
| Int. J. Clin. Pharm. (IJCP) | 0.86 |

SCIENTIFIC PUBLICATIONS (WITH IMPACT FACTOR)

1. D. PALMERO, E. DI PAOLO, L. BEAUPORT, A. PANNATIER, J. F. TOLSA. A bundle with a performatted medical order sheet and an introductory course to reduce prescriptions errors in neonates. Eur J Pediatr. 2015 Aug 15. [Epub ahead of print]. 1.79
2. K. E. HERSBERGER, M. L. LAMPERT, K. A. MAES. Demonstrating the clinical pharmacist's activity: validation of an intervention oriented classification system Tremp RM., GSASA Working group on clinical pharmacy. Int J Clin Pharm. 2015 Dec;37 (6):1162-71. doi: 10.1007/s11096-015-0179-z. Epub 2015 Aug 20. 1.33
3. P. CRISINEL, M. VERGA, K. KOUAME, A. PITTET, C. REY-BELLET, O. FONTAINE, E. DI PAOLO, M. GEHRI. Demonstration of the effectiveness of zinc in diarrhoea of children living in Switzerland Eur J Pediatr. 2015 Aug;174(8):1061-7. doi: 10.1007/s00431-015-2512-x. Epub 2015 Mar 7. 1.79
4. N. PERROTTET, J. STEINRÜCKEN, M. CHAN, A. PANNATIER, O. BORENS, E. YUSUF, A. TRAMPUZ. Efficacy and safety of high-dose daptomycin (>6mg/kg) for complicated bone and joint infections and implant-associated infections caused by Gram-positive bacteria. International Journal of Antimicrobial Agents 2015 46:4 (475-482). 4.09

5. S. FLEURY-SOUVERAIN, M. MATTIUZZO, F. MEHL, S. NUSSBAUMER, L. BOUCHOUD, L. FALASCHI, M. GEX-FABRY, S. RUDAZ, F. SADEGHIPOUR, P. BONNABRY. Evaluation of chemical contamination of surfaces during the preparation of chemotherapies in 24 hospital pharmacies. *European Journal of Hospital Pharmacy* 2015 22:6 (333-341). 0.43
6. A. FOURNIER, P. EGGIMANN, J. L. PAGANI, J. P. REVELLY, L. DECOSTERD, O. MARCHETTI, A. PANNATIER, P. VOIROL, Y. A. QUE. Impact of the introduction of real-time therapeutic drug monitoring on empirical doses of carbapenems in critically ill burn patients. *Burns*, 2015 Feb. 10, pii: S0305-4179(15)00002-9, doi10.1016/j.burns.2015.01.001. 1.88
7. A. L. SIDLER-MOIX, E. R. DI PAOLO, U. DOLCI, M. BERGER-GRYLLAKI, J. COTTING, A. PANNATIER. Physicochemical aspects and efficiency of Albuterol nebulization: Comparison of three aerosol types in an in vitro pediatric model. *Respiratory Care*, 2015 Jan;60(1):38-46, DOI 10.4187/respcare.02490, Epub 2014 Dec 16. 1.83
8. L. CARREZ, L. BOUCHOUD, S. FLEURY-SOUVERAIN, C. COMBESCURE, L. FALASCHI, F. SADEGHIPOUR, P. BONNABRY. Reliability of chemotherapy preparation processes: Evaluating independent double-checking and computer-assisted gravimetric control. *J Oncol Pharm Pract*. 2015 Dec 3. pii: 1078155215620001. [Epub ahead of print]. 0.61
9. C. J. FISCHER FUMEAUX, C. STADELMANN DIAW, D. PALMERO, F. M'MADI, J. F. TOLSA. Sources d'exposition aux phtalates dans une unité de soins néonataux 36. *Archives de Pédiatrie*, Volume 22, Issue 2, February 2015, pp. 203-210. 0.40
10. E. DI PAOLO, S. SPAGGIARI, A. PANNATIER, F. SADEGHIPOUR, I. ROCHAT, G. HAFEN. Stop using the flotation technique and start weighing salbutamol pressurised metered-dose inhalers without dose counters. *Swiss Med Wkly*. 2015 Jul 31;145:w14162. doi: 10.4414/smw.2015.14162. eCollection 2015. 2.08
11. G. GAGNON, P. VOIROL, L. SOGUEL, O. BOULAT, M. BERGER. Trace element monitoring in the ICU: quality and economic impact of a change in sampling practice *Clin Nutr*. 2015 Jun;34(3):422-7. doi: 10.1016/j.clnu.2014.04.012. Epub 2014 May 9. 3.41
12. P. VOIROL, M. BERGER, A. PANNATIER, P. EGGIMANN, F. SADEGHIPOUR. Visual compatibility of insulin aspart with intravenous drugs frequently used in ICU, *Eur J Hosp Pharm*, 2015; 22:2 (123-124). 0.43
13. V. Humbert-Delaloye, M. Berger-Gryllaki, P. Voirol, B. Testa, A. Pannatier, *Eur J Hosp Pharm* 2015;22:56–58. 0.43

SCIENTIFIC PUBLICATIONS (WITHOUT IMPACT FACTOR)

1. S. HANNOU, A. PANNATIER, A. VON GUNTEN, P. VOIROL, F. SADEGHIPOUR, M. L. WEIBEL, J. F. MALL, I. DE GIORGI. L'intervention pharmaceutique dans une unité de psychiatrie permet de réduire les prescriptions inappropriées / Die pharmazeutische Intervention auf einer psychiatrischen Station erlaubt die Reduktion inadäquater Verschreibungen. *pharmaJournal*, January 2, 2015.
2. T. PHILBET, E. R. DI PAOLO. Portrait d'Ermindo Di Paolo. *pharmaJournal*, January 3, 2015

PRESENTATIONS

POSTERS PRESENTATIONS

1. A. ALVES DOS SANTOS, E. R. DI PAOLO, L. PIQUILLOUD, D. THÉVOZ, P. JOLLIET, P. VOIROL F. SADEGHIPOUR. Quelle performance pour la nébulisation de tobramycine chez des patients sous ventilation mécanique? Un modèle in vitro. *Congress GSASA, Zürich 2015*.
2. I. ANGELSTORF, M. GRYLLAKI-BERGER, D. PALMERO, C. FISCHER FUMEAUX, F. SADEGHIPOUR. Evaluation de la qualité des fabrications de nutrition parentérale (NP) préparées dans le service de Néonatalogie; *Congress GSASA, Zürich, November 26-27, 2015*.

3. I. ANGELSTORF, M. GRYLLAKI-BERGER, D. PALMERO, C. FISHER-FUMEAUX, F. SADEGHIPOUR. Evaluation de la qualité des fabrications de nutrition parentérale préparées dans un service de néonatalogie; Journées francophones de nutrition (JFN), Marseille, December 2015.
4. L. BERCHIER, I. DE GIORGI SALAMUN, P. BEAUPÈRE, B. GRAVIER, F. SADEGHIPOUR. Sécurisation du circuit du médicament et problématique de la « déblisterisation » en milieu carcéral. Congress GSASA, Zürich 2015
5. J. C. DEVAUD, M. M. BERGER, A. PANNATIER, F. SADEGHIPOUR, P. VOIROL, Does the type of your parenteral lipids matter? A clinical answer in critical illness. ACCP Global Conference on Clinical Pharmacy, San Francisco (USA), October 2015.
6. E. R. DI PAOLO, S. SPAGGIARI, A. PANNATIER, F. SADEGHIPOUR, I. ROCHAT, G. M. HAFEN. Stop using the flotation technique and start weighing salbutamol pressurised metered-dose inhalers without dose counters. Journée de Recherche du DMCP ; CHUV, Lausanne, January 2015.
7. C. FAUCHÈRE, M. BERGER, G. PODILSKY, F. SADEGHIPOUR. Détermination du volume minimal de rinçage des tubulures Cyto-Ad-Z via un test d'absorption UV-visible, Congress GSASA, Zürich 2015.
8. A. FOURNIER, P. EGGIMANN, O. PANTET, M. KRÄHENBÜHL, C. L. BONNEMAIN, C. FOURNIER, J. L. PAGANI, J. P. REVELLY, E. DUPUIS-LOZERON, F. SADEGHIPOUR, A. PANNATIER, P. VOIROL, Y. A. QUE. Antibiotics' consumption to early detect epidemics of P. aeruginosa in a Burn center: a paradigm shift in the epidemiological surveillance of nosocomial infections ; ICPIIC, Amsterdam, 2015.
9. A. FOURNIER, P. EGGIMANN, O. PANTET, M. KRÄHENBÜHL, C. L. BONNEMAIN, C. FOURNIER, J. L. PAGANI, J. P. REVELLY, E. DUPUIS-LOZERON, F. SADEGHIPOUR, A. PANNATIER, P. VOIROL, Y. A. QUE. Antibiotic consumption to early detect epidemics of P. aeruginosa in a burn center: a paradigm shift in the epidemiological surveillance of P. aeruginosa nosocomial infections; Congress GSASA, Zürich 2015.
10. M. C. GROUZMANN, G. PODILSKY, F. SADEGHIPOUR. Evolution de la préparation des anticancéreux depuis 25 ans dans une pharmacie centrale d'un hôpital universitaire, 19^{ème} JFSPH, Mâcon, France, 2015.
11. N LAGHRIBI, C LEBLAND, M. C GROUZMANN, G PODILSKY, F SADEGHIPOUR. Evaluation des modes de défaillances d'un logiciel de production utilisé dans une pharmacie centrale d'un CHU: utilisation de l'AMDEC. Congress GSASA, Zürich 2015.
12. M. MARQUIS, J. C. DEVAUD, B. HIRSCHI, F. SADEGHIPOUR. Recommandations sur la gestion des dispositifs médicaux en pharmacie hospitalière. Congress GSASA, Zürich 2015.
13. B. MOSIMANN, A. VON GUNTEN, A. PANNATIER, P. VOIROL, B. HIRSCHI, J. MATHYS, I. DE GIORGI, F. SADEGHIPOUR. Off label use of psychotropic drugs in elderly patients with dementia in a psychogeriatric unit; 20th Congress of the EAHP, Hambourg, march 25-27, 2015.
14. C. NACHAR, A. GARNIER, O. LAMY, P. VOIROL, F. SADEGHIPOUR; La réconciliation médicamenteuse: utilité et réalisation; Congress GSASA, Zürich 2015.
15. J. RIEGER, G. PODILSKY, C. LEBLAND, F. SADEGHIPOUR. E-learning pratique pour la formation des opérateurs à la production des nutriments parentéraux; Journées francophones de nutrition (JFN), Marseille, December 2015.
16. S. SPAGGIARI, G. M. HAFEN, L. DE GOUMOENS, M. GEHRI, A. PANNATIER, E. R. DI PAOLO. Validation of inhalation techniques videotaped in asthmatic children under 5 years. Journée de Recherche du DMCP ; CHUV, Lausanne, Jan 2015. 20th Congress of the European Association of Hospital Pharmacists; Hamburg (D), March 2015.
17. C. VAN DE VELDE, M. L. MOTTIER, J. C. DEVAUD, F. SADEGHIPOUR. Optimisation de l'accès à l'information lors des Services de Piquets: Evaluation d'une Plateforme Collaborative d'Echange en Ligne. Congress GSASA, Zürich 2015.

CONGRESSES & SYMPOSIA

1. P. VOIROL. Cours Société Suisse de Nutrition Clinique, CHUV, Lausanne, September 2015 Angelstorf I. ; Quelle production pour quel volume de production ?, Journées francophones de nutrition (JFN), Marseille, December 2015.
2. J. C. DEVAUD. Lipides en nutrition parentérale : historique et impact des changements sur les patients Journée de nutrition en soins intensifs, CHUV, Lausanne, November 2015
3. E. DI PAOLO. Optimization of aerosoltherapy in mechanical ventilation 5th European Respiratory Care Association Congress and 14th International Conference on Home Mechanical Ventilation, Lyon, March 2015.
4. A. FOURNIER, P. EGGIMANN, O. PANTET, M. KRÄHENBÜHL, CL. BONNEMAIN, C. FOURNIER, J. L. PAGANI, J. P. REVELLY, E. DUPUIS-LOZERON, F. SADEGHIPOUR, A. PANNATIER, P. VOIROL, Y. A. QUE. Antibiotic consumption to early detect epidemics of *P. aeruginosa* in a burn center: a paradigm shift in the epidemiological surveillance of nosocomial infections. Congress EBA, Hannover, September 2015
5. A. FOURNIER, P. EGGIMANN, O. PANTET, M. KRÄHENBÜHL, CL. BONNEMAIN, C. FOURNIER, J. L. PAGANI, J. P. REVELLY, E. DUPUIS-LOZERON, F. SADEGHIPOUR, A. PANNATIER, P. VOIROL, Y. A. QUE. Antibiotic consumption to early detect epidemics of *P. aeruginosa* in a burn center: a paradigm shift in the epidemiological surveillance of nosocomial infections. Congress SSMI, Interlaken, September 2015
6. A. FOURNIER. Antibiotic consumption to early detect epidemics of *Pseudomonas aeruginosa* in a burn center: a paradigm shift in the epidemiological surveillance of *Pseudomonas aeruginosa* nosocomial infections; 1st meeting national of clinical pharmaceutical sciences”, PMU-CHUV, Lausanne September 2015
7. A. GARNIER, S. FURRER, N. BONVIN, V. PRUDENT, C. NACHAR, N. ROUILLER LARPIN, E. LÉCUREUX, P. VOIROL, L. HERZIG, A. C. GRIESSER, O. LAMY. 13 month of multimodal discharge plan for patients with heart failure: preliminary results of the LEAR-HF study, , 83rd Annual Meeting of the Swiss Society of Internal Medicine (SGIM/SSIM), Basel May 20-22, 2015
8. G. PODILSKY. Etat des lieux des outils de semi-automatisation de la production des alimentations parentérales, Forum romand sur l’automatisation en milieu hospitalier, Lausanne, March 2015
9. G. PODILSKY. Accident et événement indésirable dus aux cytotoxiques, CAS en pharmacie clinique, EPGL, March 2015
10. J. RIEGER. Atelier de nutrition parentérale, SSNC Journée lausannoise de nutrition clinique, CHUV, Lausanne, September 2015
11. F. SADEGHIPOUR. Safety in drug administration; can we afford not to switch to pre filled syringes? Hospital Pharmacist perspectives. Euroanaesthesia 2015, Berlin (D), June 2015
12. F. SADEGHIPOUR, P. HILD, D. MEYER. Qualification d’un Isolateur en Pharmacotechnie Hospitalière, Workshop; Congress GERPAC, Hyères, October 2015
13. B. TESTA. The Concept of Stereoselectivity in Pharmacology: A Candle or a Spotlight?; IXth Joint Meeting in Medicinal Chemistry, Athena University, June 2015.
14. B. TESTA. Stereoselectivity in Drug Metabolism: Toy or Tool? 44th Drug Metabolism Discussion Group Open Meeting, Robinson College, Cambridge University (UK), September 2015.
15. P. VOIROL. Chairman, Journée de Nutrition en Soins Intensifs, CHUV, Lausanne, November 2015

CONTINUING EDUCATION & OPEN TO THE PUBLIC LECTURES

1. F. SADEGHIPOUR, G. PODILSKY, L. BOUCHOUD, P. BONNABRY. “Maîtrise de la fabrication en milieu aseptique”. Pharmacies des HUG et du CHUV, Geneva, 2015

2. [F. SADEGHIPOUR. BPF pour les préparations radiopharmaceutiques; Cours agréés par l'OFSP pour techniciens, CHUV, Lausanne, October 2015](#)
3. [E. DI PAOLO. Enseignements coordonnés: nutrition chez le nourrisson hospitalisé \(16h\). Encadrement d'étudiants du master en pharmacie \(4th year\), EPGL, Geneva, December 11, 2015.](#)
4. [E. DI PAOLO. Pharmacologie et médicaments inhalés \(2x45 min\). Cours aux étudiants du bachelor en physiothérapie \(second year\). HESAV, Lausanne, September 29, 2015.](#)
5. [E. DI PAOLO. Co-supervision du travail de maîtrise en pharmacie de A. Alves dos Santos, Master de pharmacien, EPGL, UNIGE, 2015. Evaluation dans un modèle in vitro de la quantité inhalée de tobramycine chez des patients sous ventilation mécanique \(avec PVOI\).](#)
6. [E. DI PAOLO. Sources d'information et prescription des médicaments en pédiatrie \(45 min\). Cours aux médecins-assistants du DMCP, HEL-CHUV, May 7, 2015 and November 5, 2015.](#)
7. [E. DI PAOLO. Sources d'information sur les médicaments, interactions et incompatibilités médicamenteuses \(75 min\). Cours aux médecins-assistants des Soins intensifs de pédiatrie, May 27, 2015 and November 18, 2015.](#)
8. [E. DI PAOLO. Individualisation thérapeutique: pédiatrie Cours aux étudiants du master en pharmacie \(4th year\). Pharmaceutical school Geneva-Lausanne \(EPGL\), Geneva, October 9, 2015.](#)
9. [E. DI PAOLO. Incompatibilités physico-chimiques des médicaments injectables et administration des médicaments par sonde \(45 min\). Cours aux infirmiers en Soins intensifs. CHUV, October 9, 2015.](#)
10. [E. DI PAOLO. Sources d'information et prescription des médicaments en pédiatrie \(45 min\). Cours aux médecins-assistants du DMCP, HEL-CHUV, May 7, 2015 and November 5, 2015.](#)
11. [E. DI PAOLO. Sources d'information sur les médicaments, interactions et incompatibilités médicamenteuses \(75 min\). Cours aux médecins-assistants des Soins intensifs de pédiatrie, May 27, 2015 and November 18, 2015.](#)
12. [S. PROT-LABARTHE, E. DI PAOLO. Etudes de cas en pédiatrie \(180 min\). CAS en pharmacie clinique. University of Grenoble and Geneva. HUG, Geneva, June 17, 2015.](#)
13. [A. FOURNIER. Alimentation entérale par sonde et administration des médicaments par sonde : Médicaments cytotoxiques ; Journée de formation Soins Infirmiers, DAL-DNC; CHUV, Lausanne, June 2015](#)
14. [A. FOURNIER. Alimentation entérale par sonde et administration des médicaments par sonde : Médicaments et horaire d'administration; Journée de formation Soins Infirmiers, DAL-DNC ; CHUV, Lausanne, June 2015](#)
15. [A. FOURNIER. Alimentation entérale par sonde et administration des médicaments par sonde : Les anticoagulants ; Journée de formation Soins Infirmiers, DAL-DNC ; CHUV, Lausanne, June 2015](#)
16. [A. FOURNIER. « Séance-Flash », formation continue équipe CPR, CHUV, Lausanne, August 2015](#)
17. [C. NACHAR. Les médicaments de la douleur, Réseau santé-région Lausanne, April 27, 2015](#)
18. [C. NACHAR. Le mieux est l'ennemi du bien, Demi-journée de formation de pharmacie clinique GSASA 11.06.2015 ; Teaching round des médecins-assistants du service de Médecine interne, CHUV, Lausanne, December 15, 2015](#)
19. [N. PERROTTET. DM et insulinothérapie, Séminaire MAS : Dispositifs médicaux ; CHUV, Lausanne, September, 2015](#)
20. [B. TESTA. The Biochemistry of Drug Metabolism; PhD school, department of Pharmaceutical Sciences, University of Milan, March 2015, University of Naples, March 2015](#)
21. [P. VOIROL. CAS de pharmacie clinique, Module 4 Organisation](#)
22. [P. VOIROL. CAS de pharmacie clinique, Spécificités de la pharmacothérapie en soins intensifs ; Geneva, March 2015](#)
23. [P. VOIROL. CAS de pharmacie clinique, Support nutritionnel et prophylaxie de l'ulcère de stress en soins intensifs ; Geneva, March 2015](#)

24. P. VOIROL. CAS de pharmacie clinique, Futilités des traitements, recherche clinique et compassionate use : quelle place en fin de vie ; Geneva, March 2015
25. P. VOIROL. Formation en pharmacie clinique : aujourd'hui et demain, en Suisse, Séminaire MAS «Assistance pharmaceutique et pharmacie clinique», HUG, Geneva, June 2015

THESIS PRESENTED

INTRA-MUROS THESIS

1. Jean-Christophe DEVAUD
Utilisation rationnelle des émulsions parentérales dans un Service de soins intensifs adulte.
University of Geneva
Thesis N° 4884 – November 23, 2015
Directors : Profs P. BONNABRY, F. SADEGHIPOUR, UniGe

HOSPITAL PHARMACY (HUG)

PROFESSOR PASCAL BONNABRY

GENERAL DESCRIPTION OF THE UNIT

The HUG hospital pharmacy group works in close collaboration with the CHUV pharmacy and other hospital pharmacies to develop research and education activities in hospital and clinical pharmacy. The undergraduate education is mainly focused on a full course (32 h) of hospital pharmacy dispensed during the 3rd year of the baccalaurean cursus. A post-graduate education (MAS) in hospital pharmacy is also proposed since 1999 on the HUG and CHUV sites, with a collaboration with the Valais hospital. This three years program is a complete specialization in hospital pharmacy, associating theoretical and practical teachings, as well as a research project. HUG pharmacy also proposes positions for PhD students in pharmaceutical sciences, either for pharmacists having achieved their MAS, or in direct access. The topics are diversified among the research fields described below. For more information: HUG pharmacy: <http://pharmacie.hug-ge.ch> (32 h) of hospital pharmacy dispensed during the 3rd year of the baccalaurean cursus. A post-graduate education (MAS) in hospital pharmacy is also proposed since 1999 on the HUG and CHUV sites, with a collaboration with the Valais hospital. This three years program is a complete specialization in hospital pharmacy, associating theoretical and practical teachings, as well as a research project. HUG pharmacy also proposes positions for PhD students in pharmaceutical sciences, either for pharmacists having achieved their MAS, or in direct access. The topics are diversified among the research fields described below. For more information: HUG pharmacy: <http://pharmacie.hug-ge.ch>

The HUG hospital pharmacy group works in close collaboration with the CHUV pharmacy and other hospital pharmacies to develop research and education activities in hospital and clinical pharmacy. The undergraduate education is mainly focused on a full course

SPECIFIC RESEARCH FIELDS

Drug risk management

- ✚ Prospective risk analysis in hospital processes (FMECA method)
- ✚ Use of simulation to analyze factors that may influence the rate of preparation and administration errors
- ✚ Interests and risks of information technologies in risk management at the hospital.

Optimization of clinical use of drugs

- ✚ Securing the drug use process in high risk care units
- ✚ Detection, prevention, management and evaluation of drug incompatibilities
- ✚ Development of decision support, by a clinical pharmacy activity or the dematerialization in computerized systems
- ✚ Continuity of care at hospital discharge

Development of hospital pharmaceutical forms

- ✚ Validation of production processes
- ✚ Development of ready-to-use pharmaceutical forms
- ✚ Formulation of pediatric parenteral nutritions

Pharmaceutical analysis

- ✚ Development and validation of generic separation methods for the dosage of active ingredients contained in hospital pharmaceutical formulations.
- ✚ Analysis of cytotoxic drugs (quality control and traces in the environment)
- ✚ Analysis of monoclonal antibodies

Pharmacoeconomics and pharmacoepidemiology

- ✚ Analysis of drug use by means of time series methodology
 - ✚ Modeling the use of antibiotics in relation with the evolution of resistance
- Evaluation of the spill-over effect between the hospital and the community settings

2015 AT A GLANCE

| | |
|------------------------------------|----|
| Publications with impact factor | 8 |
| Publications without impact factor | 4 |
| Posters presentations | 19 |
| Congresses & Symposia | 11 |
| Projects with industries | 3 |
| Ph.D. Thesis presented in 2015 | 1 |

STAFF

POSTDOCTORAL SCHOLARS

Aude DESNOYER

RESEARCH AND TEACHING ASSISTANTS

Clare BECHET

Mapi FLEURY

Anne-Laure BLANC

Olivia FRANCOIS

Delphine CARLI

Nicolas GUICHARD

Laurent CARREZ

INTERNSHIP STUDENTS – Co-SUPERVISION (CO-TUTELLE)

Anne FOURNIER-HENRY

Hanitra RAVELOJAONA

ADMINISTRATIVE STAFF

Dominique HUNZIKER

RESEARCH FUNDS

INDUSTRY AND ASSIMILATED

| Code | Service - Development - Research | Total Amount for 2015 (CHF) |
|----------|---|-----------------------------|
| Pharm-ED | e-learning en pharmacie Hospitalière pour les pays en développement | 110'000 |
| | Impact des technologies de l'information sur la sécurité du circuit du médicament | 30'000 |
| | Développement de supports de formation numériques (e-learning) à l'usage du personnel médico-soignant du département de l'enfant et de l'adolescent (DEA) | 30'000 |
| | total | 170'000 |

PUBLICATIONS

THE TOP TEN JOURNALS IN THE FIELD (WITH IMPACT FACTOR)

| | |
|-----------------------------|------|
| Pharmacoeconomics | 2.86 |
| Eur. J. Clin. Pharmacol. | 2.74 |
| Ann. Pharmacother. | 2.57 |
| Pharmacotherapy | 2.31 |
| Qual. Saf. Health Care | 2.16 |
| J.Pharm. Pharmacol. | 2.03 |
| Am. J. Health-Syst. Pharm. | 1.98 |
| Swiss Med.Wkly | 1.82 |
| Int. J. Qual. Health Care | 1.79 |
| Int. J. Clin. Pharm. (IJCP) | 0.86 |

SCIENTIFIC PUBLICATIONS (WITH IMPACT FACTOR)

1. L. GSCHWIND, V. ROLLASON, F. BOEHLER, M. REBSAMEN, CH. COMBESCURE, A. MATTHEY, P. BONNABRY, P. DAYER, J. DESMEULES. P-glycoprotein : a clue to vitamin K antagonist stabilization. *Pharmacogenomics* 2015;16:129-36. 3.40
2. M. ANASTASI, S. RUDAZ, T. QUERUAU LAMERIE, P. ODOU, P. BONNABRY, S. FLEURY-SOUVERAIN. Efficacy of two cleaning solutions for the decontamination of 10 antineoplastic agents in the biosafety cabinets of a hospital pharmacy. *Annals of Occupational Hygiene* 2015;59:895-908. 2.10
3. S. DAOUK, N. CHÈVRE, N. VERNAZ, P. BONNABRY, P. DAYER, Y. DAALI, S. FLEURY-SOUVERAIN. Priorization methodology for the monitoring of active pharmaceutical ingredients in hospital effluents. *Journal of Environmental Management* 2015;160:324-32. 2.70
4. A. DE TOLEDO, P. BONNABRY, J. M. GASPOZ, J. P. DE TOLEDO, I. GUESSOUS. A web-based cardiovascular risk assessment via pharmacists : a feasibility and validation study. *Open Journal of Preventive Medicine* 2015;5:348-58. 0.61
5. A. STAINES, C. MATTIA, N. SCHAAD, E. LÉCUREUX, P. BONNABRY. Impact of a Swiss adverse drug event prevention collaborative. *Journal of Evaluation in Clinical Practice* 2015;21:717-26. 1.6
6. B. GUIGNARD, P. BONNABRY, A. PERRIER, P. DAYER, J. DESMEULES, C. F. SAMER. Drug-related problems identification in general internal medicine : the impact and role of the clinical pharmacist and pharmacologist. *European Journal of Internal Medicine* 2015;26:399-406. 2.3
7. C. BÉCHET, P. BONNABRY, R. PICHON. Improvement of customer focus in a Swiss regional hospital pharmacy : a mixed method study. *European Journal of Hospital Pharmacy* 2015;22:267-73. 0.43
8. S. FLEURY-SOUVERAIN, M. MATTIUZZO, F. MEHL, S. NUSSBAUMER, L. BOUCHOUD, L. FALASCHI, M. GEX-FABRY, S. RUDAZ, F. SADEGHIPOUR, P. BONNABRY. Evaluation of chemical contamination of surfaces during the preparation of chemotherapies in 24 hospital pharmacies. *European Journal of Hospital Pharmacy* 2015;22:333-41. 0.43

SCIENTIFIC PUBLICATIONS (WITHOUT IMPACT FACTOR)

1. S. O. DJERMOUNE, M. OUKKAL, K. BOUZID, R. DENINE, P. BONNABRY. Utilisation d'une méthode d'analyse prospective des risques pour améliorer la sécurité du processus chimiothérapie anticancéreuse dans un service d'oncologie médicale en Algérie. *Le Pharmacien Hospitalier et Clinicien* 2015;51:40-50.

2. L. CARREZ, L. BOUCHOUD, S. FLEURY-SOUVERAIN, CH. COMBESCURE, L. FALASCHI, F. SADEGHIPOUR, P. BONNABRY. Reliability of chemotherapy preparation processes : evaluating independent double-checking and computer-assisted gravimetric control. *Journal of Oncology Pharmacy Practice* 2015; DOI: 10.1177/1078155215620001.
3. F. PESENTI, A. L. BLANC, S. MÜHLEBACH, P. BONNABRY, N. WIDMER. Réponse pharmaceutique aux situations sanitaires extraordinaires en milieu hospitalier. *Swiss Review of Military and Disaster Medicine* 2015;2:43-7.
4. M. BRETON, A. GUÉRIN, P. BONNABRY, J. F. BUSSIÈRES. Rôles et retombées des activités pharmaceutiques: des informations précieuses sous-utilisées en Suisse. *PharmaJournal* 2015;23:19-22.

PRESENTATIONS

POSTERS PRESENTATIONS

1. F. WONG, J. DUQUESNE, B. BONAN, P. BONNABRY, B. DECAUDIN, M. R. RELIEU. COLLOMP. Simulation et travail en équipe: apports en pharmacotechnie (préparation de chimiothérapies). 4^{ème} Colloque francophone de simulation en santé, Paris, 2015.
2. M. FLEURY, L. FALASCHI, P. BONNABRY. Implementing chemotherapy dose-banding using retrospective data analysis and exponential calculus. 20th Congress of the European Association of Hospital Pharmacists, Hambourg, 2015.
3. C. FONZO-CHRISTE, A. PARRON, C. COMBESCURE, R. PFISTER, P. RIMENSBERGER, P. BONNABRY. Peripheral infusions in neonatal and pediatric intensive care : extravasation rate and risk factors. 20th Congress of the European Association of Hospital Pharmacists, Hambourg, 2015.
4. C. BÉCHET, L. MERMINOD, P. BONNABRY, R. PICHON. Improvement of customer focus using a quality requirement self-assessment. 20th Congress of the European Association of Hospital Pharmacists, Hambourg, 2015.
5. A. S. VERREY, L. CARREZ, L. FALASCHI, L. BOUCHOUD, P. BONNABRY. Evaluation of the performance of an automated system for the preparation of cytotoxic bags. 20th Congress of the European Association of Hospital Pharmacists, Hambourg, 2015.
6. N. SIMON, M. VASSEUR, M. PINTURAUD, M. SOICHOT, C. RICHEVAL, L. HUMBERT, P. BONNABRY, D. ALLORGE, B. DÉCAUDIN, P. ODOU. Using a closed-system transfer device leads to a better control of the occupational exposure in routine practice. 20th Congress of the European Association of Hospital Pharmacists, Hambourg, 2015.
7. S. VON GRÜNIGEN, P. BONNABRY. Pharm-Ed: plateforme éducative et collaborative pour une gestion efficiente, sûre et rationnelle des médicaments dans les hôpitaux des pays en développement. 19^{ème} Journée Franco-Suisse de Pharmacie Hospitalière, Macon, 2015.
8. C. FAUCHÈRE, T. RUDOLF VON ROHR, S. FLEURY, L. BOUCHOUD, C. FONZO-CHRISTE, L. CINGRIA, P. BONNABRY. Sécurisation de la fabrication de nutriments parentéraux pédiatriques: ré-évaluation d'une analyse de risque. 19^{ème} Journée Franco-Suisse de Pharmacie Hospitalière, Macon, 2015.
9. D. CARLI-GHABAROU, B. GUIGNARD, P. BONNABRY, C. LOVIS. Can clinical pharmacist interventions be substituted by a clinical decision support system in the electronic patient record? 19^{ème} Journée Franco-Suisse de Pharmacie Hospitalière, Macon, 2015.
10. O. HAGON, T. TARTY TYEE, J. MULBAH, M. MASSAQUOI, B. DAHN, L. BENGALY, P. BONNABRY, L. CINGRIA, M. B. MATTHEY-KHOUITI, S. WEBER, A. DEUBLE, S. WALLIS, P. COMTESSE, D. PITTET. Local production of alcohol based handrub solution (ABHS) in Liberia during the Ebola outbreak. International Consortium for Prevention and Infection Control (ICPIC), Geneva, 2015.
11. F. PESENTI, A. L. BLANC, S. MÜHLEBACH, P. BONNABRY, N. WIDMER. Role of hospital pharmacy in response to emergencies and disasters. 75th FIP World Congress of Pharmacy and Pharmaceutical Sciences, Düsseldorf, 2015.

12. S. VON GRÜNIGEN, P. BONNABRY. Pharm-Ed: a hospital pharmacy educational and collaborative platform for developing countries. 75th FIP World Congress of Pharmacy and Pharmaceutical Sciences, Düsseldorf, 2015.
13. V. ROLLASON, N. VERNAZ, L. ADLERE, P. BONNABRY, J. DESMEULES. Snapshot of prescribing practice for clopidogrel and esomeprazole co-prescription in a university hospital. 116th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, New Orleans, 2015.
14. S. SENHAJI, A. EXQUIS, L. CARREZ, L. FALASCHI, S. FLEURY-SOUVERAIN, P. BONNABRY. Evaluation d'un dispositif pour le contrôle qualité des chimiothérapies au sein de l'unité de production. Congress GSASA, Zürich, 2015.
15. N. YANKOVA, L. GSCHWIND, C. GUÉGUÉNIAT-DUPESSEY, C. FONZO-CHRISTE, P. BONNABRY. Sécurité d'administration des médicaments injectables : évaluation de l'apport d'un e-learning au travers d'une "chambre des erreurs". Congress GSASA, Zürich, 2015.
16. E. ANÇAY, J. ERARD, P. BONNABRY, N. WIDMER, M. L. WEIBEL. Analyse et amélioration de la préparation automatisée des semainiers pour EMS. Congress GSASA, Zürich, 2015.
17. L. CARREZ, L. BOUCHOUD, S. FLEURY SOUVERAIN, C. COMBESCURE, L. FALASCHI, P. BONNABRY. Impact de la surcharge de travail sur la qualité des préparations en chimiothérapie : étude pilote. Congress GSASA, Zürich, 2015 (poster primé).
18. F. PESENTI, A. BLANC, S. MÜHLEBACH, P. BONNABRY, N. WIDMER. Role and responsibility of hospital pharmacy in emergencies and disasters. Congress GSASA, Zürich, 2015.
19. E. LÉCUREUX, A. STAINES, C. MATTIA, N. SCHAAD, P. BONNABRY. Assessment of a Swiss adverse drug event prevention collaborative. The 27th annual IHI National Forum, Orlando, 2015.

CONGRESSES & SYMPOSIA

1. P. LE PAPE, S. VON GRÜNIGEN, L. FALASCHI, P. BONNABRY. e-Learning en pharmacie hospitalière pour les pays en développement : évaluation d'une leçon sur les médicaments cytotoxiques. 19^{ème} Journée Franco-Suisse de Pharmacie Hospitalière, Macon, 2015 (communication orale primée).
2. A. DESNOYER, B. GUIGNARD, A. BLANC, V. MARTINEZ-POURCHER, M. BESSON, C. SAMER, C. FONZO-CHRISTE, A. PERRIER, J. DESMEULES, P. BONNABRY. Développement d'un outil francophone de détection des prescriptions inappropriées chez l'adulte hospitalisé en médecine interne. 19^{ème} Journée Franco-Suisse de Pharmacie Hospitalière, Macon, 2015 (communication orale primée).
3. A. S. VERREY, L. CARREZ, L. FALASCHI, L. BOUCHOUD, P. BONNABRY. Evaluation des performances de l'automate PharmaHelp pour la préparation de poches injectables de cytotoxiques. Hopipharm, Reims, 2015 (communication orale primée).
4. A. L. BLANC, T. FUMEAUX, J. STIRNEMANN, M. CARPENTIER, A. OURHAMOUNE, J. DESMEULES, P. CHOPARD, A. PERRIER, N. SCHAAD, P. BONNABRY. Hospital potentially avoidable readmissions in general internal medicine : elaboration of predictive score. Congress GSASA, Zürich, 2015 (communication orale primée).
5. F. FEUTRY, A. EXQUIS, L. FALASCHI, N. GUICHARD, P. ODOU, P. BONNABRY, S. FLEURY SOUVERAIN. Evaluation d'un nouveau système de contrôle qualité des chimiothérapies par spectrophotométrie UV-visible (DrugLog). 18^{ème} Journée du GERPAC, Giens, 2015.
6. P. O. LANG, B. GUIGNARD, A. DESNOYER. Inspired by STOPP/START: a new prescription screening tool for adult patients. 20th Congress of the European Association of Hospital Pharmacists, Hambourg, 2015.
7. P. BONNABRY. Automation: a way to improve the reliability and the efficiency of cytotoxic preparation. 20th Congress of the European Association of Hospital Pharmacists, Hambourg, 2015.
8. P. BONNABRY. Intérêt de la simulation en pharmacotechnie. 19^{ème} Journée Franco-Suisse de Pharmacie Hospitalière, Macon, 2015.
9. C. FONZO-CHRISTE. Basic principles of PK and drug administration in cardiac NICU/PICU. 4th EPNCIC, Montreux, 2015.

10. P. BONNABRY. e-learning projects available for developing countries. 75th FIP World Congress of Pharmacy and Pharmaceutical Sciences, Düsseldorf, 2015.
11. P. BONNABRY. Automation to improve the safety and the efficiency of drug management. 8th Medication Safety Conference, Abu Dhabi, 2015.

CONTINUING EDUCATION & OPEN TO THE PUBLIC LECTURES

1. P. BONNABRY. IT to optimize the medication process at the hospital, Berner Fachhochschule, Geneva, 2015
2. P. BONNABRY. "Analyse prospective des risques: application de la méthode AMDEC". Certificat qualité des soins, University of Geneva, Geneva, 2015
3. P. BONNABRY. "Analyse prospective des risques: application de la méthode AMDEC". D.U.E.C. préparations aseptiques, Master techniques pharmaceutiques hospitalière. University of Lille, Lille, 2015
4. P. BONNABRY. "Analyse prospective des risques: application de la méthode AMDEC". Diplôme universitaire (DU) d'analyse et de gestion des risques en santé. University René Descartes, Paris, 2015
5. P. BONNABRY. " Stratégie de sécurisation du circuit du médicament : apport des technologies de l'information ". Diplôme universitaire (DU) d'analyse et de gestion des risques en santé, University René Descartes, Paris, 2015
6. P. BONNABRY, F. SADEGHIPOUR, et al. Maîtrise de la fabrication en milieu aseptique ". Pharmacies des HUG et du CHUV, Geneva, 2015
7. P. BONNABRY. "Enjeux futurs et implication pour la pharmacie clinique". CAS en pharmacie clinique, University of Geneva, University of Grenoble, Geneva, 2015
8. L. BOUCHOUD. "Le rôle de la pharmacie dans les essais cliniques". BPEC, Cours des HUG / Faculty of medicine, Children's Hospital, Geneva, 2015
9. P. BONNABRY. Automation to improve the safety and the efficiency of drug management BD Carefusion, Singapore, 2015
10. P. BONNABRY. Préparation des chimiothérapies : éviter les erreurs ou les détecter par des méthodes robustes. BD, 1^{ère} journée, Paris, 2015
11. P. BONNABRY. Sécurisation du circuit des chimiothérapies : de la prescription à l'administration Séminaire de cancérologie digestive, Vittel, 2015
12. P. BONNABRY. Que faut-il penser des génériques ? Colloques du mardi des HUG, Geneve, 2015

THESIS PRESENTED

INTRA-MUROS THESIS

1. Jean-Christophe DEVAUD
Utilisation rationnelle des émulsions parentérales dans un Service de soins intensifs adulte.
University of Geneva
Thesis N° 4884 – Novembre 23, 2015
Directors : Profs P. BONNABRY, F. SADEGHIPOUR, UniGe

RADIO TELEVISION INTERVENTION

P. BONNABRY

RTS, CQFD, 20 février 2015

Invite du jour

P. BONNABRY

RTS, TTC, 20 avril 2015

Les cadeaux aux médecins

P. BONNABRY

Yes FM

Pharmacie des HUG, partie I, 12 mai 2015

Pharmacie des HUG, partie II, 19 mai 2015

Pharmacie publique aux HUG, 26 mai 2015

PHD PROGRAM



DIRECTOR: PROF. YOGESHVAR KALIA

SECRETARY

Florence VON OW

COORDINATOR

Béatrice KAUFMANN

GENERAL DESCRIPTION OF THE UNIT

The PhD Program in Pharmaceutical Sciences provides a solid theoretical and practical training in all aspects of the Pharmaceutical Sciences and fosters interdisciplinary research and provides opportunities for scientific exchange via lectures, symposia and networking activities. The PhD Program also aims to increase career opportunities for graduates from the School of Pharmaceutical Sciences.

PH.D. STUDENTS

All of the doctoral students enrolled in the PhD program of the School of Pharmaceutical Sciences are subject to the regulation that stipulates the acquisition of at least 30 credits before the thesis defense can take place. It should be noted that most of the PhD students acquire more than 30 credits indicating their active participation in the PhD program (Tables 1-3). A mean number of 10.3 PhD students attended each course, which indicates an excellent level of participation. If we consider all of the participants, i.e. including postdocs and pre-grads, this mean value increases to more than 13.5 participants per course.

The PhD Program commission decided to introduce a new concept of evaluating the progression of the PhD thesis involving the use of a Thesis Advisory Committee or TAC. This is organized with the objective of harmonizing levels of excellence for the PhD candidates from the different component disciplines in the School of Pharmaceutical Sciences. This is done with respect to: efficient time-planning and organization of the thesis project; motivation to perform interesting projects and optimization of thesis project progression.

The TAC system is valid for all PhD candidates beginning their thesis from 15th September 2015. Doctoral students who began their doctorate also have the option of benefiting from this new system, but are not obliged to do so. All PhD students affiliated to the PhD program in Pharmaceutical Sciences were informed about this new structure during a meeting that was held on 11th November 2015 and which was also attended by Mr. Denis Billotte, CUSO general secretary (see below for further details).

COURSES AND SYMPOSIA

In 2015, 32 activities were proposed to the registered PhD students, and 14 had to be postponed or cancelled, due to various reasons. A total of 273 hours was given within the 2015 PhD program (including all activities). Two types of courses were proposed, namely weekly ("Hebdo") and bloc (Table 1). Within the framework of the PhD program, some symposia were organized with success (Table 2): the PhD day, as well as two new activities (chemometry workshops and first national meeting on clinical pharmaceutical sciences). Concerning the networking events (Table 3): a new concept of networking and informative event was proposed ("votre école doctorale se présente"); "Rencontre avec l'Industrie" was cancelled and will be proposed next year under a different form, and it was proposed to the PhD students to participate in the career day organized by the Faculty of Sciences.

In January, it was proposed to the PhD students to follow practical workshops on chemometric or statistical techniques, as a side-meeting of the annual congress of the Chemometrics Society, which took place in Geneva in

2015. 9 PhD students had the opportunity to follow two half-day workshops about subjects that could be useful for their PhD thesis projects.

The annual PhD day of the School of Pharmaceutical Sciences, was held on the 8th June, 2015 at the Louis-Jeantet Foundation, Geneva, with more than 75 attendees. The event was organized by the PhD students from the groups of pharmacognosy and phytochemistry and provided an opportunity to increase exchange among PhD students from different research disciplines and between PhD students and other scientists. The major innovation this year was the participation of the "Formation and Evaluation Unit from the University of Geneva (FormEv)". Dr Mallory Schaub and Delphine Rinaldi offered a half-day training session to the PhD speakers one week before the event, untitled "Communiquer efficacement; Valoriser ses recherches par une bonne communication orale".

The program started at 8:45 am with a kick-off speech by Prof. Yogeshvar N. Kalia highlighting the history as well as the importance of this traditional event.

This was followed by presentations from 15 senior PhD students who presented their work in front of the audience; engaging discussions took place after each talk as well as in the coffee breaks and at lunchtime. Two keynote speakers, Dr. Olivier Potterat from the University of Basel with a talk entitled "Combined use of extract libraries and HPLC-based activity profiling for lead discovery" and Dr. Philipp Krastel, from Novartis, with a talk "Using nature's diversity for drug discovery", shared their experience with attendees. The audience was asked to complete a survey managed by FormEv in order to provide feedback to the PhD speakers. The event finished at 5:30 pm and attendees were invited to a refreshing aperitif party on the beautiful patio. Each speaker received personalized feedback one week later from Dr Mallory Schaub based on the comments received from the audience survey.

This event was kindly sponsored by Debio Pharm and CUSO.

Due to the relocation of the School of Pharmaceutical Sciences to the new CMU building scheduled in June 2016, the next PhD Day is postponed to November 2016, and will be organized by the students of pharmaceutical biochemistry (FABIP and FAPER groups).

The PhD students also attended the specialized seminars ("conférences spécialisées") proposed within the PhD program; 12 seminars were given by international researchers from academia and industry, for a total of 24 teaching hours. A total of 193 participants attended these lecture series including 112 PhD students, 60 post-docs and 21 professors and others (pre-graduates and senior scientists).

Due to a lack of participation, we had unfortunately to cancel the « extra-muros » summer school of the School of Pharmaceutical Sciences Geneva-Lausanne for its Ph.D. students which should have taken place in Zermatt in September 2015. It was decided to reorganize the structure of this event for its next edition, the 30th, in September 2016. The goal of this reorganization is to promote a new form of "pharmaceutical sciences seminar", in which all aspects of the pharmaceutical sciences and members of the section should be more actively involved.

As replacement for this seminar, the organizers (pharmacy practice group) proposed to hold in Lausanne on 1st September 2015 the "First national meeting on clinical pharmaceutical sciences". This research symposium was intended to share experience between academic groups (Basel, Lausanne and Geneva) active in hospital or community pharmacy. 46 people were present, including 6 "senior" speakers, 15 CUSO PhD students, 10 PhD students from Basel, as well as 2 members of University Libre de Brussels (ULB, Belgium), which is a member of the G3 (Montreal-Brussels-Geneva). This day was a complete success and this kind of event will be repeated in 2016 or 2017 (probably in Basel).

The direction of the doctoral school organized an information meeting intended for all PhD students and thesis supervisors on 11th November 2015. The aim was to present the doctoral school structure, to remind students (and supervisors) of some of the procedures, including the new TAC, to explain the organization and ECTS attribution and also to foster a global contact between all PhD students in pharmaceutical sciences. The meeting was followed by a networking aperitif, which was well appreciated by all participants. We had also the great pleasure to welcome among the participants of the meeting Mr Denis Billotte, who kindly attended the meeting and was also available to answer questions from the audience.

Summarizing, the key activities of the PhD Program in Pharmaceutical Sciences are to provide a program that covers the broad range of disciplines that make up of Pharmaceutical Sciences field; in 2015, there were 18 courses and symposia (30, if considering each "conférence sur sujet spécialisé" separately) for a total of 273 hours and level of participation of the PhD students in all five activities of the PhD program in Pharmaceutical Sciences (306 registrations of PhD students) was excellent.

The schedule, the content of the courses, hours and credits as well as all indications concerning the PhD program in Pharmaceutical Sciences are stored in a MySQL database and posted dynamically on the web page of the PhD program (<http://epgl.unige.ch/pharm/fr/> [Etudes/programme doctoral]).

Efforts have been made to transfer the platform of the PhD Program to myCUSO, and the system performed quite well in 2015.

Table 1

List of courses organized within the PhD Program in Pharmaceutical Sciences 2015 and number of participants

| Name of course 2015 | Course No. | Course Organizer | Total no. of hours | Credits | No. of PhD students (total no. of attendees) |
|--|------------|---|--------------------|---------|--|
| Analytical tools characterizing protein-ligand interactions | 19H002 | R. Perozzo | 21 | 3 | 3 (4) |
| Pharmacie hospitalière et communautaire 1 | 19H003 | P. Bonnabry | 18 | 3 | 5 (41) |
| Pharmacie hospitalière et communautaire 2 | 19H012 | F. Sadeghipour | 18 | 3 | 4 (25) |
| Design drugs with a computer | 19H053 | A. Daina | 8 | 1 | 5 |
| Drug development : regulatory aspects and clinical trials | 19H009 | L. Scapozza, A. McAllister, J.-Y. LeCotonnec, S. Latour | 20 | 4 | 9 |
| Formulation of protein biopharmaceuticals and drug delivery | 19H013 | T. Arvinte | 30 | 5 | 4 (5) |
| Les brevets dans la recherche: source d'information et moteur de l'innovation | 19H018 | D. Kraus, L. Miéville, K. Houshangpour, P. Weibel | 22 | 4 | 9 |
| Use of fluorescence spectroscopy in the study of drugs, protein and membrane | 19H032 | T. Arvinte | 16 | 3 | 3 |
| Therapeutic Drug Monitoring and its Application in Diagnostics and Clinical Research | 19H045 | L. Decosterd | 6 | 1 | 6 |
| Assurer la qualité de la recherche orientée patients en sciences cliniques pharmaceutiques | 19H054 | M.-P. Schneider | 16 | 4 | 8 |
| Toxicologie analytique forensique | 19H031 | C. Staub | 8 | 1.5 | 5 |
| Les agents anticancéreux : manipulations et aspects analytiques | 19H061 | S. Fleury-Souverain, D. Guillarme | 10 | 3 | 8 |
| TOTAL | 12 | | 193 | | 69 PhD 71 others |

Table 2

List of symposia organized within the PhD Program in Pharmaceutical Sciences 2015 and number of participants.

| Name of course 2015 | # Course no. | Course organizer | Total no. of hours | Credits | # No. of participants |
|---|--------------|---------------------------------------|--------------------|-----------------|--|
| Séminaires de chimiométrie/statistiques | | Y. Kalia / S. Rudaz | 8 | 1 | 9 PhD students |
| PhD Day | 19H020 | Y. Kalia | 8 | 1 or 2 | 44 PhD students, 7 post-doc +11 profs / others |
| Conférences sur sujets spécialisés | | Y. Kalia | 12 days (24 hrs) | 1,5 for 5 conf. | 112 PhD students (193 total) |
| 1 ^{ère} rencontre nationale des sciences pharmaceutiques cliniques | | O. Bugnon / K. Hersberger (Uni Basel) | 7 | 1 | 23 PhD students, 5 post-doc, 7 profs/others |

Table 3

List of networking activities organized within the PhD Program in Pharmaceutical Sciences 2015 and number of participants.

| Name of course 2015 | Course no. | Course organizer | Total no. of hours | Credits | No. of PhD students |
|--------------------------------------|------------|------------------|--------------------|---------|---------------------|
| Votres école doctorale se présente ! | | | 3 | n.a. | 47 |
| Rencontre avec l'Industrie * | 19H050 | Y. Kalia | 6 | 1 | CANCELLED |
| Career day ** | 19H007 | Y. Kalia | 7 | 1 | 30 |

*to be reorganized for next year

**the career day of the Faculté des Sciences was proposed to the PhD students.

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The 2015 program as well as the budget were submitted to the CUSO at the end of 2014 and they were duly accepted. The budget in 2015 for the five activities (Seminar Extra-Muros, Conférence spécialisées, Cours, Symposia as well as Networking activities) was 92'000 CHF covered by the funds allocated by the CUSO.

The costs for 2015 for all the activities were 45'068.90 CHF, thus leaving 46'931.10- CHF unused. The difference between the requested budget and the costs was due to cancellation of some events (in particular, the extra-muros seminar, budgeted at 37'000.- CHF, other courses for a total of 6'200.- CHF), as well as lower expenses for some courses, including "conférences sur sujets spécialisés".

It should be noted that these lower than budgeted expenses for certain activities, freed up funds that could compensate for the budgeted positions for which the expenses were higher than the amounts initially budgeted.

We take the opportunity in this report to thank the CUSO for the past and future financial support allowing us to offer an outstanding program to the PhD students in Pharmaceutical Sciences.