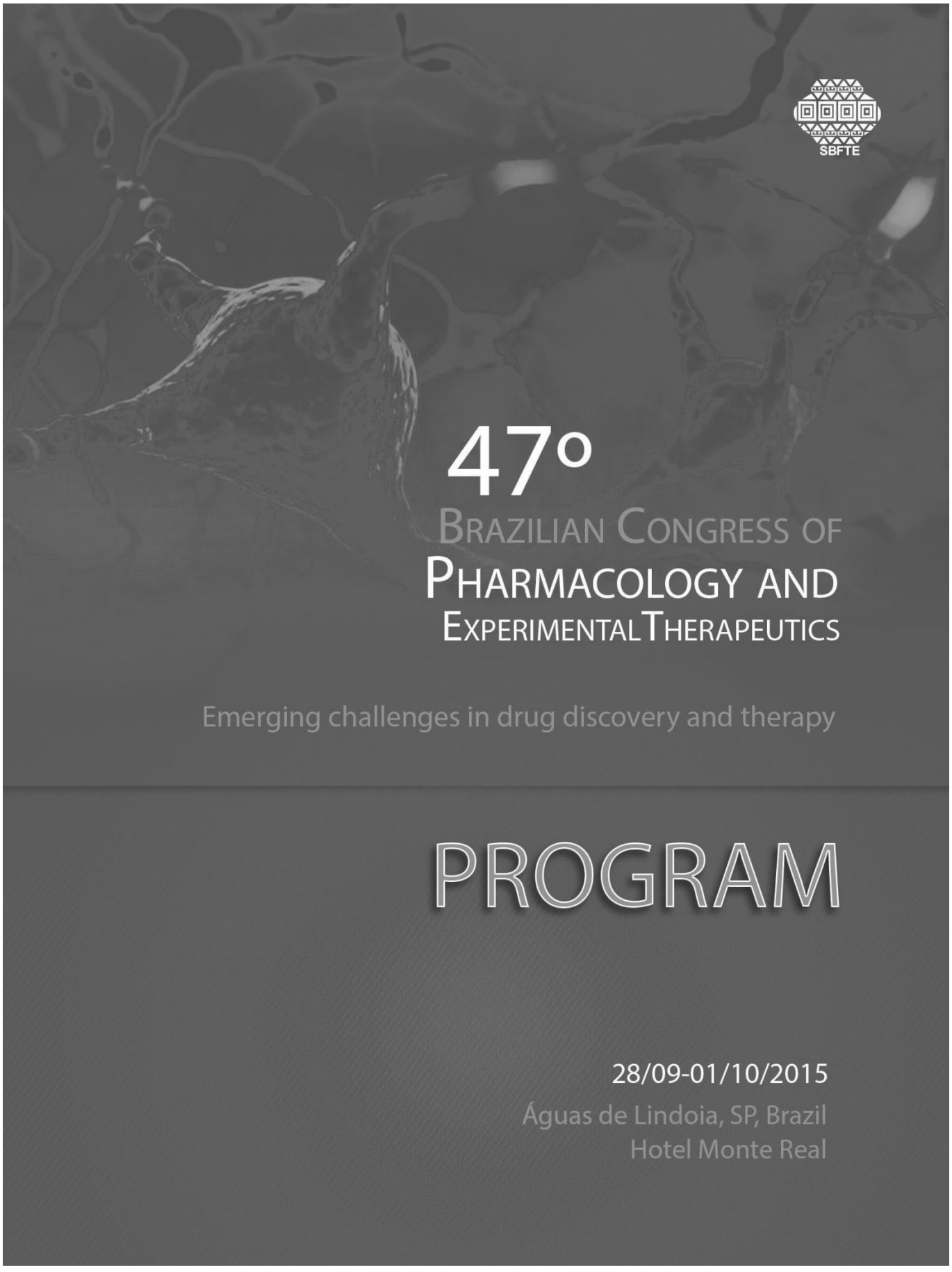

SBFTE

47º
Brazilian Congress of Pharmacology and Experimental Therapeutics

Emerging challenges in drug discovery and therapy

PROGRAM

28/09-01/10/2015

Águas de Lindoia, SP, Brazil
Hotel Monte Real

Sociedade Brasileira de Farmacologia e Terapêutica Experimental (SBFTE)
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2015 SBFTE Congress
A moment of celebration and reflection on our future as pharmacologists and as a Scientific Society

The 47th Brazilian Congress of Pharmacology Experimental Therapeutics will take place from September 28 – October 01, 2015, in the Hotel Monte Real Convention Center, Águas de Lindóia, São Paulo, when SBFTE celebrates its 49th Anniversary.

The Congress' central theme is *Emerging Challenges in Drug Discovery and Therapy* The scientific program was set up through the outstanding hard work of the Scientific Committee in assembling the final Congress Program, mostly taking into consideration the suggestions received from SBFTE's members. More than 80 speakers, among them 18 international researchers, with outstanding expertise in the field of pharmacology will present conferences and talks over the course of a few days, covering cutting-edge presentations of new and original scientific research. We also would like to highlight the sessions dedicated to topics related to research and graduate education in Pharmacology in Brazil, with representative speakers from Brazilian Research Funding Agencies (CAPES, CNPq, among others); we plan to discuss both the scientific background of research/teaching activities, as well as their political and economic context.

A special tribute will be paid to Dr. Jorge A. Guimarães not only for his outstanding contribution to Brazilian science, but also for the years of dedication and commitment as CAPES Director. The *Sergio Ferreira Lecture* will be given by the distinguished speaker Dr. Frederico G. Graeff (USP-RP). Representative members of International Scientific Societies will present conferences and also join us in a round table discussion on *Pharmacology in Latin America*: Dr. Sam Enna (USA, President of the International Union of Basic and Clinical Pharmacology, IUPHAR) and Dr. René Delgado (Cuba, President of the Cuban Society of Pharmacology). Among the estimated 600 participants, we expect to have attendees from Latin America, as part of our efforts to stimulate networking and cooperation among pharmacologists from different countries in Latin America.

The Hotel Convention Center will offer attendees a unique environment for networking, exchange of scientific ideas and social interaction. Posters will be displayed during the entire Congress close to the areas dedicated to coffee-breaks and sponsor Exhibitors. The SBFTE Board of Directors, Executive Council and the *SBFTE Jovem* will meet and welcome students, young investigators and junior faculty members, in the first day of the Congress. The sessions *Meet the Pharmacologist* and the Round Table on *Seeking a research career in the Brazilian Pharmaceutical Industry: Novel opportunities for young investigators* organized by SBFTE Jovem will provide an important space for discussions on career and professional development.

Awards sponsored by SBFTE's corporate partners will be presented to selected student and young investigator attendees present at the Congress closing session. Also, the winners of the Jose Ribeiro do Valle Award (SBFTE/Biolab Sanus Farmacêutica) and best poster presentations will be announced. Finally the commemorative *50th anniversary SBFTE logo* will be unveiled during the Closing Session, launching the activities of "The Year of Pharmacology" in 2016. A farewell celebration will follow this announcement and conclude another edition of the Congress.

We are all deeply indebted to all SBFTE members, Colleagues and Collaborators for all of their hard work in assembling this Congress.

We look forward to welcoming you, members and first timers, in Águas de Lindóia. We count on you to make this Congress a success.

Maria Christina Avellar
SBFTE President, 2015-2017

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SBFTE thanks the following organizations for supporting the
47th Brazilian Congress of Pharmacology and Experimental Therapeutics

Coordination for the Improvement of Higher Education Personnel (CAPES)
Financial Support

National Council for Scientific and Tecnological Development
Financial Support

State of Rio de Janeiro Research Foundation
Financial Support

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Financial Support

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Financial support
José Ribeiro do Valle Award.

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Useful information

Secretariat
Congress Secretariat will be open from 8h to 18h

Posters
- All posters should be on display for the duration of the conference (September 29 to October 01)
- All posters should be ready for display by 8:00 am on September 29.
- Poster presenters must be present at the poster on September 29 at 18h10-19h10 (ODD Numbers) and October 01 at 10h00-11h00 (EVEN numbers) when posters will be viewed by Poster Evaluators
- Posters should be taken down only at the end of the Congress.

Certificates
The Certificates will be sent by email to the participants and lecturers in pdf.

Media Desk
Media desk will be open from 8h to 18h. Please, leave your material at Media Desk at least two hours before your presentation. All rooms have *data show*. If you need any other equipment, please inform Media Desk as soon as possible. Lecturers presenting talks at 8h00 should leave their material at the Media Desk the day before the presentation.

Badges
The use of badge is mandatory for all activities and circulation areas

Abstracts
Abstracts presented at the poster session will be available at SBFTE site http://www.sbfte.org.br

Download our app at:
http://www.sbfte.org.br/baixar-aplicativo-sbfte/

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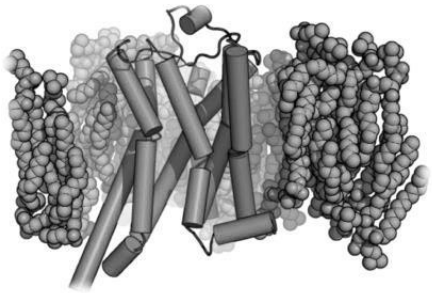
2nd Workshop of Strategies to Assess GPCR Signaling & Functional Relevance

September 25th 2015 – Ribeirão Preto, SP, Brazil.

< 7TMR-Lab >

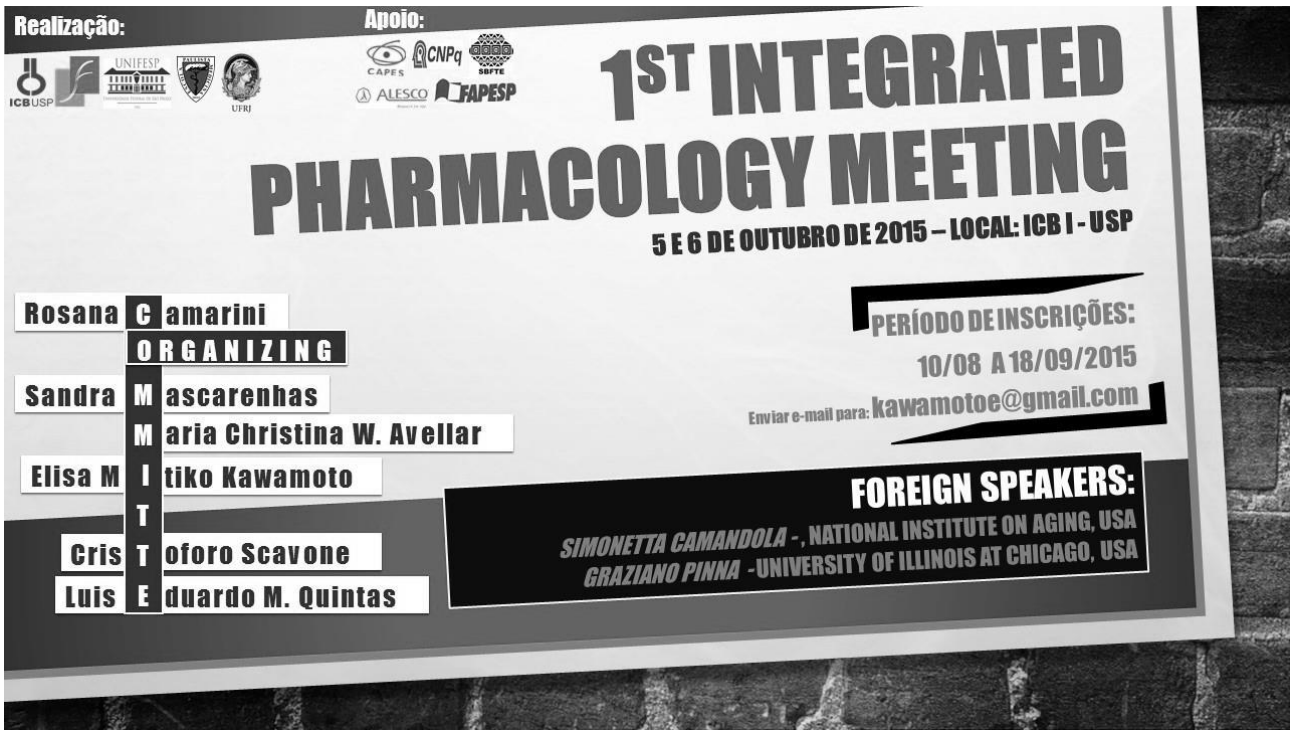


CRID
CENTER FOR RESEARCH IN INFLAMMATORY DISEASES

Organizing Committee:
Claudio M. Costa-Neto
José Carlos Alves Filho

Confirmed Speakers:
Georgios Skiniotis (University of Michigan, USA), **Claudio M. Costa-Neto**(University of Sao Paulo), **Jillian Baker** (University of Nottingham, UK), **José Carlos Alves Filho** (University of Sao Paulo), **Stephen Hill** (University of Nottingham, UK), and **selected presentations** from registered students/post-docs.

Support: FAPESP CAPES FAEPA PerkinElmer



Histórico Prêmio José Ribeiro do Valle

O Prêmio José Ribeiro do Valle, concedido anualmente pela Sociedade Brasileira de Farmacologia e Terapêutica Experimental, foi instituído em 1998 em parceria com a *Eli Lilly do Brasil*. Esta parceria vigorou até 2006 e, a partir de 2009, o prêmio passou a ser patrocinado pela Biolab-Sanus Farmacêutica. Este prêmio objetiva identificar e premiar jovens investigadores (até 35 anos) coautores principais dos cinco melhores trabalhos submetidos para apresentação no Congresso Brasileiro de Farmacologia daquele ano e inscritos ao prêmio. Os finalistas apresentam seus trabalhos na forma de Comunicação Oral e são arguidos, em sessão pública especial, realizada durante o congresso, por Comissão Julgadora (3 membros) constituída por pesquisadores seniores, especialistas nas diferentes áreas da Farmacologia. Nestes 16 anos da vigência do prêmio, os seguintes concorrentes obtiveram o primeiro lugar:

1998 – Maria Martha Campos (UFSC – Orientador: João Batista Calixto)
1999 – José Eduardo da Silva Santos (UFSC – Orientador: Jamil Assreuy)
2000 – Ana Paula Villela Dantas (ICB-USP Orientador: Maria Helena Catelli de Carvalho)
2001 – Liliam Fernandes (ICB-USP Orientador: Maria Helena Catelli de Carvalho)
2002 – Isaias Gleizer (ICB-USP Orientador: Cristoforo Scavone)
2003 – Juliano Ferreira (UFSC – Orientador: João Batista Calixto)
2004 – João Alfredo de Moraes (UERJ – Orientador: Thereza Christina Barja-Fidalgo)
2005 – Tiago Chiavegatti (Unifesp – Orientador: Rosely O. Godinho)
2006 – Ana Letícia G. Cabral Maragno (FMRP-USP – Orientador: Marcelo Damário Gomes)
2007 – Maria Fernanda de Paula Werner (UFSC – Giles A. Rae)
2008 – Ana Luiza Andrade de Paula Lopes (Unifesp – Orientador: Rosely O. Godinho)
2009 – Silvio Manfredo Vieira (FMRP-USP – Orientador: Fernando de Q. Cunha)
2010 – Vanessa Olzon Zambelli (Instituto Butantan – Orientador: Yara Cury)
2011 – Tatiana Paula Teixeira Ferreira (Fiocruz -- Patrícia Machado Rodrigues e Silva)
2012 – Maíra Assunção Bicca (UFSC – Orientador: João Batista Calixto)
2013 – Jaqueline Raymondi Silva (FMRP-USP – Orientador: Fernando de Q. Cunha)
2014 -- Jhimmy Talbot (FMRP-USP – Orientador: Fernando de Q. Cunha)

A SBFTE, por meio deste prêmio, prima pelo reconhecimento do trabalho cientifico realizado por jovens pesquisadores e incentivo à ciência brasileira.

biolab
FARMACÊUTICA

Finalistas Prêmio José Ribeiro do Valle – 2015

Andrea Rodrigues Vasconcelos

Graduação: Bacharelado e Licenciatura em Ciências Biológicas – USP (2008)
Pós-Graduação: Mestrado em Ciências (Farmacologia) – USP (2011)
Doutorado (em andamento) em Ciências (Farmacologia) – USP.
Experiência: Área de Farmacologia e Biologia Molecular, com ênfase em Sinalização associada ao Envelhecimento, Neuroproteção, Neuroinflamação e aos Processos Neurodegenerativos.
Orientador: Cristoforo Scavone.
Coorientador: Elisa Mitiko Kawamoto.

Daniele Maria Ferreira

Graduação: Biomédica – Bacharel em Análises Clínicas – Unipar (2010)
Pós-Graduação: Mestrado em Farmacologia – UFPR (2013)
Doutorado (em andamento) em Farmacologia – UFPR
Doutorado sanduíche no Tytgat Institute for Liver and Intestinal Research (Orientador: R.M.J. van den Wijngaard) -- Amsterdam
Experiência: Farmacologia de Produtos Naturais com ação sobre o trato gastrointestinal, estudando principalmente modelos de úlcera gástrica e doenças inflamatórias intestinais
Orientador: Cristiane Hatsuko Baggio

João Francisco Cordeiro Pedrazzi

Graduação: Bacharel em Ciências Biológicas – Unifal (2009)
Pós-Graduação: Mestrado em Medicina (Neurologia) – USP (2014)
Doutorado (em andamento) em Neurologia – USP
Experiência: Investiga o potencial antipsicótico do canabidiol (CBD) e seus mecanismos de ação em modelos preditivos para ação de antipsicóticos
Orientador: Elaine Aparecida Del Bel Belluz Guimarães

Raquel Dal Sasso Freitas

Graduação: Graduação em Nutrição – PUCRS (2011)
Especialização Prática em Terapia Intensiva – PUCRS (2013)
Pós-Graduação: Mestrado em Medicina e Ciências da Saúde, na área de concentração da Farmacologia Bioquímica e Molecular – PUCRS (2015)
Doutorado (em andamento) – PUCRS
Experiência: Atua no Laboratório de Farmacologia Aplicada e no Instituto de Toxicologia e Farmacologia, nas áreas de farmacologia, inflamação e nutrição
Orientador: Maria Martha Campos

Juliana Florenzano Martorelli

Graduação: Farmácia Bioquímica e Industrial -- USTJ (2006)
Pós-Graduação: Mestrado em Farmacologia – USP (2011).
Doutorado (em andamento) em Ciências Biológicas (Farmacologia) – USP
Experiência: Experiência na área de Farmácia, com ênfase em Farmacologia, atuando principalmente nos seguintes temas: Inflamação alérgica pulmonar, efeitos da exposição inalatória à partículas liberadas da exaustão do diesel (1,2-naftoquinona), defesas antioxidantes e dimorfismo sexual
Orientador: Soraia Kátia Pereira Costa
Coorientador: Lucia Rossetti Lopes

Program at a Glance

Sunday (27/09/2015)	
	Room 7
16h00-19h30	SBFTE Business Meeting (only for SBFTE Board of Directors and Council Members)

Monday (28/09/2015)			
	Room 7		
08h30-09h45	Meeting of SBFTE Organizing Committee (only for SBFTE Board of Directors and Council Members)		
10h00-13h00	SBFTE Permanent Forum of the Graduate Programs in Pharmacology (only for Heads of Pharmacology Graduate Programs, Council and Society Board)		
10h00	Venue Secretariat Opening		
13h00-14h30	Lunch		
	Room Topazio		
14h45-15h30	Welcome session to all students, young investigators and faculty attendees from the SBFTE Board of Directors and SBFTE Jovem		
15h30-17h30	Symposia		
	Room Rubi	**Room Safira**	**Room Topazio**
	Targeting ECM-Remodeling and Matrix Metalloproteinases as Potential Therapeutic Mechanisms in Cardiovascular Diseases and Cancer	Novel Mechanisms and Targets in Chronic Pain States	Behavioral Pharmacology
	Room Real		
18h15	Opening Ceremony		
18h30-19h15	Honorary Session to Jorge A. Guimarães		
19h15-20h15	Opening Lecture		
20h15	Welcome Reception		

Tuesday (29/09/2015)			
	Room Rubi	**Room Safira**	**Room Topazio**
08h00-08h50 Courses (Class 1)	Ética em Experimentação Animal	Bioestatística aplicada	Fisiologia e Biofísica do íon Ca^{2+}
09h00-11h00 Symposia	Toxicological and Pharmacological approach to the Development of New Diuretic Drugs from Natural Products	Pharmacology of Intracellular Peptides	Nanomedicine and Novel Perspectives in Drug Therapy
11h00-11h30	Coffee break and Poster View		
11h30-12h20 Conferences	Drug Discovery Strategies that Lead to Success		Visualization of GPCR Complexes by Single-Particle Electron Microscopy
12h20-13h30	Lunch		
13h30-15h30 Symposia	PK-PD approach for Drug Development	Nitrite and Nitrate in Cardiovascular Pharmacology and Therapeutics	Challenging Central Nervous System to Induce Neuroprotection
15h30-16h00	Coffee break and Poster View		
16h00-16h50 Conferences	Investigating Cell Surface Receptor Dimerization and Complex Formation with Fluorescent Ligands	*In vitro* and *in vivo* Pharmacological Characterization of Cebranopadol a Novel Mixed Nociceptin/Orphanin FQ and Opioid Receptor Agonist	Influence of TRPA1 and other TRP Channels as Thermosensitive Vascular Sensors.
	Room Real		
17h00-18h00	Como o Atual Cenário Político/Econômico impactará sobre os Programas da Capes e a Pós-graduação neste mandato		
18h10-19h10	Poster Session 1 (Odd numbers)		
	Room Rubi	**Room Safira**	**Room Topazio**
19h15-20h15	Meet the Pharmacologist: Ethics in Pharmacological Research		

Wednesday (30/09/2015)				
	Room Rubi	**Room Safira**	**Room Topazio**	**Room Onix**
08h00-08h50 Courses (Class 2)	Ética em Experimentação Animal	Bioestatística Aplicada	Fisiologia e Biofísica do Íon Ca^{2+}	
09h00-11h00 Symposia	Chronic Stress and Neuroinflammation	From Preclinical Studies to Drug Licensing and Development by Private Partners	Transient Receptor Potential (TRP) Ion Channels: A Clinical Perspective for Pain, Inflammation and Vascular Disease	
11h00-11h30	Coffee break and Poster View			
11h30-12h20 Conferences	PK/PD Applied to Anti-Inflammatory Drugs	Neuropharmacology of Neurosteroid Biosynthesis in the Treatment of PTSD	Chemokine and Inflammation	
12h20-13h30	Lunch			
12h30-13h30		Tecnologia de Micro-Fluídica de Perfusão para Ensaios de Atividade Biológica *In vivo like* – Uma Nova Fronteira para Ensaios *In vitro*		
13h30-15h30	Jose Ribeiro do Valle Award			
15h30-16h00	Coffee break and Poster View			
16h00-17h00 Oral Communications	Oral Communication 1 Neuropharmacology	Oral Communication 2 Inflammation, Pain And Nociception Pharmacology	Oral Communication 3 Natural Products	Oral Communication 4 Cardiovascular, Renal and Respiratory Pharmacology
17h00-18h30	Seeking a Research Career in the Brazilian Pharmaceutical Industry: Novel Opportunities for Young Investigators		Round table: Pharmacology in Latin America	
18h40-20h00	SBFTE General Assembly			
21h30-23h30	Meeting Party – Hotel Monte Real			

Thursday (01/10/2015)			
	Room Rubi	**Room Safira**	**Room Topazio**
08h00-08h50 Courses (Class 3)	Ética em Experimentação Animal	Bioestatística aplicada	Fisiologia e Biofísica do íon Ca^{2+}
09h00-09h50 Conferences	Beta-Blockers – Exploring New Drug Discovery Horizons in Academia	New Neuroactive Molecules against Cerebral Ischemia and Cerebrovascular Diseases in Cuba: For the Ways of Effective Neuroprotection	
10h00-11h00	**Poster Session 2 (Even numbers)**		
	Room Real		
11h15-12h15	Closing Conference		
12h15-13h00	Awards, Honorary Session and Closing Ceremony		
13h00-14h00	Farewell Lunch Party - To All Attendees before going home		

Sunday 27/09/2015	
16h00-19h30 Room 7	**Meeting of SBFTE Board of Directors and Deliberative Council** (only for Council and Society's Board Members)

Monday 28/09/2015	
08h30-09h45 Room 7	**Meeting of SBFTE Organizing Committees** (only for SBFTE Board of Directors and Council Members)
10h00	**Venue Secretariat Opening**
10h00-13h00 Room 7	**SBFTE Permanent Forum of the Graduate Programs in Pharmacology** (only for Heads of Pharmacology Graduate Programs, SBFTE Board of Directors and Council Members)
13h00-14h30	**Lunch**
14h45-15h30 Room Topazio	Welcome session to all students, young investigators and faculty attendees from the SBFTE Board of Directors and SBFTE Jovem)
15h30-17h30	**Symposia**
Room Rubi	**Targeting ECM-remodeling and matrix metalloproteinases as potential therapeutic mechanisms in cardiovascular diseases and cancer** Chairperson Michele Mazzaron de Castro (USP) • *Pharmacological targeting of intracellular proteases for diseases of oxidative stress* Richard Schulz (University of Alberta Canada) • *Inhibition of matrix metalloproteinases as potential alternative to control maladaptive vascular remodeling in hypertension* Michele Mazzaron de Castro (USP) • *Increased circulating levels of matrix metalloproteinase-2 impair cardiac function* Raquel Fernanda Gerlach (USP) • *From the tissue microenvironment to the cell nucleus: ECM-signaling regulation of mammary gland morphogenesis and cancer* Alexandre Bruni Cardoso (USP)
Room Safira	**Novel mechanisms and targets in chronic pain states** Chairperson: Thiago M. Cunha (USP) • *Gasotransmitters and nociceptive response in the inflamed temporomandibular joint* Marcelo N. Muscará (USP) • *Novel experimental evidence on the mechanisms underlying chronic tooth pulp pain* Maria Martha Campos (PUC-RS) • *Inverse agonist of type-1 cannabinoid receptors as tools for the treatment for chronic pain* Camila S. Dale (USP) • *Novel targets for neuropathic pain control* Thiago M. Cunha (USP)
Room Topazio	**Behavioral Pharmacology** (Tribute to Roberto Frussa Filho) Chairperson: Carlos Fernando de Mello (UFSM) • *Tardive dyskinesia: The contribution of Professor Roberto Frussa Filho to the comprehension of the disease* Maria Aparecida Barbato Frazão Vital (UFPR) • *On memory and reminiscence of Roberto Frussa Filho* Jorge Alberto Quillfeldt (UFRGS) • *Sleep privation and our current society* Monica Levy Andersen (Unifesp-EPM) • *Intervention points on drug abuse treatment* Eduardo A. V. Marinho (UESC)
20h15	Welcome Reception

	Room Real
18h15	**Opening ceremony**
18h30-19h15	**Honorary Session to Jorge A. Guimarães**
	Research and Post-Graduation in Brazil: Past, Present and Future. Some Reflections about the Development of Pharmacology in Brazil Jorge A. Guimarães (UFRGS) Introduced by Jamil Assreuy (UFSC)
19h15-20h15	**Opening Lecture**
	Alternative Approach to Lead Generation Sam Enna (University of Kansas, President of IUPHAR, USA) Introduced by Maria Christina W. de Avellar (Unifesp-EPM)

Tuesday 29/09/2015	
08h00-08h50	**Courses**
Room Rubi	**Ética em Experimentação Animal** Chairperson: Stela Maris Kuze Rates (UFRGS) • 1ª aula: *Diretrizes e princípios éticos* Stela Maris Kuze Rates (UFRGS)
Room Safira	**Bioestatística aplicada** Chairpersons: Carlos Fernando de Mello (UFSM) / François G. Noël (UFRJ) • 1ª aula: *Regressão não linear e analise de curva dose-efeito* François G. Noël (UFRJ)
Room Topazio	**Fisiologia e Biofísica do íon Ca^{2+}** Chairpersons: Alexandre Pinto Corrado (USP) / Rosely Oliveira Godinho (Unifesp-EPM) • 1ª aula: *Biofísica das correntes de cálcio* Viviane Louise Andree Nouailhetas (Unifesp-EPM)
09h00-11h00	**Symposia**
Room Rubi	**Toxicological and pharmacological approach to the development of new diuretic drugs from natural products** Chairperson: Arquimedes Gasparotto Jr (UFGD) • *Ethnopharmacological survey of new diuretic drugs derived from Brazilian biodiversity* Arquimedes Gasparotto Jr (UFGD) • *Latin America network for search of new diuretic drugs from plants used in traditional medicine* Dora María Benjumea Gutiérrez (University of Antioquia, Colombia) • *Regulatory information for the nonclinical toxicology studies and safety evaluation in the development of new diuretic drugs from natural products* Paulo Roberto Dalsenter (UFPR)
Room Safira	**Pharmacology of Intracellular Peptides** Chairperson: Emer S. Ferro (USP) • *Hemopressin and its therapeutic applications for treating neurodegenerative diseases* Ricardo Augusto de Melo Reis (UFRJ) • *A novel therapeutic strategy to metabolic disorders: white to brown adipose tissue differentiation using Pep19* Andrea Sterman Heimann (Proteimax Consultoria) • *Molecular and behavior characterization of oligopeptidase knockout animals* Jair Ribeiro Chagas (Unifesp) • *Mapping protein interactions between AGH peptide and 14.3.3 epsilon by cross-linking/MS and molecular modeling* Fábio C. Gozzo (Unicamp)

Room Topazio	**Nanomedicine and novel perspectives in drug therapy** Chairperson: Marco Aurélio Martins (Fiocruz) • *One pot synthesis of surface-functionalized lipid-core nanocapsules* Adriana Raffin Pohlmann (UFRGS) • *Nanotechnology as an established tool in drug research and cosmetics* Silvia Guterres (UFRGS) • *Nanodrugs for topical and oral treatment of leishmaniasis* Bartira Bergmann (UFRJ) • *Nanotechnology for drug delivery as a promising alternative to pulmonary diseases* Andressa Bernardi (Fiocruz)
11h00-11h30	**Coffee break and Poster View**
11h30-12h20	**Conferences**
Room Rubi	**Drug discovery strategies that lead to success** David C Swinney (IRND, USA) Introduced by François G. Noël (UFRJ)
Room Topazio	**Visualization of GPCR complexes by single-particle electron microscopy** Georgios Skiniotis (University of Michigan, USA) Introduced by Claudio M. Costa-Neto (USP)
12h20-13h30	**Lunch**
13h30-15h30	**Symposia**
Room Rubi	**PK-PD approach for drug development** Chairperson: Teresa C. Dalla Costa (UFRGS) • *PK/PD of anti-diabetic drugs* William Jusko (State University of New York, USA) • *Modeling of disease scales for CNS disorders* Mats Karlsson (Universidade de Uppsala, Sweden) • *PK/PD of antimicrobial drugs* Teresa C. Dalla Costa (UFRGS)
Room Safira	**Nitrite and nitrate in cardiovascular pharmacology and therapeutics** Chairperson: Jose Eduardo Tanus dos Santos (USP) • *An overview of the biological chemistry of nitrite and nitrate ions.* José Carlos Toledo Junior (USP) • *Mechanisms of antihypertensive effects of sodium nitrite and nitrate* Jose Eduardo Tanus dos Santos (USP) • *Nitrite modulates mitochondrial function in rat heart and cardiomyocytes in non-hypoxic conditions* Rafael de Lima Portella (USP)
Room Topazio	**Challenging central nervous system to induce neuroprotection** Chairperson*:* Elisa Mitiko Kawamoto (USP) • *Toll-like Receptor 4 is Involved in Spontaneous Fat and Sugar Preference* Simonetta Camandola (NIH, USA) • *Microdose lithium treatment in prevention of Alzheimer's disease* Hudson Sousa Buck (Santa Casa-SP) • *Brain plasticity induced by cardiosteroids* Cristoforo Scavone (USP)
15h30-16h00	**Coffee break and Poster View**
16h00-16h50	**Conferences**
Room Rubi	**Investigating cell surface receptor dimerization and complex formation with fluorescent ligands** Stephen Hill (University of Nottingham, UK) Introduced by Thereza Christina B. Fidalgo (UERJ)
Room Safira	***In vitro* and *in vivo* pharmacological characterization of cebranopadol a novel mixed nociceptin/orphanin FQ and opioid receptor agonist** Girolamo Calo (University of Ferrara, Italy) Introduced by Elaine C. Gavioli (UFRN)

Room Topazio	**Influence of TRPA1 and other TRP channels as thermosensitive vascular sensors.** Suzan D. Brain (King's College, UK) Introduced by Marcelo Muscará (USP)
17h00-18h00	**SBFTE Permanent Forum of Graduate Programs in Pharmacology**
Room Real	**Como o atual cenário político/econômico impactará sobre os Programas da Capes e a Pós-graduação neste mandato** Marcio de Castro Silva Filho (USP) Introduced by Carlos Fernando de Mello (UFSM)
18h10-19h10	**Poster Session 1** (Odd numbers)
	01. Cellular and Molecular Pharmacology (01.001-01.017) 02. Neuropharmacology (02.001-02.021) 03. Psychopharmacology (03.001-03-011) 04. Inflammation and Immunopharmacology (04.001-04.061) 05. Pain and Nociception Pharmacology (05.001-05.035) 06. Cardiovascular and Renal Pharmacology (06.001-06.037) and 06.036 07. Endocrine, Reproductive and Urogenital Pharmacology (07.001-07.007) 08. Respiratory and Gastrointestinal Pharmacology (08.001-08.019) 09. Natural Products and Toxinology (09.001-09.063 and 09.022) 10. Cancer Pharmacology (10.001-10.007) 11. Pharmacokinetics and Toxicology (11.001-11.015) 12. Pharmacogenomics, Pharmacogenetics and Clinical Pharmacology (12.001-12.003) 13. Drug Discovery and Development (13.001-13.013) 14. Pharmacology Education and Technology (14.001) 15. Pharmacology: Others (15.001-15.005)
19h15-20h15 Room Rubi	**SBFTE Jovem**
	Meet the Pharmacologist: Ethics in Pharmacological Research Coordinator: Erick J R Silva (Unesp-Botucatu) • Cristoforo Scavone (USP) • David C Swinney (IRND, USA) • Graziano Pinna (University of Illinois, USA) • Jamil Assreuy (UFSC) • Letícia V. Costa Lotufo (USP) • Marco Aurélio Martins (Fiocruz) • Regina P. Markus (USP) • Sam Enna (University of Kansas President IUPHAR, USA) • Simonetta Camandola (NIA, NIH) • Stela Maris Kuze Rates (UFRGS)

Wednesday 30/09/15	
08h00-08h50	**Courses**
Room Rubi	**Ética em Experimentação Animal** Chairperson: Stela Maris Kuze Rates (UFRGS) • 2ª aula: *Biotérios e manejo de animais* Luisa Maria Gomes de Macedo Braga (PUC-RS)
Room Safira	**Bioestatística Aplicada** Chairpersons: Carlos Fernando de Mello (UFSM) / François G. Noël (UFRJ) • 2ª aula: *Introdução à Análise de variância e ANOVA de uma via* Carlos Fernando de Mello (UFSM)
Room Topazio	**Fisiologia e Biofísica do Íon Ca^{2+}** Chairpersons: Alexandre Pinto Corrado (USP) / Rosely Oliveira Godinho (Unifesp-EPM) • 2a aula: *Técnicas óticas e não óticas para medição da concentração intracelular de cálcio* Edgar Paredes Gamero (Unifesp-EPM)
09h00-11h00	**Symposia**
Room Rubi	**Chronic Stress and Neuroinflammation** Chairperson: Vinicius de Frias Carvalho (Fiocruz) • *Role of PPAR-gamma on the hyperactivity of HPA axis observed in diabetic rats* Vinicius de Frias Carvalho (Fiocruz) • *Chronic Stress and Pain* Iraci L. da Silva Torres (UFRGS) • *Stress, HPA axis and Depression* Mario Francisco Juruena (USP)
Room Safira	**From Preclinical Studies to Drug Licensing and Development by Private Partners** Chairperson: François G. Noël (UFRJ) • *Discovery and development of kinase inhibitors for trypanosome diseases* David C Swinney (IRND, USA) • *Novel local anesthetic analogues as candidates for asthma therapy* Marco Aurelio Martins (Fiocruz) • *Multitarget antagonists of α_{1A}-, α_{1D}-adrenoceptors and 5-HT_{1A} receptors: Potential new strategy for treatment of benign prostatic hyperplasia* Claudia Lucia Martins Silva (UFRJ) • *Preclinical studies of ACH09, an extract obtained from vinifera grape skin* Ângela de Castro Resende (UERJ)
Room Topazio	**Transient Receptor Potential (TRP) Ion Channels: A Clinical Perspective for Pain, Inflammation and Vascular Disease** Chairperson: Soraia Katia Pereira Costa (USP) • TRP channels and potential for treatment in vascular and inflammatory disease Suzan D. Brain (Kings College, UK) • *Neonatal ambient pollutant exposure enhances vulnerability to asthma and impairs vascular reactivity in adolescence: Is there a role for TRP channels?* Soraia Katia Pereira Costa (USP) • *Elucidating the role of TRP channels in skin inflammation* Xenia Kodji (Kings College) • *TRPA1 role in joint disease: From basic to translational research* Elizabeth Soares Fernandes (UniCEUMA)
11h00-11h30	**Coffee break and Poster View**
11h30-12h20	**Conferences**
Room Rubi	**PK/PD Applied to Anti-Inflammatory Drugs** William J Jusko (State University of New York, USA) Introduced by Teresa Dalla Costa (UFRGS)
Room Safira	**Neuropharmacology of Neurosteroid Biosynthesis in the Treatment of PTSD** Graziano Pinna (University of Illinois, USA) Introduced by Maria Christina W. de Avellar (Unifesp-EPM)

Room Topazio	**Chemokine and Inflammation** Gerard Graham (University of Glasgow, Scotland) Introduced by: Patrícia M. Rodrigues e Silva Martins (Fiocruz)
12h20-13h30	**Lunch**
12h30-13h30 Room Safira	**Simpósio Merck SA**
	Tecnologia de Micro Fluídica de Perfusão para Ensaios de Atividade Biológica *In vivo* like – Uma Nova Fronteira Para Ensaios *In vitro* Palestrante: Misael Silva (Merck SA)
13h30-15h30 Room Rubi	**Jose Ribeiro do Valle Award** Chairperson: Maria Christina W. de Avellar (Unifesp-EPM)
	Jose Ribeiro do Valle Award Chairperson: Maria Christina W. de Avellar (Unifesp-EPM) *Andrea Rodrigues Vasconcelos* • 01.002 **Age-related adaptive effects of intermittent fasting during neuroinflammation.** Vasconcelos AR[1], Yshii LM[1], Kinoshita PF[1], Böhmer AE[1], Orellana AMM[1], de Sá Lima L[1], Alves R[1], Andreotti DZ[1], Marcourakis T[1], Viel TA[1], Buck HS[2], Mattson MP[3], Scavone C[1], Kawamoto EM[1] [1]USP, [2]Santa Casa de São Paulo, [3]NIH *Daniele Maria Ferreira* • 09.001 **Rhamnogalacturonan as a potential therapeutic target for the treatment of ulcerative colitis.** Maria-Ferreira D[1], Borato DG[1], da Silva LM, Corso CR[1], Nascimento AM[2], Cipriani TR[2], Watanabe PS[3], Santana DMG[3], van den Wijngaard RM, Werner MFP[1], Baggio CH[1] [1]UFPR – Farmacologia, [2]UFPR – Bioquímica, [3]UEM *João Francisco Cordeiro Pedrazzi* • 03.001 **Cannabinoids compounds attenuate sensorimotor gating disruption induced by amphetamine in mice**. Pedrazzi JFC[1], Issy AC[2], Gomes FV[3], Guimarães FS[3], Del Bel EA[2] [1]FMRP-USP – Neurociências e Ciências do Comportamento, [2]FORP-USP – Fisiologia, Morfologia e Patologia Básica, [3]FMRP-USP – Farmacologia *Raquel Dal Sasso Freitas* • 05.002 **Pre-clinical evidence on the benefits of docosahexanoic acid on adverse and anti-tumoral effects of cyclophosphamide.** Freitas RDS[1,2], Costa KM[2,1], Nicoletti NF[2,1], Campos MM[3,2,1] [1]PUCRS – Toxicologia e Farmacologia, [2]PUCRS – Medicina e Ciências da Saúde, [3]PUCRS – Odontologia *Juliana Florenzano* • 04.003 **Increased TRPA1 mRNA expression and antioxidant enzymes activity may contribute to sex differences in pulmonary allergic inflammation in young mice prior exposed to ambient pollutant 1,2-naphthoquinone.** Florenzano J, Santos KT, Feitosa KB, Soares AG, Rodrigues L, Teixeira SA, Muscará MN, Costa SKP ICB-USP – Farmacologia
15h30-16h00	**Coffee break and Poster View**
16h00-17h00	**Oral Communications**
Room Rubi	**Oral Communication 1** **Neuropharmacology** Chairperson: André S. Pupo (Unesp-Botucatu) • **03.002 Paroxetine potentiates antinociceptive process induced by chemical stimulation of ventrolateral periaqueductal gray matter.** Biagioni AF, Santos GHR, Coimbra NC FMRP-USP – Farmacologia • **02.005 Pharmacological evaluation of new aldehyde dehydrogenase-2 Inhibitors as candidates for the treatment of cocaine addiction.** Silva RR[1], de Oliveira CR[1], Costa PRR[2], Cunha TTS[3], Fraga CAM[3], Noël F[1] [1]ICB-UFRJ, [2]IPPN-UFRJ, [3]UFRJ – Farmacologia e Química Medicinal • **02.009 Proteinase Activated receptor-4 agonist elicits TRP-mediated *in vitro* and *in vivo* responses.** Patricio ES[1], Costa R[1,2], Figueiredo CP[1,2], Gers-Barlag K[3], Bicca MA[1], Manjavachi MN[1], Segat GC[1], Gentry C[3], Luiz AP[1], Fernandes ES[4], Cunha TM[5], Bevan S[3], Calixto JB[1] [1]UFSC – Farmacologia, [2]UFRJ – Farmácia, [3]King's College – Wolfson Centre for Age Related Diseases, [4]Ceuma – Biologia Parasitária, [5]FMRP-USP – Farmacologia • **02.004 Selective blockade of EP1 and EP3 receptors attenuate pentylenetetrazole-induced seizures in mice.** Marafiga JR[1], Reschke CR[1], Jesse AC[1], Masson CJ[1], Lenz QF[1], Mello CF[1] [1]UFSM – Farmacologia e Fisiologia

Room Safira	**Oral Communication 2** **Inflammation, Pain and Nociception Pharmacology** Chairperson: Thiago Mattar Cunha (USP) • **04.005 The mechanisms of NLRP3 and AIM2 inflammasome inhibition by flavonoids.** Domiciano TP[1], Verri Jr WA[2], Jones HD[3], Chen S[4], Crother TC[4], Shimada K[4], Arditi M[4] [1]UEL – Ciências da Saúde, [2]UEL – Patologia, [3]Cedars Sinai Medical Center – Pulmonary and Critical Care Medicine, [4]Cedars Sinai Medical Center – Pediatric, Infectious diseases and Immunology • **04.010 Annexin A1 (ANXA-1)-mimetic peptide controls the inflammatory and fibrotic effects induced by house dust mite (HDM) in mice.** Ferreira TPT[1], Souza ET[1], Trentin PG[1], Silva TV[1], Castro GC[1], Arantes ACS[1], Flower R[2], Perretti M[2], Martins MA[1], Silva PMR[1] [1]Fiocruz, [2]WHRI – Biochemical Pharmacology • **04.011 SN-38, the active metabolite of the anticancer agent irinotecan, is an antagonist of the toll-like receptor 4**. Wong DVT[2,1], González RH[2], Wanderley CWS[2], Borges VF[3], Leite CAVG[2], Batista GLP[2], Ribeiro-Filho HV[2], Lima JB[3], Bem AXC[2], Silva KO[1,2], Brito GAC[4], Cunha TM[3], Lima-Júnior RCP[2], Cunha FQ[3], Ribeiro RA[2,1] [1]ICC, [2]UFC – Fisiologia e Farmacologia, [3]FMRP-USP – Farmacologia, [4]UFC – Morfologia • **05.003 The role of pattern recognition receptors like toll-like receptors 4 in herpetic and post-herpetic neuralgia.** Silva CR[1], Berlink J[1], Raymondi J[1], Cunha FQ[1], Cunha TM[1] [1]FMRP-USP – Farmacologia.
Room Topazio	**Oral Communication 3** **Natural Products** Chairperson: Jamil Assreuy (UFSC) • **09.002 The role of oxidative stress in indigo alkaloid protection against TNBS-induced colitis in rats.** de Almeida ACA[1], de Faria FM[1], Manzo LPB[1], Dunder RJ[1], Socca EAR[1], Luiz-Ferreira A[2], Souza Brito ARM[1] [1]IB-Unicamp, [2]UFG – Ciências Biológicas • **09.004 Effect of 2-Phenylquinoline in experimentally induced gastric ulcers: Pathways of gastroprotection.** Breviglieri E[1], da Silva LM[1], Boeing T[1], Somensi LB[1], Gimenez A[2], Cechinel-Filho V[1], Andrade SF[1] – [1]Univali – Pharmaceutical Sciences, [2]Universidad Mayor de San Andrés • **08.002 Quercetin targets senescent lung fibroblasts from idiopathic pulmonary fibrosis patients.** Hohmann MS[1], Habiel DM[2], Coelho AL[2], Verri Jr WA[1], Hogaboam CM[2] [1]UEL – Ciências Patológicas, [2]Cedars Sinai Medical Center – Pulmonary Medicine • **09.006 Evidences about gastric healing activity of *Maytenus robusta* Reissek: *in vitro* and *in vivo* studies.** Costa P, da Silva LM, Boeing T, Somensi LB, Cury BJ, Steimbach VMB, Santin JR, Cechinel-Filho V, Andrade SF Univali – Pharmaceutical Sciences
Room Onix	**Oral Communication 4** **Cardiovascular, Renal and Respiratory Pharmacology** Chairperson: Marcelo Muscará (USP) • **06.004 Activation of a novel estrogen receptor by the agonist G1 ameliorates monocrotaline-induced pulmonary hypertension in male rats.** Alencar AKN[1], Montes GC[1], Martinez ST[2], Pinto AC[2], Groban L[3], Sudo RT[1], Zapata-Sudo G[1] – [1]ICB-UFRJ – Desenvolvimento de Fármacos, [2]UFRJ – Química, [3]Wake Forest University – Anesthesiology • **06.005 Mechanisms underlying diuretic effect of *Gomphrena celosioides* Mart. (Amaranthaceae).** Vasconcelos PCP[1], Spessoto D[1], Gasparotto Junior A[1], Kassuya CAL[1] [1]UFGD – Ciências da Saúde • **06.009 Redox-sensitive phosphorylation of AKT and ENOS and nitric oxide pathways are involved in the cardiovascular effects induced by northeastern Brazilian red wine from São Francisco river valley.** Ribeiro TP[1,2], Oliveira AC[1], Mendes-Junior LG[1], Vasconcelos WP[1], França KC[3], Nakao LS[3], Schini-Kerth V[2], Medeiros IA[1] [1]UFPB – Ciências Farmacêuticas, [2]Université de Strasbourg, [3]UFPR – Patologia • **08.006 Extracellular cAMP-adenosine pathway and carbachol synergistically increase airway smooth muscle contraction.** Pacini ESA, Godinho RO Unifesp-EPM – Farmacologia

17h00-18h30	**SBFTE Jovem – Mesa Redonda**
Room Rubi	**Seeking a Research Career in the Brazilian Pharmaceutical Industry: Novel Opportunities for Young Investigators** **Coordinator:** Erick J R Silva (Unesp-Botucatu) **Representantes da Indústria** • Carlos Eduardo Vitor (Aché Laboratórios Farmacêuticos SA) • Julio Alejandro Rojas Moscoso (Biolab) **Representantes da Academia** • Gilberto de Nucci (Unicamp) • João Batista Calixto (UFSC)
	Round Table
Room Topazio	**Pharmacology in Latin America** Coordinator: Leticia V. Costa Lotufo (USP) • Maria Christina W. de Avellar (SBFTE President, Brasil) • Sam Enna (IUPHAR President, USA) • René Delgado-Hernandez (SCF President, Cuba)
18h40-20h00 Room Rubi	**SBFTE General Assembly**
21h30-23h00	Meeting Party – Hotel Monte Real

Thursday 01/10/15	
08h00-08h50	**Courses**
Room Rubi	**Ética em Experimentação Animal** Chairperson: Stela Maris Kuze Rates (UFRGS) • 3ª aula: *Regulamentação e Diretrizes para experimentação animal no Brasil* Marco Antonio Stephano (Concea/USP)
Room Safira	**Bioestatística aplicada** Chairpersons: Carlos Fernando de Mello (UFSM) / François G. Noël (UFRJ) • 3ª aula: *ANOVA de duas vias* Carlos Fernando de Mello (UFSM)
Room Topazio	**Fisiologia e Biofísica do Íon Ca^{2+}** Chairpersons: Alexandre Pinto Corrado (USP) / Rosely Oliveira Godinho (Unifesp-EPM) • 3a aula: • *Efeitos fisiológicos relevantes mediados pelo íon Ca^{2+}* Alexandre Pinto Corrado (USP)
09h00-09h50	**Conferences**
Room Rubi	**Beta-Blockers – Exploring New Drug Discovery Horizons in Academia** Jillian Baker (University of Nottingham, UK) Introduced by Fernando de Q. Cunha (USP)
Room Safira	**New Neuroactive Molecules against Cerebral Ischemia and Cerebrovascular Diseases in Cuba: For the Ways of Effective Neuroprotection** René Delgado-Hernandez (Medical University of Havana, Cuba; SCF President, Cuba) Introduced by Maria Christina W. de Avellar (Unifesp-EPM)
10h00-11h00	**Poster Session 2 (Even numbers) with Coffee-Break**
	01. Cellular and Molecular Pharmacology (01.002-01.018) 02. Neuropharmacology (02.002-02.022) 03. Psychopharmacology (03.002-03.010) 04. Inflammation and Immunopharmacology (04.002-04.062) 05. Pain and Nociception Pharmacology (05.002-05.036) 06. Cardiovascular and Renal Pharmacology (06.002-06.034) 07. Endocrine, Reproductive and Urogenital Pharmacology (07.002-07.006) 08. Respiratory and Gastrointestinal Pharmacology (08.002-08.018) 09. Natural Products and Toxinology (09.002-09.062 and 09.031) 10. Cancer Pharmacology (10.002-10.006) 11. Pharmacokinetics and Toxicology (11.002-11.014) 12. Pharmacogenomics, Pharmacogenetics and Clinical Pharmacology (12.002) 13. Drug Discovery and Development (13.002-13.014) 15. Pharmacology: Others (15.002-15.004)
Room Real 11h15-12h15	**Closing Conference** **Sergio Ferreira Lecture**
	Serotonin in Panic and Anxiety Frederico G. Graeff (USP) Introduced by Fernando de Q. Cunha (USP)
12h15-13h00	Awards Announcements Honorary Session Launching 50th Anniversary Celebration – SBFTE Closing Ceremony
13h00-14h00	**Farewell Lunch Party - To All Attendees before going home**

01. Cellular and Molecular Pharmacology

01.001 Mechanism of action of LASSBio-579, an N-Phenylpiperazine Compound Elected as an atypical antipsychotic drug candidate. Pompeu TET[1], do Monte FM[1], Hermans E[2], Menegatti R[3], Fraga CAM[4], Barreiro EJ[5], Noël F[1] [1]UFRJ – Farmacologia Bioquímica e Molecular, [2]Université Catholique de Louvain – Neurociências, [3]UFG – Farmácia, [4]UFRJ – Farmacologia e Química Medicinal, [5]UFRJ – Ciências Biomédicas

01.003 Lipid rafts disruption and effects on the migration of tumour cells line MDA-MB 231. Guerra FS[1], Costa ML[2], Fernandes PD[1], Mermelstein C[2] [1]UFRJ – Farmacologia e Química Medicinal, [2]UFRJ – Biologia Celular e Molecular

01.005 LDT5 Prevents the increase of rat intra-urethral pressure without causing a hypotensive effect. Nascimento-Viana JB[1], Romeiro LAS[2], Noël F[1], Silva CLM[1] [1]UFRJ – Farmacologia Bioquímica e Molecular, [2]UnB – Lab. Desenvolvimento de Estratégias Terapêuticas

01.007 Changes of heart, kidney and brain Na/K-ATPase in rats with ouabain-induced hypertension. Feijó PRO[1], Neto A[2], Rossoni LV[2], Noël F[1], Quintas LEM[1] [1]UFRJ – Farmacologia Bioquímica e Molecular, [2]ICB-USP – Farmacologia

01.009 Evaluation of the bone morphogenetic protein 9 role in neonatal rat islets maturation. Silva PMR[1], Leite AR[2], Santos GJ[3], Lellis-Santos C[4], Boschero AC[3], Caperuto LC[4], Gomes PR[1], Anhê GF[1], Bordin S[2] [1]FCM-Unicamp, [2]ICB-USP, [3]IB-UNICAMP, [4]Unifesp

01.011 Cytotoxicity and chemotactic activity of L-Amino Acid Oxidase from *Bothrops jararaca* snake venom in rat lung macrophages. Fonseca FV[1], Panunto PC[1], Pereira BB[1], Marcelino EP[1], Torres-Huaco FD[1], da Silva IRF[1], Hyslop S[1] – [1]FCM-Unicamp – Bioquímica e Farmacologia

01.013 Which are the histamine receptors involved in the regulation atrial in Wistar-EPM1 rats? Nascimento SR, Musial DC, Miranda-Ferreira R, de Souza BP, Jurkiewicz A, Jurkiewicz NH Unifesp-EPM – Farmacologia

01.015 Glucocorticoid receptor expression during rat wolffian duct morphogenesis. Thimoteo DS[1], Ribeiro CM[1], Silva EJR[2], Hinton BT[3], Avellar MCW[1] [1]Unifesp-EPM – Farmacologia, [2]Unesp – Farmacologia, [3]University of Virginia School of Medicine – Cell Biology

01.017 Cyclic AMP released from skeletal muscle fiber modulates muscle contraction through the activation of presynaptic adenosine receptors. Duarte T, Pacini ESA, Godinho RO Unifesp-EPM – Farmacologia

02. Neuropharmacology

02.001 Altered [^{3}H]-GABA release stimulated by Nicotinic Acetylcholine Receptor (nAChR) activation in cerebellar synaptosomes of dystrophic (mdx) mice. Silva JDP[1], Frangiotti MIB[1], Nogueira FM[1], Stilhano RS[2], Sinigaglia-Coimbra R[3], Ko GM[4], Han SW[2], Souccar C[1] [1]Unifesp-EPM – Pharmacology, [2]Unifesp-EPM – Biophysics, [3]Unifesp-EPM – Centro de Microscopia Eletrônica, [4]Unifesp-EPM – Laboratory of Animal Experimentation

02.003 Montelukast Enhances the anticonvulsant effect of phenobarbital on PTZ-induced seizure in mice: an isobolographic analysis. Jesse AC, Fleck J, Marafiga JR, Temp FR, Mello CF UFSM – Fisiologia e Farmacologia

02.005 Pharmacological evaluation of new aldehyde dehydrogenase-2 Inhibitors as candidates for the treatment of cocaine addiction. Silva RR[1], de Oliveira CR[1], Costa PRR[2], Cunha TTS[3], Fraga CAM[3], Noël F[1] [1]ICB-UFRJ, [2]IPPN-UFRJ, [3]UFRJ – Farmacologia e Química Medicinal

02.007 The role of dorsal medial prefrontal cortex in context-induced alcohol-seeking in rats. Palombo P[1], Bianchi PC[1], Leão RM[1], Oliveira PEC[1], Planeta CS[1], Cruz FC[2] [1]Unesp-Araraquara – Princípios Ativos Naturais e Toxicologia, [2]IFSC-USP

02.009 Proteinase Activated receptor-4 agonist elicits TRP-mediated *in vitro* and *in vivo* responses. Patricio ES[1], Costa R[1,2], Figueiredo CP[1,2], Gers-Barlag K[3], Bicca MA[1], Manjavachi MN[1], Segat GC[1], Gentry C[3], Luiz AP[1], Fernandes ES[4], Cunha TM[5], Bevan S[3], Calixto JB[1] [1]UFSC – Farmacologia, [2]UFRJ – Farmácia, [3]King's College – Wolfson Centre for Age Related Diseases, [4]Ceuma – Biologia Parasitária, [5]FMRP-USP – Farmacologia

02.011 Effects caused by the CB1 inverse agonist rimonabant in a pharmacologic animal model of schizophrenia. Nazareth NJ, Marques AM, Neves GA ICB-UFRJ – Farmacologia Molecular

02.013 Characterization of a model of neuronal PTEN haploinsufficiency: Memory- and metabolism-associated effects. Cabral-Costa JV[1], Andreotti DZ[1], Mattson MP[2], Camandola S[2], Scavone C[1], Kawamoto EM[1] [1]USP – Farmacologia, [2]NIA-NIH

02.015 Chronic ouabain counteracted the effects of chronic unpredictable stress in the HPA axis and CREB signaling. Leite JA, Orellana AMM, Kinoshita PF, de Sá Lima L, Andreotti DZ, Kawamoto EM, Munhoz CD, Scavone C ICB-USP – Farmacologia

02.017 Anxiogenic-like effect of a single subconvulsant dose of pilocarpine in Swiss mice depends on the gender. Barbosa MN[1], Silva NKGT[1], Santos JA, Silva BL, Gavioli EC, Duarte FS, de Lima TCM, Duzzioni M UFAL – Ciências Biológicas e da Saúde

02.019 AT1 receptors in the prelimbic cortex modulate cardiovascular responses to acute restraint stress in rats. Brasil TFB, Fassini A, Corrêa FMA FMRP-USP – Farmacologia

02.021 Allopregnanolone effects on $GABA_A$ receptor subunits mRNA expression in the prefrontal cortex (PFC) of rats. Almeida FB[1], Agnes G[2], Nin MS[3,1], Barros HMT[1] [1]UFCSPA – Farmacociências, [2]UFCSPA – Biologia Molecular, [3]Centro Universitário Metodista do IPA

03. Psychopharmacology

03.001 Cannabinoids compounds attenuate sensorimotor gating disruption induced by amphetamine in mice. Pedrazzi JFC[1], Issy AC[2], Gomes FV[3], Guimarães FS[3], Del Bel EA[2] [1]FMRP-USP – Neurociências e Ciências do Comportamento, [2]FORP-USP – Fisiologia, Morfologia e Patologia Básica, [3]FMRP-USP – Farmacologia

03.003 Antidepressant-like effects of Nociceptin/Orphanin FQ receptor antagonists in the learned helplessness model in mice. Holanda VAD, Asth L, Medeiros IU, Guerrini R, Calo' G, Gavioli EC UFRN

03.005 Does Standard treatment for organophosphorus pesticides poisoning affects depressive like-behavior induced by chlorpyrifos in rats? Siqueira AA[1], Marques GLM[1], Minassa VS[2], Sampaio KN[1], Beijamini V[1,3] [1]UFES – Ciências Farmacêuticas, [2]UFES – Ciências Farmacêuticas, [3]UFES – Bioquímica e Farmacologia

03.007 Thimet oligopeptidae (EP24.15) knockout mice show depressive behavior. Reckziegel P, Franco RD, Ferro ES USP – Farmacologia

03.009 Initial phenotype characterization of thimet oligopeptidase (EP24.15) knockout mice. Franco RD[1], Castro LM[2], Reckziegel P[1], Camarini R[1], Ferro ES[1] [1]USP – Farmacologia, [2]Unesp – Biologia

03.011 Exposure to running wheels prevents the development of conditioned place preference induced by ethanol in mice: The role of transcriptional factor CREB in specific brain tissues. Contó MB[1], D' Almeida V[2], Camarini R[1] – [1]ICB-USP – Departamento de Farmacologia, [2]Unifesp – Psicobiologia

04. Inflammation and Immunopharmacology

04.001 Identification of novel sulfonamide and sulfonilhidrazone derivatives active to accelerate resolution of silicosis in mice. Souza ET[1], Nunes IKC[2], Ferreira TPT[1], Ciambarella BT[1], Carvalho VF[1], Azevedo RB[1], Lima LM[2], Barreiro EJ[2], Martin MA[1], Silva PMR[1] [1]IOC-Fiocruz, [2]LASSBio-UFRJ – Avaliação e Síntese de Substâncias Bioativas

04.003 Increased TRPA1 mRNA expression and antioxidant enzymes activity may contribute to sex differences in pulmonary allergic inflammation in young mice prior exposed to ambient pollutant 1,2-naphthoquinone. Florenzano J, Santos KT, Feitosa KB, Soares AG, Rodrigues L, Teixeira SA, Muscará MN, Costa SKP ICB-USP – Farmacologia

04.005 The mechanisms of NLRP3 and AIM2 inflammasome inhibition by flavonoids. Domiciano TP[1], Verri Jr WA[2], Jones HD[3], Chen S[4], Crother TC[4], Shimada K[4], Arditi M[4] – [1]UEL – Ciências da Saúde, [2]UEL – Patologia, [3]Cedars Sinai Medical Center – Pulmonary and Critical Care Medicine, [4]Cedars Sinai Medical Center – Pediatric, Infectious diseases and Immunology

04.007 Hypercorticosterolemia observed in diabetic rats depends on TLR4 activation. Magalhães NS[1], Torres RC[1], Prevatto JP[1], Gonçalves-de-Albuquerque CF[2], Martins MA[1], Silva PMR[1], Carvalho VF[1] – [1]Fiocruz – Farmacologia e Inflamação, [2]Fiocruz – Imunofarmacologia

04.009 JM25-1, a lidocaine analogue combining airway relaxant, anti-inflammatory and antieosinophilic properties: implications for new asthma therapy. Cotias AC[1], Serra MF[1], Neves JS[2], Couto GC[1], Pão CRR[1], Olsen PC[2], Anjos-Valotta EA[1], Faria RX[3], Costa JC[3], Cordeiro RSB[1], Carvalho KIM[1], Silva PMR[1], Martins MA[1] [1]Fiocruz – Fisiologia e Farmacodinâmica, [2]UFRJ, [3]Fiocruz

04.011 SN-38, the active metabolite of the anticancer agent irinotecan, is an antagonist of the toll-like receptor 4. Wong DVT[2,1], González RH[2], Wanderley CWS[2], Borges VF[3], Leite CAVG[2], Batista GLP[2], Ribeiro-Filho HV[2], Lima JB[3], Bem AXC[2], Silva KO[1,2], Brito GAC[4], Cunha TM[3], Lima-Júnior RCP[2], Cunha FQ[3], Ribeiro RA[2,1] [1]ICC, [2]UFC – Fisiologia e Farmacologia, [3]FMRP-USP – Farmacologia, [4]UFC – Morfologia

04.013 The absence of the atypical chemokine receptor D6 leads to high mortality during sepsis. Castanheira FVS, Sonego F, Kanashiro A, Borges VF, Colon DF, Donate PB, Melo PH, Russo RC, Amaral FA, Teixeira MM, Graham GJ, Locati M, Cunha TM, Alves-Filho JC, Cunha FQ USP – Farmacologia

04.015 Identifying macrophages autophagy phenotypes in diabetes. Sunahara KKS[1], Nunes FPB[2], Sannomya P[3], Martins JO[2] [1]FMUSP – Fisiopatologia, [2]FCF-USP – Análises Clínicas e Toxicológicas, [3]FMUSP

04.017 Anti-inflammatory and anti-nociceptive effects of quercetin in a chronic model of titanium dioxide (TIO_2)-induced arthritis in mice. Borghi SM[2,1], Mizokami SS[1], Pinho-Ribeiro FA[1], Casagrande R[3], Verri Jr WA[1] [1]UEL – Ciências Patológicas, [2]UEL – Patologia, [3]UEL – Ciências Farmacêuticas

04.019 Influence of leptin receptor expression in lipid mediators production, in primary culture of pulmonary endothelial cells from intrauterine undernourished rats, stimulated by LPS. Azevedo GA[1], Balbino AM[1], Santos LA[1], Gil NL[1], Silva MM[1], Fernandes L[1], Landgraf MA[2,1], Landgraf RG[1] [1]Unifesp-Diadema – Inflamação e Farmacologia Vascular, [2]USP – Farmacologia

04.021 TRPC5 regulates temperature and body weight in septic mice. Pereira DMS[1], Mendes SJF[1], Castro Jr JAA[1], Aubdool A[2], Alawi K[2], Takore P[2], Grisotto MAG[1], Brain S[2], Fernandes ES[3] – [1]Universidade Ceuma – Biologia Parasitária, [2]King's College London – Vascular Biology and Inflammation, Cardiovascular Division, [3]Universidade Ceuma and King's College London

04.023 Role of endothelin receptor antagonists in primary culture of lung endothelial cells activated by LPS. Silva MM[1], Balbino AM[1], Gil NL[1], Azevedo GA[1], Fernandes L[1], Landgraf MA[2,1], Landgraf RG[1] [1]Unifesp-Diadema – Laboratório de Inflamação e Farmacologia Vascular, [2]USP – Farmacologia

04.025 Tumoral necrosis factor-alpha inhibits the increase of cytosolic calcium levels and C-SRC and fibrinogen receptor activation in ADP-stimulated platelets. Bonfitto PHL, Lopes-Pires ME, Goulart G, Naime ACA, Bueno PI, Antunes E, Marcondes S Unicamp – Farmacologia

04.027 Gabapentin reduce pro-inflammatory parameters of the colitis induced by Trinitrobenzenesulfonic Acid (TNBS) in rats. Magalhães DA[1], Cruz Junior JS[2], Dutra YM[2], Brito TV[1], Filgueiras MC[2], Barbosa ALR[2] [1]UFPI – Biotecnologia, [2]UFPI

04.029 Evaluation of anti-inflammatory potential of hydroalcoholic extract and polysaccharide fraction from *Thuja occidentalis* in mice. Silva IS, Brito CFC, Sousa FBM, Carvalho NS, Araújo S, Souza LKM, Araújo TSL, Pacífico DM, Filho ACML, Lima GM, Almendra RB, Medeiros JVR UFPI – Farmacologia

04.031 Does hydrogen sulfide (H_2S) influence apoptosis process in lungs from allergic mice? Ribeiro MC[1], Mendes JA[2], Silva MS[1], Moreira GCP[1], Dias NH[1], Albaladejo BT[1], Pereira JA[1], Rocha T[1], Ferreira HHA[3] – [1]USF, [2]Unicamp, [3]SLMandic

04.033 Comparative study of anti-inflammatory activity of *Mikania glomerata* and *Mikania laevigata* extracts. Pereira CS[1], Antunes E[1], Sawaya ACHF[2], Iwamoto RD[1], Landucci ECT[1] [1]FCM-Unicamp – Pharmacology, [2]IB-Unicamp – Plant Physiology

04.035 Human thioredoxin influences *Candida albicans* virulence *in vitro*. Silva BLR, Mendes SJF, Ferro TAF, Grisotto MAG, Monteiro Neto V, Fernandes ES Universidade Ceuma – Biologia Parasitária

04.037 *In vitro* LPS-induced zymosan phagocytosis and inflammatory activity of murine peritoneal macrophages are mediated by protease-activated receptor (PAR)2. Barra A, Siqueira MVA, Matos NA, Freitas KM, Lopes MTP, Klein A ICB-UFMG – Farmacologia

04.039 Anti-inflammatory effect of low-level laser therapy and the role of nitric oxide in carragenan induced edema. Cruz JSJ, Mazulo JCRN, Sousa NA, Queiroz FFSN, Brito TV, Barbosa ALR, Filgueiras MC UFPI – Acadêmico

04.041 Nanocapsules increase alpha-bisabolol bioavailability in lung tissue and reduce acute pulmonary inflammation induced by LPS in mice. D'Almeida APL, Ciambarella BT, Souza ET, Terroso T, Coutinho DS, Gomes CR, Oliveira NS, Pohlmann AR, Guterres SS, Silva PMR, Martins MA, Bernardi A Fiocruz – Inflamação

04.043 Anti-inflammatory and antinociceptive activity evaluation of oleoresin of *Copaifera reticulata* in animal model. Almeida Jr J, Silva EBS, Moraes TMP, Oliveira ECP, Moraes WP ISCO-UFOPA

04.045 Effects of augmented O-Glcnacylation on activation and differentiation of macrophages. Zanotto CZ, Olivon VC, Mestriner FLAC, Alves-Filho JC, Carneiro FS, Tostes RC FMRP-USP – Farmacologia

04.047 Proteolytic fraction from *Vasconcellea cundinamarcensis* latex stimulates macrophage activity against inflammatory breast cancer cells. Braga AD[1], Freitas KM[1], Teixeira LCR[1], Salas CE[2], Lopes MTP[1] [1]ICB-UFMG – Farmacologia, [2]ICB-UFMG – Biochemistry and Immunology

04.049 Irinotecan increases regulatory T Cells and Th17 cells in intestinal mucositis. Fernandes C, Wanderley CWS, Muniz HA, Silva CMS, Teixeira MA, Souza NRP, Cândido AGF, Ribeiro RA, Lima-Júnior RCP UFC – Fisiologia e Farmacologia

04.051 Evaluation of in vivo and in vitro anti-inflammatory activity of *Rubus imperialis* extract and the isolated compound Niga-Ichigoside F1. Tonin TD, Machado ID, Niero R, Petreanu M, Santin JR USP – Análises Clínicas e Toxicológicas

04.053 Vascular changes and acute inflammation induced by agar in an air pouch model. Gomes MF, Avila PES, Bastos GNT, Nascimento JLM ICB-UFPA

04.055 Effect of hydroethanolic extract of the xylopodium of *Mandevilla longiflora* (Desf.) Pichon on the release of inflammatory mediators in murine macrophages stimulated. Almeida DAT, Cruz TCD, Rosa SIG, Martins DTO UFMT – Ciências Básicas em Saúde

04.057 Mechanisms involved in the peripheral anti-inflammatory effect of tramadol into rat's temporomandibular joint. Lamana SMS, Nascimento APC, Napimoga MH, Araújo DR, Furtado FF, Macedo CG, Clemente-Napimoga JT FOP-Unicamp – Ciências Fisiológicas

04.059 Topical formulation containing microencapsulated rutin reduces UVB irradiation-induced skin oxidative stress and inflammation. Medeiros DC[1], Martinez RM[2], Mizokami SS[3], Pinho-Ribeiro FA[3], Georgetti SR[2], Baracat MM[2], Verri Jr WA[3], Casagrande R[2] [1]UEM – Ciências Farmacêuticas, [2]UEL – Ciências Farmacêuticas, [3]UEL – Ciências Patológicas

04.061 Extracellular adenosine orchestrates sepsis-induced immunossupression through activation of A2a receptor. Nascimento DC, Melo PH, Ferreira RG, Peres RS, Cunha FQ, Alves-Filho JC FMRP-USP – Farmacologia

05. Pain and Nociception Pharmacology

05.001 Curcumin targets different signaling pathways to reduce superoxide anion-induced hyperalgesia. Fattori V[1], Pinho-Ribeiro FA[1], Borghi SM[1], Alves-Filho JC[2], Cunha TM[2], Cunha FQ[2], Casagrande R[3], Verri Jr WA[1] [1]UEL – Ciências Patológicas, [2]FMRP-USP – Farmacologia, [3]UEL – Ciências Farmacêuticas

05.003 The role of pattern recognition receptors like toll-like receptors 4 in herpetic and post-herpetic neuralgia. Silva CR[1], Berlink J[1], Raymondi J[1], Cunha FQ[1], Cunha TM[1] [1]FMRP-USP – Farmacologia

05.005 4-HNE levels and TRPA1 expression vary with the severity of temporomandibular joint dysfunction. Klug RJ[1], Mendes SJF[2], Ferro TAF[3], Paiva IC[3], Lamha APSF[4], Almeida LSB[5], Silva MA[1], Monteiro Neto V[6], Muscará MN[7], Calixto JB[8], Grisotto MAG[2], Fernandes ES[1,6] [1]Uniceuma – Odontologia, [2]Uniceuma – Biologia Parasitária, [3]Uniceuma – BIONORTE, [4]Unieuro – Odontologia, [5]UFMA – Odontologia, [6]Uniceuma – Biologia Parasitária, [7]USP – Farmacologia, [8]CIENP

05.007 Anti-allodynic effect of nicotinamide in experimental model of rheumatoid arthritis. Dutra MMGB[1,2], Nascimento Jr EB[3], Araújo DP[4], Fátima A[4], Machado RR[2], Coelho MM[2] [1]Centro Universitário Newton Paiva – Farmacologia, [2]UFMG – Farmacologia, [3]UFPI – Farmacologia, [4]UFMG – Química

05.009 The resveratrol peripheral antinociceptive effect is mediate by μ opioid receptor activation. Oliveira CC, Costa AF, Duarte IDG, Perez AC, Santos SHS, Romero TRL UFMG – Farmacologia e Fisiologia

05.011 Antinociceptive effect of decoction extract *H. crenata* Pohl and possible mechanism involved. Donald GR[1], Giorno TBS[1], Carvalho PR[1], Fernandes PD[1] – [1]LaFDI-UFRJ – Farmacologia da Dor e da Inflamação

05.013 Effect of the selective TRPV4 channel antagonist on the scratching behavior in mice. Matias DO[1], Alves VS[1], Fabiana DC[1], Miranda ALP[2], Costa R[2] [1]UFRJ – Acadêmico, [2]UFRJ – Ciências Farmacêuticas

05.015 Investigation of antinociceptive and anti-inflammatory potential of naringenin in mice. Dallazen JL, Silva CF[1], Baggio CH, Werner MF UFPR – Farmacologia

05.017 Nitroxyl reduces chronic constriction injury-induced neuropathic pain in mice. Longhi Balbinot DT[1], Rossaneis AC[1], Pinho-Ribeiro FA[1], Bertozzi MM[1], Casagrande R[2], Katrina MM[3], Verri Jr WA[1] – [1]UEL – Ciências Patológicas, [2]UEL – Ciências Farmacêuticas, [3]University of Arizona – Química

05.019 Role of Transient Receptor Potential Vanilloid-4 (TRPV4) channel in diabetic peripheral neuropathy in mice. Dias FC, Alves VA, Matias DO, Silva RV, Santos BLR, Lima CKF, Miranda ALP, Costa R UFRJ – Biotecnologia Farmacêutica

05.021 Evaluation of antinociceptive activity of methanolic fractions of sugarcane juice (*Saccharum officinarum* L.). Soares MA, Silva NLC, Gomes AC, Simas NK, Kuster RM, Miranda ALP, Tributino JLM – UFRJ

05.023 Inhibition of gastrin-releasing peptide receptor by PD176252 markedly prevents the chronic pruritus in a mouse model of atopic dermatitis. Canevese FF, Machado GDB, Pereira PSJ, Campos MM PUCRS – Farmacologia e Toxicologia

05.025 Evaluation of central and peripheral changes in different models of tooth pulp inflammation in rats. Filippini HF[1,2], Scalzilli PA[1,3], Costa KM[1,4], Freitas RDS[1,4], Campos MM[1,2,3,4] [1]PUCRS – Toxicologia e Farmacologia, [2]PUCRS – Odontologia, [3]PUCRS – Odontologia, [4]PUCRS – Medicina e Ciências da Saúde

05.027 Blockage of gastrin-releasing peptide receptor by PD176252 ameliorates acute and chronic pruritus in mice. Machado GDB, Danesi GM, Pereira PJS, Campos MM PUCRS

05.029 Antinociceptive mechanisms of a lipid transfer protein isolated from noni seeds in mice. Campos DCO[1], Costa AS[1], Rocha AD[1], Carmo LD[2], Alencar NMN[2], Oliveira HD[1] [1]UFC – Bioquímica, [2]UFC – Fisiologia e Farmacologia

05.031 Antihyperalgesic and antiallodynic effect of γ-TPN in the model of sciatic nerve partial ligation. Passos FFB, Piauilino CA, Lopes EM, Oliveira AP, Almeida FRC UFPI

05.033 Spinal cord mechanisms involved in Ehrlich cells-induced cancer pain. Zarpelon AC, Calixto-Campos C, Verri Jr WA UEL – Ciências Patológicas

05.035 Microglial Cells: no role in diabetes-induced hyponociception into rats TMJ. da Rocha LM[1], Muzilli A[1], Freitas FF[1], Macedo CG[1], Abdalla HB[1], Bonfante R[1], Clemente-Napimoga JT[1] – [1]FOP/UNICAMP

06. Cardiovascular and Renal Pharmacology

06.001 Sarcoplasmic reticulum/plasmatic membrane interaction activated by ryanodine-sensitive calcium stores in mice mesenteric artery. Garcia DCG[1], Lemos VS[2], Côrtes SF[1] [1]UFMG – Farmacologia, [2]UFMG – Fisiologia e Biofísica

06.003 Role of aldosterone in the inflamassome activation in macrophages and Type 2 Diabetes. Ferreira NS[1], Pereira CA[1], Zanotto CZ[1], Carlos D[2], Tostes RC[1] [1]FMRP-USP – Farmacologia, [2]FMRP-USP – Imunologia

06.005 Mechanisms underlying diuretic effect of *Gomphrena celosioides* Mart. (Amaranthaceae). Vasconcelos PCP[1], Spessoto D[1], Gasparotto Junior A[1], Kassuya CAL[1] [1]UFGD – Ciências da Saúde

06.009 Redox-sensitive phosphorylation of AKT and ENOS and nitric oxide pathways are involved in the cardiovascular effects induced by northeastern Brazilian red wine from São Francisco river valley. Ribeiro TP[1,2], Oliveira AC[1], Mendes-Junior LG[1], Vasconcelos WP[1], França KC[3], Nakao LS[3], Schini-Kerth V[2], Medeiros IA[1] [1]UFPB – Ciências Farmacêuticas, [2]Université de Strasbourg, [3]UFPR – Patologia

06.011 Ethnopharmacological investigation of the diuretic and hemodynamic properties of native species of the Brazilian biodiversity. Tirloni CAS[1], Prando TBL[2], Barboza LN[3], Gasparotto FM[1], Lourenço ELB[2], Gasparotto Junior A[1] – [1]UFGD – Ciências da Saúde, [2]Unipar – Ciências Biológicas, [3]UFPR – Ciências Farmacêuticas

06.013 Pharmacological characterization of the beta-3 agonist, mirabegron in platelets isolated from healthy volunteer. Alexandre EMD, Silvério-Mendes CB, de Nucci G, Antunes E, Mónica FZ FCM-Unicamp – Farmacologia

06.015 Sodium nitrate attenuates the vascular effects and the hypotensive responses to sodium nitrite. Angelis CD[1], Oliveira-Paula GH[2], Pinheiro LC[2], Tanus-Santos JE[2] [1]FCM-Unicamp, [2]FMRP-USP

06.017 Omeprazole increases gastric ph and blunts the antihypertensive effects of sodium nitrite but not of S-Nitrosoglutathione. Vilalva KH, Pinheiro LC, Ferreira GC, Oliveira GH, Portella RL, Tanus JE FMRP-USP – Farmacologia

06.019 The venous endothelium: Cell cultures and the expression of Angiotensin II receptors. Torres TC, Fernandes L Unifesp-Diadema

06.021 Antihypertensive effects of sodium nitrite are associated with prevention of hypertension-induced increases in vascular MMP-2 and vascular remodeling. Rizzi E[1], Guimaraes DA[1], Conde-Tella SO[1], Pinheiro LC[1], Gerlach RF[2], Tanus-Santos JE[1] [1]FMRP-USP – Farmacologia, [2]FORP-USP – Morfologia, Estomatologia e Fisiologia

06.023 Effects of the nytrosil complex cis-Ru (2,2'bipyridine)2(thiourea)(NO)] in systemic hemodynamics of anesthetized normotensive rats. Cabral PHB[1], Pessoa TO[1], Sampaio TB[1], Junior FSG[2], Santos CF[1], Fonteles MC[1], Lopes LGF[2], Nascimento NRF[1] – [1]UECE – Fisiologia e Farmacologia, [2]UFC – Química Biológica

06.025 Effects of barbinervic acid, A triterpene isolated from *Eugenia punicifolia* in rat thoracic aorta Teixeira RGS[1], Pascual R, Lima-Araújo KG[1], Gandía L, Silva CLM[2], Santos WC[1] – [1]UFF, [2]UFRJ

06.027 Matrix metalloproteinase inhibition prevents loss of calponin-1 in early hypertensive vascular remodeling. Belo VA, Castro MM, Tanus-Santos JE FMRP-USP – Farmacologia

06.029 Impaired relaxation of mesenteric artery to Nitric Oxide (NO) in rats with ligature-induced periodontitis. Jesus FN[1], Neto EAS[1], Wenceslau CF[2], Teixeira SA[1], Costa SKP[1], Muscará MN[1] [1]ICB-USP – Farmacologia, [2]ICB-USP – Fisiologia e Biofísica

06.031 Apocynin has higher potency than diapocynin to induce vasodilation in mesenteric resistance arteries of Wistar rats. Troiano JA[1], Potje SR[1], Graton ME[1], Silva DS[1], Ximenes VF[2], Antoniali C[1] [1]FOA-Unesp – Ciências Básicas, [2]FCB-Unesp – Química

06.033 Involvement of rock and calcium in vasodilator response induced by Glyceryl Trinitrate (GTN) and Tetrahydrofurfuryl Nitrate (NTHF) in human umbilical artery. Alustau-Fernandes MC[1], Melo MP[2], Silva TAF[2], Maciel PMP[1], Machado NT[1], Gomes SM[3], Mendes-Junior LG[1], Mendes-Neto JM[4], Furtado FF[5], Athayde-Filho PF[1], Medeiros IA[1] [1]UFPB – Produtos Naturais Sintéticos e Bioativos., [2]UFPB – Ciências da Saúde, [3]Maternidade Cândida Vargas, [4]UFS – Pós-Graduação em Ciências Fisiológicas, [5]UFCG – Escola Técnica de Saúde

06.035 Beta2-adrenoceptor is not essential for the response to environmental stress in the heart. Moura AL[1,2], Brum PC[3], Cespedes IC[4], Spadari RC[1,2] [1]Unifesp – Farmacologia, [2]Unifesp – Biociências, [3]USP – Educação Física e Esporte, [4]Unifesp – Biociências

06.036 Alpha1beta1 and integrin-linked kinase interact and modulate Angiotensin II effects in vascular smooth muscle cells. Moraes JA[1], Frony AC[1], Dias AM[1], Renovato-Martins M[1], Rodrigues G[1], Marcinkiewicz C[2], Assreuy J[3], Barja-Fidalgo C[1] [1]UERJ – Biologia Celular e Molecular, [2]Temple University, [3]UFSC

06.037 Extract of *Syzygium cumini* (L.) Skeels fruit peel reduces weight gain and improves vascular response in rats with hypercaloric diet. Torres RA[1], Silva TAF[2], Maciel PMP[3], Nascimento SM[1], Cavalcante HC[4], Alustau-Fernandes MC[3], Medeiros IA[3,2], Veras RC[1,2] – [1]PPGCN-UFPB, [2]DCF-CCS-UFPB, [3]PGPNSB-UFPB, [4]UFPB – Nutrição

07. Endocrine, Reproductive and Urogenital Pharmacology

07.001 Mirabegron relaxes urethral smooth muscle by a dual mechanism involving β3-Adrenoceptor activation and α1-adrenoceptor blockade. Alexandre EC[1], Kiguti LR[2], Calmasini FB[1], Ferreira R[3], Silva FH[1], Silva KP[2], Ribeiro CA[2], Mónica FZ[1], Pupo AS[2], Antunes E[1] [1]FCM-Unicamp – Farmacologia, [2]IBB-Unesp, [3]FCM-Unicamp – Hematologia e Hemoterapia

07.003 Androgen-induced changes in the expression of the β-defensin Spag11c during rat Wolffian duct morphogenesis. Ribeiro CM[1], Silva EJR[2], Thimoteo DS[1], Hinton BT[3], Avellar MCW[1] – [1]Unifesp-EPM – Farmacologia, [2]Unesp – Farmacologia, [3]University of Virginia – Cell Biology

07.005 Local cytokine responses to LPS or LTA in a rat model of acute epididymitis. Silva EJR[1,2], Ribeiro CM[2], Avellar MCW[2] [1]Unesp – Farmacologia, [2]Unifesp-EPM – Farmacologia

07.007 Corticosterone control of pineal gland nuclear factor kappa B-related genes couples rest/activity to light/dark rhythm. da Silveira Cruz-Machado S[1,2], Tamura EK[1], Carvalho-Sousa CE[1], Cecon E[1], Fernandes PA[1], Markus RP[1] [1]IB-USP – Cronofarmacologia

08. Respiratory and Gastrointestinal Pharmacology

08.001 JME-209 I: A novel orally active mexiletine analogue exhibiting antispasmodic properties – mechanism of action and translation to an animal model of bronchoconstriction. Carvalho KIM[1], Oliveira MTP[1], Coutinho DS[1], Silva ET[2], Costa JCS[2], Faria RX[3], Silva PMR[1], Martins MA[1] [1]Fiocruz – Inflammation, [2]Farmanguinhos-Fiocruz, [3]Fiocruz – Cellular Communication

08.003 Simvastatin protects against alendronate-induced gastric mucosal injury in mice. Carvalho NS, Souza LKM, Sousa NA, Araújo TSL, Silva MM, Silva IS, Costa DS, Lima Filho ACM, Almendra RB, Medeiros JVR UFPI – Farmacologia

08.005 Gastroprotective activity and related mechanisms of *p*-Cymene (*p*-isopropyltoluene). Paulo LL, Sales IRP, Formiga RO, Nascimento RF, Machado FDF, Lima GRM, Sobral MV, Batista LM – UFPB

08.007 Involvement of TRPV1 receptor in plasma extravasation in trachea and bronchi of rats treated with angiotensin-converting enzyme inhibitor. Oliveira JRJM, André E UFPR – Farmacologia

08.009 Pre-clinical evaluation of intestinal anti-inflammatory activity of three Brazilian medicinal species: *Achyrocline satureoides*, *Maytenus robusta* and *Rubus imperialis*. Farias JAM[1], da Silva LM[1], Somensi LB[1], Cury BJ[1], Santin JR[1], Niero R[1], Andrade SF[1] [1]Univali – Pharmaceutical Sciences

08.011 D-cysteine protects gastric mucosa by an independent mechanism of Cystathionine γ-Lyase and D-amino acid oxidase. Araújo TSL[1], Souza LKM[2], Nicolau LAD[3], Costa DS[4], Sousa NA[1], Sousa FBM[1], Carvalho NS[4], Silva IS[4], Pacífico DM[1], Medeiros JVR[1,2,4] [1]UFPI – Biotecnologia, [2]UFPI – Ciências Biomédicas, [3]UFC – Farmacologia, [4]UFPI – Farmacologia

08.013 Gastroprotective effect of diminazene aceturate: role of ACEII/Ang(1-7)/MAS pathway in gastric injury models in mice. Souza LKM[1], Nicolau LAD[2], Araújo TSL[2], Costa DS[2], Sousa NA[2], Sousa FBM[2], Silva IS[2], Pacífico DM[2], Medeiros JVR[1] – [1]UFPI – Ciências Biomédicas, [2]UFPI

08.015 Antidiarrheal activity of *Maytenus erythroxylon* Reissek (Celastraceae) in mice. Formiga RO, Sales IRP, Nascimento RF, Lima GRM, Quirino ZGM, Tavares JF, Batista LM – UFPB

08.017 Rutin reduces abdominal hyperalgesia and pancreatic inflammation in acute pancreatitis induced by L-Arginine in mice. Teixeira DF[1], Camargo EA[1], Abreu FF[1], Souza ACA[1], Costa SKP[2], Muscará MN[2], Teixeira SA[2], Oliveira JP[1] [1]UFS – Ciências Fisiológicas, [2]USP – Farmacologia

08.019 Ethanol-impaired hepatic and gastric function: benefits with *Baccharis trimera* extract. Lívero FAR[1], Silva LM[1], Ferreira DM[1], Beltrame OC[2], Werner MFP[1], Acco A[1] [1]UFPR – Farmacologia, [2]UFPR – Medicina Veterinária

09. Natural Products and Toxinology

09.001 Rhamnogalacturonan as a potential therapeutic target for the treatment of ulcerative colitis. Maria-Ferreira D[1], Borato DG[1], da Silva LM, Corso CR[1], Nascimento AM[2], Cipriani TR[2], Watanabe PS[3], Santana DMG[3], van den Wijngaard RM, Werner MFP[1], Baggio CH[1] – [1]UFPR – Farmacologia, [2]UFPR – Bioquímica, [3]UEM

09.003 Involvement of muscarinic and bradykinin receptors in the prolonged diuretic properties of *Echinodorus grandiflorus* and its relation to the prostaglandin and nitric oxide pathway. Tirloni ACS[1], Prando TBL[2], Barboza LN[3], Gasparotto FM[1], Lourenço ELB[2], Gasparotto Junior A[1] [1]UFGD – Farmacologia e Toxicologia de Produtos Naturais, [2]Unipar – Farmacologia e Toxicologia de Produtos Naturais, [3]UFPR – Farmacologia

09.005 Development of skin wound healing treatment: focus on *Passiflora mucronata* plant extract. Figueiredo J[1], Castro AB[1], Barreto A[1], Silva ICV[2], Calheiros AS[3], Ferreira AC[3], Frutuoso VS[3], Muzitano MF[1], Leal ICR[2], Bonavita AG[1] [1]UFRJ-Macaé, [2]UFRJ – Produtos Naturais e Alimentos, [3]Fiocruz – Imunofarmacologia

09.007 Anti-inflammatory effect of crude extract of S. hispidus's skin in allergic pleurisy murine model induced by ovalbumin. Muylaert FF[1], Chaves AS[1], Fernandes LDA[2], Ferraris FK[1], Amendoeria FC[1] – [1]Fiocruz – Farmacologia e Toxicologia, [2]IEAPM –Oceanografia

09.009 Anti-diabetic, anti-inflammatory and antioxidant effects of *Euterpe oleracea* Mart. (Açaí) extract in Type 2 Diabetic Rats. The exercise training potentiates these effects? Bem GF, Costa CA, Santos IB, Cordeiro VSC, Carvalho LCRM, Souza MAV, Costa GF, Okinga A, Rocha APM, Ognibene DT, Resende AC, Moura RS UERJ – Farmacologia e Psicobiologia

09.011 Antinociceptive, anti-inflammatory and gastroprotective effects of polysaccharides of *Croton cajucara* Benth. in rodents. Souza EFJ[1], Werner MFP[1], Nascimento AM[2], Cipriani TR[2] – [1]UFPR – Farmacologia, [2]UFPR – Farmacologia Bioquímica e Molecular

09.013 Investigation of gastroprotector potential of *Vernonia condensata* Baker, a Brazilian medicinal plant used in the treatment of gastric ulcer. Boeing T, da Silva LM, Somensi LB, Petreanu M, Niero R, Santin JR, Andrade SF – Univali – Ciências Farmacêuticas

09.015 The influence of calcium channels on vasorelaxant effect of (-)-borneol in superior mesenteric artery of l-name hipertensive rats. Souza FM, Silva-Filho JC, Azevedo PSS, Campelo RT, Rocha MS, Santos MEP, Lima GS, Snatos MRV, Oliveira AP NPPM-UFPI

09.017 Antidiarrheal activity of a sulfated polysaccharide extracted from seaweed *Gracilaria caudata* in rodents. Costa DS[1], Sousa NA[2], Souza LKM[2], Araújo TSL[2], Sousa FBM[2], Carvalho NS[1], Nogueira KM[3], Araújo S[3], Oliveira AP[3], Medeiros JVR[1,2] [1]UFPI – Farmacologia, [2]UFPI – Biotecnologia, [3]UFPI

09.019 Gastroprotective effect of ethanolic extract of *Samanea tubulosa* on naproxen-induced gastric damage in mice. Nogueira KM[1], Souza LKM[2], Pacífico DM[1], Araújo TSL[3], Costa DS[4], Sousa NA[3], Sousa FBM[3], Medeiros JVR[2,3], Sales PAB[1], Costa APR[1], Nicolau LAD[5] [1]UFPI, [2]UFPI – Ciências Biomédicas, [3]UFPI – Biotecnologia, [4]UFPI – Farmacologia, [5]UFC – Farmacologia

09.021 Lipid-lowering and antiatherogenic effects of *Cuphea carthagenensis* (JACQ.) J.F. Macbr. in rabbits. Barboza LN[1], Dalsenter PR[1], Prando TBL[2], Ribeiro RCL[2], Lourenço ELB[2], Gasparotto Junior A[3] [1]UFPR – Farmacologia, [2]Unipar – Farmacologia, [3]UFGD – Farmacologia

09.022 Acute toxicity and gastroprotective activity of *Wissadula periplocifolia* L. (Malvaceae) in mice. Silva AKM, Barros MEFX, Sales IRP, Formiga RO, Teles YCF, Souza MFV, Batista LM UFPB

09.023 Effect of the hydroalcoholic extract of *Croton antisyphiliticus* oxidative stress in mice with pre-hypertension induced by L-Name. Deus FA[1], Melo DS[2], Costa KB[2], Gregório LE[3], Rocha EV[2], Santos CFF[1] [1]UFVJM – Fisiologia e Farmacologia, [2]UFVJM, [3]Unifesp

09.025 Involvement of phospholipase A2 (PLA2) and cyclooxygenase metabolites in the contraction of rat isolated ileum and stomach by *Lachesis muta muta* (South American Bushmaster) venom. Stroka A[1], Dias L[1], Sousa NC[1], Melgarejo A[2], Hyslop S[1] [1]Unicamp – Farmacologia Básica e Clinica, [2]Instituto Vital Brazil – Zoologia Médica

09.027 Effect of Patchouli Essential Oil (*Pogostemon cablin*) on chemotaxis of leukocytes *in vitro.* Silva-Filho SE[1], Aguiar RP[1], Uchida NS[1], Wiirzler LAM[1], Rodrigues PJ[1], Cardia GFE[1], Cavalcante HAO[2], Bersani-Amado CA[1], Cuman RKN[1] [1]UEM – Farmacologia e Terapêutica, [2]FITL – Farmácia

09.029 Cardiovascular responses to Bothropstoxins I and II, Phospholipases A2 from *Bothrops jararacussu* (Jararacuçu) snake venom. Rodrigues MAP, Dias L, Smaal A, Rennó AL, Lorenzetti R, Sousa NC, Panunto PC, Inoue BR, Hyslop S Unicamp – Farmacologia

09.033 Gastroprotective effect of rosmarinic acid against NSAIDs and cold restrain stress induced ulcers in mice. Nascimento RF, Machado FDF, Sales IRP, Barbosa-Filho JM, Batista LM UFPB – Ciências Farmacêuticas

09.035 Friedelin enhances angiogenesis and accelerate wound healing in diabetic mice. Correia ACC[1], Carmo JOS[1], Lima DJ[1], Aquino FLT[1], Ferro JNS[1], Broetto L[1], Conserva LM[1], Martins MA[2], Silva PMR[2], Barreto E[1] [1]UFAL, [2]Fiocruz

09.037 Therapeutic potential of sulfated polysaccharide fraction extracted from seaweed *Hypnea musciformis* on acute and secretory diarrhea in rodents. Sousa NA[1], Souza LKM[2], Araújo TSL[2], Costa DS[2], Carvalho NS[2], Nogueira KM[2], Sousa FBM[2], Leódido ACM[2], Araújo S[2], Campos MS[2], Medeiros JVR[1] [1]UFPI – Biotecnologia, [2]UFPI

09.039 Sulfated polysaccharide fraction from marine algae *Gracilaria caudata* reduces mechanical hypernociception and inflammation during experimental arthritis in mice. Bingana RD[1], Silva RO[1], Oliveira FFB[1], Sousa FBM[2], Carmo LD[1], Chaves LS[3], Barros FCN[3], Ribeiro RA[1], Barbosa ALR[2], Freitas ALP[3], Soares PMG[4], Souza MHLP[1], Medeiros JVR[2] [1]UFC – Farmacologia, [2]UFPI – Biotecnologia, [3]UFC – Bioquímica, [4]UFC – Morfologia

09.041 Antinociceptive and antidepressant-like effects of the *Vitex megapotamica* in rats. Rubin MA[1], Hamann FR[1], Rossato MF[1], Mello CF[2] [1]UFSM – Bioquímica e Biologia Molecular, [2]UFSM – Farmacologia e Fisiologia

09.043 Extract assessment *Allium cepa* L. in diabetic rats streptozotocin-induced. Lemos LIC[1], Medeiros MA[1], Silva FS[1], Abreu BA[1], Bortolin RH[1], Meira KV[1], Rezende AA[1], Figueiredo CAV[2], Oliveira T[2], Medeiros KCP[1] [1]UFRN, [2]UFBA

09.045 Use of *Tibouchina granulosa* tea wound healing of diabetic mice. Sobrinho AP[1], Amorim JL[1], Ferreira LLC[2], Fernandes PD[3] – [1]UFRJ – Laboratório de Farmacologia da Dor e Inflamação, [2]Instituto Vital Brazil – Fitoterápicos, [3]UFRJ – Farmacologia e Inflamação

09.047 Hypolipidemic effect of a grape skin extract of *Vitis vinifera* (ACH09) in C57BL/6 mice fed a high-fat diet. Santos IB, da Costa GF, Costa CA, de Bem GF, Cordeiro VSC, Soares de Moura R, Resende AC UERJ – Farmacologia e Psicobiologia

09.049 Effect of methanolic extract, fractions and sub-fractions of *Garcinia achachairu* on the blood pressure of anesthetized rats. Januário AGF[1,2], Peruzzo MM[2], Mariano LNB[3], Niero R[3], Nardi GM[2,1] [1]Unoesc – Biotecnologia, [2]Unoesc – Farmacologia, [3]Univali – Ciências Farmacêuticas

09.051 A new perspective for F(ab')2 antibodies fragments on Venom:Antivenom Analysis using SE-HPLC. Collaço RCO[1], Randazzo-Moura P[2], Cogo JC[3], Sanny CG[4], Rodrigues-Simioni L[1] [1]Unicamp – Farmacologia, [2]PUCSP – Farmacologia, [3]UNIVAP –Estudos da Natureza, [4]Oklahoma State University – Biochemistry and Microbiology

09.053 Gastroprotective activity of *Cissampelos sympodialis* Eichl. (Menispermaceae) involves the maintenance of reduced glutathione levels. Sales IRP, Pessoa MMB, Nascimento RF, Formiga RO, Machado FDF, Barbosa-Filho JM, Batista LM UFPB – Ciências Farmacêuticas

09.055 Polysaccharide fraction isolated from *Passiflora edulis* inhibits the inflammatory response and the oxidative stress in mice. Sousa FBM[1], Silva RO[2], Damasceno SRB[2], Brito TV[1], Fontenele AM[1], Braúna IS[1], Junior JSC[1], Maciel JS[3], de Paula RCM[3], Freitas ALP[3], Medeiros JVR[1], Silva DC[4], Barbosa ALR[1] [1]UFPI – Biotecnologia, [2]UFC – Farmacologia, [3]UFC – Bioquímica, [4]UNIVASF

09.057 The role of kinin system in *Lonomia obliqua* – induced acute kidney injury: contribution of bradykinin B1 receptor, coagulation system activation and vascular alterations. Berger M[1], Beys-da-Silva WO[2], Santi L[2], Moraes JA[3], Marcon R[4], Vieira MAR[5], Yates JR[6], Calixto JB[4], Barja-Fidalgo C[3], Guimarães JA[1] [1]HCPA-UFRGS, [2]Univates – Biotecnologia, [3]UERJ – Biologia Celular, [4]UFSC – Farmacologia, [5]UFMG – Fisiologia e Biofísica, [6]The Scripps Research Institute – Chemical Physiology

09.059 Evaluation of acute toxicity and hypoglycemic effect of *Amasonia campestris* in animal model. Nascimento AA, Guimarães Junior BS, Alvez CM, Ribeiro RB, Santos AM Unifap – Experimentação Animal

09.061 Evaluation of the gabaergic system in the anesthetic effect of S-(+)-Linalool in silver catfish (*Rhamdia quelen*) evaluation of the gabaergic system in the anesthetic effect of S-(+)-linalool in silver catfish (*Rhamdia quelen*). Bianchini AE[1], Garlet QI[1], Silva LL, Heinzmann B[2], Baldisserotto B[1] [1]UFSM – Farmacologia e Fisiologia, [2]UFSM – Farmácia Industrial

09.063 Antinociceptive activity of extracts and secondary metabolites of Renealmia alpinia. Benjumea D[1], Cortés N[2], Osorio E[2], León F[3], Cutler S[3], Gómez-Betancur I[1] – [1]Universidad de Antioquia – Ofidismo/Escorpionismo [2]Universidad de Antioquia – Investigación en Sustancias Bioactivas [3]The University of Mississippi – BioMolecular Sciences

10. Cancer Pharmacology

10.001 Evaluation of Eugenol anticancer activity by regulation of the oncogenic transcription factor Forkhead Box M1. Wiirzler LAW[1], Aguiar RP[1], Silva-Filho SE[1], Rodrigues PJ[1], Cardia GFE[1], Uchida NS[1], Velázquez-Martínez CA[2], Bersani-Amado CA[1], Cuman RKN[1] – [1]UEM, [2]University of Alberta

10.003 Cytotoxic effect of Telocinobufagin on H460 lung cancer cells. Rendeiro MM[1], Azevedo SV[2], Fernandes J[2], Cunha-Filho GSA[1], Noël F[1], Quintas LEM[1] – [1]UFRJ – Farmacologia, [2]UFRJ – Ciências Morfológicas e Fisiológicas

10.005 *In vitro* evaluation of quinoxaline-derived chalcones associated with standard chemotherapies in oral squamous cell carcinoma. Mielcke TR[1], Erig TC[2], Chiela EC[3], Kist LW[4], Mascarello A[5], Chiaradia LD[5], Bogo MR[6], Nunes RJ[5], Campos MM[1] – [1]PUCRS – Medicine and Health Sciences, [2]PUCRS – Pharmacy, [3]UFRGS – Hepatology and Gastroenterology, [4]PUCRS – Genomics and Molecular Biology, [5]UFSC – Chemistry, [6]PUCRS – Cell and Molecular Biology

10.007 Role of endogenous glucocorticoids in diabetes-induced increase in B16F10 melanoma lung metastases. Araújo AF[1], Carvalho VF[2], Diaz BL[1] [1]UFRJ, [2]Fiocruz

11. Pharmacokinetics and Toxicology

11.001 Toxic effects of OMC administration during development of rats in lactational period. Barbosa E, Savignon T, Ferraris FK, Chaves AS, Muylaert FF, Rodrigues SA, Brito TM, Amendoeira FC Fiocruz – Farmacologia e Toxicologia

11.003 Evaluation of potential toxicity of hydroethanolic extract of *Terminalia argentea* Mart Leaves. Beserra AMSS, Martins DTO UFMT – Ciências Básicas em Saúde

11.005 Development a diabetic model with streptozotocin in Wistar rats applied to a microdialysis study. Izolan JS, Braga A, Lima DMF, Araújo BV UFRGS

11.007 A post-marketing study of pharmacokinetic bioequivalence between commercial generic and reference amoxicillin in rats. Mattos LIS, Ferraris FK, Brito TM, Chaves AS, Martins HF, Pinto DP, Silva DMD, Amendoeira FC. LAB-SEFAR-Fiocruz

11.009 Evaluation of the effects of mangiferin nanocapsules on hematological parameters in wistar rats. Garcez RA, Carmo GM, Raffin R, Fontana BD, Borin DB, Vaucher RA, Rech VC Centro Universitário Franciscano

11.011 Characterization of a cryptococcal meningitis model in male Wistar rats. Lock GA, Alves IA, Araújo BV UFRGS

11.013 Plasma pharmacokinetics of cefazolin in obese and non-obese rats after intravenous dosing. Palma EC[1], Laureano JV[1], Lima DMF[2], Araújo BV[3], Dalla Costa T[3] – [1]UFRGS – Ciências Farmacêuticas, [2]UFRGS – Farmácia, [3]UFRGS – Farmácia

11.015 Comparison of free subcutaneous tissue concentrations of cefazolin in obese and non-obese rats determined by microdialysis. Laureano JV[1], Palma EC[1], Lima DMF[2], Dalla Costa T[1], Araújo BV[1] – [1]UFRGS – Ciências Farmacêuticas, [2]UFRGS – Farmácia

12. Pharmacogenomics, Pharmacogenetics and Clinical Pharmacology

12.001 Impact of Arginase 1 and Arginase 2 on erectile dysfunction risk and disability. Lacchini R[1], Blanco ALF[2], Muniz JJ[1], Nobre YTDA[3], Cologna AJ[3], Martins ACP[3], Tanus-Santos JE[2] [1]EERP-USP – Enfermagem Psiquiátrica e Ciências Humanas, [2]FMRP-USP – Farmacologia, [3]FMRP-USP – Cirurgia

12.003 Endothelin-1 production and expression of micrornas in preeclamptic patients responsive and nonresponsive to antihypertensive therapy in an in vitro model of preeclampsia. Dias MC, Sandrim VC, Bovolato ALC, Deffune E IBB-Unesp

13. Drug Discovery and Development

13.001 Screening for carcinoma cell lines confirmed a hit in drug discovery. Antunes JE[1], Pereira MBM[2], Ribeiro RT[1] [1]UFJF – Farmácia, [2]UFJF – Ciências Básicas em Saúde

13.003 Layered double hydroxides with intercalated indomethacin: Antinociceptive study and gastroprotective effect. Bentes-Lima A[1], Dias DRC[1], Queiroz-Santos GC[2], França CM[1], Anicete-Santos M[3], Nascimento JLM[3], Bastos GNT[2] [1]UFPA – Biotecnologia, [2]UFPA – Neurociências, [3]UFPA

13.005 Development, characterization and evaluation of naringin and naringenin nanocapsules-induced cytotoxicity. Ferreira CF[1], Cordenonsi LM[2], Sulczewski FB[3], Liszbinski RB[3], Rodrigues LJ[1], Boeck CR[1], Raffin RP[1] [1]Unifra – Nanociências, [2]UFRGS – Ciências Farmacêuticas, [3]Unifra – Biomedicina

13.007 Novel partial agonist of PPAR-gamma (LASSBio-1773) reduces neuropathic pain in diabetic rats. Araujo JSC, Dias JL, de Silva JS, Trachez MM, Delgobbo MS, Silva TF, Lima LM, Barreiro EJ, Sudo RT, Zapata-Sudo G UFRJ – Farmacologia e Química Medicinal

13.009 LFQM 75: New lead compound for Alzheimer's Disease treatment. Souza INO[1], Pereira TS[1], Boni MS[1], da Silva FMR[1], Viegas Jr C[2], Castro NG[1], Neves G[1] [1]ICB-UFRJ, [2]Unifal

13.011 Evaluation of plant extracts and synthetic compounds on secretion of insulin from langerhans islets. Iwamoto RD, Borck PC, Lubaczeuski C, Pereira CS, Sawaya ACHF, Landucci ECT, de Nucci G Unicamp – Farmacologia

13.013 Antitumor activity of the fractions containing three-finger toxins from the venom of the *Micrurus lemniscatus* (American Elapidic Snake): prospection of new molecules with specific pharmacology targets. Donato MF, Santos AK, Rios JPP, Batista-Filho FL, Pimenta AMC, Resende RR, de Lima ME UFMG – Bioquímica e Imunologia

14. Pharmacology Education and Technology

14.001 Realist simulation using a patient simulator: a tool to integrate central nervous system pharmacology teachings to clinical features. Silva JLV, Morioka CY, Marcos RL, Duran CCG, Gallotti RMD Uninove – Ciências da Saúde

15. Pharmacology: Others

15.001 Activation of δPKC and AKT mediates inhibition of platelet aggregation of rats 6h after lipopolysaccharide injection. Frade-Guanaes JO[1], Lopes-Pires ME, Marcondes S[1], Antunes E[2] [1]Unicamp – Farmacologia, [2]Unicamp – Farmacologia e Inflamação

15.003 Pharmacological activity extract ethanolic Cyperus articulatus **var.** *Nodosus*. Silva EBS[1], Machado IR[2], Barata LES[2], Arévalo MR[2], Silva AS[2], Vieira LQ[3], Castro W[3], Ruiz ALTG[4], Torre AD[4], Castro KCF[2], Moraes WP[1] – [1]UFOPA – Farmacologia, [2]UFOPA – Produtos Naturais Bioativos, [3]UFMG – Gnotobiologia e Imunologia, [4]CPQBA-Unicamp

15.005 Unfractionated heparin effect on wound healing. Nascimento AS[1], Borges PA[2], Nogueira TA[1], Gomes JPM[1], Garcia TA[1], Calil-Elias S[1] [1]UFF – Farmácia, [2]UFRJ – Farmacologia e Química Medicinal

01. Cellular and Molecular Pharmacology

01.002 Age-related adaptive effects of intermittent fasting during neuroinflammation. Vasconcelos AR[1], Yshii LM[1], Kinoshita PF[1], Böhmer AE[1], Orellana AMM[1], de Sá Lima L[1], Alves R[1], Andreotti DZ[1], Marcourakis T[1], Viel TA[1], Buck HS[2], Mattson MP[3], Scavone C[1], Kawamoto EM[1] [1]USP, [2]Santa Casa de São Paulo, [3]NIH

01.004 Modulation of lipopolysaccharide-induced immune response in raw 267.4 macrophages: role of insulin and cholecalciferol. Bella LM[1], Tessaro FHG[1], Nolasco EL[1], Ayala TS[1], Azevedo CB[2], Martins JO[1] [1]FCF-USP – Análises Clínicas, [2]Unifesp-EPM – Disciplina de Reumatologia

01.006 Extracellular cyclic AMP: "third messenger" activity in vas deferens contraction? Moro RP[1], Pacini ESA[1], Godinho RO[1] [1]Unifesp-EPM – Farmacologia

01.008 Fast dissociation of LASSBio-579 and its p-Hydroxylated derivative at the Dopamine D2 receptor. Monte FM[1], Pompeu TET[1], Bosier B, Fraga CAM[2], Menegatti R[3], Noël F[1] [1]UFRJ – Farmacologia Bioquímica e Molecular, [2]UFRJ, [3]UFG

01.010 Effects of the anti-aging hormone Klotho on AKT/FoxO signaling in the central nervous system. Mazucanti C, Cararo M, Sala T, Yshii LM, Scavone C USP – Ciências Biomédicas

01.012 Heterogeneous population of alpha-1 adrenoceptors in abdominal aorta of male and female rats. Silva KP, Pupo AS IBB-Unesp – Farmacologia

01.014 Adenosine A_{2A} RECEPTOR plays a key role in lung fibroblast proliferation and activation triggered by IL-13 *in vitro*. Sá YAPJ, Ciambarella BT, Martins MA, Silva PMR Fiocruz – Inflamação

01.016 L6 myogenic cell line as a skeletal muscle model for analysis of anti-catabolic drugs. Eloi FR, Funke MG, Godinho RO Unifesp-EPM – Farmacologia

01.018 P2X7 and vanilloid-associated pores: Common events in murine peritoneal macrophages? Ferreira LGB[1], de Melo Reis RA[2], Henriques-Pons A[1], Alves LA[1], Faria RX[1] [1]Fiocruz, [2]UFRJ

02. Neuropharmacology

02.002 Quantitative changes of amino acid transmitters in the brain of dystrophin-deficient (mdx) mice. Frangiotti MIB[1], Silva JDP[1], Castro Neto EF[2], Sousa PVV[2], Naffah-Mazzacoratti MG[3], Souccar C[1] [1]Unifesp-EPM – Pharmacology, [2]Unifesp-EPM Neurology and Neurosurgery, [3]Unifesp-EPM – Biochemistry

02.004 Selective blockade of EP1 and EP3 receptors attenuate pentylenetetrazole-induced seizures in mice. Marafiga JR[1], Reschke CR[1], Jesse AC[1], Masson CJ[1], Lenz QF[1], Mello CF[1] – [1]UFSM – Farmacologia e Fisiologia

02.006 Celecoxib decreases proinflammatory cytokines in the hippocampus and cerebral cortex after pentylenetetrazole (PTZ)-induced seizures in mice. Temp FR[1], Marafiga JR[1], Jesse AC[1], Milanesi LH[1], Hessel AT[1], Rambo LM[1], Mello CF[1] [1]UFSM – Fisiologia e Farmacologia

02.008 Protocols to study modulation of long-term excitatory synaptic plasticity in hippocampal slices. Paiva KV[1], Santana PHDAS[2], Castro NG[2] [1]UFRJ – Farmácia, [2]UFRJ

02.010 Evaluation of the protective effect of Simvastatin nanocapsules on seizures induced by quinolinic acid in rats. Guerino CB[1], Alves BC[2], Thumé L[3], Cardoso PA[4], Cardoso MM[4], Boeck CR[1] [1]Unifra – Nanociências, [2]UFRGS – Bioquímica e Farmacologia, [3]Unifra – Acadêmico

02.012 Effect of ketamine on the improvement of depressive-like behavior and memory loss in animal model of Parkinson's disease induced by 6-OHDA. Vecchia DD[1], Wendler E[1], Kanazawa LKS[1], Hocayen PAS[1], Miyoshi E[2], Andreatini R[1] [1]UFPR – Farmacologia, [2]UEPG – Ciências Farmacêuticas

02.014 Morphine impairs the persistence of memory via a cAMP/PKA-dependent pathway. Milanesi LH, Porto GP, Signor C, Funck VR, Rubin MA, Mello CF UFSM – Fisiologia e Farmacologia

02.016 Effect of acute and subcronic nimesulide treatment on pentylenetetrazol (PTZ)-induced seizures in mice. Köche EM[1], Temp FR[1], Marafiga JR[1], Jesse AC[1], Hessel AT[1], Milanesi LH[1], Rambo LM[1], Mello CF[2] – [1]UFSM – Farmacologia e Fisiologia, [2]UFSM – Fisiologia e Farmacologia

02.018 Quercetin did not reverse methylphenidate-induced hyperlocomotion, an animal model of mania. Kanazawa LKS, de Mélo ML, Beirão Júnior PS, Barcaro IMR, Andreatini R UFPR – Farmacologia

02.022 Evaluation of voluntary running effects in metabolism and neurogenesis in female mice during pregnancy and breast-feeding. Andreotti DZ, Cabral-Costa JV, de Sá Lima L, Kawamoto EM, Scavone C ICB-USP – Farmacologia

03. Psychopharmacology

03.002 Paroxetine potentiates antinociceptive process induced by chemical stimulation of ventrolateral periaqueductal gray matter. Biagioni AF, Santos GHR, Coimbra NC FMRP-USP – Farmacologia

03.004 Intra-dorsal periaqueductal gray injection of noradrenaline induces anxiolytic-like effect in the elevated T maze. Carvalho JJV[1], Souza DO[2], Martins JM[1], de Bortoli VC[1,2] [1]UFES – Bioquímica e Farmacologia, [2]UFES – Ciências Farmacêuticas

03.006 Rapid and sustained anticompulsive effect of ketamine in mice submitted to the marble burying test. Tosta CL, Silote GP[1], Souza MM[2], Soares FRC[1], Joca SRL[3], Beijamini V[4,5] – [1]UFES – Bioquímica e Farmacologia, [2]UFES – Ciências Farmacêuticas, [3]FCFRP-USP, [4]UFES – Bioquímica e Farmacologia, [5]UFES – Ciências da Saúde

03.008 50-kHz USV calls as a marker for mania in a sleep deprivation model. Wendler E[1], Dalla Vecchia D[1], Kanazawa LKS[1], de Souza CP[1], Hocayen PAS[1], Schwarting RKW[2], Andreatini R[1] [1]UFPR – Farmacologia, [2]Philipps-University of Marburg

03.010 Cocaine oral self-administration and GABA-A receptor subunits in a rat model of ADHD. Umpierrez L[1], Gonçales T[1], Kimura K[1], Costa P[1], de Souza MF, Barros HMT[4] [1]DFC-UFCSPA, [2]UFCSPA – Farmacociências

04. Inflammation and Immunopharmacology

04.002 Quercetin therapeutically attenuates silica-induced pulmonary fibrosis in mice. Guimarães FV, Ferreira TPT, Ciambarella BT, Arantes ACS, Azevedo RB, Martins MA, Silva PMR Fiocruz

04.004 Corticosterone and Zymosan modulation of melatonin production in RAW 264.7 macrophage lineage. Silva DS, Almeida RKG, Pires-Lapa MA, Markus RP, Fernandes PACM IB-USP – Fisiologia

04.006 ADP treatment improves wound healing in diabetic mice. Borges PA[1], Brogliato AR[1], Figueiredo JB[1], Meyer-Fernandes JR[2], Neves SJ[1], Benjamim CF[1] [1]ICB-UFRJ – Farmacologia e Química Medicinal, [2]IBqM-UFRJ

04.008 Effect of gold nanoparticles on pulmonary inflammation caused by silica particles in mice. Ciambarella BT, Ribeiro NBS, Arantes ACS, Serra MF, Azevedo RB, Fernandes AJM, Martins MA, Silva PMR Fiocruz – Inflamação

04.010 Annexin A1 (ANXA-1)-mimetic peptide controls the inflammatory and fibrotic effects induced by house dust mite (HDM) in mice. Ferreira TPT[1], Souza ET[1], Trentin PG[1], Silva TV[1], Castro GC[1], Arantes ACS[1], Flower R[2], Perretti M[2], Martins MA[1], Silva PMR[1] – [1]Fiocruz, [2]WHRI – Biochemical Pharmacology

04.012 Evaluation of the TLR7 partial agonist TMX-302 as anti-inflammatory and antiasthmatic agent in murine models of lung respiratory diseases. Ghilosso-Bortolini R[1], Ferreira TP[1], Arantes AC[1], Silva PMR[1], Maj R[2], Martins MA[1] [1]Fiocruz – Farmacologia e Inflamação, [2]Telormedix SA

04.014 Effects of Resolvin D1 on the allergic eosinophilic inflammation in obese mice. Tavares EBG, Calixto MC, André DM, Antunes E FCM-Unicamp – Farmacologia

04.016 Anti-inflammatory activity of tyrosol salicylate derivatives. Aguiar RP[1], Wiirzler LAM[1], Silva-Comar FMS[1], Rodrigues PJ[1], Cardia GFE[1], Silva-Filho SE[1], Uchida NS[1], Rocha BA[1], Velázquez-Martínez CA[2], Cuman RKN[1] [1]UEM – Farmacologia, [2]University of Alberta – Ciências Farmacêuticas

04.018 Modulation of pathways of the resolution of inflammation following hydroalcoholic crude extract from *Casearia sylvestris* (HCE-CS) application in experimental complex regional pain syndrome –Type I (CRPS-I). Piovezan AP[1,3,2], Batisti AP[3], Benevides MLACS[3], Lenfers BT[4], Fausto LSL[3], Martins DF[3], Seed M[2], Headland SE[2], Cooper D[2], Souza PS[2], Perretti M[2] [1]PPGCS, [2]WHRI, [3]LaNex-Unisul, [4]LaNDI-UFSC

04.020 Involvement of 11-bHSD-1/2 in altered inflammatory response pattern presented by undernourished offspring. Vaz DBR[1], Balbino AM[1], Akamine EH[2], Carvalho MHC[2], Landgraf RG[1], Landgraf MA[2,1] [1]Unifesp-Diadema – Inflamação e Farmacologia Vascular, [2]USP – Farmacologia

04.022 Immunomodulatory properties of Braylin from *Z. tingoassuiba* Espírito Santo RF[1], Meira CS[2], Costa RS[3], Souza Filho OP[3], Velozo ES[3], Soares MBP[2], Villarreal CF[1] [1]UFBA – Farmacologia e Terapêutica Experimental, [2]CPqGM-LETI-Fiocruz-BA, [3]UFBA – Pesquisa em Matéria Médica

04.024 Role of leptin receptor and TLR-4 in reduced acute lung inflammation, in intrauterine undernourished mice model. Balbino AM[1], Fernandes L[1], Landgraf MA[1,2], Landgraf RG[1] [1]Unifesp-Diadema – Inflamação e Farmacologia Vascular, [2]USP – Farmacologia

04.026 Role of atypical chemokine receptor ACKR2 (D6) in the lung inflammatory response caused by silica particles in mice. Pereira JG[1], Dias DF[1], Ferreira TPT[1], Azevedo RB[1], Teixeira MM[2], Graham G[3], Martins MA[1], Silva PMR[1] [1]Fiocruz – Fisiologia e Farmacodinâmica, [2]UFMG – Farmacologia, [3]University of Glasgow – Infection, Immunity and Inflammation,

04.028 Reduction of mast cell number and reactivity induced by glucocorticoids is associated with up-regulation of advanced glycation end-products receptors expression. Santoro T[1], Torres RC[1,2], Insuella DBR[1], Martins MA[1], Silva PMR[1], Carvalho VF[1] – [1]Fiocruz, [2]UFRJ

04.030 Anti-inflammatory activity of low power laser in classic experimental model of paw oedema acute in mice. Batista JA, Brito TV, Queiroz FFSN, Lima Filho ACM, Almendra RB, Macêdo WBS, Costa MS, Barbosa ALR, Filgueiras MC UFPI – Farmacologia

04.032 L-amino acid oxidase from *Bothrops jararaca* snake venom increases vascular permeability in rat dorsal skin: involvement of free radicals. Fonseca FV, Marcelino EP, Pereira BB, Panunto PC, Torres Huaco FD, da Silva RF, Hyslop S FCM-Unicamp – Biochemical Pharmacology

04.034 Effect of systemic, spinal or local activation of a-Adrenoreceptors under the inflammatory process on the rheumatoid arthritis model induced by Zymosan. Alves HR[1], Lucena TO[1], Ferreira RT[1], Silva RF[1], Bassi GS[2], Vanderlinde FA[1], Kanashiro A[2], Malvar DC[1] [1]UFRRJ – Ciências Fisiológicas, [2]FMRP-USP – Farmacologia

04.036 Emerging treatment for Psoriasis: Role for hydrogen sulphide donor, GYY4137. Rodrigues L[1], Schmidt TP[1], Cerqueira ARA[1], Florenzano J[1], Santos KT[1], Teixeira SA[1], Wood ME[2], Whiteman M[2], Muscará MN[1], Costa SKP[1] [1]ICB-USP – Farmacologia, [2]University of Exeter-St. Luke's

04.038 Friedelin and Friedelin complexed in cyclodextrin reduces airway allergic inflammation in a murine model of asthma. Ferro JNS[1], Serra MF[2], Santos SL[1], Cotias AC[2], Lima FF[2], Aquino FLT[1], Silva JPN[1], Alves PR[1], Broetto L[1], Ferreira FR[3], Abreu FC[3], Conserva LM[3], Martins MA[2], Barreto E[1] [1]ICBS-UFAL, [2]Fiocruz, [3]UFAL – Química e Biotecnologia

04.040 Antinociceptive, antiedematogenic and anti-inflammatory effects of *Borreria verticillata* and its compounds. Teixeira FM[1], Ferreira RT[1], Guimarães LD[2], Silva RF[1], Malvar DC[1], Chaves DAS[2], Vanderlinde FA[1] [1]UFRRJ – Ciências Fisiológicas, [2]UFRRJ – Química

04.042 Reduced lung inflammation in intrauterine undernourished rats is not related to high circulating levels of corticosterone. Gil NL[1,2], Azevedo G[2], Silva MM[2], Fernandes L[2], Landgraf MA[3,2], Landgraf RG[2] – [1]ICB-USP – Imunologia, [2]Unifesp-Diadema – Inflamação e Farmacologia Vascular, [3]ICB-USP – Farmacologia

04.044 Heparan sulfate (HS) inhibits the synthesis of melatonin in rat pineal glands via toll-like 4 receptors (TLR4) activation. Acco M[1], Cecon E[2,1], Nader HB[3], Markus RP[1] [1]USP – Fisiologia, [2]Institut Cochin, [3]Unifesp – Bioquímica

04.046 Investigation of a nanodispersion system and its impact on skin delivery of the hydrogen sulfide donor (GYY4137) in an experimental model of psoriasis. Schmidt TP[1], Rodrigues L[1], Cerqueira ARA[1], Carvalho VFM[1], Teixeira SA[1], Wood M[2], Whiteman M[2], Muscará MN[1], Lopes LB[1], Costa SKP[1] [1]ICB-USP – Farmacologia, [2]University of Exeter-St. Luke's

04.048 Antimicrobial activity and biochemical and structural analyses of Dermcidin-1L (DCD-1L) and its splice variant (DCD-SV) in biomimetic membranes. Bronze F[1], Riske K[2], Brandão V[2], Belizario J[1] [1]ICB-USP – Farmacologia, [2]Unifesp – Biofísica

04.050 Down-regulation of single immunoglobulin Interleukin-1R-related molecule (SIGIRR) gene expression during irinotecan-induced intestinal mucositis. Wanderley CWS, Silva CMS, Fernandes C, Muniz HA, Aguiar MG, Lima GS, Wong DVT, Lima-Junior RCP[1], Ribeiro RA[1] [1]UFC – Farmacologia e Fisiologia

04.052 Effect of myrtenol on neutrophil migration and adhesion in inflammatory conditions. Gomes BS[1], Sousa-Neto BP[1], Silva FV[1], Sousa DP[2], Wanderley CWS[3], Wong DVT[3], Ribeiro RA[3], Lima-Júnior RCP[3], Oliveira RCM[1], Oliveira FA[1] [1]UFPI – Medicinal Plants, [2]UFS – Pharmacy, [3]UFC – Physiology and Pharmacology

04.054 Evaluation of the anti-inflammatory activity of the hidroethanolic extract of *Macrosiphonia longiflora* (Desf.) Mull. Arg. in chronic pulmonar allergic inflammation experimental model. Cruz TCD, Almeida DAT, Martins DTO Farmacologia e Toxicologia de Produtos Naturais

04.056 Role of tumor necrosis factor-alpha on platelet reactivity of rats injected with lipopolysaccharide. Bueno PI, Abreu E, Naime ACA, Bonfitto PHL, Goulart G, Marcondes S FCM-Unicamp – Farmacologia, [2]Unicamp – Farmacologia

04.058 *Porphyromonas gingivalis* lipopolysaccharide increases the expression and activity of metalloproteinase-9 in gingival fibroblasts culture from normal and diabetic mice. Beltran CT, Tirado IS, Brito VGB, Queiroz DPS, Oliveira SHP Unesp-Araçatuba

04.060 Physicochemical characterization of 15d-Prostaglandin J2-loaded solid lipid nanoparticles and effects on inflammation. de Melo NFS[1], Macedo CG[2], Abdalla HB[2], Bonfante R[2], Fraceto LF[3], Clemente-Napimoga JT[2], Napimoga MH[1] [1]São Leopoldo Mandic – Imunologia e Biologia Molecular, [2]FOP-Unicamp – Fisiologia, [3]Unesp – Engenharia Ambiental

04.062 Role of intestinal microflora and bacterial translocation in the pathogenesis of steatohepatitis induced by irinotecan in mice. Aragão KS[1], Almeida PRC[2], Melo AT[1], Muniz HA[3], Lopes CDH[3], Neto PRP[3], Carvalho CBM[4], Lima-Júnior RCP[1], Ribeiro RA[1] [1]UFC – Fisiologia e Farmacologia, [2]UFC – Patologia e Medicina Legal, [3]Hospital Haroldo Juaçaba/ICC, [4]UFC – Medical Microbiology

05. Pain and Nociception Pharmacology

05.002 Pre-clinical evidence on the benefits of docosahexanoic acid on adverse and anti-tumoral effects of cyclophosphamide. Freitas RDS[1,2], Costa KM[2,1], Nicoletti NF[2,1], Campos MM[3,2,1] [1]PUCRS – Toxicologia e Farmacologia, [2]PUCRS – Medicina e Ciências da Saúde, [3]PUCRS – Odontologia

05.004 Effects of simvastatin on diabetic neuropathic pain in rats. Corso CR, Werner MFP UFPR – Farmacologia

05.006 Involvement of microglial cells in chemical or sustained isometric contraction-induced muscle hyperalgesia. Melo B, Pelizari M, Oliveira-Fusaro MCG FCA-Unicamp – Saúde

05.008 Involvement of NO/cGMP/PKG/ATP-sensitive K^+ channels pathway on local antinociceptive effect of dipyrone and its metabolite 4-MAA. Assis DCR[1], Vaz ALL[2], Melo MCC[3], Rae GA[4], Clososki GC[2], Souza GEP[3] [1]FMRP-USP – Farmacologia, [2]FCFRP-USP – Produtos Naturais e Sintéticos, [3]FCFRP-USP – Física e Química , [4]UFSC – Farmacologia

05.010 Mechanical muscle hyperalgesia induced by sustained isometric contraction is mediated by P2X3, AMPA E NMDA receptors. Jorge CO, Marques ACS, Melo B, Santos DFS, Azambuja G, Oliveira-Fusaro MCG FCA-UNICAMP – Saúde

05.012 Muscle pain induced by chemical stimulus or sustained isometric contraction is modulated by PPAR-y receptors in Wistar rats. Santos DFS, Oliveira-Fusaro MCG Unicamp

05.014 Pharmacological characterization of fish oil concentrate treatment on experimental model of neuropathic pain. Silva RV, Lima CKF, Lobo BW, Miranda ALP UFRJ – Medicamentos

05.016 Gedunin induces anti-nociceptive effect in Swiss mice. Chaves AS, Brito TM, Rodrigues SA, Amendoeira FC, Ferraris FK Fiocruz – Farmacologia e Toxicologia

05.018 Antihyperalgesic synergistic effect of diclofenac associated with terpinolene in inflammatory pain in rats Macedo EMA[1], Santos WC[1], Piauilino CA[1], Reis Filho AC[1], Sousa DP[2], Oliveira FA[1], Almeida FRC[1] [1]NPPM-UFPI, [2]UFPB – Ciências Farmacêuticas

05.020 Anti-inflammatory and anti-nociceptive effects of GYY-4137, a slow-releasing hydrogen sulfide (H_2S) donor, on temporomandibular joint synovitis induced by carrageenan in rats. de Lira FBC[1], de Paula MAV[1], Teixeira SA[1], Wood M[2], Whiteman M[2], Costa SKP[1], Muscará MN[1] [1]USP – Farmacologia, [2]University of Exeter Medical School

05.022 Antinociceptive activity of bergenin in a mice model of neuropathic diabetic pain. Santos DS[1], Gama KB[2], Nascimento OA[1], Alves CQ[3], David JPL[4], David JM[4], Soares MBP[2], Villarreal CF[1] [1]UFBA – Farmacologia e Terapêutica Experimental, [2]CPqGM-Fiocruz-BA, [3]UFBA – Química, [4]UFBA

05.024 Study of the analgesic activity of *Solidago chilensis* Meyen extract enriched with diterpenes. Brito TM, Chaves AS, Rodrigues SA, Amendoeira FC, Ferraris FK Fiocruz – Farmacologia e Toxicologia

05.026 Effects of hydrogen sulfide (H2S) donors on pruritus induced by a type-2 protease activated receptor (PAR-2) agonist in mice. Coavoy-Sánchez SA, Rodrigues L, Costa SKP, Muscará MN ICB-USP – Pharmacology

05.028 Anti-inflammatory and Antinociceptive Properties of the Ethanol Extract of *Trema micrantha* (Cannabaceae) leaves. Carvalho MGB[1], Silva RV[1], Carbonezi LH[2], LIma CKF[1], Miranda ALP[1] – [1]FF-LEFEx-UFRJ – Biotecnologia Farmacêutica, [2]IPPN-UFRJ –

05.030 α-Phellandrene presents anti-inflammatory and anti-hyperalgesic effects: Role of the antioxidant mechanism, inhibition of the neutrophils migration and release of the pro-inflammatory cytokines. Santos WC[1], Macedo EMA[1], Cunha FVM[1], Sousa DP[2], Santos IMSP[3], Araújo KS[3], Oliveira FA[1], Almeida FRC[1] [1]UFPI – Farmacologia, [2]UFPB – Ciências Farmacêuticas, [3]Facid

05.032 Microneedles enhance antinociceptive effect of topical 15d-PGJ_2 cream in a rat model of temporomandibular joint pain. Macedo CG[1], Jain AK[2], Franz-Montan M[1], Napimoga MH[3], Clemente-Napimoga JT[1], Gill HS[2] [1]FOP-UNICAMP, [2]Texas Tech University – Chemical Engineering, [3]SLMandic

05.034 Antinociceptive effect of 15-deoxy-^{Delta12,14}-prostaglandin J_2 is mediated by the activation of proliferator-activated receptor- g on macrophage cells in the temporomandibular joint. Abdalla HB[1], Macedo CG[1], Napimoga MH[2], Bonfante R[1], da Rocha LM[1], Clemente-Napimoga JT[1] [1]FOP-UNICAMP, [2]SLMandic

05.036 Evaluation of the involvement of microglial cells in the induction and persistence of inflammatory hyperalgesia induced rheumatoid arthritis in rats ATM. Bonfante R[1], Abdalla HB[1], da Rocha LM[1], Macedo CG[1], Clemente-Napimoga JT[1] [1]FOP/UNICAMP – Ciências Fisiológicas

06. Cardiovascular and Renal Pharmacology

06.002 Unraveling the enigma of the positive inotropic effect of ATP on the heart of SHR. Rodrigues JQD[1], Camara H[1], Silva-Junior E D[1], Godinho RO[1], Jurkiewicz A[1] [1]Unifesp-EPM – Farmacologia

06.004 Activation of a novel estrogen receptor by the agonist G1 ameliorates monocrotaline-induced pulmonary hypertension in male rats. Alencar AKN[1], Montes GC[1], Martinez ST[2], Pinto AC[2], Groban L[3], Sudo RT[1], Zapata-Sudo G[1] [1]ICB-UFRJ – Desenvolvimento de Fármacos, [2]UFRJ – Química, [3]Wake Forest University – Anesthesiology – [1]ICB-UFRJ – Fármacos, [2]UFRJ – Química, [3]Wake Forest University – Anesthesiology

06.006 A new look into hypertension: A1 adenosine receptor function is potentiated in the right atrium of spontaneous hypertensive rats. Câmara H, Rodrigues JQD, Silva-Junior ED, Godinho RO, Jurkiewicz A Unifesp-EPM – Farmacologia

06.008 Nlrp3 inflamassome activation is involved in type 1 Diabetes-associated vascular dysfunction. Pereira CA[1], Ferreira NS[1], Zanotto CZ[1], Carlos D[2], Tostes RC[1] [1]USP – Farmacologia, [2]USP – Imunologia

06.010 Investigation of the mechanisms involved in mesoionic compound (MI-01)-induced vasorelaxant response in rat superior mesenteric artery. Machado NT, Maciel PMP, Alustau-Fernandes MC, Silva TAF, Melo MP, Cavalcante HC, Assis KS, Fernandes LF, Araújo IGA, Medeiros IA UFPB – Ciências da Saúde

06.012 Effects of the nytrosil complex[cis-Ru(2,2'bipyridine)2(thiourea)(NO)] in rat isolated aorta Cabral PHB[1], Sampaio TB[1], Junior FSG[2], Santos CF[1], Fonteles MC[1], Lopes LGF[2], Nascimento NRF[1] [1]UECE – Fisiofarmacologia Cardiorenal, [2]UFC – Química Bioinorgânica

06.014 Oxidative stress impairs the vasorelaxant effects of sodium nitrite mediated by xanthine oxidoreductase in renovascular hypertension. Blanco ALF[1,2], Oliveira-Paula GH[1], Pinheiro LC[1], Guimaraes DA[1], Tella SOC[1], Angelis CD[3], Tanus-Santos JE[1] [1]FMRP-USP – Farmacologia, [2]FFCLRP-USP – Biologia, [3]Unicamp – Farmacologia

06.016 Vascular reactivity in rats with different plasmatic Angiotensin I converting enzyme (ACE) activity phenotypes. Pisano Dias ASES[1], da Silva RM[1], Souccar C[1], Lapa AJ[1,2,3], Lima-Landman MTR[1] [1]Unifesp-EPM – Farmacologia, [2]CBA, [3]UEA

06.018 S-nitrosothiols formation mediates the antihypertensive effects of oral sodium nitrite

Pinheiro LC[1], Amaral JH[1], Ferreira GC[1], Portella RL[1], Toledo Jr JC[2], Tanus-Santos JE[1] [1]FMRP-USP – Farmacologia, [2]FFCLRP-USP – Química

06.020 Treatment with sodium nitrite attenuates the pressor responses to Angiotensin I and Angiotensin II, but not to Bradykinin. Ferreira GC, Pinheiro LC, Vilalva KH, Portella RL, Tanus-Santos JE FMRP-USP – Farmacologia

06.022 Early exposure to air pollutant 1,2-Naphtoquinone and the impact on the control of vascular tonus during puberty. Soares AG[1], Amaral ES[1], Florenzano J[1], Teixeira SA[1], Brain S[2], Muscará MN[1], Costa SK[1] [1]ICB-USP – Farmacologia, [2]King's College London

06.024 Beneficial effects of *Cissampelos sympodialis* Eichl. oral treatment on monocrotaline-induced pulmonary hypertension in rats. Maciel PMP, Gusmão AB, Machado NT, Assis KS, Torres RA, Silva TAF, Santos PF, Cavalcante HC, Alustau-Fernandes MC, Ribeiro TP, Medeiros IA CCS-UFPB

06.026 Contractile response induced by U46619 and relaxation induced by NCX2121 are similar in coronary arteries isolated from renal hypertensive 2K-1C and normotensive 2K rats. Paula TD, Bendhack LM FCFRP-USP – Física e Química

06.028 Effects of continuous and accumulated exercise on endothelial function in rat aorta. Martinez JE, Ledo PBO, Chies AB FAMEMA

06.030 Exercise training improves the plasma antioxidant defenses in 2 kidneys, one clip (2K1C) hypertensive rats. Oliveira PR, Ledo PBO, Chies AB FAMEMA

06.032 Apocynin and Diapocynin reduced the adrenergic vasoconstriction in intact aortas of Wistar rats, however only apocynin reduced the concentration of reactive oxygen species in aortic endothelial cells. Graton ME, Potje SR, Troiano JA, Silva DS, Pereira AAF, Nakamune AC, Ximenes VF, Antoniali C [1]FOA-Unesp – Ciências Básicas, [2]FCB-Unesp – Química

06.034 Increased levels of matrix Metalloproteinase-2 seem crucial to the transition from cardiac hypertrophy to heart failure in rats with abdominal aorta stenosis. Pereira SC[1], dos Santos DO[2], Prado FP[2], Sanchez ER[1], Prado CM[2], Castro MM[1] [1]FMRP-USP – Farmacologia, [2]FMRP-USP – Patologia

07. Endocrine, Reproductive and Urogenital Pharmacology

07.002 Effects of testosterone replacement at physiological levels in the lower urinary tract of ovariectomized (OVX) rat. Becerra SB, Oliveira MG, Moscoso JR, Calmasini FB, Campos RM, Iwamoto RD, Antunes E FCM-Unicamp – Pharmacology

07.004 Characterization of increased prostate smooth muscle reactivity in middle-aged rats: Lack of effect of testosterone replacement. Calmasini FB, Silva FH, Alexandre EC, Rodrigues RL, Báu FR, Barbosa APL, Anhê GF, Antunes E FCM-Unicamp – Farmacologia

07.006 Effects of creatine supplementation in diabetic rats induced by streptozotocin. Medeiros MA[1], Lemos LIC[1], Silva FS[1], Abreu BA[1], Sobral MV[2], Santos LRSO[1], Medeiros KCP[1] [1]UFRN, [2]UFPB

08. Respiratory and Gastrointestinal Pharmacology

08.002 Quercetin targets senescent lung fibroblasts from idiopathic pulmonary fibrosis patients. Hohmann MS[1], Habiel DM[2], Coelho AL[2], Verri Jr WA[1], Hogaboam CM[2] [1]UEL – Ciências Patólogicas, [2]Cedars Sinai Medical Center – Pulmonary Medicine

08.004 Gabapetin inhibits the production of free-radicals in colitis induced by Trinitrobenzene sulphonic acid (TNBS) in mices. Lima Filho ACM, Almendra RB, Batista JA, Silva IS, Carvalho NS, Junior JGD, Silva RO, Filgueiras MC, Barbosa ALR UFPI – Farmacologia

08.006 Extracellular cAMP-adenosine pathway and carbachol synergistically increase airway smooth muscle contraction. Pacini ESA, Godinho RO Unifesp-EPM – Farmacologia

08.008 Gastric healing properties of a medicinal plant in threat of extinction: *Persea willdenovii* Kosterm. Somensi LB, da Silva LM, Boeing T, Cury BJ, Andrade FS Univali – Ciências Farmacêuticas

08.010 JME-209 II: An orally active mexiletine analogue exhibiting anti-inflammatory actions in experimental models of Acute Respiratory Distress Syndrome and Chronic Obstructive Pulmonary Disease. Oliveira MTP[1], Coutinho DS[1], Carvalho KIM[1], Bernardi A[1], Xavier RF[2], Silva ET[3], Silva PMR[1], Costa JCS[4], Martins MA[1] [1]Fiocruz – Inflammation, [2]Fiocruz – Cellular Communication, [3]Fiocruz – Organic Synthesis

08.012 Sulphated polysaccharides extracted from *Gracilaria birdiae* reduces parameters inflammatory of the mucositis induced by 5-fluorouracil (5-FU) in mice. Almendra RB, Teles RHG, Costa MS, Magalhães DA, Lima Filho ACM, Batista JA, Coelho ML, Lima GM, Carvalho NS, Silva IS, Macêdo WBS, Barbosa ALR, Filgueiras MC UFPI – Farmacologia

08.014 Gastroprotective potential of the *Artocarpus heterophyllus* Lam. (jackfruit) seeds in Mice. da Rosa RL, Almeida CLB, da Silva LM, Cechinel-Filho V, Andrade SF Univali – Pharmaceutical Sciences

08.016 Hydrogen sulfide reduces inflammation in acute pancreatitis induced by common bile duct obstruction in mice. Santos-Oliveira A[1], Santana DG[1], Muscara MN[2], Costa SKP[2], Camargo EA[1] [1]UFS – Physiology, [2]USP – Pharmacology

08.018 Evaluation of gastroprotective activity and mechanism of action of allantoin in different experimental ulcer models. Silva DM[1], Martins JLR[2], Oliveira DR[1], Oliveira TS[1], Ghedini PC[1], Costa EA[3] [1]UFG, [2]Centro Universitário Unievangélica, [3]UFG – Farmacologia

09. Natural Products and Toxinology

09.002 The role of oxidative stress in indigo alkaloid protection against TNBS-induced colitis in rats. de Almeida ACA[1], de Faria FM[1], Manzo LPB[1], Dunder RJ[1], Socca EAR[1], Luiz-Ferreira A[2], Souza Brito ARM[1] [1]IB-Unicamp, [2]UFG – Ciências Biológicas

09.004 Effect of 2-Phenylquinoline in experimentally induced gastric ulcers: Pathways of gastroprotection. Breviglieri E[1], da Silva LM[1], Boeing T[1], Somensi LB[1], Gimenez A[2], Cechinel-Filho V[1], Andrade SF[1] – [1]Univali – Pharmaceutical Sciences, [2]Universidad Mayor de San Andrés

09.006 Evidences about gastric healing activity of *Maytenus robusta* Reissek: *in vitro* and *in vivo* studies. Costa P, da Silva LM, Boeing T, Somensi LB, Cury BJ, Steimbach VMB, Santin JR, Cechinel-Filho V, Andrade SF Univali – Pharmaceutical Sciences

09.008 Scorpion *Tityus apiacas*: identification of venom components with antimicrobial activity. Dal Mas C[1], Carvalho MA[2], da Silva Junior PI[3], Hayashi MAF[1] [1]Unifesp – Farmacologia Celular, [2]UFMT – Biologia e Zoologia, [3]IBu – Toxicologia Aplicada

09.010 Yerba mate extract increases bone markers expression on *in vitro* osteogenic differentiation of bone marrow-derived mesenchymal stromal cells from Wistar rats. Brito VGB, Chaves-Neto AH, Landim-Barros T, Oliveira SHP FOA-Unesp – Ciências Básicas

09.012 Reproductive characteristics of male Wistar rats supplemented with extract and fractions of fruits of *Tribulus terrestris* L. Oliveira NNPM[1], Félix MAR[2], Pereira TCS[2], Rocha LGP[2], Miranda JR[2], Zangeronimo MG[2], Pinto JEBP[1], Bertolucci SKV[1], Sousa RV[2] – [1]UFLA – Plantas Medicinais, [2]UFLA – Medicina Veterinária

09.016 Antimicrobial activity of (+)- Dehydrofukinone isolated from *Nectandra grandiflora* essential oil. Garlet QI[1], Pires LC[2], Spall S[2], Gressler LT[3,4], Bandeira Jr G[4], Vargas APC[4], Heinzmann BM[1] – [1]UFSM – Fisiologia e Farmacologia, [2]UFSM – Farmácia Industrial, [3]UFSM, [4]UFSM – Medicina Veterinária

09.018 Role of species reactive oxygen mitochondrial and intracytoplasmic in the anti-inflammatory effects of hydroethanolic extract of *Dilodendron bipinnatum* Radlk. Oliveira RG[1], Miyajima F[2], Castilho GRC[1], Luz TE[1], Batista MS[1], Martins DTO[1] [1]UFMT – Ciências Básicas em Saúde, [2]University of Liverpool – Molecular and Clinical Pharmacology

09.020 Intestinal anti-inflammatory activity of a standardized aqueous extract and butanolic fraction of *C. glaziovii* Sneth in acute DSS-induced colitis in mice. Nogueira FM[1], Tanae MM[1], Landman G[2], Lima-Landman MTR[1], Lapa AJ[1,3], Souccar C[1] [1]Unifesp-EPM – Pharmacology, [2]Unifesp-EPM – Pathology, [3]Amazon Biotechnology Center – Pharmacology and Toxicology

09.024 Hepatoprotective effect of *Cymbopogon citratus* essential oil against acetaminophen-induced liver toxicity in mice. Uchida NS, Rafael PA, Silva-Filho SE, Rodrigues PJ, Cardia GFE, Wiirzler LAM, Bersani-Amado CA, Cuman RKN UEM – Farmacologia e Terapêutica

09.026 Topical anti-inflammatory effect of lavender essential oil. Cardia GFE, Aguiar RP, Rocha BR, Wiirzler LAM, Silva-Fillho SE, Uchida NS, Rodrigues PJ, Bersani-Amado CA, Cuman RKN UEM – Farmacologia e Terapêutica

09.028 Evaluation of topical anti-inflammatory activity of cinnamic acid in experimental model. Rodrigues PJ, Aguiar RP, Rocha BA, Silva-Filho SE, Cardia GFE, Wiirzler LAM, Uchida NS, Bersani-Amado CA, Cuman RKN UEM – Farmacologia e Terapêutica

09.030 Doxycycline attenuates the hypotension caused by *Bothrops alternatus* (Urutu) snake venom: a role for venom metalloproteinases. Inoue BR, Dias L, Rodrigues MAP, da Silva IRF, Panunto PC, Hyslop S Unicamp – Farmacologia

09.031 Evaluation *in vivo* of the antioxidant activity of red wine and its residue from Vale do São Francisco in normotensive rats treated during 30 days by gavage. Marques VFP[1], Santos IM[2], Oliveria WP[3], Biasoto ACT[4], Lima KM[2], Negro-Dellacqua M[2] [1]Univasf – Acadêmico, [2]Univasf, [3]UFBA, [4]Embrapa

09.032 Effects of polyanions on some activities of *Bothrops leucurus* venom. Cons BL[1], Tomaz MA[1], Strauch MA[2], Monteiro-Machado M[1], Tavares-Henriques MS[1], Cruz JMT[1], Saturnino-Oliveira J[3], Melo PA[1] [1]UFRJ – Farmacologia e Química Medicinal, [2]Instituto Vital Brasil – Diretoria Científica, [3]UFS – Departamento de Morfologia

09.034 Inhibition of rat renal neutral endopeptidase 24.11 (NEP 24.11) activity by Bothrops snake venoms. Fernandes PCL, Torres-Huaco FD Unicamp – Farmacologia

09.036 Adenosine receptor antagonism and 5'-Nucleotidase inhibition protect against lethal hypotension caused by *Bothrops alternatus* (Urutu) snake venom. Pereira-Marcelino E, Tamascia ML, Hyslop S FCM-Unicamp – Bioquímica e Farmacologia

09.038 Inhibition of angiotensin-converting enzyme activity by *Bothrops spp*. and *Lachesis muta muta* snake venoms. Brunieri LVP, Dias L, Rodrigues MAP, Lorenzetti R, Hyslop S Unicamp – Farmacologia

09.040 Effects of *Tityus serrulatus* scorpion venom on bronchial epithelial cells. Rigoni VLS[1,2], Vieira RP[3], Silva JLV[4], Nogueira-Pedro A[5,6], Kwasniewski FH[7], Zamuner SR[1] [1]Uninove – Medicina, [2]Unifesp-EPM – Biofísica, [3]Uninove – Ciências da Reabilitação, [4]Uninove – Farmácia, [5]Unifesp-EPM – Bioquímica, [6]FCF-USP – Análises Clínicas e Toxicológicas, [7]UEL – Ciências Patológicas

09.042 Antiulcer effect of *Solanum stipulaceaum* Will ex. Roem & Shult. Oliveira DF[1], Lima CAA[2], Estevam CA[2], Batista JS[2] – [1]UFS – Enfermagem, [2]UFS – Fisiologia

09.044 *In vitro* effects of brasiliensic and isobrasiliensic acids from *Calophyllum brasiliense* Camb. on gastric cell turnover. Lemos LM[1], Pritchard DM[2], Burkitt MD[2], Martins DTO[1] [1]UFMT – Farmacologia, [2]University of Liverpool – Gastroenterology

09.046 Effect of heparin in cutaneous lesions induced by *Bothrops jararacussu* snake venom. Borges PA[1], Teixeira RGS[2], Nogueira TA[2], Oliveira FL[3], Calil-Elias S[2], Melo PA[1] [1]UFRJ – Farmacologia e Química Medicinal, [2]UFF, [3]UFRJ

09.048 Hemodynamic responses to *Bothrops fonsecai* snake venom: Lack of neutralization by commercial Bothropic antivenom. Tamascia ML[1], Collaço RCO[1], Cogo JC[2], Rodrigues-Simioni L[1], Hyslop S[1] [1]FCM-Unicamp – Farmacologia, [2]UNIVAP – Pesquisa e Desenvolvimento (IP&D) / Serpentário do Centro de Estudos da Natureza (CEN)

09.050 Anti-inflammatory and anti-ulcer activities of *Achyrocline alata* (Kunch). Silva GGO[1], Arfux CRB[1], Menegatti CF[1], Duarte LC[1], Souza TB[2], Moreno SE[1] – [1]Universidade Católica Dom Bosco – Biotecnologia, [2]Universidade Católica Dom Bosco – Acadêmico

09.052 Inhibition of snake venom phospholipasic activity by using distinct neuromuscular junction protocols. Schezaro-Ramos R[1], Randazzo-Moura P[2], Cogo JC[3], Rodrigues-Simioni L[1] [1]FCM-Unicamp – Farmacologia, [2]PUCSP – Ciências Médicas, [3]UNIVAP – Estudos da Natureza

09.054 Evaluation of the antibacterial activity of *Struthanthus marginatus* (Desr.) Blume. Silva RV[1], Arruda MO[2], Carmo MS[2], Freire SMF[1], Monteiro Neto V[2] [1]UFMA – Farmacologia, [2]Ceuma – Biologia Parasitária

09.056 Cytotoxic and apoptogenic properties of *C. oblongifolia* Mart. ex Hayne and *C. duckei* Dwyer oleoresin and leaf extract on human gastric carcinoma cells. Lemos M[1], Silva JJM[1], Rogez HLG[2], Veneziani RCS[3], Ambrósio SR[3], Banderó Filho VC[4], Sasse A[4], Sheridan H[4], Bastos JK[1] – [1]FCFRP-USP – Ciências Farmacêuticas, [2]CVACBA-UFPA – Engenharia de Alimentos, [3]Unifran – Ciências Exatas e Tecnológicas, [4]TBSI-Trinity College Dublin – Pharmacy and Pharmaceutical Sciences

09.058 The anti-ulcer and anti-proliferative activities of the hexane extract and candidate isolates brasiliensic and isobrasiliensic acids of *Calophyllum brasiliense*: A mechanistic evaluation of their properties. Castilho GRC[1], Lemos LMS[1], Oliveira RG[1], Miyajima F[2], Martins DTO[1] [1]UFMT – Ciências Básicas em Saúde, [2]University of Liverpool – Pharmacology

09.060 Antispasmodic effect of dichloromethane phase from ethanol extract of *Serjania caracasana* (Jacq.) Willd. (Sapindaceae) on ileum rat. Gonçalves ACB[1], Marcolin LSA[2], Silva VA[3], Rigoni VLS[4,3], Silva FL[5], Barbosa-Filho JM[6], Nouailhetas VLA[4], Silva JLV[7] [1]Uninove – Farmácia, [2]Uninove – Ciências Médicas, [3]Uninove – Mestrado Medicina, [4]Unifesp – Biofísica, [5]USP – Química, [6]UFPB – Ciências Farmacêuticas, [7]Uninove – Ciências da Saúde

09.062 Chemoprotective effect of apple juice in liver and blood of rats exposed to cadmium. Moura CFG[1], Ribeiro FAP[2], Gollucke APB[2], Oshima CTF[1], Ribeiro DA[2,1] [1]Unifesp – Patologia, [2]Unifesp-Baixada Santista – Biociências

10. Cancer Pharmacology

10.002 *In vivo* anti-tumoral effects of simvastatin and pravastatin in a cancer stem cell-rich model of breast carcinoma. Rennó AL, Alves-Junior M, Souza PC, Souza VB, Latuf-Filho P, Cardelli NJA, Schenka NGM, Schenka AA FCM-Unicamp – Farmacologia

10.004 Effect of simvastatin on MUC1 expression in breast cancer xenografts. Cardelli NJA[1], Souza VB[1], Souza CP[1], Rennó AL[1], Mendonça GRA[1], Anjos D[1], Franchi Jr GC[2], Latuf-Filho P[2], Nascimento FC[2], Resende M[2], Rocha MR[2], Soares F[2], Vassalo J[3], Schenka AA[1] – [1]FCM-Unicamp – Farmacologia, [2]FCM-Unicamp, [3]FCM-Unicamp – Patologia

10.006 Assessment of *in vitro* effects of the quinoxaline-derived chalcone N9 in breast cancer cells. Erig TC[1], Mielcke TR[2,3], Mascarello A[4], Chiaradia LD[4], Nunes RJ[4], Campos MM[2,3,5] [1]PUCRS – Pharmacy, [2]PUCRS – Toxicology and Pharmacology, [3]PUCRS – Medicine and Health Sciences, [4]UFSC – Chemistry, [5]PUCRS – Dentistry

11. Pharmacokinetics and Toxicology

11.002 Determination of free tissue brain concentration of voriconazole by microdialysis in healthy and cryptococcus neoformans infected Wistar rats. Alves IA[1], Lock G[2], Rist J[2], Rates S[1], Araújo BV[1] [1]UFRGS – Ciências Farmacêuticas, [2]UFRGS – Farmácia

11.004 Determination of thimerosal content in Influenza A (H1N1) multi-dose vaccine and evaluation of in vitro toxicity. Rodrigues S[1], Ferraris FK[1], Leandro KC[2] [1]INCQS-Fiocruz – Farmacologia e Toxicologia, [2]INCQS-Fiocruz – Química Analítica

11.006 Accessing metformin free levels in healthy and diabetics rat tissues using microdialysis technique. Braga A[1], Izolan JS[1], Lock GA[2], Dalla Costa T[1,2], Araújo BV[1,2] [1]UFRGS – Ciências Farmacêuticas, [2]UFRGS – Faculdade de Farmácia

11.008 Histopathological evaluation of the profile of non-human primate species of *Cebus apella* treated with LDE-paclitaxel oleate as a tool for cancer therapeutics. Oliveira NCL[1], Feio DCA[1], Silva WB[2], Muniz JAPC[2], Burbano RR[1], Maranhão RC[3], Lima PDL[4] [1]UFPA, [2]CENP, [3]Metabolismo de Lípides, [4]UEPA

11.010 *Safety evaluation of Rubus rosaefolius* extract: *In vivo, in vitro* and *in silico* toxicological studies. Broering MF, Tonin TD, Petreanu M, Niero R, Machado ID, Santin JR Univali – Farmácia

11.012 Local toxicity of dapaconazole, a new antifungal drug, after chronic intravaginal appplication. Campos RM, Rojas-Muscoso JA, Pissinati L, Iwamoto RD, de Nucci G Unicamp – Farmacologia

11.014 Liquid chromatography/UV method for determination of cefazolin subcutaneous penetration in rats by microdialysis. Lima DMF[1], Laureano JV[2], Palma EC[2], Araújo BV[2], Dalla Costa T[2] [1]UFRGS – Farmácia, [2]UFRGS – Pharmaceutical Sciences

12. Pharmacogenomics, Pharmacogenetics and Clinical Pharmacology

12.002 Protein kinase C genotypes and haplotype modify the antihypertensive responses to enalapril. Oliveira-Paula GH[1], Lacchini R[1], Fontana V[1], Silva PS[2], Biagi C[3], Tanus-Santos JE[1] [1]FMRP-USP – Farmacologia, [2]FCM-Unicamp – Farmacologia, [3]Santa Casa de Araçatuba

13. Drug Discovery and Development

13.002 Protective effects of green tea against Leukemic Immune Suppression. Calgarotto AK[1], Pericole FV[1], Maso V[1], Longhini AL[1], Favaro P[2], Santo IP[1], Duarte ASS[1], Saad ATO[1] [1]FCM-Unicamp, [2]Unifesp-Diadema

13.004 Layered double hydroxides intercalated with Norfloxacin: characterization X-ray diffractometry and hemolysis assay. França CM[1], Lima AB[1], Costa KM[1], Dias DRC[1], Remedios CRM[2], Anicete-Santos M[2], Alves CN[2] – [1]UFPA – Biotecnologia, [2]UFPA

13.006 Gastro-protective and anti-edematogenic effects of ibuprofen intercalated in layered double hydroxide carrier. Bentes Lima A[1], Queiroz Santos GC[2], França CM[1], Anicete-Santos M[1], Nascimento JLM[3], Bastos GNT[3] – [1]UFPA – Biotecnologia, [2]UFPA – Biologia Celular e Molecular, [3]UFPA – Ciências Biológicas

13.008 Effect of chronic treatment with creatine nanoliposomes on hepatic and hematologic toxicity parameters in rats. Moreira MP[1], Borin DB[1], Mezzomo NJ[1], Biacchi K[2], Amaral RG[2], Rech VC[1], Boeck CR[1] – [1]Unifra – Nanociências, [2]Unifra – Acadêmico

13.010 Healing activity and anti-inflammatory action of the extracts from PE1, PE2, PE3 of the Amazon flora. Bastos AC, Santos GCQ, Gomes MF, da Silva JKR, Maia JGS, do Nascimento JLM, Bastos GNT UFPA

13.012 Antibacterial activity and mechanism of hydroethanolic extract of *Gallesia integrifolia* (Spreng.) Harms inner stem bark. Karuppusamy A[1], Silva LI, Balogun SO, Martin DTO[2] [1]UFMT – Ciências da Saúde, [2]UFMT – Ciências Básicas em Saúde

13.014 Molecular dynamics study of Plasmepsin II inhibitors. Carlos E, Braz C, Guimarães E UFRN

15. Pharmacology: Others

15.002 Creatine-loaded liposomes on oxidative stress parameters in model hyperphenylalaninemia. Borin DB[1], Mezzomo NJ[1], Dotto B[2], Amaral RG[2], Dias JB[2], Rech VC[1], Boeck CR[1] – [1]Unifran – Nanociências, [2]Unifran – Biomedicina

15.004 Effect of swimming training on neurogenic contraction and stock of intracellular calcium concentration in spontaneously hypertensive rats. Pena-Garcia M[1], Miranda-Ferreira R[1], Castro Musial D[1], Jurkiewicz A[1], Da Silva R[2], Cezaretti M[2] [1]Unifesp – Farmacologia, [2]Unifesp

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sbfte@sbfte.org.br

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Biotérios e Manejo de Animais. **Luisa Macedo Braga- PUCRS**

A ciência de animais de laboratório é uma área relativamente jovem dentro do que podemos chamar de ciência estruturada. Ela possui um conteúdo ético considerável. O uso de animais em experimentação exige que tenhamos um forte comprometimento. Precisamos colocar numa balança de um lado a real validade científica do projeto que iremos executar e por outro o compromisso em não causar dor ou sofrimento nos animais utilizados. A maioria dos animais utilizados em pesquisa experimentais em nosso país e no mundo são os roedores, das espécies ratos e camundongos. O ambiente onde estes animais são mantidos, a condição sanitária proporcionada e a genética, influenciam a resposta biológica fornecida pelos roedores. Controlando essas variáveis e investindo na a educação dos profissionais que executam atividades junto a eles, os animais iram atingir um estado ideal de bem-estar e os pesquisadores irão obter resultados confiáveis e reprodutíveis. Os animais devem ser criados ou mantidos em Biotérios, definidos como o local que possua controle das condições ambientais, nutricionais e sanitárias, podendo ser Biotérios de criação, manutenção ou experimentação. Independente do tipo, esses locais devem estar adequados para a manutenção do status sanitário e genético dos animais que ali alojados. Devem possuir condições controladas, comparáveis e estáveis tanto no macro quanto no microambiente. O primeiro entendesse como a sala onde os animais estão e onde devemos definir os parâmetros de iluminação, ruído, temperatura, umidade relativa do ar e ventilação, que sejam capazes de manter a homeostase dos animais, evitando gastos fisiológicos. Por microambiente, entende-se aquele contíguo ao animal, a caixa. O microambiente ideal deve permitir que os animais realizem normalmente as suas necessidades fisiológicas (micção, defecação e manutenção da temperatura corporal), comportamentais (movimentação e ajustes de postura comuns a sua espécie) , a interação social, que permaneçam limpos, secos e com ventilação adequada, que tenham fácil acesso a água e alimentação e que possam ser observados com o mínimo de perturbação para eles. Para isso, precisamos conhecer e controlar todos os fatores que nele interferem, como o tipo de caixa, a ração, a cama, a água que bebem e o número de animais delas. Além do ambiente, o manejo a que os animais são submetidos durante a contenção, pode ser responsável por 100% do estresse que ele sofre durante o protocolo experimental. A forma correta de manuseio precisa ser observada.

Regressão não linear e análise de curva dose-efeito. (François Noël, UFRJ)

Nesta aula, iremos primeiramente relembrar as equações que descrevem as relações entre concentração (ou dose) de fármaco e efeito. Em seguida, iremos apresentar os princípios da regressão não linear, técnica estatística necessária para descrever quantitativamente estes fenômenos. Após esta introdução teórica, iremos usar o programa PRISM, de amplo uso no nosso meio, para realizar alguns exercícios ilustrando as boas práticas no uso deste recurso. Analisaremos dados experimentais mostrando alguns recursos deste programa que permitem verificar a qualidade do ajuste (*fitting*) e a escolha entre diferentes equações/modelos, visando obter os parâmetros que quantificam a potência (quer seja CE_{50} ou DE_{50} em estudos funcionais ou CI_{50} em estudos de competição) ou afinidade (Kd, em estudos de saturação (*binding*)) assim como Emax (ou Imax) e Bmax (binding). Para finalizar, mostraremos algumas formas consideradas adequadas para publicação em revistas de farmacologia quando se quer apresentar de forma tabular os resultados caracterizando tais curvas, com informação sobre precisão dos parâmetros obtidos após repetição de experimentos independentes.

Introdução à Análise de Variância e ANOVA de uma via. Carlos Mello, UFSM

Nesta aula primeiramente relembraremos que a análise de variância é um teste estatístico baseado na hipótese nula, apresentando o conceito de hipótese estatística e quais os erros possíveis em um teste de hipóteses. Logo após, abordaremos, de forma intuitiva, como a análise de variância foi concebida pelo genial Ronald A. Fisher (1925-1991) como alternativa para comparar mais que dois grupos experimentais. Após entender a lógica intuitiva por trás da análise de variância, com ênfase no raciocínio sobre a variabilidade dos dados, aprofundaremos os conceitos de variância propriamente dita, soma dos quadrados, graus de liberdade, quadrado médio do modelo (medida de variabilidade entre grupos), quadrado médio do resíduo (medida de variabilidade dentro dos grupos) e razão de quadrados médios, que é o valor calculado de F, em si, probabilidade de alfa e probabilidade de beta, e poder de prova de um teste estatístico. Após serem esclarecidos os pressupostos da ANOVA e os testes de homocedasticidade e normalidade, realizaremos uma análise de variância "a mão", utilizando uma planilha eletrônica para calcular não só o valor da razão de F, mas também o valor de r, como medida do tamanho de efeito. Os cálculos serão conferidos pelo programa PRISM. A ideia é desmistificar a ANOVA de uma via, revelando a "caixa preta" dos pacotes estatísticos. A seguir, discutiremos sobre os testes *post-hoc* (complementares) mais comumente utilizados e sua indicação: Tukey, Bonferroni e Dunnett. Por fim, encerraremos com um exemplo de como determinar a melhor função matemática que explica a variação de escores em uma curva de dose e o quanto da variabilidade total dos dados pode ser explicada pelas diferentes funções matemáticas possíveis (linear, quadrática, cúbica, etc.), a chamada decomposição da soma dos quadrados em componentes (linear, quadrático, cúbico, etc.).

ANOVA de duas (ou mais) vias – como fazer e interpretar. Carlos Mello, UFSM
Nesta aula introduziremos a análise de variância de duas vias, exercitando como identificar desenhos experimentais fatoriais. Uma vez definido o conceito de desenho fatorial (fatores e níveis), serão introduzidos os conceitos de efeitos simples e de interação entre fatores, e a necessidade de se respeitar os pressupostos da ANOVA (sob pena de perda de poder de prova). A seguir será aprofundado o conceito de que uma interação significativa implica na existência de efeitos não-aditivos entre os fatores. Assim, um desenho experimental simples em farmacologia do uso de um antagonista para verificar o mecanismo de ação de um dado composto (modelo 2 x 2) será exaustivamente debatido, mostrando a necessidade imperiosa de utilizar um desenho experimental completo, de forma a retirar conclusões coerentes a partir do modelo. A mecânica de interpretação correta da saída da ANOVA fatorial será exaustivamente exercitada, bem como a discussão da necessidade (ou da falta dela) de executar análises post-hoc em modelos fatoriais. Na medida em que houver compreensão integral do modelo, tempo e interesse, este poderá ser estendido à análise não-paramétrica fatorial.

Fisiologia e Biofísica do íon Ca^{2+} Viviane Louise Andree Nouailhetas (Unifesp-EPM)
Introdução: Muitos processos celulares são disparados a partir da elevação da concentração intracelular de Ca^{2+} acima da concentração de repouso (100 nM). O objetivo desta aula é de apresentar os fundamentos biofísicos para se entender a gênesis das correntes de cálcio responsáveis por esse aumento crítico da [Ca^{2+}]cel. A aula compreenderá 4 seções: 1. Princípios eletrofisiológicos para o entendimento de fenômenos elétricos em sistemas biológicos: distribuição do cálcio nas células, mecanismos de transporte de íons através de membranas biológicas, princípios biofísicos da difusão, incluindo permeabilidade, potencial eletroquímico e potencial de equilíbrio (equação de Nernst). Gênesis do potencial de repouso pelo modelo difusional (equação de Goldman, Hodgkin e Katz) e pelo modelo elétrico (resistência/condutância e potencial de reversão). Permeabilidade e corrente de cálcio nas células. 2. Caracterização de uma proteína de membrana como um canal iônico, focalizando principalmente os canais Ca^{2+}: condutância, seletividade, mecanismo de "gating" (condutor e não condutor), probabilidade de abertura e fechamento, mecanismo de cinética (estados fechado, aberto, inativado), bloqueadores e ativadores. 3. Tipos de canais de cálcio: canal de Ca^{2+}, dependentes de voltagem, canais de rianodina ("sparks" de cálcio), canais de Ca^{2+} ativados por trisfosfato de inositol (IP3, "puffs" de cálcio), canais de Ca^{2+} operados por receptores, canais de Ca^{2+} operados por estoques. 4. Papel fisiológico das correntes de cálcio, focando principalmente as células excitáveis: nervos, miócito esquelético, cardíaco e liso.

Técnicas óticas e não óticas para medição da concentração intracelular de cálcio. Edgar J. Paredes-Gamero. Universidade de Mogi das Cruzes (UMC) / Universidade Federal de São Paulo (UNIFESP)
Dentre dos sinalizadores celulares que controlam diversos processos encontra-se o íon Ca^{2+}. Variações na ordem nanomolar a micromolar, aspectos espaciais e temporais traduzidos por proteínas sensíveis às suas variações controlam diversos processos celulares como contração, secreção, proliferação, diferenciação, morte celular e aprendizado. Esta regulação do Ca^{2+} se dá por uma complexa e fina maquinaria celular que compreende receptores de membrana, canais iônicos, bombas, entre outros. Para quantificar as variações do Ca^{2+} no citoplasma e em organelas foram desenvolvidas metodologias diversas com métodos radioativos, fluoróforos e uso de proteínas sensíveis as suas variações ou transfecção das mesmas. Dentre os principais fluoróforos que se utilizam para quantificar o Ca^{2+} encontra-se o Fura-2 cujo tamanho e características raciométricas permitem medidas de Ca^{2+} no citoplasma. E dentre as proteínas sensíveis às variações de Ca^{2+} encontra-se a proteína quimérica Cameleon a qual pode ser direcionada para o citoplasma e organelas. Estes e outros métodos para a quantificação do Ca^{2+} que permitem uma descrição dos eventos da sinalização serão abordados.

Papel do íon Ca^{2+} na liberação de neurotransmissores e sua modulação pelo íon Mg^{2+} Alexandre P. Corrado (FMRP-USP)
Dentre os importantes papeis exercidos pelo íon Ca^{2+} no organismo, a mediação da liberação de neurotransmissores , afigura-se o mais abrangente, pois envolve todo o sistema nervoso, incluindo os contingentes central e periférico. Isto ocorre, através do funcionamento adequado de sinapses químicas, as quais medeiam a transdução de sinais biológicos entre neurônios ou entre neurônios e células efetuadoras, as quais participam dos acoplamentos excitação-secreção e excitação-contração, eventos também mediados pelo íon Ca^{2+}, cujos efeitos são todos modulados pelo íon Mg^{2+}, que se revelou o seu antagonista competitivo. Pretendemos realçar antagonismos desta natureza, cuja importância abrange todas as áreas biológicas, devido à facilidade e versatilidade da sua aplicação, aspectos plenamente exemplificados no antagonismo entre os íons Ca^{2+} e Mg^{2+} , cuja demonstração inicial requereu metodologia de natureza eletrofisiológica que foi posteriormente complementada por metodologia de mais fácil montagem e rápida execução e capaz de fornecer praticamente os mesmos resultados. Pretendemos apresentar um novo grupo de drogas antagonistas competitivas do íon Ca^{2+}, os antibióticos Aminoglicosídeos-Aminociclitólicos, cujo antagonismo com o íon Ca^{2+}ocorre em todos os níveis de toxicidade desses compostos: aguda, subaguda e crônica.

Research and Post-Graduation in Brazil: Past, Present and Future. Some Reflections about the Development of Pharmacology in Brazil

Jorge A. Guimarães (UFRGS)

1. *On the value of Science*: Several authors seek to illustrate with concrete data what it means and represents to the lives of citizens the contribution of science and its respective social value. In a recent article in Science William Press (Press, 2013) (1) shows very clearly what accounted for the American Society, the scientific development of that country. In an exponential progression the standard of advancement of American's life, as measured by the continuous increase in their *per capita* GDP, was fostered over more than 130 years. This includes the periods when the American Society had to face times of economic depression, as indeed has been the trajectory of many countries. In Brazil, despite our scientific path is much more recent, economic and social advances were also recognized as a result of scientific and technological development. Such a development has been made based on various scientists, pioneers of our science starting with José Bonifácio de Andrada e Silva, the Patriarch of Independence, Alberto Santos Dumont and many others who followed them. In fact outstanding contributions to our technological and social advances appear in agriculture, in the search for oil in oceanic deep waters, banking automation, tropical medicine and dentistry, as well in the paper and metal-mechanical industry, aircrafts production, architecture and in engineering and civil construction, and more recently several advances in social policies, such as the Sistema Único de Saúde (SUS). Important aspect for the scientific and technological development of Brazil, with recognized impacts on social performance in many areas, has been the advent of our enviable multifaceted system of funding agencies for Science, Technology and Innovation (S,T&I). Such a system, settled in diverse agencies of the federal and state governments, has no similar models in many countries at a similar stage of development as that of Brazil's. This sophisticated support system to scientific activities has been able to, in a greater or lesser degree of efficiency, provide the means necessary for the scientific development of the country. This feature could be better represented in other countries, since nowadays many nations seek an entry on the world scenario by means of scientific research. Indeed, the production of more than 8.5 million articles published in the five-year period from 2009 to 2013, had the contribution of 226 countries on all continents (Haeffner, Zannoto and Guimarães, 2015) (2). The data confirm that these countries, regardless of their stage of development, have sought to participate in the new knowledge generation process and to take up a position in the world ranking of science. This fact underlies the current realization that education and science are components of a process that supports technology development, constituting basis for business innovation, progress and economic strength of nations. From this evidence, it can be assumed that government funding for research is intended to underpin the development of countries, not only feed the work, dedication and even the vanity of scientists as many people think. In fact most well succeeded countries are applying not less than 2.0% of their GNP to support science and technology development.

2. *Brazil: 30 Years of Science*: The information available in international databases clearly show an extraordinary advance of Brazilian science in the last 30 years, coinciding with the commemoration of the thirtieth anniversary of our ministry of science, created as the Secretary of Science and Technology by Renato Archer in 1985, then made into Ministry in 1992 and finally the Ministry of Science, Technology and Innovation (MCTI) in 2011. During this period the Brazilian scientific indicators increased significantly: indexed articles, 11 folds; citations 60 folds and three times the Impact Factor (IF). Today Brazil alone produces more scientific papers than all other Latin American countries together. Total production of Brazilian articles grew in practically all areas of knowledge, with special emphasis on medicine, animal and plant science, agriculture, chemistry and physics. Since 2000, with the creation of the CAPES Portal of Periodicals, the production of review articles grew up in even stronger levels. Overall, the recent growth of the Brazilian Science can be compared to that of some other countries whose growth rates are even more prominent. Comparing the five-year periods 2006-2010 vs. 1981-1985 (Almeida and Guimarães, 2013) (3), one sees that Brazil's scientific output increased 11.4 times between these periods, but some other countries have grown more: South Korea 86.7 times; Iran (73.0); Turkey (47.8); China (39.4); Taiwan (29.6); Singapore (24.2); Portugal (23.7) and Hong Kong (17.7). The data witness the awakening of these countries to the importance of S&T. In spite of this it turns out that only 24 (about 10%) out of 246 countries contribute, each one, with at least 1% of world scientific production and together they account for 84.1% of the global total number of articles (2). It is also noted that there is wide spread in the world scientific production whether in the fields of research, whether in the numbers of production of each country and this influences the qualitative component (Impact Factor, IF), the scientific fields, the institutions, countries and even the researchers. This can be seen with the area of mathematics where the median IF of its journals is much smaller than that of journals from other exact sciences, such as physics and chemistry, and far-away from that of medical and biomedical journals. On the other hand, it is to be noted that international co-authorship in publications influences positively and significantly the IF, as a consequence of the increase in citations of such articles. Nevertheless, in countries with very low scientific production, the excess of international co-authorship (which is a very common figure), distorts the qualitative component of the fields and furthermore it masquerade the scientific significance of

such countries. Noteworthy, several countries, including Israel, Austria, Scotland, Ireland, Belgium, the Nordic Countries and others, which show a relatively low quantitative production, have elevated IF figures of their science. Together these two features exemplify the dichotomy of quantitative versus qualitative science. Certainly, such dichotomy also indicates the importance of science impacting positively the standard of living of these country's citizens.

3. *Internationalization of the Brazilian Science:* Despite of the unquestionable evolution of the Brazilian science over the last 30 years, the qualitative component of this evolution is less expressive. Set in 13th position among the countries that generate new scientific knowledge in the world, the qualitative performance of Brazil is situated much below as inferred from the mean IF: Brazil's 3.6 against the average IF of 6.4 shown by the group of the 24 most productive countries. A strong contribution to this situation is the relatively low level of international cooperation seen the in publications by Brazilian researchers. Indeed, among the 24 most productive countries, Brazil ranks with the lowest rates (29.9% of articles) with international authorship, contrasting with the average of 43% of the articles reflecting international cooperation in the group of 24 countries. As mentioned above, the level of cooperation increases the citations of articles and influences the impact factor. An effort to increase the international collaboration of Brazilian scientists is therefore an urgent challenge. Such an effort demands providing mechanisms to internationalize our universities through graduate school.

4. *A National Agenda for Research:* An important component of economic and social success of countries is derived from their capacity for planning scientific activities. This means to seek and relate issues and to operate networks, aiming to bring together the actions of different ministries, their executive units of specific actions and, in many cases their own agencies. The goal in these cases is to identify the country's needs and to establish a list of priorities demanding S&T activities in basic and applied research, as well as in Research Development and Innovation (R,D&I). The prioritized actions define the investment budgets to support advances in specific sectors for local or global development, thus unraveling solution to common problems. In fact the planning system should be able to identify problems demanding a scientific approach, which usually results in benefits for the society and its citizens. A level of planning with such characteristics can be found in more developed countries like USA, Germany, UK, France, Australia, Japan, Canada, Israel and even in non-developed countries such as China, South Korea, Taiwan, Turkey, Iran. For the full exercise of scientific activities, the importance of planning lies in the definition of the means (human and financial resources, equipment, supplies and setting strategic partnerships for the project) to be made available on time, in scheduled actions, revised periodically. In Brazil such planning rarely occurs, even for administrative actions and for science policy-reaching goals. Especially in science policy there is a recognized lack of this type of formulation, and the actions of S & T or pro-S & T are often decided at the last minute. However a plan of actions of S & T and R,D&I venture is much required for the country today. In this regard it is worth mentioning the National Plan of Graduate Studies (PNPGs) formulated since the 1980s, always with multiannual character, constitutes an exception to the rule. Such plans although usually formulated by CAPES, included the participation of other federal agencies, CNPq and FINEP, state agencies and other stakeholders such as universities associations (ANDIFES, ABRUC, ABRUEM, ANUP), Pro-Rectors Forum, ANPG, representatives of ministries and the scientific community. Over the past 30 years, six editions of PNPGs were prepared. These documents design actions for a period of years ahead and propose goals to be achieved in the training and employment of highly qualified human resources, taking into account specific developmental stage in each of the knowledge areas in the country, as well as considering their respective demands. In the actual proposal (PNPG 2011 – 2020), the need for a plan of actions dealing with science development for the country was detected. It was thought that Brazil urgently needs to establish a NATIONAL RESEARCH AGENDA, making it possible to couple the country's priorities with the actions demanding S&T approaches for solutions. Through this procedure the actions of various ministries, other organizations and government agents, demanding application of S&T solutions, would be coupled with the training of human resources, the main objective of the PNPG. Such planning would establish strategic partnerships able to provide greater efficiency in public policies generating positive synergy on state actions. What has been observed, however, is a major difficulty for formatting such an agenda and because of that, what we see is the result of initiatives that are based on the exercise of improvisation. Indeed, the Monitoring Committee of PNPG 2011 - 2020 has encountered many difficulties in scheduling interviews and to obtain suitable information and plans of action of the various state organizations. It is concluded that a coordination action is lacking for a strategic plan to support the country's development. The creation of a National Agenda for Research is urgently needed and necessary for organizing these issues.

5. *Some Thoughts about Pharmacology Output in Brazil:* Pharmacology occupies a prominent position and recognition worldwide concerning its scientific production both in quality and quantity. In Brazil the situation of the area is not different. Pharmacology is one of the highlighted fields in the national ranking of production of articles, showing furthermore, extraordinary growth in scientific production over the last three decades: from 227 articles in the five-year period 1981-1985 to 5,706 in 2010- 2014, an increase of 25-folds, or about 8 times larger than the world growth in the same period. With this development the contribution of Brazilian Pharmacology accounts now for 3.2% of the world production in the area.

Concerning citations this breakthrough was even more extraordinary: from 391 to 21,834 citations in same periods, i.e. an increase of 56-folds! The Impact Factor has more than doubled (2.4 times) in these periods: from 1.7 to 3.8. The significant performance of pharmacology in Brazil is directly linked to advances in the post-graduate programs.

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Alternative approaches to lead generation. S. J. Enna, Ph.D. President, International Union of Basic and Clinical Pharmacology (IUPHAR) Professor, Departments of Physiology and of Pharmacology, University of Kansas Medical Center, Kansas City, Kansas 66160

Historically, drug discovery was chiefly an empirical enterprise, with the shift to a more hypothesis-driven approach occurring in the 20th century. Whereas drug discovery was originally directed towards identifying therapeutically useful agents prior to defining their mechanisms of action, it is now more common to develop a target-selective compound before assessing its potential clinical utility. For neurotherapeutics in particular this often yields ligands that may be useful as research tools, but worthless as therapeutics. Although the emphasis on target identification, or "targephilia", has yielded novel pharmaceuticals, it has not facilitated the drug discovery process overall, especially for compounds to treat central nervous system (CNS) disorders. This is because the targephilic approach requires a keen understanding of the relationship between the target and organ system physiology, and the availability of in vivo and in vitro test systems that reliably predict human responses. The fact that the majority of CNS drugs have been identified empirically indicates the lack of knowledge about basic neurobiological processes and human behavior make drug discovery in this area less amenable to a target-based approach than for other types of therapeutics. Improving the success rate in CNS drug discovery requires a more pharmacometric-based strategy, with an emphasis on defining basic CNS function in intact animals and a more systematic in vivo behavioral analysis of new chemical entities. Efforts should also be directed toward defining the sites of action of existing CNS drugs to aid in the design of second-generation agents and toward examining the CNS responses to drugs approved for other uses. Such a program requires a greater balance between, and integration of, pharmacometric and molecular techniques to maximize the contributions of science and serendipity in drug discovery.

Drug discovery strategies that lead to success. David C Swinney, Institute for Rare and Neglected Diseases Drug Discovery, Mountain View, CA.

The goal of drug discovery is to identify medicines that can benefit a patient at a safe dose. Two drug discovery strategies to address this are 1) target-based drug discovery (TDD) and 2) phenotypic drug discovery (PDD). These strategies differ in how they identify molecular mechanisms of action (MMOAs) that provide therapeutically useful efficacy and safety. These MMOAs can be considered 'pharmacological hot spots' that include the target and the molecular mechanism through which the target provides a safe, therapeutically useful response. The strategies differ in that PDD will empirically identify an MMOA, whereas with TDD target validation drives the strategy and MMOA is rarely considered. A strength of TDD is a rational approach to translate genetic information into clinical development and patient care, however its weakness is the inability to predict a priori an effective MMOA. PDD can help compensate for this weakness. Ultimately, the strengths and weaknesses of these two approaches are complementary. Drug discovery strategies that combine both TDD and PDD will have a greater chance for success.

New neuroactive molecules against cerebral ischemia and cerebrovascular diseases in Cuba: For the ways of effective neuroprotection. Nuñez Figueredo Y[1], García Pupo L[1], Ramirez Sanchez J[1], Ochoa Rodríguez E[2], Verdecia Reyes Y[2], Tacoronte Morales JA[2], Pardo Andreu GL[3], Souza D.O.[4]; Costa S. L.[5]; Delgado-Hernandez R[1*]. [1]Centre of Pharmaceutical Research and Drug Development (CIDEM), Ave 26 e/ Boyeros y Ave 51, Plaza, Havana, Cuba. [2]Chemical Faculty, Havana University, Havana, Cuba. [3]Pharmacy Faculty, Havana University, Havana, Cuba. [4]Departamento de Bioquímica, PPG en Bioquímica, PPG en Educacion en Ciencia, Instituto de Ciencias Basicas de la Salud, Universidad Federal de Rio Grande do Sul, Rua Ramiro Barcelos, 2600 Anexo, Porto Alegre, RS, 90035-003, Brazil; [5]Laboratorio de Neuroquímica y Biología Celular, Departamento de Biofunci_on / Bioquímica, Instituto de Ciencias de la Salud, Universidad Federal de Bahia, Av. Reitor Miguel Calmon s/n, Salvador, BA, 40.110-100, Brazil

The neurological deterioration associated to the cerebrovascular disease (CVD), also well-known as ictus, represent one of the main causes of mortality and morbidity at world level. These pathological conditions constitute a challenge now for the biomedical sciences. 80% of the ictus is ischemic and, therefore, it derives from the lack of appropriate sanguine contribution to a cerebral area. Inside the molecular events that have evidenced in the ischemic conditions manifested this as a "not controlled" inflammatory reaction together of free radical oxygen intermediaries release and the over expression of glutamatergic transmission generated a particular situation with considerable neuronal damages. Result important to emphasize that some of this process are irreversible and these are the origin of multiple sequels manifested in the patients with cerebral

ischemic attacks. In general, the organism exert different endogenous systems of neuroprotection; such as early processes of activation of the GABAergic transmission, adenosine and potassium bombs; expression of IL-10 and Bcl protein, among others signals; followed by later events of vasculogenesis, neurogenesis, neuronal plasticity and synaptogenesis; which are able to diminish the damages in the tissues. However, when the endogenous mechanisms don't respond appropriately and these physiological conditions are not able to repair the damage, for their severity, or others causals, it is necessary to become an exogenous therapeutic intervention. For these reason the research and development of molecules with neuroprotector properties able to attenuate the affectations caused to the nervous tissues in the cerebrovascular and ischemic diseases represents a line of high-priority for the investigation on the Centre of Pharmaceutical Research and Drug Development (CIDEM). In this context, CIDEM has stimulated a new Neuropharmacology group of researchers that working in collaboration with Chemistry and Pharmacy faculty of Havana University, in order to develop an important neuroprotection line of research as the main objective to found new drugs. The presentation showed the results of the implementation of experimental pharmacological methodologies develop for the study of the ischemic brain processes and the evaluation of the effectiveness of diverse candidates of neuroprotectors molecules, the exploration of its mechanisms of actions, using some *in vitro* and *in vivo* pharmacological models that have been possible to select promissory neuroprotector compounds. These studies represent an important contribution to the search of new neuroprotective products more effective and potent using novel strategies of neuropharmacological modulation. References: Dirnagl OR et al. *Trends in Neurosciences* 26(5): 248, 2003. Nunez-Figueredo Y et al. *Neuropharmacology* 85: 517-527, 2014. Nunez-Figueredo Y et al. *Eur J of Pharmacol* 726C: 57-65, 2014. Nuñez-Figueredo Y et al. *Brain Res Bull* 109:68-76. 2014.

Investigating cell surface receptor dimerization and complex formation with fluorescent ligands. Stephen J Hill, Cell Signalling Research Group, School of Life Sciences, University of Nottingham, Nottingham, NG7 2UH.

Previous work in our lab, using fluorescent adenosine receptor agonists and antagonists, has provided novel insights into the allosteric regulation of adenosine A_3 (A_3AR) and A_1 (A_1AR) receptors by allosteric ligands and receptor dimerization in single living cells (1-2). We have also used a fluorescent analogue of CGP12177 to investigate ligand binding to the human β1-adrenoceptor. This work has demonstrated that there is negative cooperativity between the two different ligand-binding conformations of the β1-adrenoceptor activated by catecholamines and CGP12177 respectively (3). Finally, we have used fluorescence correlation spectroscopy (FCS) to investigate ligand binding to A_1AR and A_3AR in small 0.2 μm^2 microdomains of single living cells (4). FCS studies with a fluorescent A_3-agonist have enabled high affinity labeling of the active conformation (R*) of the receptor (4). We have also used a fluorescent adenosine A_3-antagonist (CA200645) to study the binding characteristics of antagonist-occupied receptor conformations (R) in membrane microdomains of single cells (5). In addition we have developed novel ligand binding assays for both G protein-coupled receptors (GPCRs) and receptor tyrosine kinases using cell surface receptors tagged with a novel N terminal luciferase (NanoLuc; Promega) and bioluminescence resonance energy transfer (BRET) to a fluorescent ligand (6). I thank the MRC, BBSRC and Wellcome Trust for financial support. References: May LT et al (2010), Mol Pharmacol 78:511-23. (1) May LT et al (2011), *FASEB J* 25:3465-76 (2) Gherbi K et al (2015) FASEB J in press (3) Cordeaux, Y et al (2008), FASEB J. 22: 850-860 (4) Corriden R et al (2014) FASEB J 28: 4211-4222 (5) Stoddart LA et al (2015) Nature Methods 12:661-663

***In vitro* and *in vivo* pharmacological characterization of cebranopadol a novel mixed nociceptin/orphanin FQ and opioid receptor agonist.** [1]Caló G, [1]Rizzi A, [1]Cerlesi MC, [1]Ruzza C, [1]Malfacini D, [1]Ferrari F, [2]Costa T, [3]Guerrini R, [3]Bianco S, [3]Trapella C. [1]Dept Medical Sciences, Sect Pharmacol, University of Ferrara, Italy. [2]Dept Pharmacol, ISS, Rome, Italy. [3]Dept Chem and Pharmaceutical Sciences, University of Ferrara, Italy.

Nociceptin/orphanin FQ (N/OFQ) via selective activation of the N/OFQ peptide receptor (NOP) controls several biological functions including pain transmission. Evidence coming from rodent and non-human primate indicates that the simultaneous activation of NOP and opioid receptors promotes synergistic analgesic effects. Thus mixed NOP/opioid receptor agonists may have a therapeutic potential as innovative analgesics. This study aimed to investigate the in vitro and in vivo pharmacological profile of cebranopadol. In CHO cells coexpressing NOP or opioid receptors and chimeric G proteins cebranopadol stimulated calcium mobilization with the following rank order of potency NOP = mu > kappa > delta. The stimulatory effects of cebranopadol were antagonized by SB-612111 and naloxone in cells expressing the NOP and the mu receptor, respectively. In a BRET based assay cebranopadol promoted both NOP/G protein and mu/G protein interaction with high potency. The rank orders of potency were cebranopadol > Ro 65-6570 >> fentanyl in NOP cell membranes and cebranopadol > fentanyl >> Ro 65-6570 in mu cell membranes. In the mouse tail withdrawal assay fentanyl but not Ro 65-6570 produced dose dependent antinociceptive effects that were sensitive to naloxone but not SB-612111 (both at 1 mg/kg). Cebranopadol mimicked the antinociceptive action of fentanyl eliciting however longer lasting effects that were similarly sensitive to both antagonists. In the mouse formalin test fentanyl, Ro 65-6570, and cebranopadol elicited dose dependent effects. Interestingly fentanyl displayed

similar potency (ED_{50} 0.03 mg/kg) in the tail withdrawal and formalin assay while cebranopadol was more potent in latter than the former assay (ED_{50} 0.03 and 0.1 mg/kg, respectively). Collectively the results confirm and extend previous finding demonstrating that cebranopadol by simultaneously activating NOP and opioid receptors elicit robust analgesic effect in different pain models.

Influence of TRPA1 and other TRP channels as thermosensitive vascular sensors. Aisah Aubdool and Susan D. Brain. Cardiovascular Division BHF-Centre of Cardiovascular Excellence and Centre of Integrative Biomedicine, King's College London

Transient receptor potential ankyrin-1 (TRPA1) is a non-selective thermosensitive cation channel which is widely expressed in a subset of sensory neurons. Here, we have investigated the ability of TRPA1 to influence cold responses, Mice were anaesthetised with (ketamine-75mg/kg and medetomidine-25mg/kg, *i.p.)* and blood flow was measured *in vivo* using laser Doppler flowmetry. We investigated the effects of local cold exposure to the mice plantar skin. Blood flow was measured before (5-10 min for baseline readings) and after local cold exposure of the mouse hindpaw (30 min). Local cold exposure mediates a response consisting of vasoconstriction followed by vasodilatation in the hindpaw. The cold-induced response was substantially reduced in TRPA1(knockout) KO, as compared to WT mice and significantly inhibited by the selective TRPA1 antagonist HC030031. Additionally, the cold-induced vascular responses were shown to be significantly reduced in TRPM8KO mice. The vasodilator restorative component was lost when mice were pre-treated with a mix of the selective calcitonin gene related peptide (CGRP) receptor antagonist, $CGRP_{8-37,}$ the substance P neurokinin-1 receptor antagonist SR140333 and a non-selective nitric oxide synthase inhibitor L-NAME, suggesting a prominent role of neuropeptides and nitric oxide in this vasodilator component. We provide novel evidence of a major involvement of TRPA1 and other cold-sensitive receptors in a vascular response that involves sensory nerves in local cold-induced vascular responses *in vivo* (Aubdool et al., 2014). Aubdool et al. (2014) Nat Commun. 5:5732. doi: 10.1038/ncomms6732. *This study was supported by the British Heart Foundation and a BBSRC-led IMB capacity building award.*

Como o atual cenário político/econômico impactará sobre os Programas da Capes e a Pós-graduação neste mandato. Marcio de Castro Silva Filho (USP).

A CAPES tem desempenhado um papel fundamental na pós-graduação (PG) brasileira, atuando não apenas na avaliação dos programas, mas sobretudo no fomento, redução das assimetrias e indução de áreas estratégicas. Nos últimos 10 anos a agência teve um notável aumento no seu orçamento o que permitiu financiar boa parte da expansão das ações previstas. Não obstante, a CAPES buscou novos parceiros para o financiamento da pós-graduação e convém ressaltar os Acordos com as Fundações Estaduais de Amparo a Pesquisa. Em 2015, frente aos novos desafios da situação econômica do país a Agência priorizou a manutenção das bolsas (país e exterior) voltadas à PG e o Portal de Periódicos, com ajustes no orçamento nas rubricas de Custeio e Capital. Assim, mais de 90% dos recursos foram garantidos.

PK/PD applied to anti-inflammatory drugs. William J Jusko, PhD. SUNY Distinguished Professor of Pharmaceutical Sciences, University at Buffalo, Buffalo, New York, USA

Inflammation consists of an array of diverse pathologic responses to infection and injury. A complex immune cascade is the basis of many chronic diseases such as arthritis, diabetes, and cancer. Numerous mathematical models have been developed to describe the disease (DIS) symptoms and progression and the effects of various anti-inflammatory drugs. This overview will illustrate the state-of-the-art in pharmacokinetic/pharmacodynamic (PK/PD) modeling of the effects of diverse drugs for treating inflammation, describes relevant biomarkers amenable to modeling, and summarize major advantages and limitations of the published PK/PD and systems models. Simple direct inhibitory models are often used to describe in vitro and some clinical effects of anti-inflammatory drugs such as the NSAIDs. Indirect response models are more mechanism-based and are more widely applied to the turnover (generation and loss) of biomarkers and symptoms. These, along with target-mediated models that describe nonlinear target binding and transduction models that describe short to lengthy time delays, have been successfully applied to capture the PK/PD of many anti-inflammatory drugs along with the disease progression. The multiplicity of pro-inflammatory genes, cytokines, and steps as modulated by the PK and receptor-mediated effects of corticosteroids will be illustrated with a small systems model applied to a collagen-induced arthritis model in rats. Biologics, especially monoclonal antibodies, also offer opportunities to address tissue distribution limitations and specific mechanisms of action and evolve diverse PK/PD/DIS models to quantitatively capture the underlying physiological processes. More advanced mechanistic and systems models should allow evaluation of the roles of some key mediators in disease progression, assess interactions among diverse drugs, and better translate drug properties from in vitro and animal data to patients. Supported by the UB Center for Protein Therapeutics and NIH Grant No.GM24211.

Neuropharmacology of neurosteroid biosynthesis in the treatment of PTSD. Graziano Pinna Psychiatric Institute, Department of Psychiatry, College of Medicine, University of Illinois at Chicago, Chicago, IL 60612, Email: gpinna@psych.uic.edu; graziano_pinna@yahoo.com

Posttraumatic stress disorder (PTSD) is a severe, undertreated condition that affects millions in the USA without a consistent effective therapy. Benzodiazepines, mostly used for the treatment of anxiety disorders, are ineffective in improving PTSD symptoms. Allopregnanolone (ALLO) and its equipotent stereoisomer, pregnanolone, are neuroactive steroids synthesized by principal glutamatergic neurons that positively and allosterically modulate the action of ?-amino-butyric acid (GABA) at post- and extra-synaptic $GABA_A$ receptors. Levels of ALLO are reduced in the cerebrospinal fluid of female premenopausal patients with PTSD. This suggests that restoring downregulated brain ALLO levels in PTSD may be beneficial.
ALLO biosynthesis is also decreased in association with the emergence of PTSD-like behaviors in socially isolated (SI) mice. Similar to PTSD patients, SI mice also exhibit changes in the frontocortical and hippocampal expression of $GABA_A$ receptor subunits, resulting in resistance to benzodiazepine-mediated sedation and anxiolysis. ALLO acts at a larger spectrum of $GABA_A$ receptor subunits than benzodiazepines and increasing corticolimbic ALLO levels in SI mice by injecting ALLO or stimulating ALLO biosynthesis with a *selective brain steroidogenic stimulant (SBSS)*, such as S-norfluoxetine, at doses far below those that block serotonin reuptake, reduces PTSD-like behavior in these mice. This suggests that synthetic analogs of ALLO, such as ganaxolone, may also improve anxiety, aggression, and other PTSD-like behaviors in the SI mouse model. Consistent with this hypothesis, ganaxolone induced a dose-dependent reduction in aggression toward a same-sex intruder and anxiety-like behavior in an elevated plus maze. The EC_{50} dose of ganaxolone used in these tests also normalized exaggerated contextual fear conditioning and, remarkably, enhanced fear extinction retention in SI mice. At these doses, ganaxolone failed to change locomotor activity. Therefore, unlike benzodiazepines, ganaxolone at non-sedating concentrations appears to improve dysfunctional emotional behavior associated with deficits in ALLO in mice and may provide an alternative treatment for PTSD patients with deficits in the synthesis of ALLO. PTSD appears to be a multifactorial disorder with several symptom clusters and involving neurochemical deficits that may vary among individuals with PTSD. Selective serotonin reuptake inhibitors (SSRIs) are the only medications currently approved by the FDA for treatment of PTSD, however they are ineffective in a substantial proportion of PTSD patients. Accumulated knowledge about the heterogeneous pathophysiology of PTSD thus suggests that treatments of the future should be "individually designed" rather than "one-size fits all". In the case of PTSD patients who exhibit deficient ALLO biosynthesis and related deficits in GABAergic neurotransmission, ganaxolone administration may facilitate recovery. Perhaps then, future clinical trials of ganaxolone should be guided by pre-treatment ascertainment of ALLO levels and other relevant GABAergic system biomarkers as possible predictors of treatment efficacy. Acknowledgement. This study was supported by National Institute of Mental Health Grants MH 085999 and Marinus Pharmaceuticals, Inc., funding to Graziano Pinna.

Beta-blockers – exploring new drug discovery horizons in academia. Jillian Baker, Sheila Gardiner, Christophe Fromont, Barrie Kellam, Steve Hill, Peter Fischer. University of Nottingham
During this presentation I will discuss two areas of drug discovery undertaken at the University of Nottingham, both of which aim to reduce the side-effects of current classes of drugs: one by achieving super-selectivity, and one by limiting the distribution of the drug in the body.
The first project concerns receptor selectivity of drugs. β-blockers are important treatments for people with heart disease, for example prolonging life in those with heart failure and ischaemic heart disease and reducing symptoms of those with angina and arrhythmias. However current β-blockers are not selective, thus although binding to the heart β1 receptors, they also binding to β2 receptors in the lungs which makes asthma and COPD worse. The presentation covers the development of very β1-selective beta blockers, from medicinal chemistry, through molecular pharmacology to studies in rats that demonstrate their β1-blocking effects whilst having so effect on β2-responses. These molecules have potential to be useful β-blockers in patients with heart disease who also have asthma and are therefore currently unable to take β-blockers despite their like-prolonging effects.
The second focus will be on drugs that are used topically but that cause side-effects because of systemic absorption. β-blockers are used topically in glaucoma and have also been shown to be useful in the treatment of infantile haemangiomas. However systemic absorption causes hypotension, bradycardias (sometimes requiring hospital admission and electrical pacing of the heart) and chronic use in babies is a developmental concern. This presentation with discuss the development of β-blockers that are esterase-sensitive, that are hydrolysed by serum and liver esterases making them inactive upon contact with blood. This method provides a potential mechanism for reducing systemic side effects of topical agents. Funding: Wellcome Trust

Pathophysiological maturation of the prefrontal cortex linked to the psychiatric disorders susceptibility gene RELN. J. Iafrati, J.M. Orejarena, A. Malvache, O. Lassalle, L. Bouamrane, C. Gonzalez Campo and P. Chavis. INSERM, INMED, Marseille, 13009, France. Aix-Marseille University, UMRS 901, Marseille.
The glycoprotein reelin is an essential building block of the brain extracellular matrix and is a multifunctional protein. It controls neuronal migration and positioning in the developing central nervous system and also regulates maturation and functions of adult central synapses. Past work of our group fueled the concept that in the postnatal brain, reelin is required for the homeostasis of glutamatergic receptors that compose the

majority of excitatory synapses. The RELN gene, which encodes for reelin, is a strong candidate in the aetiology of several human psychiatric diseases including schizophrenia, autism, and mood disorders. A number of these disorders share common features of dysfunctional prefrontal circuits and abnormal reelin expression in the brain, especially in the prefrontal cortex (PFC), thus reinforcing the link between reelin and the pathophysiology of the prefrontal cortex. To unravel the role of reelin in the postnatal maturation of PFC connectivity, we implemented a multiscale exploration and examined the impact of reelin haploinsufficiency at the structural, functional and behavioral scales in mice from the juvenile stage to adulthood. We discovered that reduced levels of reelin impair the structural and functional maturation of PFC excitatory synapses and that this directly impacts on learning. We also show that the juvenile period provides a critical window for therapeutic rehabilitation with the fast acting antidepressant, ketamine. A single in-vivo injection of ketamine, can restore normal morpho-functional properties and correct aberrant behavior in the PFC of juvenile reelin haploinsufficient mice. These effects are mediated via the mammalian target of rapamycin (mTOR) pathway. Altogether, these data show that reelin is essential for successful structural, functional and behavioral postnatal maturation of prefrontal circuits and reveal the existence of a critical period in the juvenile development of the PFC during which genetic insufficiencies are amenable to pharmacological rescue. Financial Support: Fondation Jérôme Lejeune, ANR.

Serotonin in panic and anxiety. Frederico G. Graeff. Instituto de Neurociência e Comportamento – IneC
Experimental results obtained with conflict tests in laboratory animals have shown that drugs that decrease 5-HT activity release behavior suppressed by punishment. Because conflict tests are reliable animal models of anxiety, 5-HT was supposed to enhance anxiety by acting on limbic forebrain structures as well as on the dorsal periaqueductal grey matter (dPAG). However, results with stimulation of the DPAG showed that 5-HT impairs proximal defense, pointing to an anxiolytic role of 5-HT. To solve this contradiction, it was suggested that conflict tests generate conditioned anxiety, whereas dPAG stimulation produces unconditioned aversion, related to panic. This hypothesis has been tested in animal and human models of anxiety and panic along 24 years and, so far, the obtained results are largely compatible with its predictions. They have also shown that the antidepressants used for treating panic disorder sensitize 5HT 1A and 2A receptors in the dPAG and medial hypothalamus, both of which inhibit panic attacks. The reduction of generalized anxiety, also caused by antidepressants, would be due to desensitization of 5-HT2C receptors in the amygdala. Recent results suggest that 5-HT and endogenous opioids act synergistically in the dPAG to inhibit panic-like responses in rats through a cooperative action of 5-HT1A and μ-opioid postsynaptic receptors. These findings allowed reconciliation between two leading neurochemical hypotheses of panic pathophysiology, namely: 1) that of a lack of 5-HT inhibition of the behavioral and neurophysiologic symptoms of panic, and 2) that of a faulty opioid buffering system that regulates both respiration and social bonding. They also indicate that opioid agents with low abuse potential, such as buprenorphine, may be used as alternative or adjunctive treatment of panic disorder. Financial support: CNPq Senior Fellowship

Symposia

Pharmacological targeting of intracellular proteases for diseases of oxidative stress. Richard Schulz, Departments of Pediatrics & Pharmacology, Cardiovascular Research Centre, University of Alberta, Edmonton AB Canada. richard.schulz@ualberta.ca
Matrix metalloproteinases (MMPs) are best understood for their biological actions to proteolyse extracellular matrix proteins to cause tissue remodeling, both physiological and pathological. It is now clear that they have several intracellular functions. My lab discovered that MMP-2, found in almost every cell type, also localizes to specific subcellular organelles and has unique susceptible protein targets inside the cardiac myocyte and other cells. We recently found that a combination of MMP-2 signal sequence quality, as well as its splicing, dictate its distribution between the cytosol and the secretory pathway. MMP-2 is activated directly by oxidative stress (in the form of peroxynitrite) to a S-glutathiolated Cys derivative which is catalytically active and distinct from its secreted form. It is an integral sarcomeric protein localized to thin, thick and intermediate (titin) filaments, most prominently at the Z-line, and is also found in nuclei, mitochondria, the mitochondrial associated membrane, and caveolae. During oxidative stress injury in the heart, MMP-2 is rapidly activated and cleaves specific sarcomeric and cytoskeletal targets including troponin I, alpha-actinin, myosin light chain-1, glycogen synthase kinase-3beta and titin. The cleavage of these sarcomeric proteins results in the rapid loss of contractile function. MMP inhibitor drugs prevent the cleavage of these targets and protect the heart from oxidative stress injury by preventing inefficient contractile function. We also found that several caspase and calpain inhibitors have MMP inhibitory activity, thus processes ascribed to these proteases could be MMP dependent. Such drugs, including doxycycline, which possesses MMP inhibitory properties distinct from its antibacterial actions, are promising new therapies for the treatment of ischemic heart disease and heart failure. Post-translational modifications of intracellular MMP-2, including S-glutathiolation and its phosphorylation, will allow the development of inhibitors specifically targeting intracellular but not extracellular MMP-2, and should be useful in treating diseases caused by oxidative stress in the body.

Inhibition of matrix metalloproteinases as a potential alternative to control maladaptive vascular remodeling in hypertension. Michele Mazzaron de Castro, PhD, Professor. Department of Pharmacology, Faculty of Medicine of Ribeirao Preto, University of Sao Paulo

The matrix metalloproteinases (MMPs) are well known for their ability in degrading several components of the extracellular matrix, which contribute to tissue remodeling in many pathophysiological conditions. MMP-2 notably contributes to hypertension-induced cardiovascular dysfunction and chronic maladaptive remodeling, which lead to the development of many other cardiovascular diseases. MMP-2 is more recently found to be also an intracellular protease, which is mainly located in the contractile apparatus of cardiac myocytes and vascular smooth muscle cells. Previous studies showed that calponin-1 and troponin I were cleaved by MMP-2 in the vasculature and hearts in some oxidative stress-related cardiovascular diseases. Calponin-1 is a 34 kDa protein located in the contractile apparatus of vascular smooth muscle cells. Calponin contributes to the regulation of vascular tone and it is a marker of cell differentiation. Decreased levels of calponin-1 are intrinsically related with vascular smooth muscle cells proliferation and migration, thus may contributing to intima hyperplasia and remodeling. Our laboratory is showing that inhibition of MMPs prevented the loss of calponin-1 in aortas of hypertensive rats, and this effect may contribute to reduce the resulting chronic vascular remodeling. Therefore, in this lecture, it will be discussed how MMP-2 may mediate hypertension-induced vascular remodeling. The MMP inhibitors may be useful not only as pharmacological tools in experimental research, but instead, as adjuvant therapy in the treatment of hypertension and its cardiovascular complications. Financial support: FAPESP, CAPES e CNPQ.

From the tissue microenvironment to the cell nucleus: ECM-signaling regulation of mammary gland morphogenesis and cancer. Alexandre Bruni Cardoso. Department of Biochemistry, Institute of Chemistry, University of São Paulo

Cell behavior and tissue homeostasis are not exclusively controlled by soluble signals. Microenvironmental factors such as the extracellular matrix (ECM) arrangement, tissue architecture and mechanical forces are sources of signals capable of determining a cell's fate. By using physiologically relevant assays of 3D culture in combination with molecular biology, biochemistry, bioinformatics and live-cell microscopy tools, our laboratory seeks at understanding how cues from the tissue microenvironment reach the cell nucleus altering gene expression programs that control cell behavior during mammary gland morphogenesis and cancer. In this talk, I will present preliminary on "molecular relays" for signaling from the basement membrane (BM), a specialized ECM that regulates cell survival, quiescence and differentiation. We found that "normal" and malignant mammary cells respond differently to the growth-suppressive signals from the BM. "Normal" cells become quiescent when treated with laminin-111, an essential BM protein, whereas malignant cells are refractory to the treatment and continue to proliferate at the same rate as the untreated cells. Bioinformatics analysis of gene expression profiles of normal and tumor tissues and also experimental data point that molecular signaling that connects the ECM to the cell nucleus is disrupted in malignant cells. We believe that the conclusion of these studies will bring details of the ECM-regulation of cell proliferation and invasion, which are crucial processes in tissue morphogenesis and in cancer initiation and progression. Funding: FAPESP and CNPq

Novel experimental evidence on the mechanisms underlying chronic tooth pulp pain. Maria Martha Campos (PUC-RS)

Pain affecting the orofacial area is rather complex, displaying peculiar patterns of transmission. This presentation will cover the main recent findings regarding the mechanisms underlying the orofacial pain, based on the available current literature on either human or animal studies of tooth pulp inflammatory pain. Experimentally, the induction of tooth pulp pain can be accomplished by electrical stimulation or by the application of chemical irritants, such as oil mustard, capsaicin and carrageenan. Additionally, tooth pulp inflammation can be elicited by the exposure to infectious agents, including bacterial lipopolysaccharide (LPS), Complete Freund's adjuvant (CFA) or human caries. Irrespective of the kind of stimulation, both peripheral and central pathways are likely involved in tooth pulp inflammatory pain. Of note, the trigeminal subnucleus caudalis (also named medullary dorsal horn) has been demonstrated as a pivotal anatomical site related to the transmission of nociceptive information from the tooth pulp to higher brain centers of pain processing. Furthermore, it has been demonstrated that pain transmission after tooth pulp inflammation relies on the activation of MAP-kinases ERK and p38, besides microglia stimulation. Studies on this matter might well contribute to further understanding of dental and other orofacial pain-related states and their management.

Inverse agonist of type-1 cannabinoid receptors as a tool for the treatment for chronic pain. Camila Squarzoni Dale. Departamento de Anatomia, Instituto de Ciências Biomédicas, USP

Neuropathic pain is one of the most insurgent conditions to antalgic treatment, representing a challenge to health professionals involved and a serious problem in modern society. Due to the complexity of the mechanisms involved, the treatment of neuropathic pain is often ineffective and although there is progress in the development of new analgesics, the need for therapeutic agents capable of blocking the abnormal painful sensation without affecting the normal abilities of patients still has not been found. Type-1 cannabinoid

receptors (CB1R) are, among the members of the G-protein coupled receptors family, one of the most abundant in the central nervous system. Furthermore, CB1R are primarily responsible for the effect of cannabinoids in nociceptive pathways, and the expression of these receptors is demonstrated in areas involved in nociceptive transmission and processing. Although they are seen as promising targets for the development of drugs to treat various pathophysiological conditions, clinical and preclinical trials show that CB1R agonists usually produce unwanted effect in the CNS. CB1 agonists are generally psychoactive and are at risk of dependence, hindering optimization doses in clinical and pre-clinical tests. Thus, the development of drugs capable of binding to cannabinoid receptors without psychoactive effects offer therapeutic potential without the risk of adverse effects, becoming valuable tools for the treatment of numerous disorders related to cannabinoid system. Hemopressin (Hp), a nonapeptide (PVNFKFLSH) isolated from hemoglobin alpha chain, is an inverse agonist CB1R, which induces antinociception in different experimental models. Its effect is specific to nociception blockade and occurs thought the inhibition of nociceptive activation at spinal level, directly in sensory neurons and involves CB1 receptors, glial cells and *Mu* opiod receptors. This peptide is able to block pain experimentally when injected locally, administered orally or injected intrathecally, without inducing motor abnormalities, sedative or CNS depressant effects, generally associated with CB1R-binding compounds, making hemopressin a strong candidate for therapeutic purposes.

Novel targets for neuropathic pain control. Thiago M. Cunha (USP)
There is growing body of evidence showing that the development of pathological pain (neuropathic and inflammatory) depends neuron-immune interactions across the nociceptive system. In this talk, these mechanisms will be present focusing on the role of infiltrating leukocytes, patter recognition receptors (TLRs and NLRs) and their endogenous ligands.

Tardive dyskinesia: The contribution of Professor Roberto Frussa Filho to the comprehension of the disease. Maria Aparecida B. F. Vital. Departamento de Farmacologia - Universidade Federal do Paraná (UFPR).
In this presentation we will discuss the pathophysiology of Tardive Dyskinesia and an important contribution of Professor Doctor Roberto Frussa Filho in this area. Tardive dyskinesia is a syndrome characterized by repetitive involuntary movements, usually involving mouth, face and tongue and sometimes limb and trunk musculature. The syndrome is considered to be a late-onset adverse effect of prolonged administration of antipsychotic drugs, mainly the neuroleptics. It usually persists for months after the drug has been stopped and may be irreversible. The pathophysiology of tardive dyskinesia is complex, multifactorial and still not fully understood. Dr. Frussa Filho studied many different neurotransmitters involved in the pathology such as dopamine, gaba and glutamate. However, a great number of drugs were tried for the management of this motor disturbance, yet until now no effective and standard treatment has been found. In rats, abrupt withdrawal from long-term neuroleptic treatment not only enhanced general activity observed in an open-field but also the responses to apomorphine-induced stereotyped behaviour. These effects have been considered to be a consequence of the development of supersensitivity of central dopaminergic pathways (Bernardi and Palermo-Neto, 1979; Bernardi et al., 1981; Palermo-Neto, 1982, Felicio et al., 1987, Frussa-Filho and Palermo-Neto, 1988, 1990, 1991, Vital et al., 1995). In this line, in 1994 Janet Neisewander suggested that reserpine-induced oral dyskinesia in rats may provide a new animal model of tardive dyskinesia. Indeed, rats treated with this monoamine depleting agent develop orofacial dyskinesia characterized by twitching of the facial musculature, vacuous chewing movements and tongue protrusions (Neisewander et al., 1991a; 1991b; 1994). Dr. Frussa Filho and his Group studied this model and described many factors which are related to the development of tardive dyskinesia. In this regard, age is the single most frequently implicated risk factor increasing both the risk of developing tardive dyskinesia and the severity and persistence of the condition. Moreover, they also showed the contribution of the gender, strain, and the role of the oxidative stress in the pathophysiology of the disease (Abílio et al., 2002, 2003; Araújo et al., 2004; Castro et al., 2006; Faria et al., 2005; Silva et al., 2002; Peixoto et al., 2003, 2005). Despite these efforts tardive dyskinesia continues to be an important clinical problem without effective therapies. Further experiments might help to understand the disease and the treatment.

On memory and reminiscence of Roberto Frussa Filho. Jorge A. Quillfeldt, Depto de Biofísica, IB, and P.P.G. em Neurociências, ICBS – UFRGS
Roberto Frussa Filho was a young and highly productive brazilian neuroscientist working in the pharmacology of behaviour and cognition, that unfurtunately died at his best age of 53 in september 20, 2013. In this presentation we will review and discuss some of his main papers on learning and memory, a subject that comprises at least one third of his noteworthy scientific production of almost 140 papers. Roberto has studied different aspects of memory formation from the point of view of different neurochemical systems and cognitive modalities, with a constant eye on the methodological limitations intrinsic to every known experimental behavioral model, or "task". The effort to effectively control and distinguish the otherwise inextricably intermingled aspects of cognition - such as attention, emotion and memory itself – lead him to develop and validate a version of the Elevated Plus Maze that would simultaneously measure anxiety and memory, the Plus-Maze Discriminative Avoidance Task. Employing this and other tools Roberto and his students approached the most diverse themes, going from different neuropathologies that affect retention to

particular phenomena such as One-Trial Tolerance. His thoughful and intense academic production reveals how his inquisitive mind work, but only in part: in order to understand and celebrate the scientist and the great human being that left us so early, some reminiscences and recollections on his person and thoughs will be woven together with what is on print. Roberto is and will continually be missed, not only as a unique asset of brazilian academic community - a strongly ethical and fully accomplished scientist-intellectual - but above all, as a friend and collegue..

Sleep privation and our current society. Monica Levy Andersen (Unifesp_EPM)
Sleep is an activity that occupies approximately one third of our lives and is fundamental to our physical well-being, good mental and emotional health. Compared to the pre-industrial world, the modern population is subject to ever-increasing pressure on sleep time that leads to the development of a constant sleep debt. Globalization, the internet, and an explosion in information have added to the stimulus for competition coming from a worldwide capitalist vision to promote a process of acceleration in a majority of societies, increasing working hours and reducing even more the time for rest and sleep among all human beings. As sleep scientists, we cannot just accept this situation. The investigation of the consequences of sleep deprivation is an important step in direction of broader understanding of neurobiology of sleep. This talk will address the association between sleep and its consequences, and remember the valuable contribution of Professor Roberto Frussa-Filho.

Intervention points on drug abuse treatment. Eduardo Ary Villela Marinho, Universidade Estadual de Santa Cruz, Ilhéus, Bahia
In this lecture the neural basis of drug addiction will be addressed, highlighting the points of intervention currently being investigated to treat this disease. Most common drugs of abuse increase dopamine levels in the mesoaccumbens dopaminergic system, which modulates both their rewarding and psychomotor arousal effects. Thus, drugs that directly or indirectly modulate the dopaminergic system play an important role in the efforts to develop pharmacological therapies for the treatment of addiction. Also, because the environmental component of drug abuse poses a major challenge in addiction treatment, recent efforts to develop effective treatments for drug abuse have focused on manipulations of learning and memory processes involved in encoding drug-cue associations. Managing possible therapies for drug addiction must consider both the best pharmacological targets and the perfect timing for intervention within the abuse cycle. Studies in mice from our group will be presented showing promising intervention strategies to treat drug abuse. Apoio Financeiro: Fapesb/CNPq

Ethnopharmacological survey of new diuretic drugs derived from Brazilian biodiversity. Arquimedes Gasparotto Jr (UFGD)
Studies have shown that a substantial proportion of hypertensive patients do not have controlled blood pressure levels, and the major reason is the poor adherence to antihypertensive medications. Older age, living alone, and perception related to treatment control were significant independent factors associated with better medication adherence. Cultivating positive beliefs that hypertension is controlled by treatment is one of the most appropriate ways for adequate control of this pathology. Socio-cultural appeal from medicinal plants, transferred by generations, translates an idea of reliability and safety of these herbal remedies, contributing to improve the therapeutic arsenal and helping adherence to antihypertensive medications. Thus, the popular culture is used in the identification of medicinal native species that can contribute to conventional treatment and encourage the belief that hypertension control is possible and might provide additional benefit. In recent decades several studies have been conducted around the world in order to evaluate the possible diuretic properties of different natural products. Most of the studies were only qualitative and not dedicated themselves to investigate the molecular mechanisms involved in these effects. Only in recent years has been published data that emphasized the mode of action of some diuretic plants and the relationship of these effects to their secondary metabolites. In Brazil, several medicinal species are used as diuretic drugs, but most of them lack pharmacological studies that show the molecular pathways that might be contributing to these effects. Nevertheless, these species require a thorough ethnopharmacological investigation due to their extensive popular use as diuretics. So, in this presentation the main studies that are currently being carried out in Brazil are presented. The methods and results from these studies are discussed with the purpose of presenting alternatives for new diuretic drugs to be used when a complementary diuretic and hypotensive effect is required. Financial support: CNPq and FUNDECT/MS.

Latin America network for search of new diuretic drugs from plants used in traditional medicine. Dora María Benjumea Gutiérrez (University of Antioquia, Colombia)
Working in a network promotes scientific research, knowledge transfer and development of innovation projects, aimed at sharing experiences, results and technologies. With this strategy, cooperation for development is encouraged, with the participation of academic, scientific, government, and industry actors. Latin America is the region with the greatest biodiversity on the planet; Brazil and Colombia are considered the richest countries in these resources, which translate into a rich source of genetic resources. This, coupled with the ancestral knowledge of its people, constitutes a unique and valuable position for its study and for sustainable

use, in order to promote social and economic growth. Particularly, in the case of plants used in traditional medicine for its diuretic properties it is possible to identify research groups of Latin America with extensive experience in toxicological, phytochemical and pharmacological studies aimed at potential application in hypertension treatment. Given that the various research groups have different strengths in terms of experience, instrumentation, access to vegetal materials, human resources, among others, the possibility of networking is an option that should be taken into account to the extent that the research is strengthened, costs are reduced and research knowledge is produced cooperatively in order to generate solutions to health problems that go beyond a certain geographical boundary. In this presentation some examples of studies being carried out in Latin America, which could be taken into account for the elaboration of a network Project, are presented. The methodology that could be used, and the results that could be obtained from this cooperative work, in order to obtain new compounds with diuretic activity, that are effective and safe, through the exchange of knowledge, technology and experience among participating countries are also discussed. Financial support: Pós Graduação em Ciências da Saúde. Faculdade de Ciências da Saúde Program- UFGD. Brasil.

Regulatory information for the nonclinical toxicology studies and safety evaluation in the development of new diuretic drugs from natural products. Paulo Roberto Dalsenter (UFPR)

The popular use of medicinal plants is widely known around the word and many plants are used for treated different diseases. *Tropaeolum majus* L. is a medicinal plant popularly known in Brazil as chaguinha, capuchinha and nastúrcio. It is native from de Andes in South America and the leaves are used as diuretic, anti-inflammatory and anti-hypertensive. Many articles published in the literature reinforces the hypothesis of possible diuretic and hypotensive action of this plant, demonstrating therapeutic potential for use in clinical medicine. While studies show the effectiveness of this plant, it is important to prove their safety by non-clinical and clinical trials. The risks of improper use of medicinal plants has led to a significant increase in safety assessment of these therapeutic resources. Evaluation with acute, sub-chronic and chronic toxicological tests, as well as evaluations during pregnancy should be conducted to assess the toxicological potential of natural products. Thus, this presentation demonstrates a script non-clinical toxicology evaluations conducted to certify the safety of chaguinha as a possible therapeutic resource to be used by the population. The purpose of this presentation is to discuss the importance of toxicological herbal assessments using protocols approved by regulatory agencies such as ANVISA and OECD, using as an example the *Tropaeolum majus* plant. Financial support: CNPq and UFPR

Hemopressin and its therapeutic applications for treating neurodegenerative diseases. Ricardo A de Melo Reis, Lab. Neuroquimica, IBCCF, UFRJ

Hemopressin (HP), a nonapeptide derived from the α chain of hemoglobin, was initially isolated from rat brain homogenates as a substrate for endopeptidases, and it was reported to elicit a weak hypotensive effect in rodents. It was identified in 2007 as a CB1 receptor inverse agonist on neural cell lines. This is an important observation as cannabinoid research in the previous forty years was essentially related to lipid phytocannabinoids and endogenous compounds known as endocannabinoids. Here, I will discuss how type 1 cannabinoid receptor (CB1R) agonist (R)-(+)-Methanandamide (R-m-AEA) or inverse agonist (HP) acting on mouse neonatal subventricular zone

(SVZ) stem/progenitor cell cultures can give rise to different populations of neural cells. CB1R activation induced self-renewal, proliferation and neuronal differentiation in SVZ cell cultures.

Expression of CB1R was detected in immature cells (Nestin-positive), astrocytes and neurons. Stimulation of the CB1R by R-m-AEA promoted neuronal differentiation, without affecting glial differentiation, at 7 days, based on the number of NeuN-positive cells in the cultures.

Single cell calcium imaging following KCl and histamine stimuli, a method that allows the functional evaluation of neuronal differentiation, increased neuronal-like cells. On the other hand, HP increased oligodendroglial differentiation in SVZ neural stem/progenitor cell cultures based on selective markers and monitoring intracellular calcium concentrations ([Ca2+]i) following thrombin activation. We conclude that CB1R interaction with different cannabinoid ligands can give rise to a diversity of cells in mouse neonatal subventricular zone stem/progenitor cell cultures.

A novel therapeutic strategy to metabolic disorders: white to brown adipose tissue differentiation using Pep19. Andrea Sterman Heimann (Proteimax Consultoria)

Proteimax is a small biotech company established in 2001, to create an innovation supply chain for the biopharmaceutical industry. Proteimax developed a young and dynamic technology, with a successful team of deep knowledge and experience in finding novel peptide-based therapeutic molecules. The company already has four new peptide based drugs with exciting results, both in vitro and in vivo. The potential clinical application for Proteimax novel molecules includes diabetes, obesity, chronic pain and cancer. Herein I am going to present Pep19 a new approach to be used as therapy for metabolic syndrome. Background: Between US$ 33 to 55 billion were spent annually in the US on weight-loss products and services, including medical procedures and pharmaceutical products (data from 2008). Obesity, diabetes type II and/or hypertension

(metabolic syndrome) are amongst the major health problems of our time. This is an unmet need in the market as there is no efficient treatment for metabolic syndrome. The cannabinoid system comprising cannabinoid receptors (CB), CB1 and CB2 receptors and their endogenous ligands, acts to control food intake and energy metabolism. CB receptors, CB1 particularly, have been identified in several peripheral organs and tissues, including thyroidal gland, adrenal gland, reproductive organs, fat, liver, muscle and gastrointestinal tract. There are several compounds that modulate CB receptors activity and, among them, the rimonabant - drug that was used for weight reduction and thinning the waist was widely used in the pharmaceutical market. However, this compound has subsequently been associated with the occurrence of psychiatric disorders in humans, particularly for acting in the central nervous system, thus being removed from the world market. Peptide 19 (pep19) is a novel non-natural peptide with cannabinoid receptor activity that does not cause depression, acting in the peripheral tissue level is indicated to therapeutic treatment of metabolic disorders and/or obesity. Pep19 oral administration decreases body weight, adipose index and blood pressure in diet induced obese rats. This novel compound induces brown adipose tissue cell differentiation locally in the peripheral white adipose tissue, which is the primary mechanism of pep19 inducing weight loss action.

Molecular and behavior characterization of oligopeptidase (Thimet Oligopeptidase - EP24.15) knockout mice. Jair Ribeiro Chagas[1], Leandro M. Castro[3], Fernanda Dalio[2], Patrícia Reckziegel[2], Roseane Durante Franco[2], Bruna Visniauskas[1], Emer Suavinho Ferro[2]. [1]Departamento de Psicobiologia, Universidade Federal de São Paulo (UNIFESP). [2]Departamento de Farmacologia, Instituto de Ciências Biomédicas, Universidade de São Paulo (USP). [3]Universidade Estadual Paulista – UNESP.

For more than a hundred years the chemical nature and biological functions of peptides has been elucidated and gained a fundamental role in physiology. Albeit usually view as extracellular agents with intracellular consequences, more recently it has become clear that a complex intracellular peptidergic system exists and presents distinct and essential roles in cell functioning. Intracellular peptides are produced by the proteasome and by peptidases such as thimet oligopeptidase (EP24.15) and neurolysin (Nln). EP24.15 is a metallopeptidases, strongly localized to intracellular compartments, that seems to have also relevant extracellular functions, such as hydrolysis of bradykinin, angiotensin-I, neurotensin and enkephalins. It seems also to be involved in the selection of peptides to be presented to the immune system. The inhibition or absence of EP24.15 can change the intracellular amount of peptides or the kinetics of extracellular peptides, causing alterations on animal phenotype. Our group produced a colony of EP24.15 knockout animals and is interested in identifying the phenotype of these animals. As many neuropeptides are potential natural EP24.15 substrates, we started our approach by analyzing basic behavior evaluation of these KO mice, like anxiety, depression and potential for addiction. KO animals do not show evidence of changes in locomotor and open field exploratory tests. Nonetheless the forced swimming indicates a depressive behavior. Reaction to acute cocaine is significantly less pronounced compared to wild-type but after one-week treatment the place preference test does not indicates differences in potential addiction. New tests will now be oriented by the data on peptidomic analysis for different brain regions that are presently underway. Supported by FAPESP, CNPq, CAPES and AFIP

Mapping protein interactions between AGH peptide and 14.3.3 epsilon by cross-linking/MS and molecular modeling. Fábio C. Gozzo (Unicamp)

Chemical cross-linking coupled to mass spectrometry has become a powerful tool to study protein-protein/peptide complex. The 14-3-3 proteins are a family of dimeric proteins that interacts with different molecules involved in apoptosis, cell cycle regulation and intracellular signaling, besides being associated with GPCR's. The binding of 14-3-3 can occur to phosphorylated and non-phosphorylated partners and recently a new natural, intracellular peptide was shown to bind 14-3-3 and regulate its interactions. The new peptide, denoted AGH, is not phosphorylated but binds with high affinity to 14-3-3ε. To understand how AGH peptide binds to 14-3-3ε, we used chemical cross-linking coupled to mass spectrometry (CL/MS), hydrogen/deuterium exchange (HDX) and molecular modeling. Molecular dynamics simulations show that the c-terminal region of AGH is partially folded as alpha- and contains two acidic residues. CL/MS data presented a cross-link between the N-terminal residue of AGH and Lys residue located in the 14-3-3ε main pocket. Docking between AGH and 14-3-3ε generates a structure were the two acidic residues in the AGH alpha-helix binds to two Arg residues responsible for phosphorylated peptides binding. HDX experiments reveals a solvent protection in the main pocket of 14-3-3ε upon binding. By merging all the experimental and theoretical data, a AGH/14-3-3ε complex model was generated that fits all the data.Financial support: FAPESP / CNPq

One pot synthesis of surface-functionalized lipid-core nanocapsules. Adriana Raffin Pohlmann. Departamento de Química Orgânica, Instituto de Quimica, UFRGS, Porto Alegre, RS, Brazil.

The applications of nanotechnology in drug delivery have grown exponentially in the past twenty years. Biodegradable nanocarriers have been studied as a promising alternative to therapeutics. The control of size distribution, by using self-assembly methods of preparation, affects the drug biodistribution and release. Some advantages of the nanoparticulate systems are related to the drug targeting reducing side effects and increasing therapeutic index. The presentation addresses the aspects of the synthesis of lipid-core

nanocapsules, an original type of carrier useful to encapsulate poorly water-soluble drugs, as well as their surface functionalization producing the metal-complex multi-wall nanocapsules. The one pot synthesis approach is an easy process to functionalize the nanocapsule surface. Examples of physico-chemical characterization and biological applications of surface-functionalized lipid-core nanocapsules are discussed: i) LDL(-) recognition and ii) Mucopolysaccharidosis type I. In summary, this presentation shows that self-assembled nanoparticles are promising devices for drug delivery and targeting. (CNPq, CAPES, FAPERGS)

Nanotechnology for drug delivery as a promising alternative to pulmonary diseases. Andressa Bernardi. Instituto Oswaldo Cruz – Fundação Oswaldo Cruz

Inflammation is a central feature in the pathogenesis of severe lung disorders such as acute respiratory distress syndrome, asthma, chronic obstructive pulmonary disease, silicosis and pulmonary arterial hypertension. All of them have high socioeconomic impact in countries around the world and can be fatal. There is, therefore, a great scientific and clinical interest in studies addressing novel, effective, and safe anti-inflammatory therapies for the treatment of chronic inflammatory lung diseases. Glucocorticoids are, by far, the most effective therapy in the management of chronic pulmonary inflammation; however, the side effects and the poor bioavailability limit the efficacy of such treatment. In this context, micro- or nanoparticles have been frequently used as a pulmonary delivery vehicle for drugs. Nanoencapsulation of drugs can provide a number of advantages over the free drug and conventional systems such as drug protection, improving the stability, controlling drug release, targeting drug to a specific organ or tissue, and/or to reduce side effects. Recently, we investigated the potential anti-inflammatory effect of α-bisabolol-loaded nanocapsules (α-bis NC) in acute pulmonar inflammation induced by LPS. A sesquiterpene alcohol obtained by essential oil from plants, alfa-bisabolol present antioxidant and anti-inflammatory activity. Pre-treatment with α-bis NC significantly reduced the increased lung elastance in inflammation induced by LPS. We also observed a significantly reduction on accumulation of total leukocytes in tissue and in bronchoalveolar lavage fluid, highlighting the inhibition of polymorphonuclear cells migration. Additionally, increased levels of pro-inflammatory chemokines were significantly reduced in animals pre-treated with α-bis NC. Mechanistically, α-bis NC were able to modulate MAPK signaling by reducing the phosphorilation levels of ERK1/2, JNK and p38 proteins. It is worth to note that α-bisabolol carried by polymeric nanocapsules achieved higher lung concentrations than those of free α-bisabolol, increasing their bioavailability. Overall, polymeric nanocapsules are able to successfully carry α-bisabolol into the lung, modulating multiple molecular mechanisms involved in the inflammation induced by LPS and improving lung function by decreasing the elastance parameter. In this way, α-bisabolol-loaded nanocapsules may offer new and potentially high effective strategy for the treatment of pulmonary diseases. Financial support: FIOCRUZ, CNPq, FAPERJ and CAPES.

PK/PD applied to anti-diabetic drugs. William J Jusko, PhD. SUNY Distinguished Professor of Pharmaceutical Sciences, University at Buffalo, Buffalo, New York, USA

Mathematical models have been applied to characterize the relationships between glucose and insulin for many decades with the “minimal model” long serving as a means of quantitation and patient diagnosis. Review of these and other basic models as applied to diverse therapeutic agents used to treat diabetes was provided by C. Landersdorfer and W. J. Jusko in 2008 (Clin Pharmacokin 47: 417-448). Basic indirect response models have provided considerable value in characterizing the effects of exogenously-dosed insulin as well as older drugs such as metformin and sulfonylureas that alter either the production or tissue utilization and elimination of either glucose or insulin. The Karlsson group began developing more complex integrated models utilizing population methods to capture key relationships between IV and oral test doses of glucose and insulin responses, adding additional intermediary steps and controlling elements (Silber et al, J Clin Pharmacol 47: 1159-1171, 2007). Mechanistic models have evolved in a “top-down” perspective in the past decade to account for the role of endogenous factors such as GLP-1 and free fatty acids (FFA), anti-inflammatory drugs such as salsalate, and responses to therapeutic agents with newer mechanisms of action including pramlintide, PPARγ agonists (rosiglitazone), DPP-4 inhibitors (vildagliptin), incretin mimetics (exenatide), and the recently developed SGLT2 inhibitors (canagliflozin). The modeling usually focuses on changes in glucose, insulin, and glycosylated hemoglobin concentrations over time in both preclinical and clinical situations. Type 2 diabetes is the result of pathophysiological changes in tissue utilization of glucose (insulin resistance) and pancreatic secretion of insulin with other diverse organs contributing to the homeostatic control of glucose. Our group has carried out diverse studies in animal systems to determine the mechanisms and dynamics underlying steroid diabetes. A multi-organ small systems model was developed to account for the roles of the pancreas, liver, fat, and muscle in receptor, gene, and biochemical control of glucose, insulin, FFA, leptin, and other biomarkers altered by methylprednisolone (Fang et al, PLOS ONE 8: 2013). Commercial complex systems models are available from Entelos, Rosa, and Archimedes that allow testing of hypotheses on the roles of drug and other interventions in diabetes. The availability of relevant biomarkers and the continued need for improvements in therapy of diabetes has made this area a fertile biological landscape for the development and application of PK/PD and systems models. Supported by NIH Grant No. GM24211.

Modeling of disease scales for CNS disorders. Mats O. Karlsson. Dept of Pharmaceutical Biosciences, Uppsala University, Uppsala, Sweden

Disorders affecting the CNS are generally complex to their origin and multifactorial with respect to the impact on life of the patient. Most CNS diseases have no cure and many are of a progressive nature. For some biomarkers exist, but the relationship to the disease and its progression is often weak. Therefore, monitoring of disease severity is typically based on disease scales. These scales are composite scores made up the responses to several tests, tasks, evaluations and responses to questions. Most commonly the responses to each item of the scale are reported as ordered categorical outcome and the total score is obtained by simple addition of individual scores. Such disease scales are used not only in clinical practice, but are also important measures of treatment effects in clinical trials. Despite their importance, there are many problems associated with the use of these disease scales as measures of disease severity and treatment effects. This include often long and arduous tests for frail patients, missing item data, difficulty in bridging between different test versions and sub-tests not being informative for a particular patient category. The Item Response Theory (IRT) was developed in the social sciences in the 1950s as a methodology to develop and evaluate questionnaire data. It assumes that responses to items of a test are related to an underlying ability. These relations are quantitatively described using probabilistic models. We have adopted and extended this methodology to disease scales for different CNS diseases including ADAS-Cog in Alzheimer's Disease (Pharm Res. 2014 31:2152-65), EDSS in Multiple Sclerosis, MDS-UPDRS in Parkinson's Disease and PANSS in schizophrenia. Item response characteristics was estimated and baseline status as well as time-courses of disease progression and treatment effects were quantified using data from large patient trials. Such models hold the promise of more precise determination of the effects of interest, identification of the most informative items from questionnaires, better bridging between test versions, better handling of missing data and a better basis for development of biomarker to endpoint relationships.

PK/PD of Antimicrobials Drugs. Teresa Dalla Costa. Pharmaceutical Sciences Graduate Program, College of Pharmacy, Federal University of Rio Grande do Sul, Porto Alegre, Brazil

Lately a worldwide increase in antimicrobial drug resistance has been observed. One of the reasons for this reality is the misuse and abusive use of antimicrobials. Traditionally antimicrobials dosing regimens are based on PK/PD indexes that relate pharmacokinetic parameters to the MIC ([fAUC]/MIC, [fCmax]/MIC and ft > MIC). These indexes, however, use breakpoint MIC as a pharmacodynamic endpoint. Furthermore, unequally effective dosing regimens can result in the same PK/PD index for a certain antimicrobial. PK/PD modeling offers the possibility of relating antimicrobials free plasma or tissue concentrations to bacteria killing effect over time allowing the optimization of drug regimens and maintenance of antimicrobials therapeutic value. Different PK/PD models are available to describe the antimicrobial effect as well as the amplification of resistant bacteria due to drug exposure. Established antimicrobials and antifungals can be revisited by PK/PD modeling leading to more efficacious and less toxic dosing regimens with decreased likelihood of developing microorganism resistance.

An overview of the biological chemistry of nitrite and nitrate ions. José Carlos Toledo Junior, Departamento de Química, Faculdade de Filosofia, Ciências e Letras de Ribeirão Preto – SP, Universidade de São Paulo.

The biological chemistry of nitrite (NO_2^-) and nitrate (NO_3^-) anions has experienced a growing interest lately as a consequence of new findings regarding NO_2^- biological functions that may be clinically and perhaps even (patho)physiologically relevant. Nitrite may have biological activity on its own but its effects are usually associated with its reduction to nitric oxide ($NO^\bullet$). In particular, the oral and intravenous administration of nitrite ions that cause systemic reduction of blood pressure are associated with NO_2^- reduction to $NO^\bullet$, both in the acidic stomach lumen and by numerous metalloproteins such as deoxyhemoglobin and xanthine oxidase, especially under hypoxia, although, this mechanism is still questionable. Nitrate is less reactive and its effects are dependent on its reduction to nitrite by commensal bacteria. On the other hand, NO_2^- can also be oxidized to the noxious nitrogen dioxide radical (NO_2) both in the stomach and by oxihemoglobin and heme-peroxidases. Therefore, redox reactions involving nitrite in different biological environments produce the same radical species ($NO^\bullet$ e $NO_2^\bullet$). Chemically, local and concomitant production of these radicals leads to oxidation, nitration and nitrosation of numerous targets. This chemical reactivity is of fundamental importance to understand fully or to elucidate mechanisms of the biological effects of nitrite. These redox reactions and their possible chemical/biological outcomes in different biological compartments will be discussed.

Mechanisms of antihypertensive effects of sodium nitrite and nitrate. Jose E. Tanus-Santos. Department of Pharmacology, Ribeirao Preto Medical School, University of Sao Paulo

Many recent studies have shown antihypertensive effects of both inorganic nitrate and nitrite, and their antihypertensive effects are thought to result of the conversion of nitrate to nitrite by commensal bacteria in the mouth, with significant amounts of the swallowed nitrite surviving stomach conditions and entering the systemic circulation. Increased circulating concentrations of nitrite are then supposedly converted into nitric oxide by heme-containing proteins or enzymes with nitrite reductase activity. Indeed, nitrite promotes arterial and venous dilatation under normoxia, and this effect is explained by one-electron reduction of nitrite to nitric oxide by deoxyhemoglobin, deoxymyoglobin or enzymes with nitrite reductase activity including xanthine oxidase. This mechanism has emerged as a nitrate-nitrite-NO pathway, and is now regarded as a major source of nitric oxide (NO) independent of classic L-arginine NO synthases. However, while nitrite is known to generate NO nonenzymatically under the acidic conditions of the stomach, only recently studies have shown antihypertensive mechanisms involving chemical reactions taking place in the stomach after oral nitrite or nitrate administration. At low pH conditions, nitrite generates nitrous anhydride (N_2O_3) and other potent nitrosating species that induces formation of S-nitrosothiols, and there is now evidence that the antihypertensive effects of orally administered sodium nitrite or nitrate depend on the gastric formation of S-nitrosothiols, a mechanism critically dependent on gastric pH. These new observations offer an improved mechanistic perspective to the effects of both nitrite and nitrate, and have major implications, particularly to patients that are prescribed proton pump inhibitors, which increase gastric pH and cancel the protective effects of inorganic nitrates and nitrites. Support: FAPESP, CNPq, CAPES.

Nitrite modulates mitochondrial function in rat heart and cardiomyocytes in non-hypoxic conditions. Rafael de Lima Portella. Department of Pharmacology, Ribeirao Preto Medical School, University of Sao Paulo, Ribeirao Preto, SP, Brazil

Over the past decades, nitrite has emerged as an important signaling molecule. The majority of physiological effects mediated by nitrite are thought to be dependent on the reduction of nitrite to nitric oxide in conditions of low pH and oxygen tension. Recently, we have shown that nitrite confers cardioprotection when administered prior to an ischemic episode. This cardioprotection is dependent on the nitrite-mediated normoxic activation of protein kinase A (PKA), which modulates mitochondrial morphology and function. However, the mechanism by which nitrite activates PKA and its ability to target PKA to the mitochondrion is unknown. Recently, it has been shown that PKA can modulate several mitochondrial targets. We hypothesized that nitrite-mediated PKA activation can modulate mitochondrial function. Using H9C2 cells (cardiomyocytes) and isolated mitochondria from rat heart, treated for 30 minutes with sodium nitrite (10-25μM), we showed that nitrite increases cellular cAMP levels in cardiomyocytes leading to PKA activation. This cAMP increase is due to the inhibition of the mitochondrially localized phosphodiesterase activity. Further, nitrite increases the expression of A-kinase anchoring protein (AKAP121), which localizes PKA to the mitochondrial membrane. Consistent with the mitochondrial targeting of PKA, we show that nitrite induces the phosphorylation of Ser58 on mitochondrial complex IV (a known PKA target), leading to augmented basal and maximal respiration. Ongoing studies are investigating the mechanism by which nitrite increases AKAP121 expression as well as which PDE isoform is inhibited by nitrite. These data demonstrate that nitrite can be a versatile signaling molecule, not only by inducing protein nitration and nitrosylation but also through modulating protein expression and phosphorylation. Further, these data contribute to expand the therapeutic potential of nitrite in preventing and treating cardiovascular diseases. **Financial Support:** Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) e Vascular Medicine Institute – University of Pittsburgh

Toll-like Receptor 4 is involved in spontaneous fat and sugar preference. Roy G. Cutler, Elisa M. Kawamoto, Mark P. Mattson, Simonetta Camandola. Laboratory of Neurosciences, National Institute on Aging, Intramural Research Program, Baltimore, MD, USA.
The gustatory system allows animals to discriminate among foods in order to select nutritious diets and maintain energy balance. Although a broad range of economic, social and behavioral factors influences food choices, the immediate pleasantness generated by taste is still for most individuals the driving force behind food consumption. Most animals, including humans, display an innate attraction for lipid-rich foods. In a typical Western diet fats account for almost 40% of the daily energy content. The hedonic response to palatable macronutrients, and consequent over-consumption of tasty high calorie foods, has been suggested to play a role in the increasing prevalence of obesity worldwide. However, the mechanisms underlying such eating behavior are largely unclear. Toll-like receptor 4 (TLR4) is a transmembrane protein involved in the detection of lipopolysaccharide in gram negative bacteria. In addition to its well characterized role in innate immune responses, it was recently shown that TLR4 plays a role in central nervous system plasticity, learning and memory, and cognition. Since the discovery that obese, type 2 diabetic, and metabolic syndrome subjects have increased levels of TLR4 expression in various tissues, many studies have been conducted to elucidate its function in the metabolic consequences of diet-induced obesity. In the present study we provide evidence that TLR4 is involved in orosensory detection of fat and sugar. TLR4 knock mice displayed decreased spontaneous preference for a high fat, high sugar diet, resulting in reduced food consumption and caloric intake, and less weight gain. Compared to wild type animals TLR4 deficient mice showed reduced preference for lipids (i.e. linoleic acid), as well as sugars (i.e. sucrose, fructose, saccharin) and umami (i.e. inosine-5'-monophosphate) in two bottle preference tests. The altered gustatory preferences of TLR4 knock mice were associated with decreased expression of key regulatory molecules for the detection of sweet, umami and fat taste in the tongue epithelium. Experiments are currently under way to determine the cellular and molecular mechanism by which TLR4 impacts taste perception and eating behavior. This research was supported by the National Institute on Aging Intramural Research Program.

Microdose lithium treatment in prevention of Alzheimer's disease. Hudson Sousa Buck (Santa Casa-SP) Hudson Sousa Buck.
Alzheimer's disease (AD) is characterized by neurodegeneration associated with formation of senile plaques and neurofibril tangles leading to impairment of memory, language and emotional disturbance. Nowadays, treatment options target only the relief of symptoms and the development of therapeutics with disease modifying properties still essential. In this way, recently we show the efficacy of a microdose lithium carbonate treatment (0.025 mg/Kg/day/15 months) in preventing cognitive loss in AD patients. The treated group showed no decreased performance in the mini-mental state examination test, in opposition to the lower scores observed for the control group during the treatment, with significant differences starting three months after the beginning of the treatment. Additionally, chronic lithium treatment (1.2 mg/Kg/day in drinking water) was effective in prevention of memory disruption observed in transgenic mice expressing human amyloid precursor protein (Cg-Tg(PDGFB-APPSwInd)20Lms/2J), with no changes in motor activity, compulsive behavior and anxiety, suggesting that memory maintenance were not due to other behavioral changes. Mice were treated for 16 or 8 months starting at two and ten months of age, respectively. Also, transgenic mice treated since 2 months-old showed increased concentration of BDNF, absence of neuronal loss and absence of amyloid plaques in cortex and hippocampus. These data support the therapeutic role of lithium in microdose in prevention and stabilization of phenotypic and behavioral symptoms of AD.

Brain plasticity induced by cardiosteroids. Cristoforo Scavone & Elisa Mitiko Kawamoto. Department of Pharmacology, Institute of Biomedical Science, University of São Paulo, Avenida Lineu Prestes, 1524, 05508-900 - São Paulo, Brazil.
Hormesis is an adaptive response of cells and organisms to a moderate stress, usually intermittent, which may have many beneficial effects to the biological system. Examples include exposure to low doses of certain phytochemicals such as curcumin, resveratrol and isothiocyanates, exercise and dietary energy restriction. Hormesis seems to act by mechanisms associated with cell survival and inflammatory response, involving (tumor necrosis factor (TNF)-α, glutamate, modulation of transcription factors, such as nuclear transcription factor -κB (NF-κB) and Brain Derived Neurotrophic factors (BDNF). Endogenous steroids, also called digitalis-like factors, has been shown to play important roles in the modulation of renal sodium transport, arterial pressure, cell growth, differentiation, apoptosis, fibrosis, immunity, carbohydrate metabolism, and the control of various central nervous functions and even behavior. Na,K-ATPase (NKA) is constituted of 3 subunits : α, β and γ, with each subunit having a number of isoforms that provide functional versatility across different cell types. The NKA α isoform plays a critical role in the modulation of learning and memory, in turn regulating susceptibility to Alzheimer's disease. Cardiotonic steroids (CTS) are specific ligands of the α subunit. CTS dose-dependently inhibit NKA ion transport. Recent studies have now shed new light on the function of CTS as hormones, which activate a signaling function of NKA. Ouabain (OUA), an endogenous CTS, has been described as a new hormone synthesized in the adrenal cortex and hypothalamus. Several studies identify OUA as a physiological inducer of calcium oscillation and Src-Ras-mitogen activated protein kinase(MAPK)

pathways, and indicate a novel and important role for the OUA/NAK complex as a regulator of TNF-α, NFκB activity and BDNF levels. The non-inhibitory concentrations of OUA have been shown to be protective against some types of injury, such as kainic acid and Shiga toxin. In addition, OUA pretreatment has anti-inflammatory and anti-apoptotic effects in the hippocampus challenged with LPS induced inflammation. This effect is mediated by NF-κB activation, including in the neurogenesis associated dentate gyrus. The ability of OUA to suppress inflammatory process and maintain hippocampal BDNF levels in the face of inflammatory activity suggests that NKA signaling cascade could be a new strategy for pharmacological interventions aimed at promoting longevity and healthy aging, as well as for the treatment of neurodegenerative disorders. Financial Support: FAPESP, CNPq. All procedures were approved by the Biomedical College of Animal Experimentation and the Ethical Committee for Animal Research ICB/USP.

Role of PPAR-gamma on the hyperactivity of HPA axis observed in diabetic rats. Vinicius de Frias Carvalho Laboratório de Inflamação – IOC/ FIOCRUZ – RJ – Brazil.
Increased hypothalamus-pituitary-adrenal axis (HPA) activity in diabetes is strongly associated with several morbidities associated with the disease. In our previous studies we demonstrated that diabetic rats showed a hyperactivity of the hypothalamic-pituitary-adrenal (HPA) axis leading to increased plasma glucocorticoid levels. In this study, we investigated the role of peroxisome proliferator-activated receptor (PPAR)-γ in HPA axis hyperactivity observed in diabetic rats. All the procedures used in this study were in accordance with the guidelines of the Ethic Committee on Use of Laboratory Animals of the Oswaldo Cruz Foundation, License LW – 23/11. Diabetes was induced by a single i.v. injection of alloxan (40 mg/kg) into fasted rats and PPAR-γ agonist rosiglitazone, PPAR-γ antagonist GW9662 and/or PI3K inhibitor wortmannin were given 3 day after diabetes induction, daily for 18 days. The analyses were made 21 days after the diabetes induction and included plasmatic ACTH and corticosterone levels evaluation by RIA; expression of mineralocorticoid receptor (MR), glucocorticoid receptor (GR), ACTH receptor (MC2R), proopiomelanocortin (POMC), PI3Kα and PPAR-γ through immunohistochemistry. Rosiglitazone treatment inhibited adrenal hypertrophy and hypercortisolism observed in diabetic rats. Rosiglitazone also significantly reversed the diabetes-induced increase in the MC2R expression in adrenal cortex. We noted that rosiglitazone reduced the number of corticotroph cells and inhibited both anterior pituitary POMC expression and plasma ACTH levels. Furthermore, rosiglitazone treatment was unable to restore the reduced expression of GR and MR in the anterior pituitary of diabetic rats. Rosiglitazone increased the expression of PPAR-γ and PI3K in both anterior pituitary and adrenal cortex of diabetic rats. In addition, GW9662 and wortmannin blocked the ability of rosiglitazone to restore baseline plasma corticosterone levels in diabetic rats. Our results suggest that PPAR-γ is involved in HPA axis hyperactivity in diabetic rats via a mechanism dependent on PI3K activation in pituitary and adrenal glands. Financial support: CNPq, FAPERJ and FIOCRUZ.

Chronic Stress and Pain. Iraci L.S. Torres. Laboratório de Farmacologia da Dor e Neuromodulação: Investigações Pré-clínicas. Departamento de Farmacologia. ICBS. UFRGS.
Stress has been associated with plasticity in a wide neural circuit including cortical and subcortical circuits resulting in chronic psychiatric diseases as depression and anxiety, and it alters the pain perception. While acute stress induces analgesia, chronic stress is related to hyperalgesia and allodynia. Once, chronic stress induces neuroplastic effects on pain-related neural circuitry, techniques to induce neuroplasticity on this system would be a new non pharmacological option. In this context, transcranial direct current stimulation (tDCS) has been suggested as a therapeutic tool for pain syndromes. Although the human results are promising, it is still unclear whether the tDCS alters mal-adaptive plasticity associated with chronic pain. To investigate this question, we tested the effect of tDCS in hyperalgesia induced by chronic restraint stress (CRS) for 11 weeks, and we evaluate interleukin 1β (IL-1 β) serum levels, BDNF spinal cord, brainstem and serum levels and TNFα hippocampus levels. Forty-nine adult male Wistar rats were divided into 4 groups: control, stress, stress plus sham tDCS and stress plus tDCS. Anodal or sham tDCS was applied for 20 minutes/day over 8 days. The hot plate and Von Frey tests were performed immediately and 24 hours after the last session of tDCS. Then, the animals were killed and blood and SNC structures removed and evaluated by ELISA. The stress group (exposed to CRS) developed hyperalgesia and mechanical allodynia as indexed by the hot plate and Von Frey tests respectively ($P<0.001$, n=9–12/group). The hot plate test showed an analgesic effect immediately and 24 hours after the last session of tDCS; and the anti-allodynic effect of tDCS as indexed by Von Frey test was also observed but only 24 hours after the last tDCS application (one-way ANOVA/Tukey, $P<0.05$ for both behavior). There was no statistically significant difference in IL- 1β level in serum ($P>0.05$), but there was a statistically significant decrease of TNFα level in hippocampus ($P<0.05$). In addition there was significant decrease of BDNF levels in spinal cord ($P<0.001$), brainstem ($P=0.002$) and a strong tendency of stress effect in the serum levels ($P=0.053$) (One way ANOVA/SNK). These results support the notion that tDCS reverts the detrimental effects of chronic stress on the pain system, and that the alterations and peripheral and central TNFα and BDNF levels could be related. This study provides, for the first time, evidences that tDCS can be a therapeutic tool in chronic pain, since it reverses the prejudicial effects of a specific exposure (chronic restrain stress) on the pain system. Financial support:

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Stress, Hypothalamic-Pituitary-Adrenal (HPA) axis and Depression. Mario Francisco Juruena*, MD, MPhil, Dip, CBT, MSc, PhD

Depression is a chronic, recurrent and long-term disorder characterized by high rates of impairment and several comorbidities. Early life stress (ELS) is associated with the increased risk for developing depression in adulthood, influences its clinical course and predicts a poorer treatment outcome. Stressful life events play an important role in the pathogenesis of depression, being well established as acute triggers of psychiatric illness. The vulnerability for developing depression is associated to changes in neurobiological systems related to stress regulation. The hypothalamic-pituitary-adrenal (HPA) axis responds to external and internal stimuli. Reported results indicate that stress in early phases of development can induce persistent changes in the response of the HPA axis to stress in adulthood, leading to a raised susceptibility to depression and other affective disorders. These abnormalities appear to be related to the HPA axis impair in depression, partially due to an imbalance between glucocorticoid receptors (GR) and mineralocorticoid receptors (MR). While most studies have consistently demonstrated that GR function is impaired in major depression (reduced GR-mediated feedback in HPA axis), data about the MR role in depression are still limited and controversial. Therefore, in this presentation we will report findings about the consequences of ELS in HPA axis functioning and in the responsivity of MR/GR receptors in affective disorder. Acknowledgments: CNPq, FAPESP, FAEPA, CAPES, Royal Society, King's Colege London. *MD from Pontifical Catholic University-RS, Brazil. Specialist in psychiatry by Mental Health School of Public Health RS, Brazil. MPhil at the Department of Psychobiology, Federal University of Sao Paulo, Dip CBT by Beck Institute for Cognitive Therapy and Research, USA and FBTC. by MSc Affective Neuroscience, Universiteit Maastricht, the Netherlands., PhD from University of London. Head of the Stress and Affective Disorders (SAD) Programme; Professor Dr at the Department of Neurosciences and Behavior, University of São Paulo and Honorary Senior Lecturer at Kings College London.

Discovery and development of kinase inhibitors for trypanosome diseases. David C Swinney[1], Brad A. Haubrich[1], Zachary T. Swinney[1], Paul Guyett[2], Rick L. Tarleton[2], Kojo Mensa-Wilmot[2] 1.Institute for Rare and Neglected Diseases Drug Discovery, Mountain View, CA., USA, 2. Center for Tropical and Emerging Global Diseases, University of Georgia, Athens, GA, USA.

The goal of this work is to identify new mechanisms and molecules to treat trypanosomal diseases. Our approach is to screen against genetically validated protein kinases from *T. brucei* (TbPKs) and characterize the molecular mechanisms of action (MMOAs) to identify compounds for testing in parasite proliferation assays. To this end we have established assays and screened focused compound libraries against four TbPKs. We identified tideglusib as a time-dependent inhibitor of a glycogen synthase kinase, TbGSK3β. Tideglusib is an irreversible inhibitor of human GSK3β with a good safety profile in phase II human studies. Tideglusib inhibits growth of *T. brucei* and *T. cruzi* with moderate activity (IC_{50}s of 2.3 and 4.2 μM, respectively). In this talk I will discuss some of requirements, options, challenges and opportunities to move a preclinical lead to clinical POC studies for neglected diseases. Funding from NIH 1RO1AI103476 to DCS.

Visualization of GPCR complexes by single-particle electron microscopy. Georgios Skiniotis (University of Michigan, USA)

Single-particle electron microscopy (EM), devoid of the need for large-scale sample preparations or protein crystallization, has been established as a very powerful approach for the 3D structural characterization of biological macromolecular complexes. Recent advances in instrumentation and image reconstruction algorithms have not only enabled high resolution structure determination by this methodology, but also the analysis of conformational dynamics within the same particle population, thereby providing crucial insights to mechanistic aspects of protein function. While discussing the basics of this application, we will describe single-particle EM visualization on GPCRs and their complexes, as exemplified in a GPCR/G protein complex, a GPCR/arrestin complex, and a class C GPCR. We will further discuss the hybridization of EM data with other biophysical and biochemical methods, as well as the current challenges and future directions.

Novel local anesthetic analogues as candidates for asthma therapy. Martins, MA. Laboratory of Inflammation, Oswaldo Cruz Institute, Oswaldo Cruz Foundation, (FIOCRUZ), Rio de Janeiro, Brazil.

Anti-inflammatory treatment with inhaled glucocorticoid (GC) alone and combined preparations of a GC and a long-acting β2-agonist are the most effective therapies for asthma. Most asthmatics respond to these treatments, but some subjects require additional oral GCs, and the long-term use of these agents has been strongly associated with adverse effects. In addition, a minority of patients is entirely insensitive to GCs, reinforcing the need for new therapies. Local anesthetics, such as lidocaine, are used to prevent life-threatening bronchospasm triggered by mechanic or pharmacologic stimuli. Nebulized lidocaine also exhibits GC-sparing properties in asthmatics and has received interest as an alternative for asthma therapy. Nevertheless, caution in its use is required since aerolized lidocaine has recognized irritant properties and can cause initial bronchoconstriction, particularly in patients with reactive airway disease. The pharmacological properties and therapeutic potential of lidocaine analogues, synthesized and screened for reduced local

anesthetic activity, have been investigated in our laboratory. Changes in the aromatic ring of lidocaine led to analogues that combine reduced local anesthetic activity with increased anti-spasmodic and anti-inflammatory properties in one molecule. Treatment of OVA-challenged mice with nebulized JMF2-1 or JM25-1 prevented crucial asthma events, including airway hyper-reactivity, leucocyte infiltration (eosinophils, CD4 T cells), and the production of pro-inflammatory cytokines in lung tissue. In *in vitro* settings, JMF2-1 dose-dependently inhibited antigen-induced T cell proliferation and IL-13 production. Furthermore, T cells exposed to JMF2-1 underwent apoptosis as attested by flow cytometric analyses. This phenomenon was impaired when T cells were treated with the pan-caspase inhibitor z-VAD, and hence it is suggested that JMF2-1 mediates the caspase-dependent apoptosis of lymphocytes. Altogether, these observations indicate that the protective effect of these analogues upon allergen-evoked airway inflammation and bronchial hyper-reactivity may be accounted for by the down-regulation of T cell survival and the inhibition of Th2 cytokine production. Finally, it should be emphasized that the toxicity of local anesthetics, including lidocaine, is closely related to the potency of the local anesthetic because toxicity is largely dependent on the blockade of Na^+ channels within the central nervous system and cardiovascular system. In fact, our findings indicated that the proconvulsive potency of lidocaine was significantly higher than that presented by JMF2-1 or JM25-1, as expected by the short-lasting and very limited anesthetic activity presented by these analogues, suggesting that they might prove to be safer than lidocaine for patients with asthma. However, because, unlike lidocaine, JMF2-1 is halogenated with a trifluoromethyl substitution at the benzene ring, experiments should be done to better define the safety profile of this particular substance. In conclusion, these observations suggest that the anesthetic action might not be relevant in the anti-inflammatory and spasmolytic activity of lidocaine and provide support for the belief that compounds such as JMF2-1 and JM25-1, when inhaled, might achieve useful clinical benefit for the treatment of asthma. Financial support: PDTIS (Oswaldo Cruz Foundation), CNPq and FAPERJ.

Multi-target antagonists of α_{1A}-, α_{1D}-adrenoceptors and 5-HT_{1A} receptors: potential new strategy for treatment of Benign Prostatic Hyperplasia. Claudia Lucia Martins Silva, Laboratory of Biochemical and Molecular Pharmacology, ICB, Federal University of Rio de Janeiro

Benign prostatic hyperplasia (BPH) is characterized by stromal cell proliferation and contraction of prostatic smooth muscle mediated by α_{1A}-adrenoceptors, causing lower urinary tract symptoms suggestive of BPH (LUTS/BPH). Current BPH treatment, based on monotherapy with α_{1A}-adrenoceptor antagonists, is frequently suboptimal since disease continues to progress, and recent reports suggest that stimulation of α_{1D}-adrenoceptors and serotonergic 5-HT_{1A} receptors contribute to stromal cell proliferation. Since BPH is a multifactorial disease, we hypothesized that a multi-target based strategy could be more appropriate. Thus, we investigated the potential of two *N*-phenylpiperazine derivatives - LDT3 and LDT5 - as multi-target antagonists of BPH-associated receptors (USPTO No. 14370646). The primary assays (isometric contraction, competitive binding and $[Ca^{2+}]$ measurement) evaluated the potency, affinity and efficacy of LDTs and used cells expressing human α_1-adrenoceptor subtypes and rat tissues enriched in specific on- or off-target BPH receptors. Since the stromal cell proliferation is an important marker of BPH, the putative anti-proliferative effect of LDTs was evaluated using stromal cells obtained from BPH patients. We also determined LDTs' effects on rat intraurethral and arterial pressure. LDT3 and LDT5 have the desired efficacy and are high-affinity antagonists of α_{1A}-, α_{1D}-adrenoceptors and 5-HT_{1A} receptors (K_B or K_i: nM). Moreover, they have low affinity (μM) for off-target receptors. Cell-based assays for viability and proliferation showed that LDTs are not cytotoxic but prevented BPH cell growth induced by phenylephrine and 5-HT. Tamsulosin (α_{1A}-adrenoceptor antagonist) used as control did not block cell growth. *In vivo*, LDT3 and LDT5 fully blocked the increase of intraurethral pressure induced by phenylephrine at doses (ED_{50} of 0.15 and 0.09 $\mu g.kg^{-1}$, respectively) without effect on basal blood pressure. Regarding preclinical safety, LDT3 and LDT5 (1 μM) did not bind to hERG K^+ channels and LDT5 (up to 100 μM) did not inhibit five CYP isozymes. Our results showed that the multi-target antagonism of α_{1A}-, α_{1D}-adrenoceptors and 5-HT_{1A} receptors by LDT3 and LDT5 inhibit human hyperplastic prostate cell growth, while also relaxing prostatic muscle, which is a mechanism of action that differs from the existing medicines. This project was early licensed which is a key step in academic preclinical drug discovery process. If successfully translated to the clinic these two important effects may contribute concurrently to slow disease progress and alleviating LUTS/BPH. Thus, we propose that LDT5 is a potential new lead compound that could be of value for BPH treatment. Support: FAPERJ, CNPq, Biozeus Desenvolvimento de Produtos Biofarmacêuticos S.A.

Preclinical studies of ACH09, an extract obtained from *vinifera* grape skin. Resende AC[1]. [1]Departamento of Pharmacology, Institute of Biology, State University of Rio de Janeiro

The prevalence of cardiovascular and metabolic diseases over the past decades has shown rapid rise worldwide and is associated with increased cardiovascular morbidity, mortality in most developed and developing countries. Studies show that the wine has a beneficial cardiovascular effect and there is a consensus that chemical substances present in the grape skin, the polyphenolic compounds, confer this effect. Studies from our group have demonstrated that a hydro-alcoholic extract from *vitis vinifera* grape skin (GSE) presents vasodilator effect dependent on nitric oxide and hyperpolarizing factor(s), as well as antihypertensive

and antioxidant effects. From a partnership with the pharmaceutical industry, our group has been conducting preclinical studies with the GSE (ACH09), rich in polyphenols, mainly anthocyanins. We have shown that ACH09 lowers blood glucose in experimental model of diabetes induced by alloxan, and increases the expression of the insulin signaling cascade proteins in skeletal muscle. ACH09 also protects against programmed cardiovascular, renal or metabolic changes in the adult mice or rat offspring caused by maternal high fat or low protein diets during lactation. In the present, we are evaluating the beneficial effects of preventive treatment with ACH09 on metabolic disorders observed in an experimental model of obesity and fatty liver disease. Treatment of C57BL/6 mice fed a high fat diet with ACH09 improved insulin resistance by increasing expression of insulin signaling cascade proteins, as well as the lipid profile and hepatic steatosis by decreasing lipogenesis and normalizing the excretion of cholesterol. These effects associated with the antioxidant action of ACH09 may protect against the phenotypic and metabolic characteristics of obesity. Therefore, the preclinical studies open a possibility of oral administration of ACH09, a promising natural new product for the treatment and the prevention of hypertension, insulin resistance and obesity-related abnormalities. Financial Support: CNPq and FAPERJ.

Neonatal ambient pollutant exposure enhances vulnerability to asthma and impairs vascular reactivity in adolescence: Is there a role for TRP channels? Soraia K P Costa. Pharmacology Department, Biomedical Science Institute, University of São Paulo.

Introduction: Fine particulate matter is a leading cause of global mortality, mainly due to cardiovascular (CV) and pulmonary causes. Pollutant molecules relevant to respiratory diseases may activate transient receptor potential ankyrin 1 (TRPA1) in bronchial epithelial cell and sensory fibres. Although we showed that diesel exhaust particles (DEP) and its chemical irritant 1,2-napththoquinone (1,2-NQ) evoke lung inflammation via activation of TRPV1 [Arch Toxicol. 2010;84(2):109], whether early exposure to 1,2-NQ itself evokes lung inflammation and consequently CV health effects via TRPA1 channels is unknown. Aims: We examined whether early exposure to 1,2-NQ acts as a critical link, via TRPA1 channels, to enhance vulnerability to lung inflammation and consequently impairs vascular/endothelial function in adolescence. Methods: Neonate male and female mice (2-5 g) were nebulized with 1,2-NQ (100 nM, 10 ml) on days 6, 8 and 10 of life. After 33 days, mice were sensitized and further challenged with ovalbumin (OVA), and concomitantly treated with the TRPA1 antagonist HC030031. Mesenteric/pulmonary arteries (MA/PA) reactivity and lung assessments were performed 24 h after OVA challenge. Results: Neonatal exposure to 1,2-NQ in male, but not female, enhanced allergic lung inflammation in adolescence. In female lung, increased TRPA1 mRNA expression and higher catalase and glutathione peroxidase activities were detected compared to the males. HC030031 treatment significantly reduced 1,2-NQ-induced eosinophilia in male mice. Mesenteric artery responsiveness to phenylephrine and acetylcholine (ACh) in prior exposed 1,2-NQ male and female mice was similar to matched vehicle group, except that MA in female mice showed increased sensitivity to sodium nitroprusside as compared to controls (EC50 6.59 ± 0.05 vs. 7.15 ± 0.10*, respectively). Exposure to 1,2-NQ did not affect endothelium independent vasodilation in PA of both genders, but reduced ACh-induced vasodilation. Increased TRPV1mRNA expression and undetectable TRPA1 expression were assessed in PA from both genders. Conclusions: In male mice, early inhalation of 1,2-NQ confers enhanced allergic lung inflammation in adolescence via, at least in part, activation of TRPA1 and reduced antioxidant defenses, besides evokes no apparent gender influences on impaired endothelium-dependent vascular responses. This underlines the importance of avoiding or limiting exposure to 1,2-NQ during vulnerable periods in development. Acknowledgements: Fapesp, CNPq Animal Ethics Committee: 113/07/CEEA

Elucidating the role of Transient Receptor Potential (TRP) channels in Aldara™-induced, psoriasis-like skin inflammation model. *Kodji, X.1, Aubdool, A.A.1, Andersson, D.A.2, Brain, S.D.1* 1 British Heart Foundation Centre of Research Excellence, Vascular Biology Section, Franklin-Wilkins Building, King's College London, UK 2 Wolfson Centre of Age-Related Diseases, Guy's Campus, King's College London, UK

Psoriasis is a chronic skin inflammation affecting 2-3% of people globally. Studies have highlighted the importance of cutaneous sensory nerves as denervation led to psoriasis resolution [1]. We aimed to investigate whether TRP channels are involved in psoriasis, in regards to skin pathology as in the Aldara™-induced skin inflammation model. Male mice (20-30g, 6-8 weeks) were treated with 75mg of Aldara™ cream (5% imiquimod) or Vaseline® on the dorsal skin daily for 4 consecutive days [2], during which cutaneous blood flow was quantified using the Full Field Perfusion Imaging scanner (FLPI) and double skinfold thickness was measured, confirmed by histology. We have characterised this model in C57BL/6 mice, showing significant increase in skin thickness ($P<0.001$ vs veh, n=6), skin scaling "modified PASI" score ($P<0.001$ vs veh, n=6) as well as in dorsal skin blood flow on the FLPI, reaching significance during days 3-4 ($P<0.001$ vs veh, n=6). TRPA1KO mice showed enhanced skin inflammation, both in terms of dorsal skin blood flow ($P<0.001$ vs TRPA1 WT, n=4-5) as well as skin thickness ($P<0.001$ vs TRPA1 WT, n=4-5). Histological analysis also showed similar pattern of enhanced skin inflammation in TRPA1 KO compared to TRPA1 WT ($P<0.05$, vs TRPA1 WT, n= 4-5). Studies are ongoing to further elucidate the involvement of TRP channels, focusing on resiniferatoxin-induced sensory denervation, genetically-modified mice, and pharmacological tools in this skin inflammation model to elucidate the mechanisms underlying the interactions between the sensory nerves and immunological

functions. Funding sources*:* XK is a postgraduate research student funded by the British Pharmacological Society's AJ Clark Studentship. AA is funded by the British Heart Foundation. [1] Riol-Blanco *et al* (2014) *Nature* **510:** 157-61 [2] Roller *et al* (2012) *J Immunol* **189(9)**: 4612-20

TRPA1 role in joint disease: From basic to translational research*.* Elizabeth Soares Fernandes (UniCEUMA)

Introduction: We and other groups have investigated the role of transient receptor potential Ankyrin 1 channel (TRPA1) in joint disease. It was found that TRPA1 mediates joint pain in rheumatoid arthritis and osteoarthritis. Also, evidence has implicated TRPA1 in orofacial pain and this has been linked to its expression on trigeminal ganglion neurons. Whilst most of the data obtained are from animal models, little is known of TRPA1 role in human disease. Aim: Herein, we investigated the expression levels of TRPA1 on peripheral blood leukocytes as well as the levels of its endogenous agonist 4-HNE in saliva and plasma samples obtained from patients with diagnosed temporomandibular joint (TMJ) dysfunction with different levels of disease severity (n=26), by using commercial enzyme-linked immunosrbent assay kits obtained from Cloud-Clone Corp (TX, USA) and Cell Biolabs (CA, USA); respectively. Samples obtained from healthy subjects were used as controls (n=11). Changes in peripheral blood leukocyte subpopulations were evaluated by flow cytometry on a BD Accuri C6 (BD Biosciences-Immunocytometry Systems) and analyzed using FlowJo software (Tree Star Inc.). Results: Increased levels of 4-HNE were detected in saliva samples from patients with moderate/severe TMJ dysfucntion whilst TRPA1 expression levels on peripheral blood leukocytes was augmented in patients with mild TMD ($p<0.05$). These changes were accompanied by increased activation of $CD14^{+}$ circulating cells in mild TMJ dysfunction patients ($p<0.05$) and decrease on the number of circulating T regulatory cells ($CD4^{+}CD25^{+}CD127^{low}$) in patients with moderate/severe TMJ dysfunction ($p<0.05$). Discussion: Overall, we show for the first time that TRPA1 expression on peripheral blood leukocytes and the saliva levels of its endogenous agonist 4-HNE vary with the severity of TMJ dysfunction. These changes may reflect on treatment responsiveness at different stages of disease and implicate TRPA1 as a target to treat TMJ dysfunction. Also, e draw a comparison between the knowledge accumulated from basic research and its translation into human joint disease.

A indústria farmacêutica e os jovens cientistas. Julio Alejandro Rojas Moscoso (Biolab)

Desde algum tempo atrás, a indústria farmacêutica é uma das áreas de atividade no mundo mais rentáveis e influentes, movimentando cerca de R$ 125,1 bilhões só no Brasil no ano passado. É composta por numerosas organizações públicas (Instituições Educacionais) e privadas (Laboratórios e indústria farmacêutica) as quais se dedicam à descoberta, desenvolvimento, fabricação e comercialização de medicamentos para a saúde humana e animal. É de conhecimento também que a grande maioria das empresas farmacêuticas são internacionais e tem subsidiárias em vários países, entende se por tanto que uma relativa fluência no inglês é importante para uma mais rápida adaptação, além de interesse, curiosidade, espírito de investigação, capacidade de análise e facilidade de interligar dados, entre outras características que fazem parte de um bom cientista. O setor, tecnologicamente avançado, possibilita o emprego a muitos profissionais como farmacêuticos, dentistas, biólogos, biomédicos, bioquímicos, químicos, microbiologistas, médicos e médicos veterinários, profissionais os quais precisam reciclar seus conhecimentos constantemente. Apoio financeiro: Biolab.

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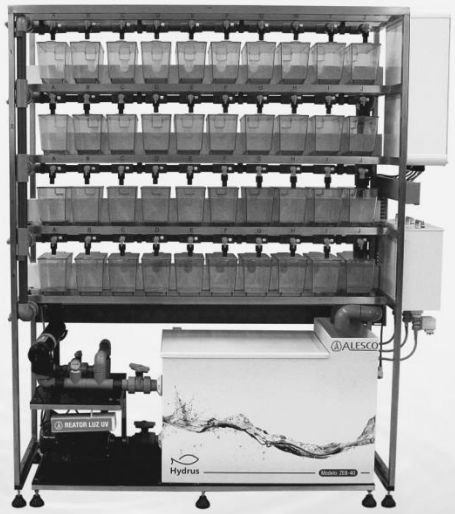

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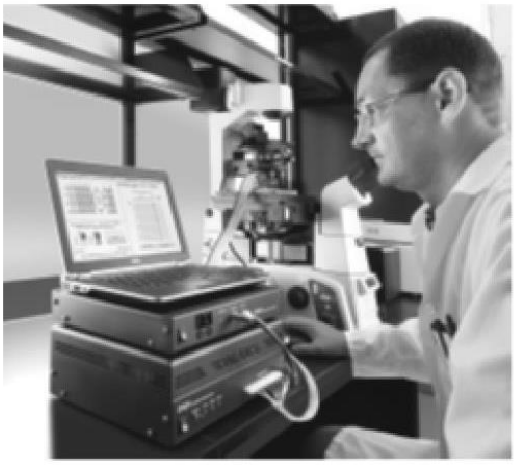

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