Current Drug Discovery for Neglected Diseases

A series of seminars on drug discovery sciences and the state-of-the-art on the neglected diseases field

Hosts

Dr Lucio Freitas-Junior
Centro Nacional de Pesquisa em Energia e Materiais (CNPEM)
Laboratório Nacional de Biociências (LNBio)
Link CV Lattes: http://lattes.cnpq.br/2136191319465692

Prof Fabio T. M. Costa
Depto. Genética, Evolução e Bioagentes
Instituto de Biologia
Universidade de Campinas
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Dra Carolina Borsoi Moraes
Centro Nacional de Pesquisa em Energia e Materiais (CNPEM)
Laboratório Nacional de Biociências (LNBio)
Link CV Lattes: http://lattes.cnpq.br/2856012942943418

Invited International Speakers

Dr Eric Chatelain	Drugs for Neglected Diseases initiative – Switzerland
Dr Jair L. Siqueira-Neto	Universidade California San Diego – USA
Dra Joana Tavares	Universidade do Porto – Portugal
Dr Sheraz Gull	European Screening Port – Fraunhofer IME – Germany
Prof Vicky Avery	Eskitis Institute – Australia
Dr Musa Mhlanga	Council for Scientific and Industry Research – S. Africa
Dr Jean-Robert Ioset	Drugs for Neglected Diseases initiative – Switzerland
Dr Tom Von Geldern	Embedded Consulting – USA
Dra Martine Keenan	Epichem – Australia
Prof Susan Charman	Murdoch University – Australia
Dr Gilles Courtemanche	Bioaster Technology Research Institute – France
Prof John Kelly	London School of Tropical Medicine and Hygiene – UK

Invited National Speakers

Prof. Sergio Schenkman	Universidade Federal de São Paulo
Prof Pedro Cravo	Universidade Federal de Goiás
Prof Bianca Zingales	Universidade de São Paulo
Prof Carolina Horta Andrade	Universidade Federal de Goiás
Dr André Tempone	Instituto Adolpho Lutz
Prof Flavio da Silva Emery	Universidade de São Paulo
Prof Brenno Neto	Universidade de Brasília
Prof Silvia Uliana	Universidade de São Paulo
Dr Daniel Lebre	CEMSA – São Paulo
Prof João Batista Calixto	Universidade Federal de Santa Catarina
Prof Carlos Henrique Nery Costa	Universidade Federal do Piauí

Discipline Description ("Ementa")

The **Current Drug Discovery for Neglected Diseases** discipline will provide seminars from some of the most renowned experts on the field, from both Pharma and Academia. Seminars will cover both basic and in-depth aspects of drug discovery for neglected diseases, with a focus on human African trypanosomiasis, Chagas disease, leishmaniasis, and vivax malaria. The course will address the multidisciplinary nature of drug discovery, introducing students to the basics of drug discovery science and also to cutting-edge research on the field. Topics covered include high throughput and high content screening, structural biology and virtual screening, screening data analysis, medicinal chemistry, lead optimization, in vitro and in vivo ADME, and in vivo models for pharmacokinetics and efficacy studies.

All seminars will be offered in English.

Rationale for the Discipline

This discipline will be hosted at the National Center for Research on Energy and Materials (CNPEM) – Campinas and will happen as a parallel event to the São Paulo School of Advanced Sciences on Neglected Diseases Drug Discovery. This event will gather several world-class, leading scientists on the field of drug discovery, from national and international institutions. Several of these scientists originate from the Pharma, and will offer additional insight into the process of drug discovery and how product-oriented drug discovery programs should function. This is a unique opportunity for undergrad students to benefit from the view and experience of successful scientists on the field at a very low cost for the Graduate Program/Genética-UNICAMP.

Discipline Dynamics and Approval Requirements

Classes will consist on 45 min seminars by each professor. Students are encouraged to make questions during the seminars and will be evaluated based on active participation. A minimum of 75% (seventy five percent) attendance is mandatory.

Target Public and Students Selection

Graduate students and postdocs from related areas (biology, chemistry and pharmacology). English proficiency is mandatory and must be proven (by means of evidences such as certificates). A maximum of 40 students will be accepted

Benefits to UNICAMP

- Drug discovery is a key applied area in biomedical sciences and students rarely have the opportunity to interact with scientists experienced in the Pharma and Biotech sectors.
- International course with 50% of lecturers from international institutions without any costs to UNICAMP; the university should only bear the costs of transportation and allowances for two lecturers, Profs. Pedro Cravo and Carolina Horta, from UFGO.
- Rare opportunity for students to interact with top-notch scientists in the field during a discipline.
- Opportunity for students to develop networking and English skills.

Period of Classes

June 16th to 23rd 2015 – 6 days of classes.

Schedule

	16th June 2015
13:15-14:00	**Neglected Tropical Diseases: Needs and Current Drug Discovery Landscape** Dr. Eric Chatelain
14:00-14:45	**Drug targets in Trypanosomes** Dra. Joana Tavares

14:45-15:30	**Biochemistry of Kinetoplastids and Drug Discovery** Prof. Sergio Schenkman
15:30-16:15	**Drug discovery and development for neglected diseases: an USA university perspective"** Dr. Jair Siqueira Neto
16:15-16:30	**Coffee-break**
16:30-17:15	**Drug Efficacy Models for Leishmaniasis and HAT** Dra. Joana Tavares
	17th June 2015
13:15-14:00	**Introduction to Drug Discovery/Design of Biochemical Assays for Drug Discovery Purposes – What can be achieved and learnings from past success and failures** Dr. Sheraz Gul
14:00-14:45	**High Throughput and High Content Screening for Trypanosomes** Prof. Vicky M Avery
14:45-15:30	**Secondary Assays for Hit-to-Lead and Lead Prioritization** Dra. Carolina B. Moraes
15:30-16:15	**miRNA screening for drug discovery** Dr. Musa Mhlanga
16:15-16:30	**Coffee-break**
16:30-17:15	**Screening Databases, Hit Clustering and Prioritization** Dr. Jean-Robert Ioset
	18th June 2015
13:15-14:00	**Using genomics towards more effective identification of new antimalarial drugs and vaccines** Prof. Pedro Cravo
14:00-14:45	**Genetic Diversity of Kinetoplastids** Prof. Bianca Zingales
14:45-15:30	**Medicinal Chemistry: An Introduction** Dr. Tom Von Geldern
15:30-16:15	**Lead Optimization Program for Chagas disease: An Example** Dra. Martine Keenan
16:15-16:30	**Coffee-break**
16:30-17:15	**Assessing Physicochemical and ADME Properties in Early Drug Discovery** Prof. Susan Charman
	19th June 2015
13:15-14:00	**Integrated Drug Design Strategies to Identify New Hit Compounds against *Leishmania infantum*** Prof. Carolina Horta Andrade
14:00-14:45	**Selection and optimization of lideres compounds against protozoan infections: in vitro and experimental approaches** Dr. Andre Temponi
14:45-15:30	**Developing a library of heterocycles to fight neglected diseases** Prof. Flavio da Silva Emery
15:30-16:15	**Fluorescent Tags and Probes: Mechanisms of Actions and Dynamics in Live Cells of Bioactive Small Molecules** Prof Brenno Neto
16:15-16:30	**Coffee-break**
16:30-17:15	**Think Medicinal Chemistry** Dr. Gilles Courtemanche
	22nd June 2015
13:15-14:00	**The Path to a Candidate: A Multidisciplinary Effort – Analogy to the 400 m Hurdles** Dr. Eric Chatelain
14:00-	**Animal Models of Leishmaniasis Applied to Drug Discovery**

14:45	Prof. Silvia Uliana
14:45-15:30	**In vitro metabolic stability and metabolic profile** Dr. Daniel Lebre
15:30-16:15	**Pre-clinical Pharmacology: How to Take a Lead Compound to Clinical Studies** Prof. João Batista Calixto
16:15-16:30	**Coffee-break**
16:30-17:15	**Compound Safety Profiling: in silico, in vitro and in vivo** Dr. Tom Von Geldern
23rd June 2015	
13:15-14:00	**Virulence Factors in Visceral Leishmaniasis** Prof. Carlos Henrique Nery Costa
14:00-14:45	**Drug Efficacy Models for Chagas Disease** Prof. John Kelly
14:45-15:30	**Challenges and perspectives in Plasmodium vivax** Prof. Fabio Costa
15:30-16:15	**Discussion with students** Dr Eric Chatelain
16:15-16:30	**Coffee-break**
16:30-17:15	**Discussion with students** Dr Lucio Freitas-Junior

Bibliography

There is no mandatory bibliography but the students are encouraged to read the following review literature prior to the start of the discipline:

Alsford S, Kelly JM, Baker N, Horn D. Genetic dissection of drug resistance in trypanosomes. Parasitology. 2013 Oct;140(12):1478-91. doi: 10.1017/S003118201300022X.

Chatelain E. Chagas disease drug discovery: toward a new era. J Biomol Screen. 2015 Jan;20(1):22-35. doi: 10.1177/1087057114550585.

Don R, Ioset JR. Screening strategies to identify new chemical diversity for drug development to treat kinetoplastid infections. Parasitology. 2014 Jan;141(1):140-6. doi: 10.1017/S003118201300142X.

Flannery EL, Chatterjee AK, Winzeler EA. Antimalarial drug discovery - approaches and progress towards new medicines. Nat Rev Microbiol. 2013 Dec;11(12):849-62. doi: 10.1038/nrmicro3138.

Freitas-Junior LH, Chatelain E, Kim HA, Siqueira-Neto JL. Visceral leishmaniasis treatment: What do we have, what do we need and how to deliver it? Int J Parasitol Drugs Drug Resist. 2012 Jan 28;2:11-9. doi: 10.1016/j.ijpddr.2012.01.003

Gilbert IH. Drug discovery for neglected diseases: molecular target-based and phenotypic approaches. J Med Chem. 2013 Oct 24;56(20):7719-26. doi: 10.1021/jm400362b.

Sykes ML, Avery VM. Approaches to protozoan drug discovery: phenotypic screening. J Med Chem. 2013 Oct 24;56(20):7727-40. doi: 10.1021/jm4004279.

André Gustavo Tempone

Adolfo Lutz Institute
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http://www.ial.sp.gov.br
Scientific Researcher VI at Adolfo Lutz Institute (Secretary of Health of São Paulo State). Graduated in Pharmacy (1997), master degree (1999), PhD degree (2003) in Parasitology (Parasite-Host Relationships) at University of Sao Paulo, with part of his PhD at the London School of Hygiene and Tropical Medicine (2001). He coordinates the Laboratory of Applied Toxinology in Antiparasitic Drugs since 2004 and since 2009, is the vice-director of the Department of Parasitology and Mycology. He works with Drug Discovery for Leishmaniasis and Chagas disease, from drug repositioning to natural products, preclinical studies, mechanism of action of lead compounds and targeting delivery of drugs by liposomes.

Bianca Zingales

Professor
Department of Biochemistry
Institute of Chemistry
University of São Paulo
São Paulo, Brazil
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Bianca Zingales is Professor of Biochemistry at the University of São Paulo. Since 1985, Zingales has focused her research on the Molecular Epidemiology of *Trypanosoma cruzi*. Her laboratory contributed to the definition that *T. cruzi* is partitioned into six genetic lineages (TcI-TcVI), which have distinct eco-epidemiological characteristics. A major focus of her current research, funded by the FAPESP and CNPq, is the characterization of one ABCG transporter potentially involved in therapeutic failures to benznidazole and the screening of candidates for Chagas disease treatment. Zingales has been a consultant of TDR since 1992. She was appointed by WHO as a Member of the Expert Advisory Panel of Trypanosomiasis (2000-2009) and as Co-chair of the Disease Reference Group on Chagas disease, Leishmaniasis and Human African Trypanosomiasis (2009-2012). Since 2011, Zingales integrates the Chagas Research Platform of DND*i*. She has published more than 110 peer-reviewed papers. Recently, recommendations have been issued on which strains representing *T. cruzi* diversity should be selected for drug discovery for Chagas disease.

Brenno Amaro DaSilveira Neto

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Dr. Brenno A. D. Neto has conducted his independent research career since the end of 2006 when he finished his Ph.D. defending his Thesis. He is Professor of Organic and Medicinal Chemistry at the University of Brasilia (Chemistry Institute) and presently he manages his own research group. Nowadays, he is the Coordinator of the Laboratory of Medicinal and Technological Chemistry group. Currently, his research group comprises 8 Ph.D. students, 2 M.Sc. students and 7 undergraduate students. Already, 4 Ph.D., 7 M.Sc. and several undergraduate students have successfully graduated under his guidance. He published (independent publications) more than 50 articles after he finished his Ph.D. (all indexed at ISI and Scopus, and only a few as a collaborator) underpinning his research independence. Among his outputs, there are 4 reviews which underline the importance of his independent work.
Dr. Neto was also the Guest Editor of a Special Issue (*hot topic*) held in Current Organic Chemistry (2013, vol. 17, n. 3) thus showing the impact

of his own work in the field of catalysis. He also works as a referee for about 35 international journals and has received some national and international awards such as:

- BMOS/RSC Young Investigator Award 2013
- Honourable Mention – Best Brazilian Thesis in Chemistry 2013. Category: Advisor.
- Petrobras Inventor Award for the best-filed patent in 2008.
- Best Thesis from the Graduate Program from the Chemistry Institute at the Federal University of Rio Grande do Sul (UFRGS), 2006.

Carolina Horta Andrade

Professor
Federal University of Goias
Goiania, Brazil
Laboratory for Molecular Modeling and Drug Design (LabMol)
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Adjunct Professor at Faculty of Pharmacy of Federal University of Goias (UFG), and head of LabMol – Laboratory for Molecular Modeling and Drug Design. She graduated in Pharmacy and got her Ph.D. degree in drugs and medicines at University of Sao Paulo (USP), with part of her PhD developed at University of New Mexico, USA. Her research focuses on Drug Design for Neglected Diseases and Cancer, using integrated Virtual Screening (VS) approaches, QSAR models and cheminformatics and chemogenomics approaches to identify new hit compounds for these diseases. Her group is also focused on the generation of predictive tools to study metabolism and toxicity of chemical compounds. In 2014 she was awarded with the "For Women in Science" award from L'Oréal Brasil- UNESCO-ABC, and in 2015 she received the "International Rising Talents" award from L'Oréal – UNESCO. Since 2012, she is CNPq research fellow – 2 level, and is the treasurer of the Division of Medicinal Chemistry of the Brazilian Chemical Society (SBQ) (2014-2016).

Carolina Borsoi Moraes

Principal Investigator
Brazilian Biosciences National Laboratory – LNBio-CNPEM
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Carolina Borsoi Moraes obtained a PhD in 2009 on Microbiology and Immunology from a joint program between the Institut Pasteur Korea and the Federal University of São Paulo. From 2010 to 2012 she had a postdoctoral position at the Center for Neglected Diseases Drug Discovery (CND3) in Institut Pasteur Korea, coordinating the HCS activities (assay development for lead optimization) for Chagas disease drug discovery. The research of Dr. Moraes' group focuses on drug discovery for Chagas disease, using high content screening (HCS) assays that permit the triage of chemical compounds for determination of activity against *Trypanosoma cruzi,* the protozoan parasite that causes Chagas disease. These assays are amenable to automation and have been used in high throughput mode to screen chemical libraries. Additionally, these assays are used to provide routine testing and guide hit prioritization and chemical optimization of hit compounds selectivity/antiparasitic properties during structure-activity relationship (SAR) studies, a process also known as lead optimization. A major goal is developing and improving *in vitro* and *in vivo* assays that will translate human disease into experimental models applicable to drug discovery programs, ultimately leading to the discovery of novel chemotherapeutic agents for Chagas disease, while generating knowledge about Chagas disease pathogenesis.

Carlos Nery Costa

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My main area of interest is visceral leishmaniasis as model for the control of vector borne diseases, of systemic inflammation, and live vaccine development. We have been involved in projects on the finding of Leishmania infantum virulence factors, on host inflammatory response, on mathematical modelling and spatial analysis, on transmission to sandflies, and on landscape. Besides, we have collaborations on biomarkers of disease severity, biosensors, and clinical trials, all about visceral leishmaniasis. However, we also have been working on the diagnosis of neurocysticercosis, neurocryptococcosis and HIV infection.

Daniel Lebre

Scientific Director
Center for Applied Mass Spectrometry
São Paulo, Brazil
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Graduated in Chemistry – Oswaldo Cruz University (1996) and master's degree in Nuclear Technology (Applications) by the Institute of Nuclear and Energy Research (2000) (IPEN/USP). Professional skills in chemistry, with emphasis on analytical chemistry, mainly in the following areas: mass spectrometry, liquid chromatography, ADME, analytical method validation. Since 2009 is a partner and Scientific Director of CEMSA – Center for Applied Mass Spectrometry Ltd and responsible for research and development projects: coordinating projects funded by FAPESP (PIPE PIPE I and II) and FUNCET. With experience of over 14 years in mass spectrometry, he worked for nine years at AB Sciex in Brazil and Canada. During his experience in Canada he was responsible for LC/MS applications for small molecules in the pharmaceutical, food, beverage, forensics and environmental. He was responsible for sample collection, generation and interpretation of data, but mostly by the development of analytical methodologies for new MS technologies. As professor, we has disseminated the knowledge and the application of mass spectrometry. He is a member and vice president of the Brazilian Society of Mass Spectrometry.

Eric Chatelain

Head of Drug Discovery, DNDi
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Eric Chatelain has extensive Research and Drug development experience gained from the academia and the industry, as well as management experience, and is well connected with international groups working on Neglected Diseases. Eric Chatelain graduated with a PhD in Biochemistry in 1993 at the INSA Lyon, France. Following 5 years in the academia (ICRF, London, UK and FMI/Novartis, Basel, Switzerland) as a Research Fellow, he joined the pharmaceutical industry (Spirig Pharma AG, Switzerland) in 1999. Focus was on Dermatology R&D and Eric Chatelain led the Biopharmacy Research Lab (till 2003) before heading the Pre-clinical Department (till 2007). In that position, he gained extensive acquaintance with all the processes, workflows and interfaces involved in drug development; he was involved in project development and interacting with people of all disciplines at all levels. His activities led to major projects being taken on board for further clinical development. Since joining DNDi (Drugs for Neglected Diseases initiative, a not-for-profit R&D organisation, whose focus is to develop drugs/treatments for the most neglected diseases) in 2007, Eric's main role is the management of various projects/teams around the world working on the development of new drugs for neglected diseases. Until mid-2009 he was responsible for all screening/early discovery activities before joining the Chagas disease team and taking on responsibility for all Chagas discovery and preclinical projects. During that period he was responsible for the development for high-throughput screening assays (HTS) to assess compounds for their activity against *Leishmania* and *T. cruzi*, the pathogen involved in Chagas disease, and led DNDi global current effort in lead optimization for that disease with major and recognized institutions in Australia, Brazil, Europe and South Korea. In 2011 he played an essential role in restructuring of DNDi lead optimization programs and now co-leads the entire DNDi lead optimization effort.

Flavio da Silva Emery

Professor
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He completed his degree in pharmacy in 1998 at Universidade Federal do Rio de Janeiro (UFRJ); in 2005, he received a Ph.D. degree in Natural Product Chemistry from Núcleo de Pesquisa de Produtos Naturais (NPPN) at the UFRJ. Currently, is an associate professor at School of Pharmaceutical Sciences at Ribeirão Preto, Universidade de São Paulo.
He is a non-EU member of Chemistry and Molecular Sciences and Technologies (CMST) Co-operation in Science and Technology (COST) Action TD0905, Epigenetics: Bench to Bedside, a scientific activity in the European Union (EU), which aims at integration of the scientific and technological developments across European countries. Since 2013, he is the first secretary of the Brazilian Association of Pharmaceutical Science, and since 2014, he is an active member of IUPAC's subcommittee on Drug Discovery and Development.
He works in the fields of medicinal chemistry, chemical biology, and heterocycle synthesis, aiming to explore several targets for the discovery of novel bioactive compounds. His interested is mainly focused on heterocyclic chemistry, trying to develop new scaffolds as chemical or fluorescent probes. Regarding neglected diseases, he is focusing on epigenetic targets and DHODH, trying to improve the understanding of biochemical processes by using molecular tools and chemical probes to find new chemical space for drug discovery. He is currently coordinating a collaborative project with GSK (FAPESP/GSK call) targeting epigenetic to fight neglected diseases.

Fabio T M Costa

Professor
Dep de Genética, Evolução e Bioagenes
University of Campinas, Institute of Biology
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Dr. Fabio Trindade Maranhão Costa is associate Professor of Parasitology and Immunology at University of Campinas (UNICAMP) located in Campinas (São Paulo State, Brazil). As a malaria researcher at UNICAMP, Dr. Costa is an expert in basic research, focusing on the immunopathological aspects of Plasmodium spp. infections and on the discovery and development of experimental drugs and vaccines. Dr. Costa also works as academic Editor for PLoSOne, Frontiers in Immunolog y e BioMed Research International Journals. Dr. Costa graduated in Biological Science s at University of Brasilia in 1994. He obtained his Masters' and PhD degree at Federal University of São Paulo in 1998 and 2001, respectively. From 2001 to 2003, he attended to Université de La Méditerrané /Institut Pasteur (France) as a post-doc fellow, working on human and experimental malaria. He is tenured Professor at University of Campinas since 2003, where he coordinates the laboratory of Experimental Immuno-Parasitology.

Gilles Courtemanche

Antimicrobials Unit Director
Bioaster Technology Research Institute
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Gilles Courtemanche got his PhD on Synthetic Chemistry (1991) at Pierre & Marie Curie University Paris, France. He has been working in the pharma industry for 20 years. First he took a position of Scientist and worked in Central Nervous System field where he participated in the discovery of the first CRF antagonists (1991-1994). Next, as a project leader at Synthelabo, he contributed in the nomination of several drug candidates for development phase in Urology, Gastroenterology and Metabolism fields. Then, he took of position of Group Leader in Medicinal Chemistry, where he managed a team of up to 30 medicinal chemists working in the field of Infectious Diseases. Finally, he took the responsibility of Collaborative Research on Neglected Tropical Diseases at Sanofi where he worked in collaboration with not for profit organizations like DNDi or MMV, and several international academic partners. He has filed more than 20 patent applications. Currently, he is working for Bioaster, a Technology Research Institute for Health, where he is heading the Antimicrobials Unit. His mission is to build public-

private collaborative projects to overcome technical bottlenecks that impair the discovery or development or drugs against Infectious Diseases.

Jair Lage de Siqueira Neto

Assistant Adjunct Professor
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Jair Siqueira-Neto has a Bachelor degree in Biology and PhD in Genetics & Molecular Biology from Unicamp, where he graduated in 2007 studying the telomere biology of *Leishmania* parasites. After, he went to South Korea for a post-doc at the recently founded Institut Pasteur Korea, where he pioneered the development of High-Content High-Throughput Screening assays for drug discovery against leishmaniasis. As Staff Scientist and later Team Leader he was involved in drug discovery programs against the parasites *Leishmania* and *Trypanosoma cruzi*, working in projects with the Drugs for Neglected Diseases Initiative (DND*i*) collaborating with a number of pharmaceutical companies including Pfizer, GlaxoSmithKline, Sanofi, Merck, Astra Zeneca, among others. In 2013 he moved to the Silicon Valley as the Kinetoplastid Core Director at the Center for Discovery and Innovation in Parasitic Diseases (CDIPD), University of California San Francisco – USA. He led projects and collaborations to accelerate the development of new chemotherapies for the kinetoplastid-caused parasitic diseases: leishmaniasis, Chagas disease and Human African Trypanosomiasis. In the summer of 2014 he was hired as Assist. Adj. Professor at the Skaggs School of Pharmacy and Pharmaceutical Sciences, University of California San Diego where he is currently involved in the construction of a Screening Platform to foster drug discovery and development for neglected and rare diseases with low economical interest from the major pharmas.

Jean-Robert Ioset

Discovery Manager
Drugs for Neglected Diseases initiative – DNDi
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http://www.dndi.org/
Dr. Jean-Robert Ioset joined DNDi in 2005. He is currently the Discovery Manager responsible for the management of the global early discovery portfolio and the supervision and coordination of the DND*i* screening network (4 centres and 8 FTE) – through these centres, his objective is to deliver novel lead series to the DND*i* preclinical programs. Dr. Ioset also plays an active role in the Department of Communication, Advocacy and Fundraising by providing key information related to all discovery activities. He recommends the organization on the early discovery strategy – a position he's held since 2009. Prior to being the Discovery Manager, Dr. Ioset worked as a consultant for DNDi responsible for coordinating early discovery activities. In his past role, he supported the R&D team with data management, provided advice on R&D projects related to natural products, and coordinated the Pan-Asian Screening Network research network. Prior to joining DNDi, Dr. Ioset was a scientific collaborator and lecturer at the School of Pharmacy of the University of Geneva and the University of Lausanne. His academic research focused on the discovery of new antiprotozoal drugs from plants. He also supervised several PhD, Master and undergraduate students. Before completing a post-doctoral fellowship at the London School of Hygiene and Tropical Medicine (Prof. Simon Croft), he earned a diploma in Public Health and Tropical Medicine from Humboldt University in Berlin. Dr. Ioset is a pharmacist by training, with a PhD in Plant Chemistry from the University of Lausanne. He authored more than 40 publications in the field of natural product chemistry, anti-infective drug discovery and counterfeit drugs.

Joana Tavares

Researcher
Institute for Molecular and Cell Biology
University of Porto, Portugal
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Joana Tavares graduated in Pharmaceutical Sciences in 2003 and received in 2008 a PhD degree in Biochemistry by the University of Porto. From 2009 to 2013 she conducted post-doctoral research at Pasteur Institute in Paris. She was from 2003 to 2007 Instructor at the Biochemistry department of the Faculty Pharmacy University of Porto and from 2007 to 2011 Invited Assistant of Immunology. J. Tavares has been research associate at the Institute for Molecular and Cell Biology (IBMC), University of Porto, since 2013. She has been working with protozoan parasites responsible for important human diseases such as *Leishmania*, *Trypanosoma brucei* and *Plasmodium*. She has contributed to the identification of potential drug targets in Trypanosomatids and to the search for target specific inhibitors. More recently, she became an expert on live imaging, including intravital confocal microscopy to dissect in mice the mechanisms used by parasites to overcome host defenses.

João Batista Calixto

Director
Center of Innovation and Preclinical Studies
Florianopolis, Brazil
http://www.cienp.org.br/en/
João B. Calixto received degree in Biological Sciences in 1973 at the University of Brasilia and then concluded his Master Science in Pharmacology by Federal University of São Paulo, (EPM) in 1976 and this PhD in Pharmacology in 2004, at the University of São Paulo, Ribeirão Preto, Brazil. He has been professor of Pharmacology at the Federal University of Santa Catarina, Florianópilis, Brazil (1976-2013) and currently he is Director of the Center of Innovation and Pre-clinical Studies (CIEnP), located in Sapiens Parque, Florianópolis, SC. Professor Calixto published about 400 papers in distinguished international peer review journals in the field of Pharmacology, Neuroscience and Medicinal Plants. These papers have been cited more than 12,000 times. His major areas of interest are: pain, inflammation and medicinal plants. He has supervised more than 100 undergraduate students, 37 Master Science, 33 PhD and 22 post-doctoral students. He served as Editor and participates in the Editorial board of several international journals. He has actively acted as referee in more than 70 international scientific journals and most national and international agencies that support the scientific research. He received several awards and also served in many Brazilian committees that support research in Brazil. Professor Calixto has also actively participated in several research projects in partnership with Brazilian and international pharmaceutical companies. He has 23 patents (in Brazil and abroad) and has participated of the development of 03 products that are currently in the market in Brazil.

John M. Kelly

Head of Department of Pathogen Molecular Biology
London School of Hygiene and Tropical Medicine
London UK
http://www.lshtm.ac.uk/aboutus/people/kelly.john
John Kelly has been Professor of Molecular Biology at the London School of Hygiene and Tropical Medicine since 2005 and Head of the Pathogen Molecular Biology Department since 2010. The Kelly group were the first to report the transfection of the American trypanosome *Trypanosoma cruzi* and have a long record in the development genetic tools for this parasite. He has published widely in the areas of trypanosome biochemistry, chromosome structure and function, and the mechanisms of drug action and resistance. A major focus of his current research, funded by the Wellcome Trust, British Heart Foundation and the Drugs for Neglected Diseases Initiative is the development and optimisation *in vivo* imaging techniques applicable to *T. cruzi*, as tools for assessing drug efficacy and disease pathology. He has published more than 100 peer-reviewed papers, has served on expert review panels for the Wellcome Trust, and is an external adviser for TriTrypDB, the trypanosomatid community genome database.

Lucio Freitas-Junior

Event Coordinator
Chemical Biology and Screening Platform
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Campinas, Brazil
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Lucio Freitas-Junior is a molecular parasitologist that has been working in the field of tropical diseases for the past 23 years. From 2009 to 2013 Dr. Freitas-Junior was the director of the Center for Neglected Diseases Drug Discovery (CND3) at Institut Pasteur Korea, where his group worked on assay development, high throughput screening and lead optimization for Leishmaniasis, Chagas disease, Malaria and Dengue. Among the work developed by the team led by Dr Freitas-Junior, the development of image-based high throughput/high content drug screening assay for visceral leishmaniasis was a breakthrough in the field because it allowed, for the first time, the screening of chemical compounds against the mammalian form of *Leishmania donovani*, the clinically relevant form of the parasite. This assay has been used to screen over 700,000 compounds for leishmaniasis, in collaboration with different Pharma partners and the Drugs for Neglected Diseases initiative, radically changing the drug discovery landscape for this devastating neglected disease. Since 2013 Dr. Freitas-Junior is at the National Center of Research on Energy and Materials, where he continues to develop translational research on drug discovery for neglected diseases, focusing on Chagas disease, Leishmaniasis, Dengue and Chikungunya. Lucio Freitas-Junior is also working on the implementation of a Brazilian Drug Discovery Consortium, to combine multidisciplinary academic expertise in different fields of the discovery sciences to produce drugs against these diseases and, by doing so, aiding on the development of a product-oriented drug discovery matrix in the Brazilian Academia.

Martine Keenan

Head of Drug Discovery
Epichem
Murdoch, Australia
http://www.epichem.com.au/index.php
Dr Martine Keenan, Epichem's Head of Drug Discovery, is a creative synthetic and medicinal chemist with a commitment to high quality drug discovery and has over 15 years professional experience in the pharmaceutical industry. She obtained her BSc from Kings' College in London, completing a PhD in natural product synthesis at the same institution before moving to Germany to take up a post-doctoral position developing chiral catalysts for asymmetric hydrogenation.
Returning to the UK in 1998, Martine took up a medicinal chemistry position in the neuroscience division of international pharmaceutical company Eli Lilly and remained there for eight years working on a variety of projects. She made a significant contribution to Lilly's fledgling nicotinic platform leading project teams designing and synthesising novel compounds as potential new treatments for CNS indications. A move to Perth, Australia enabled her to join Epichem in 2008 to lead the medicinal chemistry team working on the development of novel drugs for protozoan parasitic diseases as part of an international consortium funded by a leading R&D Non-Government Organisation. She was appointed Head of Drug Discovery in 2009 and has been working to expand Epichem's R&D portfolio as well managing contract medicinal chemistry projects for an expanding list of clients. She has extensive expertise in all phases of preclinical discovery including design and synthesis of novel analogues, computer-aided drug design, compound optimisation towards drug candidates and successful delivery of project milestones.

Musa Mhlanga

Professor & Research group leader
Gene Expression & Biophysics
University of Cape Town Dept. of Integrative Biomedical Sciences & CSIR & IMM (Lisboa)
South Africa
http//mhlangalab.synbio.csir.co.za
Musa M. Mhlanga (USA citizen), American-born male cell biologist, holds a PhD in cell biology & molecular genetics from New York University School of Medicine (2003). He began his PhD at the Rockefeller University in the laboratory of David Ho where he worked on spectral genotyping of human alleles. He then went on to work on the development of in vitro and in vivo applications of molecular beacons for their use in visualizing RNA in living cells with Fred Russell Kramer and Sanjay Tyagi at New York University School of Medicine. Upon completion of his doctoral work he was awarded a U.S. National Science Foundation post-doctoral fellowship at the Institut Pasteur in Paris, France to work in the laboratory of nuclear cell biology. There he worked on RNA transport and single molecule visualization and tracking of RNA in living cells. In late 2008 he moved his lab to South Africa to join the Council of Scientific and Industrial Research as the Research Leader of the Synthetic Biology Emerging Research Area. He heads the Laboratory for Gene Expression & Biophysics and holds a joint appointment to the Institute of Molecular Medicine in Lisbon, Portugal. His laboratory now at the University of Cape Town Medical school works on gene

regulation, host-pathogen interactions, single molecule imaging of gene expression and the development of cell-based visual high-throughput biology techniques for screening in basic and clinical biology.

Pedro Vitor Lemos Cravo

Professor
Laboratory of Genomics and Biothecnology
Federal University of Goiás
Goiania, Brazil
http://www.researcherid.com/rid/G-3532-2012

Pedro Cravo holds a Bachelor's degree in Biotechnological Engineering, obtained in Lisbon, Portugal, in 1992. In 1995 he completed a Master's degree in Molecular and Biochemical Parasitology, at the University of Salford, United Kingdom. Two years later joined the University of Edinburgh, United Kingdom, where he completed his Ph.d. in Genetics in 2001. Since then his career has been mostly devoted to understanding the molecular mechanisms of resistance to antimalarial drugs, using genome-wide genetics combined with new concepts and technologies of genomics and bioinformatics. He is currently an Assistant Professor at the Institute of Tropical Pathology and Public health at the Federal University of Goiás, Brazil, where he follows his studies on the mechanisms of drug resistance in malaria. More recently, he has started applying genomics and bioinformatics tools towards the discovery of new antimalarial drugs through a strategy known as "drug repositioning" as well as for producing an effective vaccine against the human malaria parasite *Plasmodium vivax*.

Sérgio Schenkman

Full Professor and
member of the Brazilian Academy of Sciences
Federal University of São Paulo
São Paulo, Brazil
http://www.ecb.epm.br/~sschenkman/

Our laboratory investigates mechanisms involved in growth control and differentiation of protozoan parasites of the *Trypanosoma* genus. We have studied the signaling events involved in translation initiation and replication control. These include protein phosphorylation and acetylation by protein kinases and acetylases/deacetylases. We have demonstrated that phosphorylation of the eukaryotic initiation factor 2 (eIF2a) is required for nutritional stress-induced differentiation of *Trypanosoma cruzi*, the agent of Chagas' disease. We have shown that heme is as a key molecule involved in activation of an endosomal eIF2alpha kinase that phosphorylates eIF2a. Trypanosomes also have four different Target of Rapamycin (TOR) kinases that in eukaryotes control cellular growth. We have found that one of the TOR kinases, containing a unique PDZ domain, is required for survival in hyperosmotic conditions in *Trypanosoma brucei,* the agent of African Trypanosomiasis. We have also detected variable histone acetylation in differentiated forms and during the *T. cruzi* division cycle. We found that histone acetylation is related to chromatin assembly during the replication stages of Trypanosomes. In addition, different levels of acetylation were found in cytosolic and mitochondrial proteins, as revealed by proteomic analysis, in different stages of *T. cruzi* and *T. brucei.* Taken as a whole, these studies will help to understand how this group of organisms adapt and survive different environmental conditions, which is an essential step in developing novel anti-parasitic drugs.

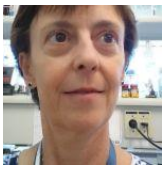
Sheraz Gul

Assay Development and Screening
Fraunhofer Institute for Molecular Biology and Applied Ecology ScreeningPort Fraunhofer-IME SP
Hamburg, Germany
http://screeningport.com/about-us/team

Sheraz Gul is currently in the Assay Development and Screening department of the Fraunhofer-IME SP where he focuses on small molecule drug discovery across many disease areas. He manages a group that is responsible for developing assays that are subsequently utilized in High Throughput Screening campaigns, as well as validation of Hit compounds and this includes determining their mechanism of action. Prior to this, he worked for GlaxoSmithKline for 7 years where he developed biochemical and cellular assays for High Throughput Screening as well and Hit compound characterization. He has a PhD and 5 years post-doctoral research experience all from the University of London. He has co-

authored numerous papers, book chapters and the Enzyme Assays: Essential Data Handbook. In addition, he has been appointed to the editorial board of the European Pharmaceutical Review. Sheraz Gul has experience in progressing small molecule drug discovery programs from the target identification stage through to Lead compound selection. His contributions to these activities have led to multiple publications in peer-reviewed journals, talks at scientific conferences, the identification of multiple Lead series and two development Candidates. Currently, he is also work-package lead in the EU-FP7 projects that focus on neglected parasitic diseases (NMTrypI and PDE4NPD).

Silvia Reni Bortolin Uliana



Assistant Professor at Department of Parasitology
Biomedical Sciences Institute, University of São Paulo
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http://lattes.cnpq.br/5238500995853873
After graduating in Medicine at the University of São Paulo in 1982, Silvia Uliana joined the Infectious Diseases Program a t Hospital das Clínicas – USP and obtained the title of Specialist in Infectious Diseases in 1985. She did her MSc at the Medicine School – USP (1988-1990) and the PhD at the Biomedical Sciences Institute – USP (1990-1993). She was a Post-Doc at Imperial College of Science, Technology and Medicine, under the supervision of Dr. Deborah Smith (1995-1996). In 1986 she joined the Department of Infectious Diseases at Hospital das Clínicas – FMUSP as a physician and, in 1989, became an Assistant at the Parasitology Department, Biomedical Sciences Institute, USP, where she is now an Associate professor. Silvia's primary research focus at present is leishmaniasis chemotherapy including evaluation of available drugs, combined therapy and discovery of new therapeutics using a "repurposing" approach.

Susan Charman

Director of the Centre for Drug Candidate Optimisation Monash Institute of Pharmaceutical Sciences
Faculty of Pharmacy and Pharmaceutical Sciences
Monash University
Australia
http://www.monash.edu.au/pharm
Susan Charman is Director of the Centre for Drug Candidate Optimisation, and Professor at the Monash Institute of Pharmaceutical Sciences. The theme of her research is understanding mechanistic relationships between physicochemical properties of drug candidates and their absorption, distribution, metabolism and elimination (ADME) characteristics. Optimisation of ADME properties is essential for new drug candidates to ensure safe and efficacious exposure profiles and convenient dosing regimens. She leads a group of 20 scientists that have established platforms to assess physicochemical, permeation, and protein binding properties, to profile metabolic stability and identify potential metabolites, to assess the potential for metabolic drug interactions, to characterize oral bioavailability and pharmacokinetic properties, and to establish clearance mechanisms. She has created a successful model for conducting collaborative, translational research within a university environment, and her group has contributed to programs that have progressed 22 new drug candidates into clinical trials. She is particularly interested in the lead optimisation of novel drug candidates for neglected and tropical diseases and has contributed to projects resulting in one approved antimalarial, two antimalarial candidates currently in clinical development and four in preclinical development. She has attracted significant funding from industry and competitive grants, has published over 125 manuscripts, and is co-inventor on 7 patent applications.

Tom von Geldern

Pharma/biotech consultant
Embedded Consulting
Illinois, USA
Tom von Geldern has been an independent consultant to the pharmaceutical and biotech industries since 2007, specializing in medicinal chemistry and discovery strategy and tactics. Prior to this, Dr. von Geldern spent over 20 years in the pharmaceutical industry, most recently serving as a Research Fellow and Senior Group Leader at Abbott Laboratories. In this capacity he led medicinal chemistry efforts resulting in the identification of clinical candidates in the areas of oncology, inflammation, cardiovascular and metabolic diseases. He is an author of 78 peer-reviewed articles, an inventor on 42 US patent applications, and has lectured by invitation on more than 40 occasions. Dr. von Geldern

received S.B. degrees in Chemistry, Mathematics, and Biology from MIT, a Ph.D. in Chemistry from the University of California at Berkeley, and performed post-doctoral research at Stanford University.

Vicky Avery

Chief Investigator & Head
Discovery Biology
Griffith University
Australia
http://www.discoverybiology.org/team/vicky-avery

Professor Vicky Avery obtained her PhD in 1995 (Flinders University, SA), and was awarded an Australian NHMRC Postdoctoral Fellowship which was undertaken at the University of Adelaide. Prof Avery gained significant industry experience whilst working for Active Biotech AB, Sweden (1998-2004). Her positions included, Section Head, Protein Interaction and Drug Discovery; Scientific Project Leader to identify the molecular target of 'Laquinimod', a novel oral treatment for MS; Director, Biochemistry and Molecular Biology and Director, Business Development. She was responsible for the development of assays for FDA to assess efficacy of a cholera vaccine, and identification of compounds against CD80, which led to RhuDex®, an oral treatment for Rheumatoid Arthritis. As Head of Biology for the AstraZeneca /Griffith University collaboration, she was responsible for more than 50 HTS campaigns conducted between 2004 -2007. These spanned all disease areas and encompassed a diverse range of technologies. Professor Avery is currently the Chief Investigator & Head of Discovery Biology, and is responsible for setting the broad research directions of the group.