ANNUAL ACTIVITIES REPORT

2013

INCT OF DRUGS AND MEDICINES

INCT-INOFAR

ANNUAL ACTIVITIES REPORT

2013

353.998
A613a

Annual Activities Report 2013 / coordenação de Eliezer J. Barreiro. Rio de Janeiro: Edição do autor, 2013.

192 p. : il.
ISSN: 2179-3050

1.Fármacos. 2.Medicamentos. 3. Estudos. 4. Pesquisas e inovação I. INCT-INOFAR.

CDD 355.998

CNPq Process Number: 573.564/2008-6
Faperj Process Number: E-26/170.020/2008

inct inofar
instituto nacional de ciência e tecnologia de Fármacos e Medicamentos
www.inct-inofar.ccs.ufrj.br

SUPORT

CNPq 60 ANOS
DECIT
FAPERJ Fundação Carlos Chagas Filho de Amparo à Pesquisa do Estado do Rio de Janeiro
inct institutos nacionais de ciência e tecnologia

INCT-INOFAR

ANNUAL ACTIVITIES REPORT

2013

ABOUT THE COVER

"Fear is what makes you not see, or hear, because one of the effects of fear is to dull the senses, and make things look like things they are not!"

(Excerpt from Don Quixote).

SUMMARY

ANNUAL ACTIVITIES REPORT 2013

EDITORIAL

It's the 5th edition of the Annual Activities Reports of **INCT-INOFAR**, describing ours activities during the year of 2013. In this issue are described our major accomplishments and achievements during this period. It is difficult to highlight any, so I hope that reading the book is enlightening in itself.

The **INCT-INOFAR** noted significant progress on both sides of innovation in pharmaceuticals and medicines. As part of radical innovation, i.e. invention of new molecules, significantly advanced in relevant sub-projects that have improved us further in achieving interinstitutional and interdisciplinary research, as the drug discovery and development process demand it. Concerning the incremental innovation, the **INCT-INOFAR** achieved relevant results. It was possible during this period to conclude the studies of synthetic route of three relevant generic drugs as atorvastatin, fluoxetine, and sunitib, performed under supervision of Professors Luiz Carlos Dias of Institute of Chemistry of UNICAMP - the firts two drugs - and Angelo da Cunha Pinto from Institute of Chemistry of Federal University of Rio de Janeiro, for the last one, respectively.

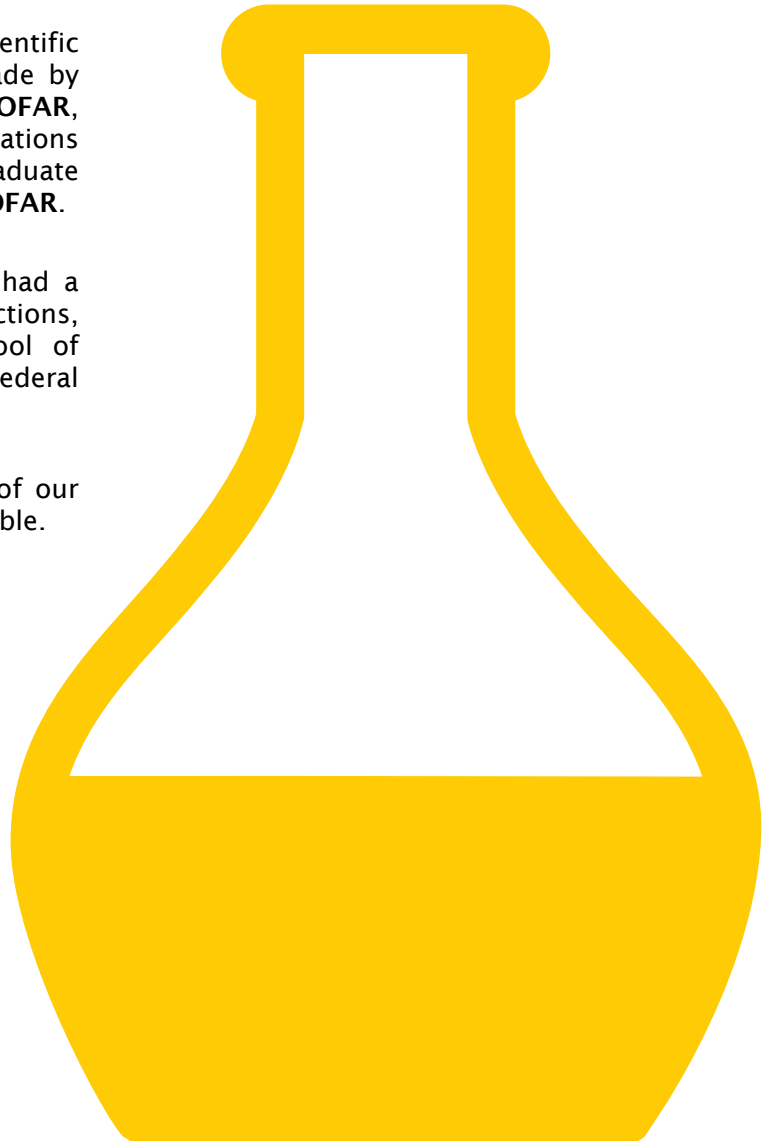
This period had significant scientific output with 255 publications made by researchers members of **INCT-INOFAR**, 22 PhD Thesis and 27 MSc dissertations completed by different graduate programs aggregates to **INCT-INOFAR**.

During 2013, the **INCT-INOFAR** had a significative number of outreach actions, including the XIX Summer School of Medicinal Chemistry held at Federal University of Rio de Janeiro.

I hope that reading this edition of our AAR can be instructive and enjoyable.

Rio de Janeiro, May 29, 2014.

ELIEZER J. BARREIRO
Scientific Coordinator
of **INCT-INOFAR**



ANNUAL ACTIVITIES REPORT 2013

INCT-INOFAR
ANNUAL ACTIVITIES REPORT

Coordination: Eliezer J. Barreiro
Text: Lucia Beatriz Torres (*Serendipity Comunicacao*)
Photos: Lucia Beatriz Torres and Cristalia Chemical and Pharmaceutical Products Ltd.
With: Fabricio Salvador and Douglas Rodrigues
Translation: Janaina Lana Viggiano de Melo
Graphic Art: Claudio Ventura Comunicação Visual

INCT-INOFAR HEADQUARTERS
UFRJ / Centro de Ciências da Saúde (CCS)
– bloco K, sala 12
Cidade Universitária – Rio de Janeiro/RJ
Cep: 21941971 Caixa Postal: 68043
Phone/Fax: +55 21 3938-6478
www.inct-inofar.ufrj.br

COORDINATOR
Eliezer J. Barreiro (UFRJ) - CV-Lattes

VICE-COORDINATOR
Fernando Queiroz Cunha (USP-Ribeirao Preto) - CV-Lattes

MANAGING COMMITTEE
Angelo da Cunha Pinto (UFRJ) - CV-Lattes
Heloisa de Oliveira Beraldo (UFMG) - CV-Lattes
Luiz Carlos Dias (UNICAMP) - CV-Lattes
Marco Aurelio Martins (FIOCRUZ-RJ) - CV-Lattes
Vanderlan da Silva Bolzani (UNESP - Araraquara) - CV-Lattes

SCIENTIFIC SUPERINTENDENCE
Lidia Moreira Lima (UFRJ) - CV-Lattes

SECRETARY OF COMMUNICATION
Douglas Rodrigues - CV-Lattes

EXECUTIVE SECRETARY
Ana Carla dos Santos - CV-Lattes

SECRETARY OF EXTENSION
Ana Cristina da Mata Silva - CV- Lattes

SECRETARY OF FINANCES
Edson de Almeida Naccor - CV-Lattes

NATIONAL INSTITUTES OF SCIENCE AND TECHNOLOGY

INTRODUCTION

BRIEF HISTORY

In 2008, the Brazilian government issued public notice MCT/ CNPQ no014/2008 with a goal of recruiting scientists to work in networks, in research areas strategic to the sustainable development of the country. The edit remains the one that has most encouraged Science and Technology in Brazil.

At the time, part of the scientists associated with the Millenium Institute of Innovation and Development of Drugs and Medicines (IM-INOFAR) accepted the challenge and submitted a new project for the edit of the National Institutes of Science and Technology (INCTs). And then the INCT of Drugs and Medicines was created (**INCT-INOFAR**).

Following the example of **INCT-INOFAR**, a total of 126 National Institutes of Science and Technology (INCTs) were created. Articulating groups of laboratories or associated research groups in different parts of Brazil, the INCTs have the mission of acting in areas strategic to the sovereignty of Brazil. **INCT-INOFAR** carries out research in the field of health, aiming at the discovery of new drugs and medicines.

INCT OF DRUGS AND MEDICINES (INCT-INOFAR)

The National Institute of Science and Technology in Drugs and Medicines (**INCT-INOFAR**) is a research network that brings together renowned scientists of different research institutes and Universities in Brazil. Its missions is to act in the discovery of new drugs and medicines and in the search for new synthetic routes for generic drugs, cooperating for the professional graduate and undergraduate training in Medicinal Chemistry and Pharmacology, central disciplines in the process of pharmaceutical innovation.

Made up of almost a hundred scientists, coming from 31 research groups that focus on radical pharmaceutical innovation and incremental innovation in generic drugs, **INCT-INOFAR** is present in 16 research and teaching institutions, in 8 different Brazilian states.

With the goal of qualifying human resources capable of acting in important stages of the process in discovery/invention of new pharmaceuticals – from the election of the therapeutic target to the conclusion of bioassays in the pre-clinical stage - **INCT-INOFAR** contributes to identify and equate important bottlenecks in the chain of pharmaceutical innovation.

Parallel to laboratory research, **INCT-INOFAR** has a permanent action in society promoting the science it practices, encouraging the rational and responsible use of drugs. As well as maintaining the Drugs Portal, a website created to promote Pharmaceutical Sciences, **INCT-INOFAR** also carries out Health Education initiatives that educate the population on the rational use of drugs.

MISSION

TO ORGANIZE NATIONAL SCIENTIFIC COMPETENCES INTO AN EFFECTIVE AND PRODUCTIVE NETWORK OF RESEARCH IN DRUGS AND MEDICINES;

TO SUPPORT SCIENTIFIC RESEARCH SUBPROJECTS AIMED AT THE CHAIN OF RADICAL INNOVATION IN DRUGS AND MEDICINES;

TO ACT IN INCREMENTAL INNOVATION IN DRUGS THROUGH GENERIC DRUGS;

TO STUDY AND DEVELOP TOTAL SYNTHESIS ROUTES FOR CURRENT AND FUTURE GENERIC DRUGS, AS WELL AS ADVANCED INTERMEDIATES AND STRATEGIC RAW MATERIALS FOR THE SECTOR;

TO CONTRIBUTE TO QUALIFIED SCIENTIFIC EDUCATION OF PERSONNEL IN MEDICINAL CHEMISTRY & PHARMACOLOGY;

TO PROMOTE SCIENCES RELATED TO DRUGS AND MEDICINES, AS WELL AS CONTRIBUTING IN AN EFFECTIVE WAY TO THEIR RATIONAL AND SAFE USE.

PHARMACEUTICAL INNOVATION

With the contribution of its entire research network, **INCT-INOFAR** studies and develops several subprojects in radical innovation and it also acts in incremental innovation, studying new total synthesis routes for generic pharmaceuticals.

In the field of radical innovation, the Institute aims at the discovery/invention of original substances, active in *in vivo* pharmacological models that are widely validated and that are capable of originating new pharmaceutical candidates in different therapeutic classes. The research areas that interest **INCT-INOFAR** are: inflammation, pulmonary diseases, pain, central nervous system, cardiovascular system and chemotherapy of cancer and of the so-called neglected diseases, leishmaniasis in particular.

In the area of incremental innovation, **INCT-INOFAR** leads projects which are focused on the search for new synthetic routes, efficient and accessible, for generic pharmaceuticals already in the market – and that represent important instruments in the public health policies and of pharmaceutical care of the population – as well as of those drugs that are about to have their patents expire, representing new business opportunities for the national pharmaceutical sector.


GENERICS
PAIN
CARDIOVASCULAR SYSTEM
INFLAMMATION
RESEARCH AREAS
CHEMOTHERAPY
ANTINEOPLASTIC, LEISHMANICIDAL AND TRIPANOMICIDAL
PULMONARY DISEASES
DIABETES
CENTRAL NERVOUS SYSTEM

GENERIC DRUGS

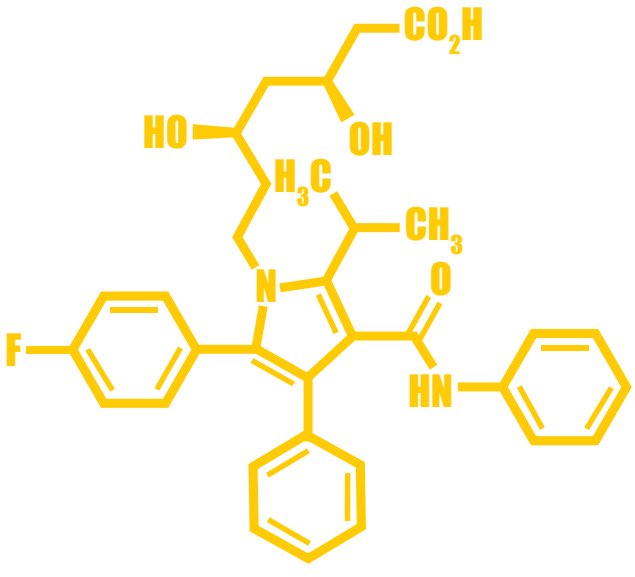
Despite the advances due to the 14 years since the Law of Generics (no 9.787/1999) was created in Brazil, unfortunately, so far national pharmaceutical companies have mostly kept to formulating and packaging active principles imported from distant markets like China, India, and Korea.

Making an effort to try to reverse this "Indian Pathway" process, **INCT-INOFAR** tries to study and develop total synthetic routes for generic medications, with the goal of transferring the technology acquired to the local industry.

By studying and developing total synthetic routes of generic drugs, advanced intermediates and raw materials strategic to the sector, **INCT-INOFAR** research paves the way to the production of active principles at a reduced price in Brazil.

Since it was created in 2009, **INCT-INOFAR** has already developed new synthetic routes for atorvastatin, sunitinib, and fluoxetine.

ATORVASTATIN

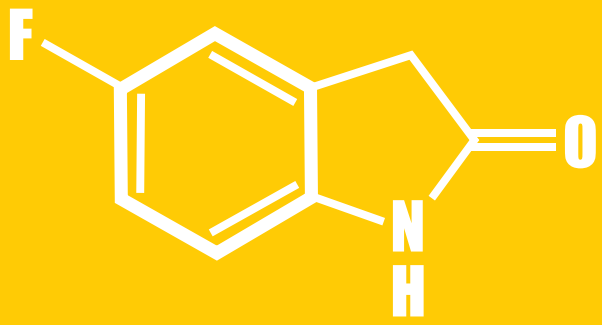


In the same month where the patent for Lipitor™/ Pfizer expired in Brazil (December 2010), **INCT-INOFAR** researchers announced the discovery of a new synthetic route for the production of its active principle, atorvastatin. A continuous use medication to reduce cholesterol that is widely used, Lipitor was the bestselling pharmaceutical in the world history, reaching US$ 150 billion in sales during the time of its patent (1991-2011).

The people in charge of the research, which had a lot of repercussion in the press both locally and overseas throughout 2011, were Prof. Luiz Carlos Dias and Dr. Adriano Siqueira Vieira of the Institute of Chemistry of the State University of Campinas (Unicamp), the latter as an **INCT-INOFAR** scholar. The synthesis route of atorvastatin has been patented and it represents an important technological asset for **INCT-INOFAR**. Since then, **INCT-INOFAR** has been trying to negotiate the production of this generic with a local company.

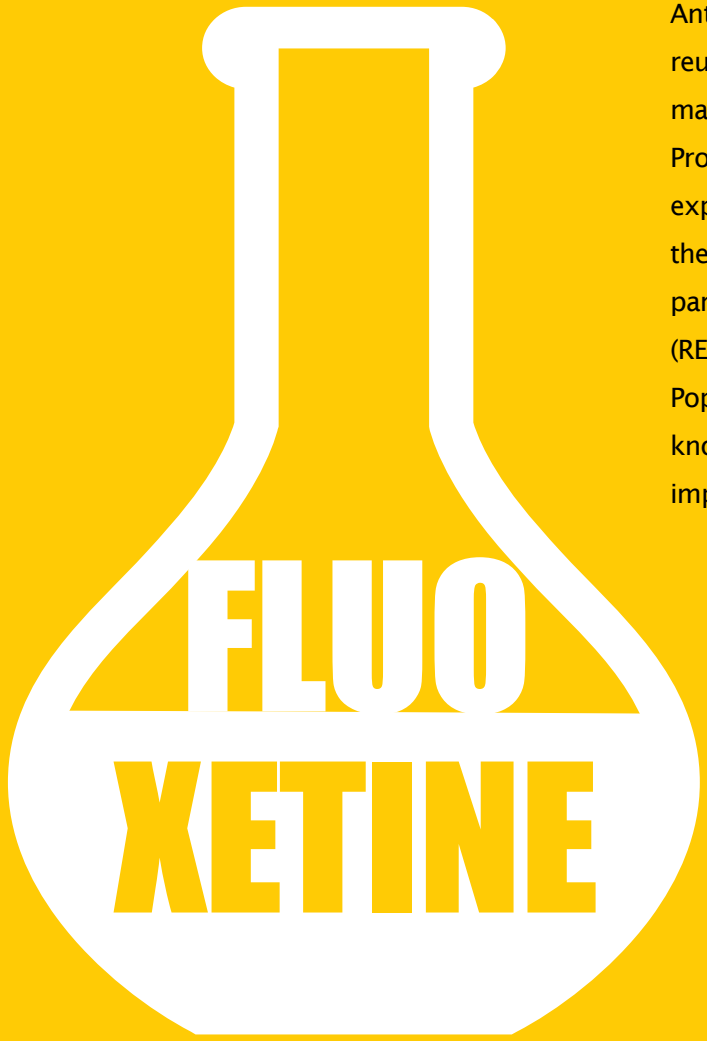
GENERICS

SUNITINIB

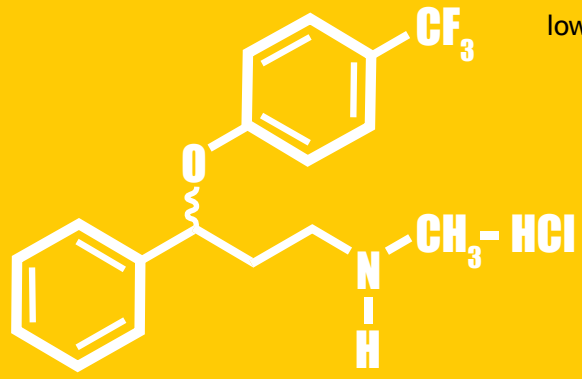


Recommended to fight certain types of stomach cancers, sunitinib is the active principle of Sutent®/ Pfizer, a high cost medication – around 11 thousand Brazilian Reais per box with 28 pills – which, unfortunately, is not yet available in the Public Health System (SUS) and that because of that is the target of many lawsuits since it is the primary recommended drug in these cases.

The synthetic route for sunitinib was finished in September 2011 by Prof. Angelo da Cunha Pinto and Dr. Barbara Vasconcellos da Silva, of the Institute of Chemistry of the Federal University of Rio de Janeiro (UFRJ). With the discovery of new sunitinib synthesis route, Brazil can preemptively prepare to produce the medication, reducing its production cost when its patent expires here.



Antidepressant from the selective serotonin reuptake inhibitors, fluoxetine used to be marketed by Eli Lilly under the name of Prozac™, until the patent for the medication expired in August 2001, making way for the production of generics. Fluoxetine is part of National List of Essential Medications (RENAME) and is made available through the Popular Pharmacy Program. The technological knowledge of the synthesis of fluoxetine is an important **INCT-INOFAR** has achieved.



Considering the controlled medication with the highest demand in the public health care system, most of the fluoxetine consumed in Brazil is imported. Due to the social and market impact of this medication in the country, **INCT-INOFAR** has made efforts in the discovery of a new synthetic route to produce generic fluoxetine. Until now, the group led by Prof. Luiz Carlos Dias of Unicamp has prepared 2g of the active principle, using a new and efficient methodology, so that the drug can be prepared in larger amounts, in a faster, more practical, cheaper way, and with lower environmental impact.

INCT-INOFAR

MULTIDISCIPLINARY RESEARCH NETWORK

The pharmaceutical innovation process has characteristics that are clearly inter and multidisciplinary, which demand competencies in distinct areas of the Health Sciences environment.

INCT-INOFAR brings together research groups of academic-scientific excellence into a network, from different areas, covering all the stages of the process of invention of new drugs, going from the election of the therapeutic target to the conclusion of pre-clinical stage bioassays, quantitative and qualitative analytical methods, as well as clinical pharmacology.

The **INCT-INOFAR** multidisciplinary team is made up of experts in different fields like medicinal chemistry, pharmacology, organic chemistry, toxicology, organic synthesis, computational chemistry, structure biology, spectroscopy, chemistry of natural products, among other related areas.

SCIENTIFIC EXCHANGE

Present in 16 teaching and research institutions in 8 different Brazilian states, **INCT-INOFAR** has been actively cooperating to reduce the regional scientific imbalance present in Brazil, as well as contributing to strengthen local expertise in a sector strategic to the country.

By making it possible for researchers from different institutions, in several geographic regions, to work in association, **INCT-INOFAR** promotes exchange between larger centers and emerging research groups.

Cooperative action is a way for **INCT-INOFAR** to contribute to the increase of the scientific and technological production of the emerging centers, especially in the Midwest and Northeast, benefitting the professional qualification at the undergraduate and graduate levels in this field. Throughout these four years, **INCT-INOFAR** has seen notable benefits in the advancement of these emerging scientific groups.

INCT-INOFAR RESEARCH GROUPS

LABORATORIES AND PEOPLE IN CHARGE

NETWORK SCIENTIFIC COORDINATOR

Prof. Eliezer J. Barreiro (LASSBio/UFRJ) CV-Lattes

RIO DE JANEIRO

1. FIOCRUZ

Laboratory of Inflammation (IOC)
Marco Aurélio Martins CV-Lattes

Laboratory of Environmental Toxicology (ENSP)
Francisco José Roma Paumgartten CV-Lattes

2. UERJ

Department of Pharmacology (IBRAG)
Theresa Christina Barja-Fidalgo CV-Lattes

LABORATORIES AND PEOPLE IN CHARGE

3. UFRJ

Laboratory of Evaluation and Synthesis of Bioactive Substances – LASSBio (ICB)
Carlos Alberto Manssour Fraga CV-Lattes
Lidia Moreira Lima CV-Lattes

System of Information on the Chemical Industry – SIQUIM (EQ)
Adelaide Maria de Souza Antunes CV-Lattes

Laboratory of Pulmonary Investigation (IBCCF)
Patrícia Rieken Macedo Rocco CV-Lattes

Laboratory of Biochemical and Molecular Pharmacology (ICB)
François Germain Noel CV-Lattes

Laboratory of Cardiovascular Pharmacology (ICB)
Gisele Zapata Sudo CV-Lattes

Laboratory of Muscular Excitation-Contraction Coupling (ICB)
Roberto Takashi Sudo CV-Lattes

Laboratory of Natural Products and Chemical Transformations (IQ)
Ângelo da Cunha Pinto CV-Lattes

Laboratory of Support to Technological Development (IQ)
Francisco Radler de Aquino Neto CV-Lattes

Laboratory of Pharmacology of Inflammation and of Nitric Oxide (ICB)
Patricia Dias Fernandes CV-Lattes

4. UFRRJ

Institute of Exact Sciences (IQ)
Carlos Maurício Rabello de Sant´Anna CV-Lattes

5. LNCC-MCTI

Group of Molecular Modelling of Biological Systems (Department of Computational Mechanics)
Laurent Emmanuel Dardenne CV-Lattes

SÃO PAULO

6. USP-RP

Laboratory of Pain and Inflammation (Faculty of Medicine)
Fernando de Queiroz Cunha CV-Lattes

7. UNESP ARARAQUARA

Nucleus of Bioassays, Biosynthesis, and Ecophysiology of Natural Products – NUBBe (IQ)
Vanderlan da Silva Bolzani CV-Lattes

8. UNICAMP

Laboratory of Synthetic Organic Chemistry (IQ)
Luiz Carlos Dias CV-Lattes

MINAS GERAIS

9. UFMG

Group of Innovation in Organic and Inorganic Compounds with Pharmacological Activity (Department of Chemistry)
Heloísa de Oliveira Beraldo CV-Lattes

10. UNIFAL

Laboratory of Phytochemistry and Medicinal Chemistry (Faculty of Pharmacy)
Cláudio Viegas Junior CV-Lattes

Agency of Innovation and Entrepreneurship (Dean of Graduate Studies and Research)
Marcia Paranho Veloso CV-Lattes

RIO GRANDE DO SUL

11. UFRGS

Laboratory of Experimental Psychopharmacology (Faculty of Pharmacy)
Stela Maris Kuze Rates CV-Lattes

12. UNIPAMPA

Laboratory of Pharmacology – LABFAR (Faculty of Pharmacy)
Sandra Elisa Haas CV-Lattes

LABORATORIES AND PEOPLE IN CHARGE

GOIÁS

13. UFG

Laboratory of Bioconversion (Faculty of Pharmacy)
Valéria de Oliveira CV-Lattes

Laboratory of Pharmacology and Cellular Toxicology (Faculty of Pharmacy)
Marize Campos Valadares Bozinis CV-Lattes

Laboratory of Medicinal Pharmaceutical Chemistry (Faculty of Pharmacy)
Ricardo Menegatti CV-Lattes

Laboratory of Cardiovascular Pharmacology (Faculty of Pharmacy)
Matheus Lavorenti Rocha CV-Lattes

ALAGOAS

14. UFAL

Laboratory of Pharmacology and Immunity (Institute of Biological and Health Sciences)
Magna Suzana Alexandre Moreira CV-Lattes

CEARÁ

15. UFC

Unit of Clinical Pharmacology (Faculty of Medicine)
Manoel Odorico de Moraes CV-Lattes

Laboratory of Pharmacology of Inflammation and Cancer (Faculty of Medicine)
Ronaldo de Albuquerque Ribeiro CV-Lattes

Department of Physiology and Pharmacology
Claudia do Ó Pessoa CV-Lattes

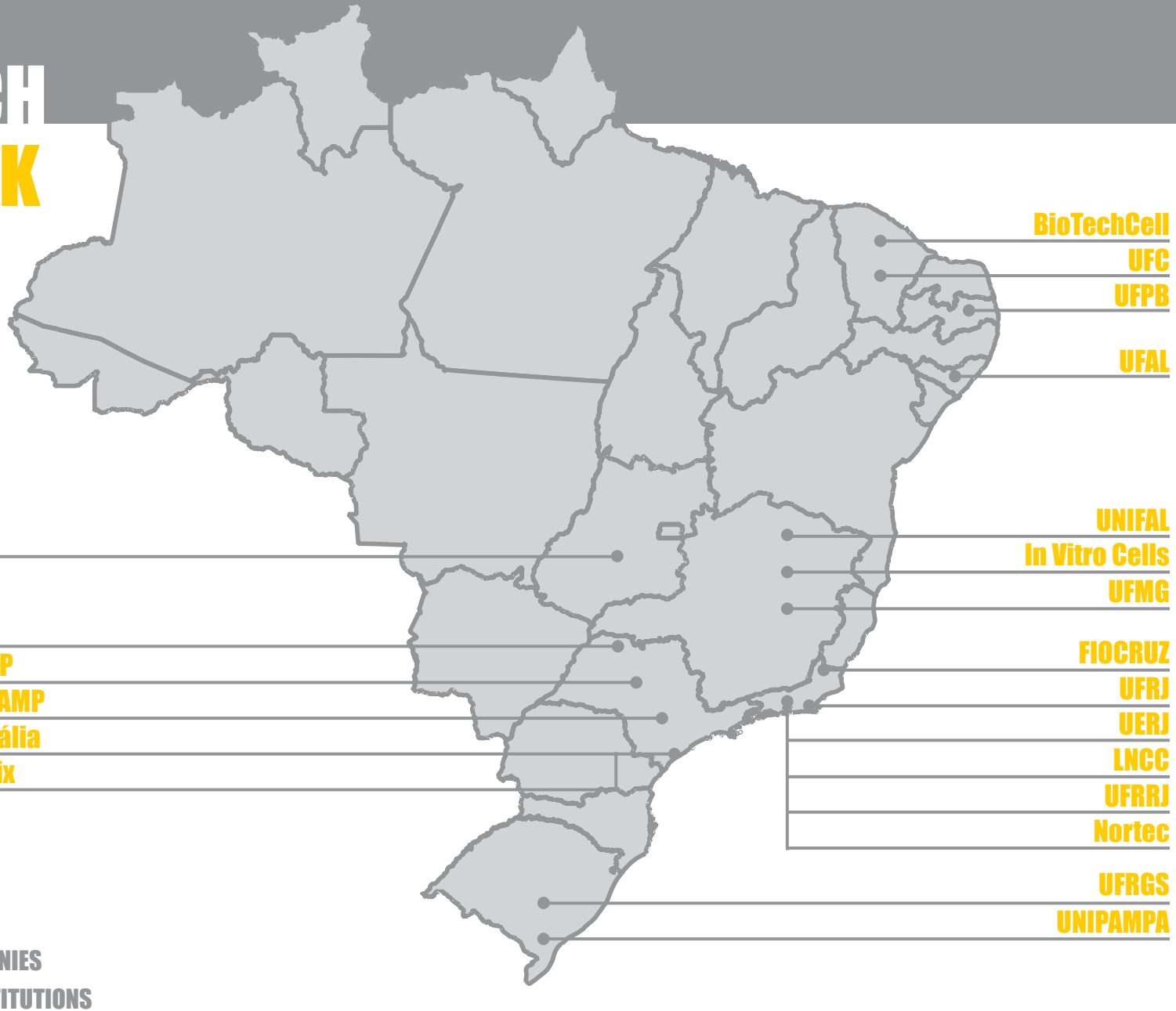
PARAÍBA

16. UFPB

Laboratory of Toxicological Assays – LABETOX (Department of Pharmaceutical Sciences)
Margareth de Fátima Formiga Melo Diniz
CV-Lattes


MeOH
THF

RESEARCH NETWORK MAP



08 | STATES
16 | INSTITUTIONS
31 | RESEARCH GROUPS
33 | CNPq RESEARCHERS
05 | ASSOCIATED COMPANIES
04 | INTERNATIONAL INSTITUTIONS

HUMAN RESOURCES EDUCATION

So that a truly innovative medication can be discovered, it is fundamental to have a diverse and extremely qualified personnel to carry out, successfully, all the stages in the chain of innovation.

Cooperating to perfect Brazilian expertise in the discovery/invention of new drugs and medicines, **INCT-INOFAR** strongly acts in the education of human resources in the different research centers to which it is associated.

At **INCT-INOFAR**, scientific qualifications are improved at all different academic levels: undergraduate, graduate, doctoral, and post-doctoral. As part of this qualification, graduate students connected to the subprojects under study are encouraged to take part in academic exchange between participating laboratories with scientific expertise, so as to make the agreed upon goals achievable in the deadlines adequate to the project.

Through scientific exchanged promoted and encouraged by **INCT-INOFAR**, the Institute not only contributes to the education of new researchers, but also for the recycling and updating of senior researchers. The retention of renowned talented professionals in the country is also one of the premises under which **INCT-INOFAR** operates.

INCT-INOFAR researchers have actively participated in education and qualification of human resources activities, through the connection to 18 Graduate Programs of recognized academic merit throughout Brazil.

Over half of the Graduate Programs that have the participation of **INCT-INOFAR** researchers are classified at excellent levels with ratings 6 and 7 (out of 7).

PREMISES

- EDUCATION OF HUMAN RESOURCES
- ACADEMIC-SCIENTIFIC EXCHANGE
- RECYCLING AND UPDATING OF SENIOR RESEARCHERS
- RETENTION OF RENOWNED TALENTED PROFESSIONALS IN THE COUNTRY

GRADUATE PROGRAMS WITH INCT-INOFAR RESEARCHERS

(USP/RP) PROGRAM OF GRADUATE STUDIES IN BIOLOGICAL SCIENCES (PHARMACOLOGY) M / D - CAPES - 7
HTTP://WWW.RADIORIBEIRAO.CCRP.USP.BR/POS_GRADUACAO.ASP

(UNICAMP) PROGRAM OF GRADUATE STUDIES IN CHEMISTRY – M / D - CAPES 7
HTTP://WWW.IQM.UNICAMP.BR/POSGRADUACAO/

(UFRJ) PROGRAM OF GRADUATE STUDIES IN CHEMISTRY M / D – CAPES 7
HTTP://WWW.PGQU.NET/

(UNESP/ARARAQUARA) PROGRAM OF GRADUATE STUDIES IN CHEMISTRY M / D- CAPES 7
HTTP://FI.COM.BR/PROJETOS/UNESP/

(FIOCRUZ) PROGRAM OF GRADUATE STUDIES IN CELLULAR AND MOLECULAR BIOLOGY M / D – CAPES 7
HTTP://WWW.FIOCRUZ.BR/IOCENSINO/CGI/CGILUA.EXE/SYS/START.HTM?SID=6

(UFMG) PROGRAM OF GRADUATE STUDIES IN CHEMISTRY M / D – CAPES 7
HTTP://WWW.QUI.UFMG.BR/PG

(UFRGS) PROGRAM OF GRADUATE STUDIES IN PHARMACEUTICAL SCIENCES M / D - CAPES 7
HTTP://WWW.UFRGS.BR/PPGCF/

(UERJ) PROGRAM OF GRADUATE STUDIES IN BIOSCIENCES M / D - CAPES 6
HTTP://WWW.PGBIOLOGIA.UERJ.BR/

(UFC) PROGRAM OF GRADUATE STUDIES IN PHARMACOLOGY F - CAPES 6
HTTP://WWW.FISFAR.UFC.BR/POSGRAD/

(UFPB) PROGRAM OF GRADUATE STUDIES IN BIOACTIVE NATURAL AND SYNTHETIC PRODUCTS M / D – CAPES 6
HTTPS://SITES.GOOGLE.COM/A/LTF.UFPB.BR/PGPNSB/

(LNCC) GRADUATE PROGRAM IN COMPUTATIONAL MODELING M/D – CAPES 6
HTTP://WWW.LNCC.BR/POSGRADUACAO/HOMEPOSGRAD.PHP?VMENU=&VDEPTO=7&VCABECALHO=POS

(UFRJ) PROGRAM OF GRADUATE STUDIES IN BIOLOGICAL SCIENCES (PHARMACOLOGY AND MEDICINAL CHEMISTRY) M / D – CAPES 5
HTTP://WWW.FARMACO.UFRJ.BR/POSGRADUACAO/INDEX.HTML

(UNIFAL) PROGRAM OF GRADUATE STUDIES IN CHEMISTRY M / D – CAPES 4
HTTP://WWW.UNIFAL-MG.EDU.BR/PPGQUIMICA/

(UFRRJ) PROGRAM OF GRADUATE STUDIES IN CHEMISTRY M / D - CAPES 4
HTTP://WWW.ICE.UFRRJ.BR/POSGRAD/

(UFAL) PROGRAM OF GRADUATE STUDIES IN HEALTH SCIENCES M / D – CAPES 4
HTTP://WWW.UFAL.EDU.BR/UNIDADEACADEMICA/ICBS/POS-GRADUACAO/CIENCIAS-DA-SAUDE

(UNIFAL) PROGRAM OF GRADUATE STUDIES IN PHARMACEUTICAL SCIENCES M / D – CAPES 4
HTTP://WWW.UNIFAL-MG.EDU.BR/PPGCIENCIASFARMA/

(UFG) PROGRAM OF GRADUATE STUDIES IN PHARMACEUTICAL SCIENCES M - CAPES 4
HTTP://MESTRADO.FARMACIA.UFG.BR/PAGES/23204

(UNIPAMPA) GRADUATE PROGRAM IN PHARMACEUTICAL SCIENCES M – CAPES 3
HTTP://CURSOS.UNIPAMPA.EDU.BR/CURSOS/PPGCF/

SOURCE: TRIENNIAL EVALUATION REPORT 2013
REFERENCE 2010 – 2012, CAPES.

KEY:: D (DOCTORATE);
M (MASTER DEGREE);
F (PROFESSIONAL MASTER DEGREE)

SEE THE FULL LIST OF COMPLETE MASTER AND DOCTORAL THESES GUIDED BY INCT-INOFAR RESEARCHERS AND FINISHED IN 2013 AT CHAPTER 5 IN THIS PUBLICATION.

CAPES THESES AWARD 2013 | CHEMISTRY

Every year the Coordination for the Improvement of Higher Education Personnel (Capes) awards prizes for the best doctoral theses in several areas of knowledge – the Capes Theses Award. In 2013, **INCT-INOFAR** was the winner of the Prize in Chemistry.

TITLE: ***"Total synthesis of (-)-goniotrionin. Theoretical study of the stereoelectronic influence in the 1,5 selectivity in aldolic reactions involving beta-alkoxy methylcetones"***

AUTHOR: Marco Antonio Barbosa Ferreira

ADVISOR: Prof. Luiz Carlos Dias

INSTITUTION: Program of Graduate Studies in Chemistry - UNICAMP

DEFENSE: 2012

AREA: Chemistry

Aside from the Capes Theses Award in Chemistry, the research has also been awarded a prize by the Paulo Gontijo Institute.

ACCESS THE ARTICLE ON THE AWARDED THESIS AT THE FOLLOWING LINK:
HTTP://WWW.INCT-INOFAR.CCS.UFRJ.BR/RELEASE_PREMIOCAPES2013.HTML

ORGANIZATIONAL STRUCTURE

The organizational structure of **INCT-INOFAR** is made up of a Coordinator, a Vice-Coordinator, and the Management and Follow-up Committee (CGA). The CGA is a consulting and deliberating collegiate that acts in the strategic planning of **INCT-INOFAR** activities.

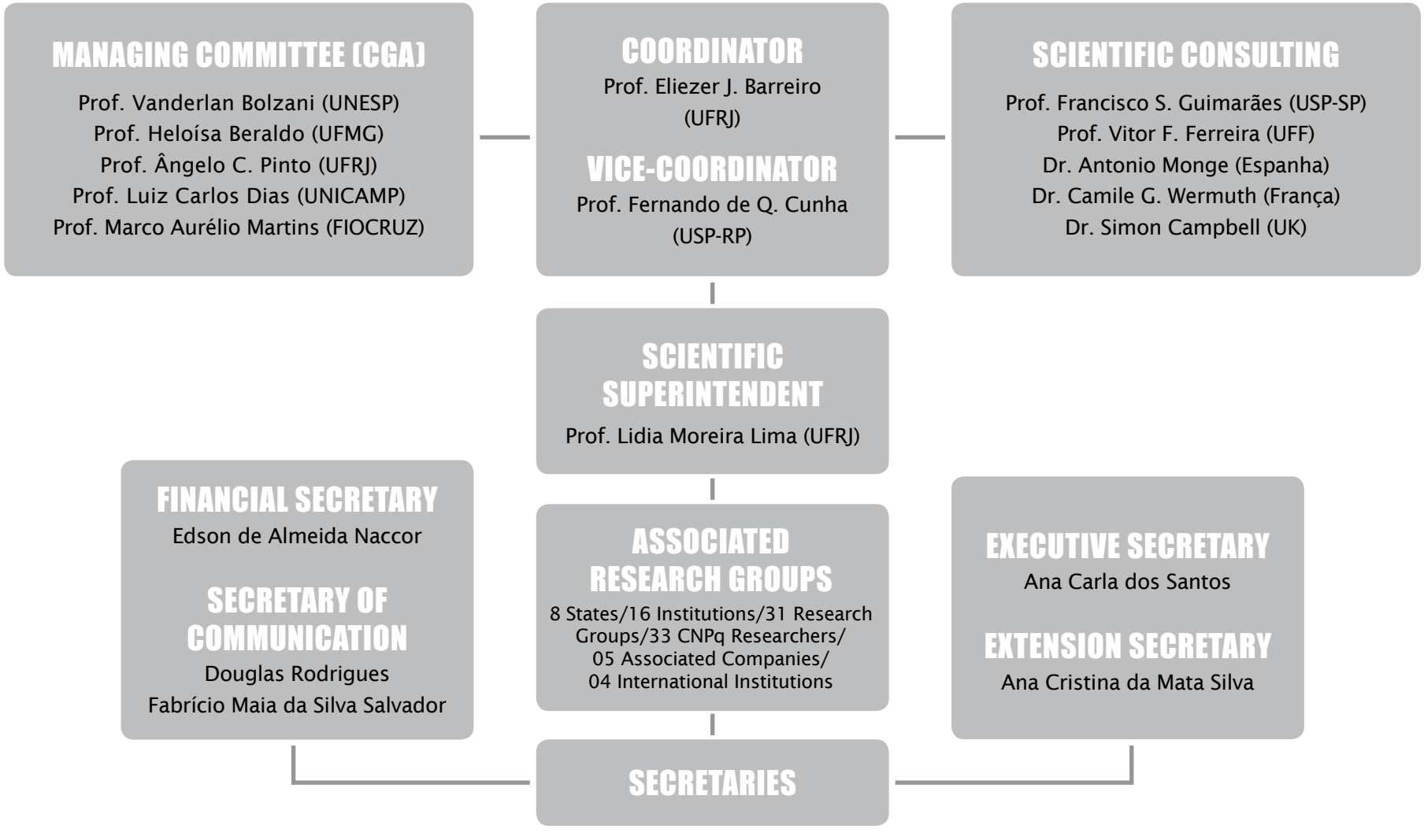
The Scientific Superintendence supports the Coordination, acting in the technical-scientific evaluation of the projects under study, including in the timely meeting of previously agreed upon deadlines.

INCT-INOFAR has the participation, under confidentiality, of specialist consultants who provide scientific support in the evaluation of the projects under study, to optimize the research activities. In some projects consultants also suggest possible necessary route deviations to meet the ultimate goal of the Institute, which is contributing for the discovery of new national drugs. .

The **INCT-INOFAR** scientific competence network is made up of 31 research groups, located in 16 institutions, throughout 8 Brazilian states. Each research group associated to **INCT-INOFAR** is led by an expert, responsible for the scientific interaction of his or her team among itself as well as with other teams that are part of the Institute.

The Financial, Executive, Communication, and Extension Secretaries provide the necessary support to the full development of **INCT-INOFAR** research and scientific awareness activities, and they are physically located in the Center for Health Sciences (CCS) at UFRJ the administrative headquarters for the Institute.

INCT-INOFAR ORGANIZATIONAL CHART



ASSOCIATED COMPANIES

INCT-INOFAR has the support, even if informal, of pharmaceutical and related companies such as In Vitro Cells Technological Research S.A., Cristalia Chemical Pharmaceutical Products Ltd., Ciallyx Laboratories & Consultancy, BiotechCell, and Nortec Chemistry.

CRISTÁLIA CHEMICAL PHARMACEUTICAL PRODUCTS

www.2cristalia.com.br

Cristália Chemical Pharmaceutical Products Ltd. is a pharmaceutical company associated to **INCT-INOFAR**, capable of supporting the conduction, at an onus, of eventual stages of the pharmacotechnical development of new prototype compounds that have reached this advanced stage of the chain of innovation in drugs and medicines. Under terms of non-disclosure and confidentiality, Cristalia will benefit, if so interested, of the information on the studied projects, by expressing an interest at the adequate deadlines to internalize the technologies developed by **INCT-INOFAR**. So that the technology is transferred, the UFRJ Innovation Agency and its equivalent at another **INCT-INOFAR** research institution will negotiate directly with the parts interested, including financial backers.

IN VITRO CELLS

In Vitro Cells – Toxicological Research S.A. is a technology based company located in Biominas Foundation (Belo Horizonte, MG). Its founders are professors at the Federal University of Minas Gerais (UFMG) in the fields of Toxicology and Biochemistry. The company is a **INCT-INOFAR** partner to conduct *in vitro* bioassays for the evaluation of safety and efficacy of new drug candidates developed by the Institute.

CIALLYX LABORATORIES & CONSULTANCY

Ciallyx Laboratories & Consultancy is a company created within CIETEC (Center for Creation of Technology Companies) that carries out efficacy studies (concept proofs) and safety studies (toxicological studies and assays) for new molecules, drugs, and formulations. Ciallyx generates results following national and international protocols under strict quality parameters using the international rules for Good Laboratory Practices – GLP. The company is an **INCT-INOFAR** partner to carry out *in vivo* bioassays for evaluating the safety and efficacy of new pharmaceutical candidates developed by the Institute.

BIOTECHCELL

www.biotechcell.com.br

The term Biotechnology refers to a wide range of enabling and potentializing technologies that involve the use, the controlled change and the optimization of live organisms or their derived products, such as cells and molecules, for the generation of processes and services. A BiotechCell® is a biotechnology entrepreneurial company from the Northeast region, born out of the scientific community from an ideal shared by young researchers who intended to align their wide academic experience to technological innovation and services. It is an **INCT-INOFAR** partner company that acts in research and providing pre-clinical pharmacology services, human biomonitoring, toxicogenetics, and applied toxicology.

NORTEC CHEMISTRY

http://www.nortecquimica.com.br/

In the process of pharmaceutical innovation, the active principle is fundamental for the construction of new synthesis routes. Nortec Chemistry is a 100% pharmachemical company that can act in partnership with **INCT-INOFAR** in the production of pharmaceutical active principles. Nortec Chemistry, created in the 1980s, is headquartered in Rio de Janeiro (RJ) and has, for several years in a row, received the Excellence Award for Supplying Raw Materials, awarded by SINDUSFARMA – Pharmaceutical Industries

INTERNATIONAL AGREEMENTS

INCT-INOFAR has been making efforts to internationalize its research network, through the signature of international cooperation agreements. This internationalization is due to the recommendations from the National Council of Scientific and Technological Development (CNPq) and it follows the philosophy of the Science Without Borders program.

The goal is to make activities of Science, Technology and Innovation in Brazil internationally visible. It will also allow, through this internationalization, that new cooperation networks can be created, which may offer training opportunities for undergraduate and graduate students abroad. Currently, **INCT-INOFAR** cooperates with 04 Teaching and Research Institutes abroad, allowing the exchange between its researchers with experts in Germany, Portugal, Italy, and Uruguay.

INCT-NOFAR INTERNATIONAL COOPERATION NETWORK

GERMANY

Interdisciplinary Center for Pharmacogenomics and Pharmaceutical Research (ICEPHA)
University of Tübingen, Germany.
Researcher in Charge: Prof. Stefan Laufer

ITALY

Department of Pharmaceutical Science
University of Ferrara, Italy.
Researcher in Charge: Prof. Pier G. Baraldi

PORTUGAL

Department of Chemistry
University of Aveiro, Portugal.
Researcher in Charge: Prof. Jose A. F. Cavalheiro

URUGUAY

Department of Organic Chemistry,
National University of the Republic, Uruguay.
Researcher in Charge: Prof. Hugo Cerecetto and Prof. Mercedes Gonzalez

INTERNATIONAL AGREEMENTS

Among the main objectives of the international agreements are the development of joint research projects, the organization of academic and scientific activities, the exchange of researchers and/or students, as well as the exchange of materials and relevant publications in the field.

OTHER INTERNATIONAL ACTIONS

In parallel to other international agreements, **INCT-INOFAR** makes efforts towards punctual cooperation between their researchers and renowned international scientists. Under confidentiality, **INCT-INOFAR** has the participation of international consultants who provide scientific support in the evaluation of the projects under study. Currently, the Institute has 03 international consultants:

INCT-INOFAR International Assistance

- Prof. Antonio Monge (University of Navarra, Pamplona, Spain)
- Dr. Camille G. Wermuth (Prestwick Chemical, Ilkirch, France)
- Dr. Simon Campbell (*Royal Academy of Science*, London, England)

CURRENTLY STUDIED INCT-INOFAR SUBPROJECTS

RADICAL INNOVATION

INFLAMMATION (Pulmonary Diseases)

1.Study of the potential anti-inflammatory effect of LASSBio 897 compound, in silicosis and asthma compounds
Prof. Patricia Machado Rodrigues e Silva (FIOCRUZ – RJ) CV-Lattes
Prof. Marco Aurelio Martins (FIOCRUZ – RJ) CV-Lattes

2.Impact of therapy with nanoparticles with the thymuline gene in a chronic allergic asthma model
Prof. Patricia Rieken Macedo Rocco (UFRJ) CV-Lattes

3.Study for identification of new sulfonamide compounds effective in the control of pulmonary inflammation caused by silica in mice
Prof. Patricia Machado Rodrigues e Silva Martins (FIOCRUZ-RJ) CV-Lattes

4.Development of new antiasthmatic pharmaceutical prototypes (LASSBio-596)
Prof. Patricia Rieken Macedo Rocco (UFRJ) CV-Lattes
Prof. Lidia Moreira Lima (UFRJ) CV-Lattes

INFLAMMATION AND PAIN

5.New 5-aryl-2-furfuryl-N-acylhydrazone compounds functionalized with potent anti-inflammatory and analgesic activity: LASSBio-1609 e LASSBio-1636
Prof. Carlos Alberto Manssour Fraga (UFRJ) CV-Lattes

6.Development of new antiarthritic pharmaceutical candidates, MAPK p-38 modulators
Prof. Lidia Moreira Lima (UFRJ) CV-Lattes

7.Benzaldehyde semicarbazone (BS)
Prof. Heloisa de Oliveira Beraldo (UFMG) CV-Lattes

8.Planning, synthesis, structural characterization, and pharmacological evaluation of new anti-inflammatory, anti-infectious, and neuroactive drug candidates
Prof. Claudio Viegas Junior (UNIFAL) CV-Lattes

9.Development of new anti-inflammatory and analgesic pharmaceutical candidates from safrole
Prof. Lidia Moreira Lima (UFRJ) CV-Lattes

10.Planning of structural changes aimed at the optimization of the affinity of the selective inhibitor of IKK2 enzyme, LASSBio-1524
Prof. Laurent Emmanuel Dardenne (LNCC) CV-Lattes

CURRENTLY STUDIED INCT-INOFAR SUBPROJECTS

CHEMOTHERAPY

11.Evaluation of antiparasitic activity of a series of semicarbazone and hydrazine-N-acylhydradazone derivates (Leishmanicidal)
Prof. Magna Suzana Alexandre Moreira (UFAL) CV-Lattes

12.Discovery of new antitumoral pharmaceutical candidates analog to combrestatin A4 (Antineoplastic)
Prof. Lidia Moreira Lima (UFRJ) CV-Lattes

13.Theoretical investigation of the action mechanism of dialkylphosphorilhydrazones as inhibitors of the ribose 5-fosfate isomerase enzyme of trypanosoma cruzi and plasmodium falciparum (Trypanomicidal)
Prof. Carlos Mauricio R. de Sant'Anna (UFRRJ) CV-Lattes

CENTRAL NERVOUS SYSTEM

14.Study of N-phenylpiperazine derivates functionalized as prototypes for the development of new atypical antipsychotics (antipsychotic)
Prof. Stela Maris Kuze Rates (UFRS) CV-Lattes
Prof. Carlos Alberto Manssour Fraga (UFRJ) CV-Lattes

15.Pharmacological evaluation of new neuroactive Zolpidem neuroactives (neuropathic pain)
Prof. Roberto Takashi Sudo (UFRJ) CV-Lattes

16.Planning, synthesis, and pharmacological evaluation of vectorized and self-organized neuroactive pharmaceutical prototypes
Prof. Ricardo Menegatti (UFG) CV-Lattes

CARDIOVASCULAR SYSTEM

17.Therapeutic potential of new vasodilator (LASSBio 1289) in arterial and pulmonary hypertension
Prof. Gisele Zapata Sudo (UFRJ) CV-Lattes

18.Pharmacological and toxicological evaluation of new pharmaceutical candidates for the prevention and treatment of miocardiopathy and neuropathy caused by diabetes mellitus
Prof. Gisele Zapata Sudo (UFRJ) CV-Lattes

INCREMENTAL INNOVATION

GENERIC DRUGS

19.Synthesis of sunitinib

Prof. Eliezer J. Barreiro (UFRJ) CV Lattes

Prof. Angelo da Cunha Pinto (UFRJ)

CV Lattes

Prof. Barbara Vasconcelos (UFRJ)

CV Lattes

20. Synthesis of fluoxetine

Prof. Eliezer J. Barreiro (UFRJ) CV Lattes

Prof. Luiz Carlos Dias (UNICAMP)

CV Lattes

Dr. Adriano V. Siqueira (UNICAMP)

CV Lattes

21.Synthesis of atorvastatin

Prof. Eliezer J. Barreiro (UFRJ)
CV Lattes

Prof. Luiz Carlos Dias (UNICAMP)

CV Lattes

Dr. Adriano V. Siqueira (UNICAMP)
CV Lattes

2013 HIGHLIGHTS

PARTNERSHIP BETWEEN INCT- INOFAR & INCT- IDN

In compliance with a recommendation by the Federal Government for the National Institutes of Science and Technology (INCTs) to develop projects in a network, in 2013, **INCT-INOFAR** established a partnership with the INCT of Innovation in Neglected Diseases (INCT-IDN) to develop an innovative treatment against infections caused by fungi.

Immunosuppressed patients submitted to organ and marrow transplants, to chemotherapy or who use the anti-HIV cocktail, due to being the most vulnerable to fungal infections, may be the most benefitted by the partnership between the two INCTs.

The INCT of Innovation in Neglected Diseases (INCT-IDN) is an international network of research groups created to study, foster and promote innovation in health, with a focus on neglected diseases considered to be sanitary priorities in Brazil. The institute is coordinated by Dr. Carlos Medici's Morel and is hosted at the Center for Technological Development (CDTS) of the Oswaldo Cruz Foundation (Fiocruz), located in the Manguinhos campus, in Rio de Janeiro.

2013 HIGHLIGHTS

inct-idn
instituto nacional de ciência e tecnologia de inovação em doenças negligenciadas

While studying fungal microbiology, researcher Marcio Lourenco Rodrigues, of INCT-IDN, discovered that if a specific gene of these fungi were to be knocked out, it would lose its pathogenic properties and would become inoffensive. From that concept proof, it was necessary to then test substances that were capable of inactivating these genes, breaking the infectious process started by fungi.

Due to the bureaucratic complexity involved in having access to libraries of compounds abroad, INCT-IDN has established a partnership with **INCT-INOFAR** to test compounds of the Laboratory of Evaluation and Synthesis of Bioactive Substances (LASSBio). LASSBio is a laboratory at the Federal University of Rio de Janeiro (UFRJ) associated to **INCT-INOFAR**, that has over 1,500 prototype compounds (ligands) in its chemical library, synthetized and pharmacologically tested in its own laboratory.

FOR FURTHER INFORMATION GO TO:

WWW.CDTS.FIOCRUZ.BR/INCT-IDN

In case the partnership between the INCTs INOFAR & IDN is successful, identifying a compound capable of inactivating the pathogenic gene of fungi, it will no longer be necessary to identify the fungus before treatment, because most fungi have this specific gene. This way, the partnership between INCTs may originate an innovative wide spectrum treatment to fight fungal infections.

For further details on the partnership, please go to the following article in the Drugs Portal: http://www.inct-inofar.ccs.ufrj.br/release_inct_idn.html

LAUNCH OF THE DOCKTHOR-LNCC/MCTI PORTAL

Developed by **INCT-INOFAR** associated researchers and from the National Laboratory of Scientific Computation (LNCC/MCTI), the DockThor portal was launched in July 2013. The portal is completely free to access, and it is the first in Brazil and the Southern Hemisphere dedicated to the evaluation of small ligand molecules. The Portal has a goal of reducing costs and optimizing the time of development for research in the discovery of new drugs in Brazil.

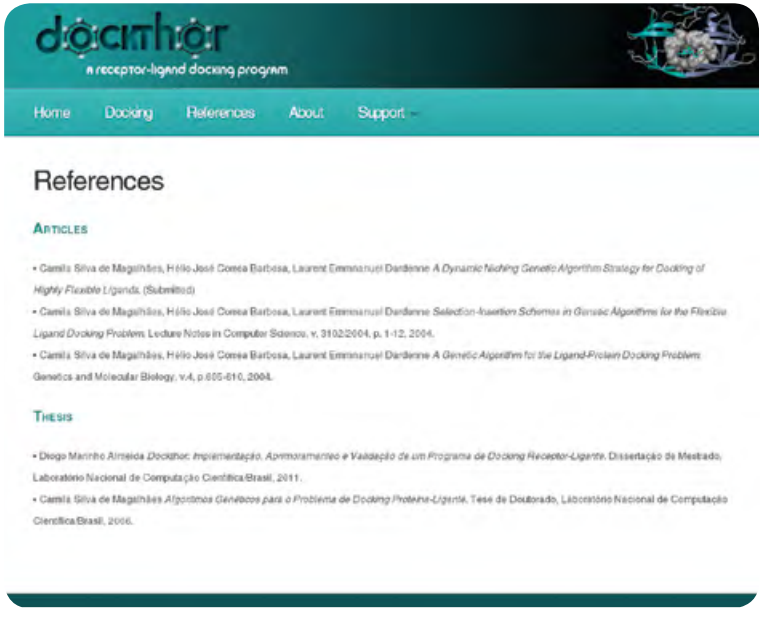
The DockThor portal allows that any researcher in computational biology simulate the interaction between a ligand molecule and a protein related to the disease being treated. The portal allows the automatic preparation of the protein and the ligand without the need for experts in molecular modelling.

The program uses a genetic algorithm to investigate several possibilities and predict the ligation mode and strength between the protein and the ligand. The stronger the affinity between two molecules, the more likely that the ligand molecule under study is a good candidate for the process of development of a new drug.

DOCKTHOR PORTAL:

HTTP://DOCKTHOR.LNCC.BR

2013 HIGHLIGHTS



To use the DockThor portal, the researcher needs only to send a file with information on the ligand molecule and the protein he or she wishes to research. When the simulation is done, the researcher can access the results through a specific link sent to his or her email. Usually, the results are sent to the users in less than 24 hours.

The program is then executed from the infrastructure provided by the National System of High Performance Processing (Sinapad), a network of high performance computing centers created by the Ministry of Science, Technology, and Innovation (MCTI), where the portal is hosted.

The DockThor portal project is supported by **INCT-INOFAR** and it is coordinated by Prof. Laurent Emmanuel Dardenne, expert in Biophysics from LNCC. In the future, the Portal will allow **INCT-INOFAR** researchers to have access to simulations with its database of ligands and with the target proteins used, in their specific studies for the development of drugs.

INCT-INOFAR RESEARCH INSPIRES EDITORIAL IN CLINICAL AND EXPERIMENTAL PHARMACOLOGY AND PHYSIOLOGY (CEPP)

"Antihyperalgesic effects of a novel muscarinic agonist (LASSBio-873) in spinal nerve ligation in rats"

Clinical and Experimental Pharmacology and Physiology (CEPP) 2013, 40, 404-411 (dói: 10.1111/1440-1681.12090)

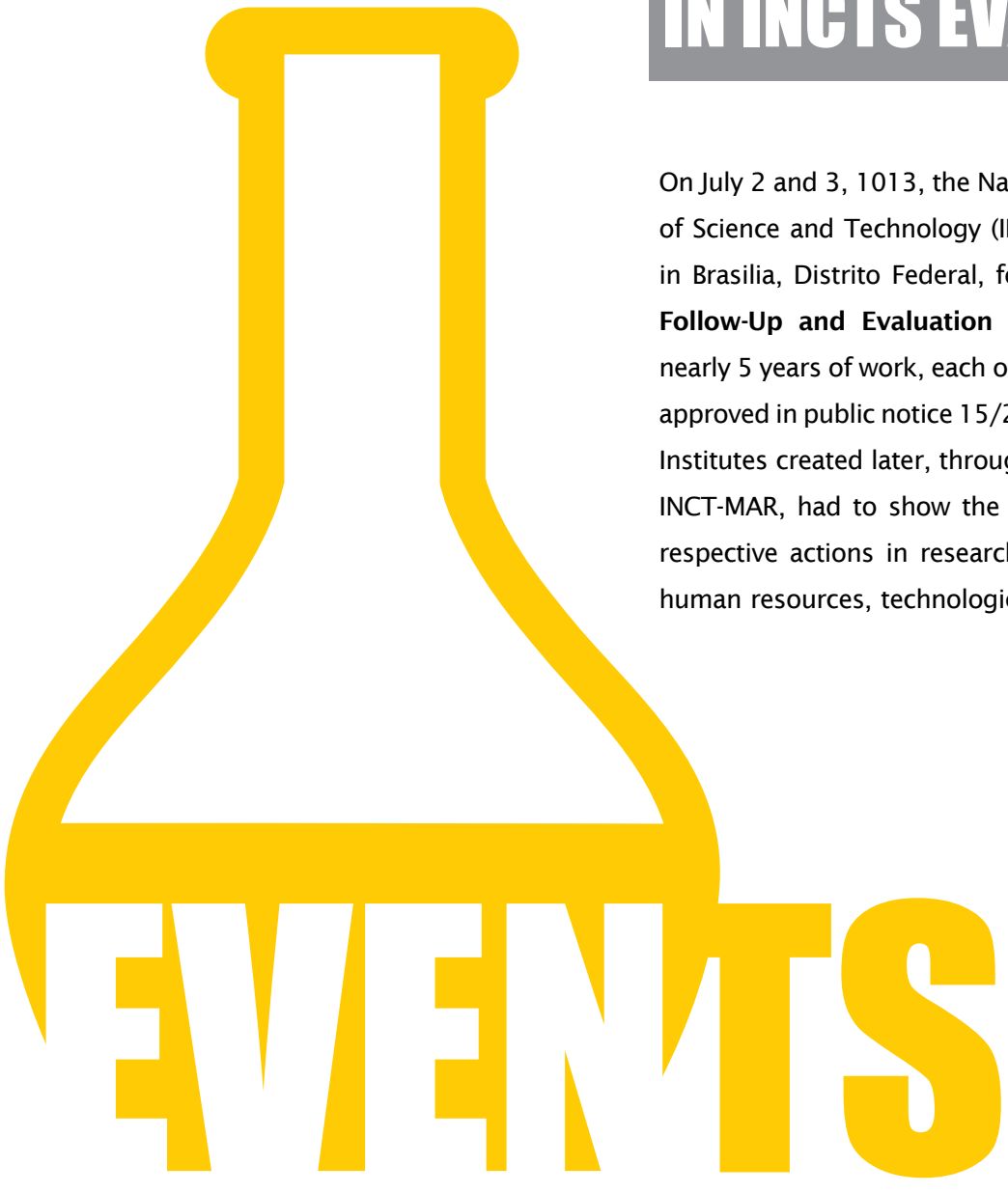
AUTHORS: Thaiana da Cunha Ferreira Mendes, Fernanda Antunes, Margarete Manhaes Trachez, Nailton Monteiro Nascimento Junior, Carlos Alberto Manssour Fraga, Eliezer J. Barreiro, Gisele Zapata-Sudo and Roberto Takashi Sudo.

The article *"Antihyperalgesic effects of a novel muscarinic agonist (LASSBio-873) in spinal nerve ligation in rats"*, produced by researchers associated to INCT-INOFAR of the Federal University of Rio de Janeiro (UFRJ), inspired an editorial published at the periodical *Clinical and Experimental Pharmacology and Physiology* (CEPP). The article and the editorial titled *"Muscarinic agonists in the treatment of neuropathic pain: a novel finding"* were published in July 2013, in volume 40 of the print version of CEPP. (doi: 10.1111/1440-1681.12090).

The article produced by **INCT-INOFAR** researchers deals with research to develop new drugs to fight neuropathic pain. The disease, which is caused by lesion or somatosensory nervous system diseases like diabetes, nervous compression and herpes, generally affects the quality of life of patients.

The current treatment for neuropathic pain is based on the use of antidepressants, anticonvulsives, and opioids, drugs associated with several side effects. The fact that most patients using combined therapeutics show no improvement of the pain situation has motivated the group of researchers to seek alternatives for the treatment of neuropathic pain.

The article led by professors Gisele Zapata-Sudo and Roberto Takashi Sudo shows improvement of neuropathic pain in an animal model through the activation of muscarine receptors. The presentation of the new substance in an alternative therapeutic target has piqued the interest of the editorial team to publicize the news to medical professionals.



INCT-INOFAR SURPRISES IN INCTS EVALUATION MEETING

On July 2 and 3, 1013, the National Institutes of Science and Technology (INCTs) gathered in Brasilia, Distrito Federal, for the **II INCTs Follow-Up and Evaluation Seminar**. After nearly 5 years of work, each of the 122 INCTs approved in public notice 15/2008, plus the 4 Institutes created later, through the so-called INCT-MAR, had to show the results of their respective actions in research, education of human resources, technological transfer and scientific awareness and promotion. **INCT-INOFAR** surprised the evaluators and the audience with its strong presence in each of the 4 areas evaluated.

CNPq promoted the II INCTs Follow-Up and Evaluation Seminar in partnership with the Center for Management and Strategic Studies (CGEE) of MCTI. The evaluation was conducted by an excellent team made up by national and foreign consultants. To assess the 126 INCTs, 11 theme groups were created, which dealt with 8 different breakthrough research areas in science and technology, in themes strategic for the sustainable development of the country. The event also had a booth area (hall and exposition) where representatives for each INCT could present promotion materials and interact with researchers from other Institutes.

The health sector represents today around 35% of the Brazilian scientific production, and this is reflected in the INCTs, where a third of the Institutes are in health. For the Secretary of Science, Technology and Strategic Materials of the Ministry of Health (MS), Carlos Gadelha, it is fundamental to put the knowledge developed in the INCTs at the service of the health system, so that the constitutional mandate is fulfilled. "*Science can help sustainability of incorporating new technologies to the [healthcare] system, which establishes universal, full, and equal access*" – observed the secretary.

In his opening speech at the event, Gadelha suggested another variable for the evaluation of INCTs: the contribution for the wider health policies: "*The scientific community must have the commitment of cooperating with the construction of a more solid and sustainable health system in the country.*" According to the Secretary, today the purchase of drugs represents over 10% of the Ministry of Health's budget.

INCT-INOFAR at the II INCTs Follow-Up and Evaluation Seminar: Eliezer J. Barreiro (Coordinator), Lidia Lima (Scientific Superintendent) and Ana Cristina da Mata (Secretary of Extension)

INCT-INOFAR SURPRISES IN INCTS EVALUATION MEETING

REVERSING THE "INDIAN PATHWAY"

Aware that Brazil has a deficient pharmaceutical industry and that it is extremely dependent on the importation of active principles, medications, and pharmacotechnical adjuvants, the National Institute of Science and Technology of Drugs and Medicines (**INCT-INOFAR**) makes efforts to revert the "Indian Pathway" of drugs in the country. With a mission to act in the discovery of new drugs and medicines and in the search for new synthetic routes for generics that have a large impact on the Brazilian trade balance, **INCT-INOFAR** helps build a more efficient health care system in the country.

To call attention to the need to develop public policy that encourages the production of Brazilian drugs, **INCT-INOFAR** researchers go public with the issue, providing criticism and suggesting solutions. Through the publication of editorials, the participation in debate forums, the publicizing of their discoveries in the press, among other actions, the Institute highlights the idea that, without a strong national pharmachemical and pharmaceutical industry, that is capable of establishing partnerships for the primary scaling of molecules discovered in academia, Brazil will hardly be able to develop a fully national drug, and will remain dependent on importation.

According to the speech by the president of the Coordination for Improvement of Higher Education Personnel (CAPES), Jorge Guimaraes, one of the largest contributions by INCTs was the development of the new graduate courses focused on the networks. Considering that there is no way to make a truly national drug available compatible with the main health demands of our population without good Medicinal Chemistry professionals, **INCT-INOFAR** researchers have helped created, at the Institute of Biomedical Sciences in the Federal University of Rio de Janeiro (UFRJ), a new graduate course in Latin America, that combines Pharmacology and Medicinal Chemistry.

OPENING CEREMONY OF THE II INCTS FOLLOW-UP AND EVALUATION SEMINAR, IN BRASILIA

INCT-INOFAR SURPRISES IN INCTS EVALUATION MEETING

INCT-INOFAR INSPIRING FELLOW INCTS

Out of the 126 INCTs, 38 are health focused. To make the evaluation logistics easier, the Health INCTs were divided in 3 groups. Each Institute had the challenge of, in thirty minutes, presenting the result of their actions in four areas of equal importance in the evaluation: research, education of human resources, transfer of technology, and scientific awareness and promotion.

INCT-INOFAR was part of the 3rd Health Group, and was evaluated by Dr. Osvaldo Yantorno of the *Universidad Nacional de La Plata*, by Dr. Walter Colli of the University of Sao Paulo (USP) and by Dr. Paola Minoprio of the *Institut Pasteur de Paris*. Impressed by the graphic quality of the Annual Activities Report that she received previously to evaluate, Paola Minoprio made sure to visit the **INCT-INOFAR** booth. At the occasion, the evaluator from the *Institut Pasteur* in Paris was surprised by the diversity of actions in scientific awareness and health education and complimented the Institute thusly:

> **"It is really exemplary work that INCT-INOFAR has developed throughout the years. Beside scientific research at the highest level, the Institute also carries out activities in schools, making children look at science making"**
>
> **Dr. Paola Minoprio**
> ***Institut Pasteur de Paris***

At her visit to the **INCT-INOFAR** booth, the evaluator took home the full kit of **INCT-INOFAR** scientific awareness materials. With a stylized Brazilian flag on the cover to remind everyone of the importance of the work towards a national medication, the **INCT-INOFAR** kit had, among other materials, the digital content of four annual reports produced by the Institute, from 2009 to 2012, and a catalog with the summarized portfolio of **INCT-INOFAR** actions in science promotion.

When questioned by the evaluator and by other INCT representatives about the secret to developing so many projects at once, both in scientific research and in science promotion, the **INCT-INOFAR** coordinator explained that this is only possible due to team work.

"*Having qualified professionals in their respective areas to carry out each action is fundamental. To support the multidisciplinary work of **INCT-INOFAR** researchers, we have administrators, educators, and journalists.*" - observed Barreiro, who was happy to know that coordinators of other INCTs look up to **INCT-INOFAR** for inspiration, to develop better work with each passing day.

INCT-INOFAR in the spotlight: Prof. Eliezer J. Barreiro (coordinator) presents the Institute to three evaluators

Ana Carla dos Santos (Executive Secretary) and Ana Cristina da Mata (Secretary of Extension) at the INCT-INOFAR booth at the II INCTs Follow-Up and Evaluation Seminar

EVENTS

INCT-INOFAR FOLLOW-UP AND EVALUATION EVENTS

INCT-INOFAR organizes, from time to time, internal follow-up and evaluation events with the goal of strengthening scientific cooperation among its research network, and to discuss internally the results achieved by their subprojects that are most advanced in the chain of innovation in drugs and medicines.

In 2013, **INCT-INOFAR** organized two internal events, with the VII **INCT-INOFAR** Follow-Up and Evaluation Workshop taking place in the first half of the year, and the **INCT-INOFAR** Strategic Planning Meeting on the second half of 2013.

VII INCT-INOFAR FOLLOW-UP AND EVALUATION WORKSHOP

With an innovative format that had consultants for each theme block, the VII **INCT-INOFAR** Follow-Up and Evaluation Workshop (VII WSAA) took place in Rio de Janeiro, on April 24 and 25, 2013. The first day of the event dealt with the results of incremental innovation, especially those related to generic drugs, and with the results of radical innovation projects referring to new candidates for leishmanicidal and antipsychotic drugs. Anti-inflammatory, antihypertensive, and pharmaceutical candidates for the treatment of diabetes were presented on the second day of the event.

In the dynamic planned for the **INCT-INOFAR** Follow-Up and Evaluation event, after the presentation of each research project, **INCT-INOFAR** external consultants had the floor so they could add their considerations. At the VII WSAA, **INCT-INOFAR** had the cooperation of 05 external consultants and the moderation of members of the **INCT-INOFAR** Managing and Evaluation Committee (CGA).

EXTERNAL CONSULTANTS

Prof. Frederico Guilherme Graeff (USP-RP) CV lattes

Prof. Giles Alexander Rae (UFSC) CV lattes

Prof. Hugo C. Castro Neto (Fiocruz-RJ) CV lattes

Prof. Manoel Barral (UFBA) CV lattes

Prof. Vitor F. Ferreira (UFF) CV Lattes

INCT-INOFAR STRATEGIC PLANNING MEETING

With a goal of evaluating the research and education trajectory of **INCT-INOFAR** and of establishing new goals for the future, the Institute gathered the leaders of its research network on August 12, 2013 in its headquarters at the Federal University of Rio de Janeiro (UFRJ). Prior to the **INCT-INOFAR** Strategic Planning Meeting, the 20th Managing and Evaluation Committee meeting took place.

Around 30 researchers, leaders of research laboratories associated to **INCT-INOFAR** of different Science and Technology Institutions in Brazil took part in the Strategic Planning Meeting. For the first time, representatives from the Financial, Executive, and Extension Secretaries were able to formally present their work routines to Institute researchers, who were surprised by the many tasks undertaken by the three secretaries to make the **INCT-INOFAR** machine work.

Continuing the presentations, the Scientific Superintendence talked about their strategic job in the Institute, of being the bridge between the associated researchers and the **INCT-INOFAR** coordinator, as well as between the CGA. For Prof. Lidia M. Lima (UFRJ), responsible for the area, as well as keeping up with the scientific production of members of the Institute, one of the main jobs performed by the Scientific Superintendence is to try to standardize the scientific language so that all areas can understand one another, considering that **INOFAR** is a hybrid INCT, with multidisciplinary research.

During the event, the floor was open to the associated researchers so that they can balance the positive and negative aspects of **INCT-INOFAR**, from its creation. It is expected that this collective brainstorm, promoted and encouraged by the coordination at this Strategic Planning Meeting, is the basis for the construction of a future project for the new INCT public notice, focused on the excellence of the **INCT-INOFAR** research network.

The INCT-INOFAR Strategic Planning Meeting was carried out at UFRJ

PROMOTION AND PARTICIPATION IN EVENTS

As a part of its institutional routine, **INCT-INOFAR** organizes, promotes, supports and takes part in events in their research area dealing with innovation in drugs and medicines. A form of actively contributing to the diffusion of knowledge in the academic-scientific community, cooperating for Brazil to improve its human resources and to advance in studies for new medications.

Periodically, **INCT-INOFAR** researchers take part in Congresses, Meetings, Seminars, Symposiums, and Workshops, teaching courses, lecturing at conferences, being part of round tables, among other activities. Parallel to these actions, **INCT-INOFAR** also supports courses and conferences on drugs and medicines. Always mindful of the importance of partnerships, **INCT-INOFAR** also invests in events that have the cooperation of companies, NGOs, and other institutions.

EVENTS

XIX SUMMER SCHOOL IN MEDICINAL PHARMACEUTICAL CHEMISTRY

http://www.evqfm.com.br/xix_evqfm/

Traditionally organized by the Laboratory of Evaluation and Synthesis of Bioactive Substances (LASSBio™), the Summer School in Medicinal Pharmaceutical Chemistry (EVQFM) has been incorporated to **INCT-INOFAR** as an extension activity. The event, which always takes place at UFRJ during the summer school vacation, offers 5 consecutive days of courses and conferences with renowned national and foreign experts in the field of Medicinal Pharmaceutical Chemistry. In 2013, from March 18 to March 22, the event took place for the 19th year in a row.

Since its creation, in 1995, the School has had over 2,800 participants from different parts of the country and abroad, and has received celebrity scientists, responsible for the development of innovative medications, who have personally recounted their discoveries.

Planned to deal with a multidisciplinarity and interdisciplinarity of topics, the XIX Summer School presented 06 courses, with 01 of them being a tutorial, and 05 conferences on topics related to Medicinal Pharmaceutical Chemistry. At the press coverage for the 2013 edition, as well as daily reports, special reports on each of the five conferences were published.

XIX SUMMER SCHOOL IN MEDICINAL PHARMACEUTICAL CHEMISTRY

XIX EVQF COURSES

Introduction to Medicinal Pharmaceutical Chemistry
Prof. Dr. Eliezer J. Barreiro (LASSBio/UFRJ)

Drug Metabolism and Medication Interactions
Prof. Dr. Lidia Lima (LASSBio/UFRJ)

Highlights in Medicinal Chemistry
Prof. Bruce Cassels (University of Chile)

Principles of Pharmacology
Prof. Bagnolia Araujo (UFPB)

Contribution of Subtle Structural Effects in the Discovery of Drugs
Prof. Carlos Alberto Manssour Fraga (LASSBio/UFRJ)

Tutorial: Computational Chemistry and Molecular Modelling
Prof. Nelilma Romeiro (UFRJ) and
Prof. Carlos Mauricio Sant'Anna (UFRRJ)

XIX EVQFM CONFERENCES

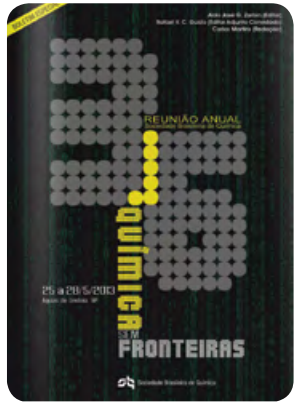
"Halogen Bonds in Medicinal Chemistry"
Prof. Bruce Cassels (University of Chile)

"Opportunities for innovation in drugs and medicines: INCT-INOFAR"
Prof. Dr. Eliezer J. Barreiro (LASSBio/ UFRJ)

"Challenges and Opportunities in the Development of New Chemotherapeutic Drugs: LASSBio Contributions"
Prof. Dr. Lidia Lima (LASSBio/UFRJ)

"Approaches of Inorganic Chemistry for the development of new anti-Alzheimer drugs"
Prof. Heloisa Beraldo (LASSBio/UFRJ)

"Opportunity for the development of a new analgesic"
Prof. Thiago Mattar Cunha (LASSBio/UFRJ)



http://www.sbq.org.br/36ra/

36TH ANNUAL MEETING OF THE BRAZILIAN SOCIETY OF CHEMISTRY

Helping enrich the discussions in the realm of Chemistry aimed at the development of new drugs and medicines, **INCT-INOFAR** took part of the 36th Annual Meeting of the Brazilian Society of Chemistry (RASBQ). The event took place from May 25 to 28 in the city of Aguas de Lindoia in Sao Paulo.

At the event, considered the largest Chemistry event in Latin America, **INCT-INOFAR** researchers were highlighted in the scientific programming. As well as giving lectures in theme sessions and panels, **INCT-INOFAR** was also present at the 36th RASBQ Fair.

Those who had the opportunity of visiting the booth were able to see and be surprised by the work done by **INCT-INOFAR** in the search for new synthetic routes to achieve generic drugs, as well as having the opportunity to take home a kit with the Scientific Awareness & Health Education published by **INCT-INOFAR**. Around 400 people visited the Institute's booth during the three days of the 36th RASBQ fair. With very important visitors like the President of the Brazilian Society of Chemistry (SBQ), Prof. Vitor Francisco Ferreira, among several other professionals, like the President of the American Chemical Society (ACS, Washington, USA), Dr. Marinda Li Wu.

36TH ANNUAL MEETING BRAZILIAN SOCIETY OF CHEMISTRY

INCT-INOFAR booth
at the 36th RASBQ

INCT-INOFAR IN THE SCIENTIFIC PROGRAMMING

Prof. Claudio Viegas Junior (UNIFAL-MG)
Presented a lecture at the "New Frontiers in the identification, synthesis and evaluation of bioactive molecules" Workshop.

Prof. Carlos Maurício Rabello de Sant'Anna (UFRRJ)
Coordinated the Session "Biological Chemistry/Medicinal Chemistry"

Prof. Lidia Moreira Lima (LASSBio-UFRJ)
Presented a paper at Session "Biological Chemistry/Medicinal Chemistry"

Doctoral Candidate Marina Amaral Alves (IQ, LASSBio - UFRJ)
Presented a paper at Session "Biological Chemistry/Medicinal Chemistry"

Prof. Carlos Alberto Manssour Fraga (UFRJ)
Prof. Vanderlan da Silva Bolzani (UNESP)
Coordinators of Theme Session "Translational research in the development of drugs and medicines"

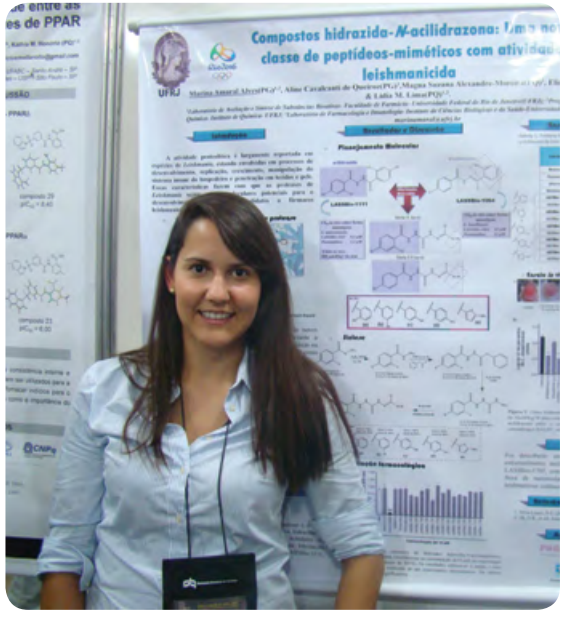
Prof. Marco Aurelio Martins (FIOCRUZ)
Presented a paper at Theme Session "Translational research in the development of drugs and medicines"

36TH ANNUAL MEETING BRAZILIAN SOCIETY OF CHEMISTRY

INCT-INOFAR PANELS ARE AWARDED AT 36TH RASBQ

INCT-INOFAR had two displays awarded by the Chemistry Division in the 36th RASBQ. Both works were advised by Prof. Lidia M. Lima of LASSBio/ UFRJ and dealt with research to reach new therapeutic alternatives that are safe and effective for the treatment of neglected diseases, in particular Leishmaniasis, and the treatment of chronic pulmonary obstructive disease and asthma. The authors of the work are respectively doctoral candidate Marina Amaral Alves of the Graduate School in Chemistry (IQ-UFRJ) and Dr. Isabelle Nunes of the Graduate School in Pharmacology and Medicinal Chemistry (ICB-UFRJ).

LASSBio®
Laboratório de Avaliação e Síntese de Substâncias Bioativas



MARINA AMARAL ALVES (UFRJ)

"Hydrazide-N-acylhydrazone compounds: a new class of peptide-mimetic with leishmanicidal activity."

Alves, M. A. (PG); Queiroz, A. C. (PG); Alexandre-Moreira, M. S. (PQ); Barreiro, E. J. (PQ); Lima, L. M. (PQ) - UFRJ

ISABELLE NUNES (UFRJ)

"LASSBio-1632: new PDE4 inhibitor prototype"

Nunes, I. K. da C. (PG); de Souza, E. T. (PG); Martins, M. A. (PQ); Silva, P. M. R. (PQ); Barreiro, E. J. (PQ); Lima, L. M. (PQ) - UFRJ.

7TH ENIFarMed

INCT-INOFAR took part, on August 20 and 21, 2013, of the seventh edition of the National Meeting in Innovation in Drugs and Medicines (7th ENIFarMed). ENIFarMed is a consolidated forum to encourage interaction between professionals in Research, Development and Innovation in companies in the production chain of the pharmaceutical sectors with researchers in Institutes of Science and Technology (ICTs) and Universities. The event gathered academia, industry, and representatives of government agencies to discover a common agenda for the advancement of technological innovation in drugs and medicines in Brazil.

With a goal of developing the projects under study in its network of research in drugs and medicines, as well as getting closer to the productive sector and government agencies, **INCT-INOFAR** was part of the 5th ExpoFarMed, a business fair connected to the 7th ENIFarMed. With a green and yellow booth, the Institute called attention to the importance of investing in the Brazilian scientific expertise, so that Brazil can start producing drugs with genuinely national technology. This was the Institute's third time at the ENIFarMed business fair.

7TH ENIFarMed

INCT-INOFAR IS AWARDED 3 TIMES AT THE 7TH ENIFARMED

INCT-INOFAR had a booth at the 7th ENIFarMed business fair

Three **INCT-INOFAR** research projects were awarded the Technical Recognition Prize promoted by the event. The winners of the first and third places focused on incremental innovation, presenting the development of new synthetic routes for the production of generic versions of drugs that have a high impact on the Public Health Care System (SUS) and on the Brazilian trade balance. The research awarded the 4th place was about radical innovation, dealing with an innovative molecule for the treatment of severe asthma, chronic obstructive pulmonary disease, and silicosis.

Among the criteria for the selection of the winners of the Technical Recognition Prize at the 7th ENIFarMed were the adequacy of the project to the market focus; conceptual and practical basing, related to incremental innovation or to invention, and social relevance of the theme.

Authored by Prof. Dr. Barbara Vasconcellos da Silva and by Prof. Dr. Angelo da Cunha Pinto from the Institute of Chemistry of UFRJ, the research "Synthesis of Sunitinib" was awarded the first place at the Technical Recognition Award at the 7th ENIFarMed. The work awarded summarizes the efforts of **INCT-INOFAR** in the discovery of a new synthetic route for sunitinib (Sutent®), a high cost medication for fighting kidney, stomach, and intestinal caners.

Under the supervision of Prof. Dr. Luiz Carlos Dias, of the Institute of Chemistry of UNICAMP, the synthetic methodology developed by Dr. Adriano Siqueira for the "Total synthesis of fluoxetine chloridate" is an innovative method to obtain the generic for Prozac®. The research developed at **INCT-INOFAR** received the 3rd place at the 7th ENIFarMed Technical Recognition Award.

Making efforts in radical innovation, Dr. Isabelle Karine da Costa Nunes, advised by Prof. Dr. Lidia Moreira Lima of the Laboratory for Evaluation of Bioactive Substances (LASSBio) of UFRJ, has dedicated part of her doctoral thesis to the research "LASSBio-1632: a new PDE4 inhibitor prototype". The study in question received the 4th place at the Technical Recognition Award and it represents a therapeutic hope for patients with severe asthma, silicosis, and chronic obstructive pulmonary disease.

INCT-INOFAR also took part of the 7th ENIFarMed during the theme session "Innovation in Chemical Synthesis", being represented by its coordinator, Prof. Dr. Eliezer J. Barreiro (UFRJ).

7TH ENIFarMed

BARBARA VASCONCELLOS – 1ST PLACE

ADRIANO SIQUEIRA – 3RD PLACE

ISABELLE NUNES – 4TH PLACE

TRIPLE CELEBRATION FOR INCT-INOFAR IN THE 7TH ENIFARMED

EVENTS

EVALUATION OF THE BRAZILIAN PHARMACHEMICAL SECTOR: TECHNOLOGICAL AND PRODUCTIVE QUALIFICATION

The National Health Surveillance Agency (ANVISA), in partnership with the Oswaldo Cruz Foundation (Fiocruz) and the Secretary of Science and Technology of the Ministry of Health promoted, on October 09, 2013, in Brasilia, the seminar Evaluation of the Brazilian Pharmachemical Sector: Technological and Productive Qualification". **INCT-INOFAR** was part of the event, being represented by its Scientific Superintendent, Prof. Dr. Lidia Moreira Lima.

At the opening table, the vice-president of Production and Innovation in Health, Jorge Bermudez, presented the results of the study carried out on the technological and productive capacity of the Brazilian pharmachemical. Out of the 36 companies present in Brazil and visited by researchers, 23 have an actual pharmachemical profile. Out of these, 89% are of fully national capital 4% are of mixed capital, and 7% are multinational.

According to the study, titled “Evaluation of the Brazilian pharmachemical productive sector – technological and productive capacity”, and which represents the 2nd census of the Brazilian pharmachemical industry, there was a small retraction in the work force when compared to the previous evaluation of the sector, referent to years 2004-2007, in spite of the increase in specialization. The hiring of qualified personnel at a graduate level made up around 7% of company employees.

The study produced by Fiocruz came up with a diagnosis of the Brazilian pharmachemical industry and showed that, in spite of the country having doubled the production of synthetic drugs since 2006, from 760 to 1,318 tons/year in 2011, it still produces less than 1% of the imported quantity (173 thousand tons/year). The importance of Brazil taking charge of the production of active principles for drugs was highlighted by Jorge Bermudez at the event.

According to Bermudez, the report generated shows that local pharmachemical companies, mostly located at the Southeast region, have a low degree of innovation, primarily producing IFAs (i.e. active pharmaceutical raw materials) of synthetic origin, based on non-complex chemical transformations. Although, the data gathered indicates availability for verticalization, the sector needs efforts made in that direction.

Among the frailties pointed out by the study are the lack of investment to consolidate production of oncological drugs, the need to increase the production of drugs for cardiovascular diseases, neglected diseases, and central nervous system diseases, and the lack of production of raw materials for antibiotics.

EVENTS

Chosen to host the XIV Regional Meeting of the Brazilian Society of Chemistry – Rio de Janeiro (SBQ-Rio), Federal Fluminense University (UFF) was the stage to discuss teaching and research in Chemistry in the state of Rio de Janeiro. The event took place in the city of Niteroi – RJ, between December 02 and December 05, 2013, and was supported by **INCT-INOFAR**.

To award personalities that have provided a unique contribution to the development of Chemistry in Brazil, the Walter B. Mors award and the Virtual Chemistry Magazine (RVq) were delivered during the opening ceremony of the XIV Regional SBQ-Rio Meeting.

XIV REGIONAL SBQ-RIO MEETING

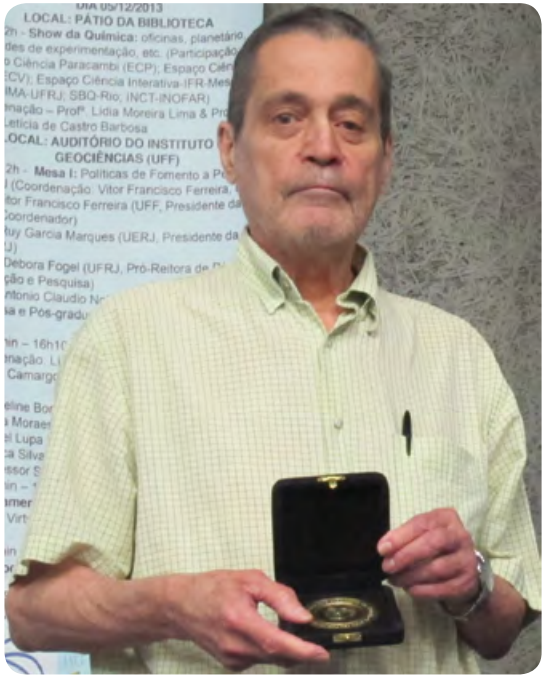
http://www.uff.br/sbqrio/xiv_ersbq/index.html

WALTER BAPTIST MORS MEDAL

Ricardo Bicca de Alencastro, Full Professor and Professor Emeritus at UFRJ, was awarded the Walter Baptist Mors Medal. Prof. Bicca was a pioneer in paving the construction of knowledge of computational Chemistry, particularly the molecular modeling of drugs, at UFRJ. This area of knowledge has recently had its importance recognized by humankind by the Nobel Prize in Chemistry 2013, awarded to the team of researchers Martin Karplus, Michael Levitt and Arieh Warshel.

Pointed out as one of the most active members of the Brazilian Society of Chemistry (SBQ) since its creation, Bicca has already served as elected director of the Rio Regional and of the Division of Medicinal Chemistry for SBQ. In 1999, Bicca became a Full Professor at UFRJ and recently he was elevated to Professor Emeritus at UFRJ.

The Virtual Chemistry Magazine (**RVq**) was created by SBQ-Rio in 2009. It is a non-profit electronic publication that has as its mark the publication of original works in Chemistry from the Latin American continent. Created in 2011, the RVq Medal, in 2013, was awarded to Professor Oswaldo Luiz Alves of the Institute of Chemistry of Unicamp.



Prof. Ricardo Bicca de Alencastro

RVq MEDAL

Being the president of SBQ during a difficult moment, where Brazil faced a serious crisis in Science investments, Professor Oswaldo Luiz Alves had a strong leadership and an entrepreneurial spirit. It was during his management that the idea for the creation of SBQ Publishing came about. As a legacy for the Institution, he left all his steps as president of SBQ recorded in a book. Awarded with the RVq Medal for his important contributions to Chemistry in Brazil, the Unicamp professor received the "challenge" of speaking at the opening conference for the event, titled "Chemistry and the XXI Century".

During the days of the XIV Regional SBQ-Rio Meeting, INCT-INOFAR was present at the exposition fair of the event, publicizing its actions of Science promotion and health education.

Prof. Oswaldo Luiz Alves and Eliezer J. Barreiro

"SCIENCE, TECHNOLOGY, AND INNOVATION AT SUS – INTEGRATION BETWEEN SCIENTIFIC KNOWLEDGE AND HEALTH POLICIES" MEETING

At the invitation of the Director of the Department of Science and Technology of the Ministry of Health (DECIT/SCTIE/MS), **INCT-INOFAR** members were present on December 03 and 04, 2013, at the International Convention Center for Brazil – Brasilia, at the Meeting: "Science, Technology, and Innovation at SUS – Integration between Scientific Knowledge and Health Policies". The event had the participation of great names of the scientific community and of managers connected to the field of Public Health Care.

As goals for this Meeting, the following actions were listed: Discussing structures and institutional processes to support the use of scientific knowledge for decision making at SUS; encouraging the culture of production and use of scientific knowledge in health policy; defining priority themes for the fostering of health research; and identifying and promoting innovation and successful management practices for the use of scientific knowledge at SUS.

The motto at this innovation event, according to the Secretary of Science and Technology and Strategic Raw Materials for the Ministry of Health (SCTIE/MS), Dr. Carlos Augusto Grabois Gadelha. However, as he himself emphasized at his opening speech, this innovation is not limited to trying to find new ways of doing things; it requires special attention to the priority needs for the advancement of Public Health. He also highlighted that the importance of advancing in all fields, from scientific studies to their applicability, so that the knowledge is not only generated, but also properly used.

EVENTS

In a meeting with several activities and extensive programming, **INCT-INOFAR** was one of the 10 INCTs invited to have a booth at the event. At the area designated for the Institute, **INCT-INOFAR** was able to show the results of its research and innovation actions, as well as a summary of its actions in Scientific Awareness and Popularization of Science.

The audience who visited the booth was able to take home a portfolio folder with information on the **INCT-INOFAR** research network and the health education materials developed by their researchers for activities in schools and at the community at large.

Prof. Carlos Alberto Manssour Fraga (INCT-INOFAR) and
Prof. Antônio Carlos Campos de Carvalho, DECIT/MS Director

INCT-INOFAR DELIVERS DOCTOR SERGIO HENRIQUE FERREIRA AWARD FOR THE BEST THESIS

As a result of the effort of **INCT-INOFAR** associate researchers, a new graduate program in Latin America that combines Pharmacology and Medicinal Chemistry, was created at the Institute of Biomedical Sciences (ICB) at the Federal University of Rio de Janeiro (UFRJ). With a goal of celebrating the best thesis of 2013 in this Program, **INCT-INOFAR** created the Doctor Sergio Henrique Ferreira Award for the Best Doctoral Thesis in the Graduate Program in Pharmacology and Medicinal Chemistry (PPGFQM/UFRJ).

The awards ceremony took place on December 19, 2013, at the Pharmacology Auditorium at the Center for Health Sciences (CCS) at UFRJ. Before the announcement of the awarded thesis, Prof. Ângelo da Cunha Pinto (IQ/UFRJ), who was also part of the judging panel for the award, presented the lecture “Brazil of travelers and Brazilian Chemistry of Natural Products”. At the occasion, Prof. Cunha Pinto was honored for his scientific history.

EVENTS

Prof. Angelo da Cunha Pinto was a lecturer at the ceremony for the Dr. Sergio Henrique Ferreira Award for Best Doctoral Thesis

In 2013, the Award for the Best Thesis went to Dr. Arianne Renno Brogliato. Advised by Prof. Claudia Farias Benjamim (ICB, UFRJ), the new Doctor was awarded with the thesis titled "Evaluation of the participation of the 5-LO way in the healing of wounds and the implications for oxidative stress". In her graduate studies, Dr. Brogliato had the opportunity to take part in academic exchange at the *University of South Florida*, being advised by Prof. Lisa Goud while in the United States. The researcher received a CAPES scholarship to develop her doctorate at ICB/UFRJ.

With experience in experimental models of sepsis and healing of cutaneous wounds in mice, Dr. Arianne Brogliato dedicates herself to Immunopharmacology and develops research in projects that mainly involve sepsis, inflammation, and tissue repair.

DR. SERGIO HENRIQUE FERREIRA AWARD

BEST THESIS

THESIS: "Evaluation of the participation of the 5-LO way in the healing of wounds and the implications for oxidative stress"

AUTHOR: Arianne Renno Brogliato

ADVISOR: Prof. Claudia Farias Benjamim

INSTITUTION: Graduate Program in Pharmacology and Medicinal Chemistry (ICB/UFRJ)

EVENTS WHERE INCT

DECEMBER 03 TO 06, 2013

XIV REGIONAL MEETING OF THE BRAZILIAN SOCIETY OF CHEMISTRY
Federal Fluminense University – RJ
Lecture: "New trends in drugs discovery"
Mini-course: "Science Writing"

DECEMBER 09, 2013

I SCIENCE MEETING OF THE DIRECTOR OF METROLOGY APPLIED TO LIFE SCIENCES (DIMAV)
National Institute of Metrology, Quality, and Technology
Lecture: "The National Institute of Science and Technology in Drugs and Medicines (INCT-INOFAR): opportunities for drug innovation"

NOVEMBER 27 TO 29, 2013

V MEETING OF THE GRADUATE PROGRAM IN PHARMACEUTICAL SCIENCES AT UFRGS
Federal University of Rio Grande do Sul – Porto Alegre – RS
Lecture: "New trends in drugs discovery for treatment of multifactorial diseases"

NOVEMBER 13, 2013

GREATER DOURADOS UNIVERSITY CENTER UNIGRAN – Dourados – MS
Lecture: "Drug Planning"

NOVEMBER 06 AND 07, 2013

III ACADEMIC EXPO OF THE RORAINOPOLIS CAMPUS
State University of Roraima – Rorainopolis Campus – RR
Mini-course: "The creation and the value of scientific knowledge"
Lecture: "The efficiency of science in the construction of critical consciousness"

OCTOBER 30, 2013

45TH BRAZILIAN CONGRESS OF PHARMACOLOGY AND EXPERIMENTAL THERAPEUTIC
Ribeirao Preto Convention Center – SP
Lecture: " INCT-INOFAR: A Brazilian network for drug discovery, design & development"

OCTOBER 22 TO 27, 2013

NATIONAL SCIENCE AND TECHNOLOGY WEEK
"INCT-INOFAR at the Vessels circuit"

OCTOBER 11, 2013

"DRUG DISCOVERY MEETING" SEMINAR
National Public Health School – FIOCRUZ – RJ

INOFAR WAS PRESENT*

OCTOBER 10 TO 12, 2013

III FAPERJ FAIR OF SCIENCE, TECHNOLOGY, AND INNOVATION
Cultural Center for Citizenship Action – Rio de Janeiro – RJ
INCT-INOFAR Booth

OCTOBER 08, 2013

110 YEARS OF THE FACULTY OF PHARMACEUTICAL SCIENCES
Federal University of Paraiba – PB
Master Lecture: "Pharmaceutical Sciences: research and development of drugs in Brazil"

OCTOBER 06, 2013

XVII SAO PAULO CONGRESS OF PHARMACEUTICALS
Transamerica Hotel Expo Center – Sao Paulo – SP
Round Table: "Development of drugs: interactions between University and the productive sector"

SEPTEMBER 24, 2013

I IBEROAMERICAN SYMPOSIUM OF CANCER INVESTIGATION
Federal University of Campinas – Campinas – SP
Round Table: " New aspects of cancer therapy: multitarget pharmaceuticals"

SEPTEMBER 21, 2013

IV SYMPOSIUM IN MEDICINAL PLANTS IN THE SAO FRANCISCO VALLEY
Federal University of the Sao Francisco Valley – Juazeiro – BA
Lecture: " INCT-INOFAR and Medicinal Chemistry"

AUGUST 20 AND 21, 2013

7TH NATIONAL MEETING IN INNOVATION IN DRUGS AND MEDICINES (ENIFARMED)
Reboucas Convention Center – Sao Paulo – SP
INCT-INOFAR Booth

AUGUST 15, 2013

ACADEMIC PHARMACY WEEK
State University of Campinas – Campinas – SP
Lecture: "Opportunities in drug innovation: INCT-INOFAR"

JULY 24, 2013

III INTERNATIONAL SYMPOSIUM ON DRUG DISCOVERY
Araraqua International Convention Center - SP
Lecture: "Challenges on Drug Discovery"

JULY 22, 2013

65TH ANNUAL MEETING OF THE BRAZILIAN SOCIETY FOR THE PROGRESS OF SCIENCE
Federal University of Pernambuco – UFPE – Recife Campus - PE
Lecture: "New opportunities for Innovation in Pharmaceuticals"

EVENTS WHERE INCT

JULY 01 TO 04, 2013

2ND INCTS FOLLOW-UP AND EVALUATION SEMINAR
Hotel Royal Tulip Brasilia - DF
Lecture: "INCT-INOFAR"

JUNE 17, 2013

20 YEARS OF THE BACHELOR IN PHARMACY COURSE - UNIVALI
University of Itajai Valley - UNIVALI
Lecture: "The effect of methyl in the action of drugs"

JUNE 07, 2013

V IBEROAMERICAN CONGRESS OF PHARMACEUTICAL SCIENCES
Hotel Nacional – Brasilia – DF
Theme Session: "Innovation and Intellectual Property in Pharmaceutical Research"

JUNE 04, 2013

NUPEM LECTURE CYCLE
NUPEM – UFRJ – MACAE CAMPUS - RJ
Lecture: "The Process of Discovery in the Invention of Drugs"

MAY 24 TO 28, 2013

36TH ANNUAL MEETING OF THE BRAZILIAN SOCIETY OF CHEMISTRY
Hotel Monte Real Resort – Aguas de Lindoia - SP

MAY 13, 2013

CYCLE OF LECTURES: "FRONTIERS OF CHEMISTRY RESEARCH"
Department of Chemistry at PUC- Rio de Janeiro - RJ
Conference: "The National Institute of Science and Technology in Drugs and Medicines (INCT-INOFAR): opportunities and innovation in drugs."

FROM MAY 06 TO 10, 2013

II EDUCATION AND SCIENCE MEETING
State University of Roraima - Boa Vista – Roraima
Conference: "The efficiency of science in the construction of a critical conscience"
Mini-course: The Creation and the Value of Scientific Knowledge

MARCH 08, 2013

WORKSHOP "THE CONTRIBUTIONS OF PROF. TIMOTHY J. BROCKSOM TO ORGANIC SYNTHESIS IN BRAZIL"
Federal University of Sao Carlos – UFSCar - SP
Lecture: "The incredible feats of methyl in Medicinal Chemistry"

INOFAR WAS PRESENT*

FEBRUARY 27 TO MARCH 01, 2013

XII NATIONAL MEETING OF PHARMACEUTICAL CHEMISTRY PROFESSORS

Papillon Hotel – Setor Oeste – Goiania - GO

Lecture: "The adventures of methyl in Medicinal Chemistry".

*through the presence of its coordinator, Eliezer J. Barreiro (LASSBio/UFRJ).

OUTREACH ACTIVITIES

SCIENTIFIC AWARENESS AND PROMOTION

Parallel to the research developed at the laboratory, **INCT-INOFAR** coordinates several Scientific Awareness & Health Education initiatives, for believing that the promotion and popularization of Science, Technology, and Innovation represent an important factor in the construction of the critical evaluation of the contemporary globalized world.

Aware of the potential of children to multiply the knowledge acquired to their friends and family, **INCT-INOFAR** invests in Health Education initiatives that try to make young people aware of the rational and safe use of drugs.

Periodically, **INCT-INOFAR** produces new scientific awareness content in the area of health and produces educational materials focused on the right use of drugs. By cooperating to publicize scientific knowledge inherent to Pharmaceutical Sciences, **INCT-INOFAR** allows that new vocations are displayed in the youth, including those that are unrelated to their family experiences.

SCIENTIFIC AWARENESS AND PROMOTION

With the responsibility of making the **INCT-INOFAR** Health Education projects spread, taking the discussion on the correct use of medications to schools, the Secretary of Extension acts with the other Secretaries – Communication, Executive, and Financial – of the Institute, to widen the awareness and promotion actions of Pharmaceutical Sciences within the community.

As permanent projects of awareness and promotion of Science by **INCT-INOFAR** are the Drugs Portal <www.portaldosfarmacos.ccs.ufrj.br> and the "**INCT-INOFAR** in Schools" project, with the first one being coordinated by the Secretary of Communication and the second one by the Secretary of Extension.

"INCT-INOFAR SCIENCE PROMOTION ACTIONS" BOOK

In 2013, **INCT-INOFAR** updated its portfolio of actions in extension and scientific awareness and launched, in the month of August, a publication that gathers, chronologically, the main activities of the Institute, since its creation in 2009. The publication, in an yearbook format was titled "**INCT-INOFAR** Science Promotion Actions: 2009=2013" and is available online and in print version.

INCT-INOFAR Science Awareness actions 2009-2013

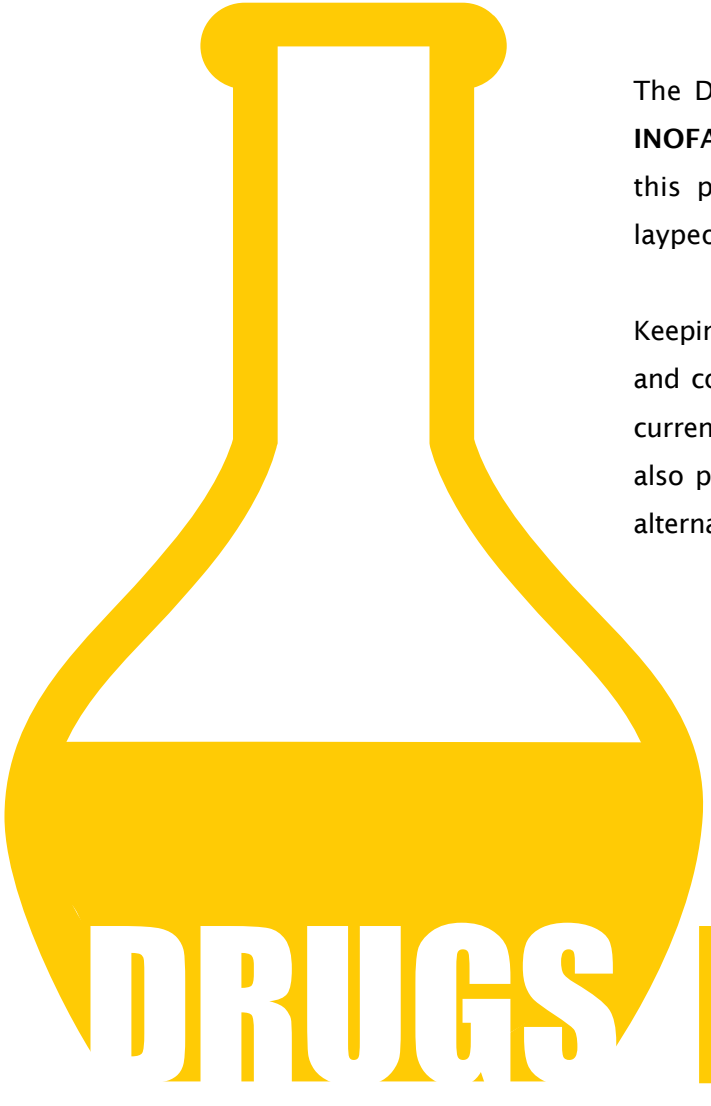
The online version of the INCT-INOFAR yearbook is available for download at:

http://www.inct-inofar.ccs.ufrj.br/download/almanaque2013.pdf

OUTREACH ACTIVITIES

The Drugs Portal <www.portaldosfarmacos.ccs.ufrj.br> is a website maintained by **INCT-INOFAR** aimed at the publicizing and popularization of Pharmaceutical Sciences. Through this portal, **INCT-INOFAR** publicizes its research activities in a language accessible to laypeople, and makes its own materials in Health Education available.

Keeping in sync with new trends in scientific journalism, the Drugs Portal provides the schedule and covers relevant scientific events. Periodically, it publishes new articles and interviews on current themes related to the innovation in drugs and medicines and to health as a whole. It also produces comics that criticize the irrational use of drugs, as well as suggest conscious alternatives to their use.



www.portaldosfarmacos.ccs.ufrj

PORTAL

inct inofar

More than one hundred articles and interviews in the pharmaceutical area have been published in the Drugs Portal since the creation of **INCT-INOFAR**, in 2009. In 2013, the Institute invested in updating its website and joined social networks, creating a Drugs Portal on Facebook.

Portal dos Fármacos

- PUBLICIZING INCT-INOFAR RESEARCH ACTIVITIES IN A LANGUAGE ACCESSIBLE TO LAYPEOPLE;
- PUBLICATION OF NEW ARTICLES ON THEMES OF INNOVATION IN DRUGS AND MEDICINES AND HEALTH;
- SCHEDULE AND COVERAGE OF THE MAIN SCIENTIFIC EVENTS IN THE FIELD;
- DOWNLOAD OF INCT-INOFAR EDUCATIONAL BOOKLET ON THE RIGHT USE OF DRUGS.

"INCT-INOFAR IN SCHOOLS" PROJECT

With a goal of taking content that is poorly approached in school curriculum to classrooms – the importance of the safe and correct use of drugs - **INCT-INOFAR** created in 2011 the "**INCT-INOFAR** in schools" project.

In 2012, through the Secretary of Extension, the project received the approval of the Municipal Secretary of Education of the City Hall of Rio de Janeiro, to be conducted in partnership with the 4th Regional Coordination of Education/4th CRE (Ilha do Governador region). The area was chosen due to the proximity to the UFRJ Campus, where **INCT-INOFAR** is headquartered. With this approval, **INCT-INOFAR** was formally authorized to develop its work in Health Education at schools of the municipal education network in the area of the 4th CRE.

Parallel to other activities developed with the community for scientific awareness, **INCT-INOFAR** visited 04 municipal schools in Rio de Janeiro to bring information on the correct use of drugs.

CONEGO FERNANDES PINHEIRO MUNICIPAL SCHOOL

Address: Rua Sebastian Bach, S/Nº
Neighborhood: Jardim América
Cep: 21240-370
Phone: (21) 3372-5400
E-mail: emconego@rioeduca.net
May 17

ANITA GARIBALDI MUNICIPAL SCHOOL

Address: Estr. Maracajás, 1294
Neighborhood: Galeão
Cep: 21941-390
Phone: (21) 3975-9461
E-mail: emgaribaldi@rioeduca.net
July 10

LEONEL DE MOURA BRIZOLA CIEP

Address: Av. Brasil, S/Nº
Neighborhood: Ramos
Cep: 21030-001
Phone: (21) 3105-9934
E-mail: ciepbrizola@rioeduca.net
August 27

EMBAIXADOR BARROS HURTADO MUNICIPAL SCHOOL

Address: Rua General Carvalho, 702
Neighborhood: Cordovil
Cep: 21250-240
Phone: (21) 2482-7736
E-mail: emhurtado@rioeduca.net
September 25

The activities of the "**INCT-INOFAR** in Schools" project are always programmed to take place in 02 classes. On average, a total of 90 children take part in the action at the school visited by the project. Considering an appropriate age range for the understanding of content and themes, "**INCT-INOFAR** in Schools" works with children aged 10 and up.

The classes are in Junior High and range from the 5th to the 9th grade. Usually, they are supported by teachers, staff, and pedagogical coordinators who take part in the activities with the students, reaching the entire school community with the guidance on the safe and correct use of drugs.

There is still the concern by **INCT-INOFAR** to make these guidelines reach their homes, so that they are spread to the family environment by the children. That way, each student takes home a kit with the Health Education materials produced by the Institute.

"INCT-INOFAR IN SCHOOLS" PROJECT

The "**INCT-INOFAR** in Schools" project promotes the importance of correctly using drugs through playful-educational activities in which the students learn as they play, remembering that drugs are serious. To reinforce the issue, the **INCT-INOFAR** Secretary of Extension created the subproject "Drugs are not toys", creating a human board game in a 12 square meter tarp (4mx3m), where the students become pawns and as they roll the die travel through a circuit with information on the use of drugs. The game titled "Drugs are not toys" was launched as a celebration of the International Day for the Rational Use of Drugs, celebrated on May 05, 2013.

Students of Barros Hurtado Municipal School with the INCT-INOFAR kits

ACTIVITIES AT MUNICIPAL SCHOOLS

The playful-educational activities of the "**INCT-INOFAR** in Schools" project are always developed in two shifts and conducted by two pharmacists alongside the pedagogical coordinator of the project, and an I**NCT-INOFAR** journalist.

To introduce the subject to students, at the first part of the activities there is the presentation, in a projector screen, of an animated booklet on the "Commandments of the Right Use of Drugs". With colorful illustrations and a simple and dynamic language, the booklet provides guidelines about labels, talks about where and how to store drugs at home, and mentions the risks of taking drugs without a prescription.

Now familiar with the topic, the students are invited to ask questions to the team of **INCT-INOFAR** pharmacists. Using age-appropriate terms to express themselves, the children were inspired by their everyday experiences to ask questions on the right use of drugs.

CHILDREN'S QUESTIONS

Can I take drugs with milk?

My cousin chews pills. Is that dangerous, or can we do that?

Do vaccines act faster than pills?

My father takes pills by placing them under his tongue, why? Does it act faster when taken that way?

Are black label drugs for people with mental problems?

I take medication to be hungrier and I think it makes me sleepy. Are there drugs that make you sleepy?

If I take a drug and then eat lunch, is it a problem?

My grandma takes medication with a black label. If she doesn't take it at the right time, can there be side effects?

The booklet "Commandments of the Right Use of Drugs" is available at:
http://www.portaldosfarmacos.ccs.ufrj.br/download/cartilha_medicamento.pdf

AUTHORS:
Eliezer J. Barreiro and Natalia Medeira de Lima

After answering the children's questions on the right use of drugs, "**INCT-INOFAR** in Schools" hen shows a cartoon that tells the story of a little boy named Joey. In the narrative produced by **INCT-INOFAR** researchers, Joey has a fever, and his mother is very scared and asks her sister for advice. She mentions her own son had a similar problem. After taking the leftover drugs from his cousin, Joey has a sudden improvement, but suddenly gets sick again. After going to a doctor, the family learns of the dangers related to self-medicating and learns how to correctly use antibiotics.

"JOEY'S CREW: CORRECT USE OF ANTIBIOTICS

In a playful and figurative way, through the story of the illness that Joey has, **INCT-INOFAR** explains, in a scientific language that is easily understood, how and why bacteria become resistant to antibiotics. It also calls attention to the importance of seeing a doctor and, most of all, of rigorously following the treatment prescribed. The material is approved by the National Health Surveillance Agency (ANVISA).

AUTHORS:
Lidia Moreira Lima and Angelo da Cunha Pinto (UFRJ)

LINK FOR DOWNLOAD – COMICS
http://www.portaldosfarmacos.ccs.ufrj.br/inct/cartilhas/cartilha_antibiotico.pdf

LINK TO WATCH THE CARTOON ON YOUTUBE
http://www.youtube.com/watch?v=GGIkKwcau-U

"INCT-INOFAR IN SCHOOLS" PROJECT

TIME FOR PLAYING AND THINKING

After showing the cartoon (12 minutes), children are separated in two groups, which take turns to perform the activities. While a group of students exercises their creativity, putting on paper what they have learned from **INCT-INOFAR** about drugs, the other group takes part of the game in the human board game.

The class is divided in two groups to take part in the playful education activities promoted by INCT-INOFAR

Reflecting on what he had learned

"INCT-INOFAR IN SCHOOLS" PROJECT

HUMAN BOARD GAME "DRUGS ARE NOT TOYS"

"GO AHEAD FOR TWO SPOTS, COME BACK A SPOT, MISS A TURN"

The luck of the die shows the children some common situations in the use of drugs. "Congratulations, you have never self-medicated – jump 3 spots", "You took antibiotics on your own – miss a turn". Like in the game of life, at the circuit created by **INCT-INOFAR**, children go back or forth depending on the information in each spot. The goal is for children to learn in a playful way basic notions on the safe and correct use of drugs.

The children approved of the INCT-INOFAR visit

"I WOULD REALLY LIKE FOR THESE PEOPLE TO RETURN SOON. JOEY'S CREW TAUGHT ME A LOT ABOUT THE RIGHT DRUGS, AT THE RIGHT TIMES. WHEN YOU COME BACK, I WILL SING YOU A SONG!"

Marcos Paulo, 11 Years Old
Leonel de Moura Brizola CIEP

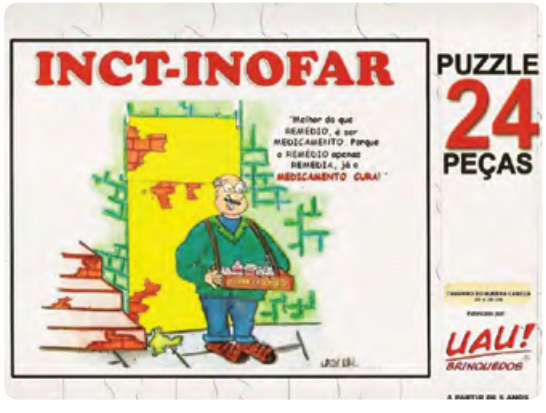
The story that generated the cartoon "**Joey's Crew in: The correct use of antibiotics**" was published, originally, as a comic. At the end of the activities, the students receive an **INCT-INOFAR** kit containing the comic book with Joey's Crew and a theme puzzle, with the commitment to inform their friends on the correct use of drugs.

PUZZLES

The comic strips published in the Drugs Portal have been made into puzzles. A total of ten different versions of these educational toys have been produced. The goal is for the theme puzzles to promote thinking, creating a more conscious attitude when faced with drug use.

ACCESS THE COMICS AT:
http://www.portaldosfarmacos.ccs.ufrj.br/charges.html

AUTHOR:
Natalia Medeiros Lima



TEAM OF THE "INCT-INOFAR IN SCHOOLS" PROJECT

SUPERVISION:
Eliezer J. Barreiro
(**INCT-INOFAR** Coordinator)

PEDAGOGICAL COORDINATOR:
Ana Cristina da Mata Silva

PHARMACISTS:
Daniel Nascimento do Amaral, Roberta Tesch, Natalia Lima and Ciro Goncalves

JOURNALISTS:
Douglas Outeiro and Fabricio Salvador

INCT-INOFAR IN THE NATIONAL SCIENCE AND TECHNOLOGY WEEK (SNCT)

PARTNERSHIP

INCT-INOFAR IN THE KNOWLEDGE VESSELS

In 2013, **INCT-INOFAR** formalized a partnership with the Special Secretary of Science and Technology of the City of Rio de Janeiro to conduct activities in the Knowledge Square and Vessels, during the X National Science and Technology Week. The goal of **INCT-INOFAR** was to be closer to the community, bringing information on the correct use of medications to a wider age group, ranging from children to the elderly.

The Vessels and the Knowledge Square were created by the Rio de Janeiro City Hall to bring digital inclusion to needy areas of the city of Rio de Janeiro. Currently, the city has the project in 06 different neighborhoods: Vila Alianca, Penha, Iraja, Madureira, Padre Miguel and Santa Cruz.

Between October 22 and 27, the time of the X National Week of Science and Technology, **INCT-INOFAR** was present in one of the Vessels each day, and also at the Knowledge Square, conducting its activities of Health Education focused on the promotion of the correct use of medications.

Through the partnership with the Special Secretary of Science and Technology of Rio de Janeiro, **INCT-INOFAR** was able to include its educational materials, made up of videos, booklets, cartoons, comic books, and puzzles with guidelines on the rational use of medication, as part of the permanent content of all Vessels.

INCT-INOFAR prepared special programming for the Knowledge Vessels Circuit, based on the theme of the SNCT: Science, Health, and Sports. With the presentation of lectures and the development of playful-educational activities at the external area of the Knowledge Vessels, INCT-INOFAR saw approximately 1,000 people, when all 06 days of the project are added up.

In sync with the project of social and digital inclusion of the Knowledge Vessels, **INCT-INOFAR** promoted a draw for 01 tablet at the end of each activity day at the Knowledge Vessels. The full report of activities can be found at: http://www.inct-inofar.ccs.ufrj.br/download/relatorio_finalsnct2013.pdf

INCT-INOFAR IN THE NATIONAL SCIENCE AND TECHNOLOGY WEEK (SNCT)

SNCT PROGRAMMING
"INCT-INOFAR IN THE KNOWLEDGE VESSELS CIRCUIT"

DAY	KNOWLEDGE VESSEL	INCT–INOFAR
10/22	**VILA ALIANÇA VESSEL** *"Abadias do Nascimento"* Rua Antenor Correira, no 1 – Vila Aliança	***"The importance of vitamins and minerals in sports practice"*** Lecturer: Ciro G. Sa
10/23	**IRAJÁ VESSEL** *"Prof. Claudia Martin Augusto de Jesus"* Praça N. S. da Apresentação – Irajá	***"Dangers of the Abusive Use of Drugs in Sport"*** Lecturer: Prof. Lidia Moreira Lima
10/24	**PENHA VESSEL** *"Jornalista Joelmir Beting"* Rua Santa Emiliana – Penha	***"From Medicinal Plants to Drugs"*** Lecturer: Prof. Hellio Mattos
10/25	**MADUREIRA VESSEL** *"Compositor Silas de Oliveira"* R. Manoel Marques – Parque de Madureira	***"Drugs and Quality of Life: When and How to Use Them?"*** Lecturer: Prof. Carlos A. Manssour
10/26	**PADRE MIGUEL SQUARE** *"Repórter Cinematográfico Gelson Domingues"* Av. Marechal Marciano esquina com Rua Açafrão – Padre Miguel	***"The use of steroids and doping in sports: health dangers for athletes and young people"*** Lecturer: Daniel Amaral
10/27	**SANTA CRUZ VESSEL** *"Jornalista Tim Lopes"* Rua Álvaro Alberto com Rua Barão de Loreto, Largo do Bodegão – Santa Cruz	***"Marathon of correct use of drugs"*** Lecturer: Natalia de Medeiros Loma

FIXED ACTIVITIES

Human Board Game *"Drugs are not toys"*
External area of Knowledge Square and Vessels

INCT-INOFAR Lectures
Facts on the Right Use of Drugs and Sports (see programming above)

"Tour" through INCT-INOFAR content
Presentation of educational material available at the wall of knowledge and at the digital gallery

Delivery of INCT-INOFAR kits
02 cartoons featuring Joey's Crew and "Toys are not drugs" board game"

Drawing of tablet
At the end of activities in each Knowledge Vessel and Square, 01 tablet was drawn

INCT-INOFAR IN THE NATIONAL SCIENCE AND TECHNOLOGY WEEK (SNCT)

RECORDING OF VIDEO "INCT-INOFAR AT THE KNOWLEDGE VESSELS CIRCUIT"

A recording crew, coordinated by journalist Lucia Beatriz Torres, followed the daily activities of **INCT-INOFAR** at the Knowledge Vessels Circuit. As well as being responsible for the audiovisual recording of the actions of the Institute within the X National Science and Technology Week, the team was also responsible for conducting interviews whenever possible with the audience present, recording their impressions on the content presented by **INCT-INOFAR**. Researchers. Questions on the use of drugs were also approached in the interviews.

INTERVIEWS
Lucia Beatriz Torres

Camera
Enrico Alario Rubin

Sound
Bruno Frene

Script
Lucia Beatriz Torres

Editing
Marina Muricy

VIDEO (10 MINUTES LONG)
"INCT-INOFAR at the Knowledge Vessels Circuit"

YOUTUBE:
http://m.youtube.com/watch?v=L_C_ZGa4w3w

RELEASE OF THE PORTABLE VERSION OF THE "DRUGS ARE NOT TOYS" BOARD GAME

Considering the success achieved with the human board game: "Drugs are not toys", **INCT-INOFAR** launched, during the activities of the National Science and Technology Week, the "table" version of the same board game. This way, **INCT-INOFAR** made it possible for children to keep playing at home, sharing the knowledge gained at the game with their friends and families.

GAME: "DRUGS ARE NOT TOYS" PORTABLE VERSION

The game is made up of a board in the A3 format, a die, and 04 characters to be assembled, which are represented by different drugs and their ratings. After choosing their pawn (miniature drugs), each player tries his chance at the die to find out who goes first. After the playing order is established, each player throws the die to go through the game circuit until the finish. At each stop, the player faces a daily situation that refers to the use of drugs, and the answer makes them go forward or backwards. The goal is to make children aware of what is right and wrong in the use of drugs.

AUTHORS:
Ana Cristina da Mata and Natalia Medeiros de Lima

INCT-INOFAR IN THE NATIONAL SCIENCE AND TECHNOLOGY WEEK (SNCT)

RELEASE: "JOEY'S CREW IN: THE CORRECT USE OF ANTI-INFLAMMATORIES"

AUTHORS:
Lídia M. Lima and Ana Cristina da Matta (collaborator)

During the "**INCT-INOFAR** in the Knowledge Vessels Circuit" activities, there was the launch of the second issue of the educational booklet with the characters of Joey's crew. On this new comic, Joey learns how to correctly use anti-inflammatory drugs. At the end of the comic, there are activities to teach the content of the booklet, making children think about what they learned in the reading of the booklet with their guardians.

INCT-INOFAR used soccer and the interest of young people in social networks to talk about the correct use of anti-inflammatories.

In the comics, Joey discovers that his friend, Peter, is taking anti-inflammatories of his own accord, before soccer games. Concerned, Joey tells his parents. Conscious of the dangers connected to self-medication, Joey's parents recommend that their son talk to Peter, to convince him to talk to the club doctor. So Joey asks his friend to chat to him online and says that his grandmother, Isaura, had become very ill from spending some time taking drugs without a prescription. Scared, Peter decides to look for the club doctor, and at the office, the friends find out about the risks and benefits of the anti-inflammatories and learn how to use this class of drugs correctly.

INCT-INOFAR ENCOURAGES SCIENCE AWARENESS IN RORAIMA

As a result of a project created by Prof. Angelo da Cunha Pinto, an **INCT-INOFAR** associated researcher from the Institute of Chemistry of UFRJ, the Portable Chemistry Laboratory has a goal of improving the quality of Chemistry teaching in public schools in Brazil. As part of the **INCT-INOFAR** actions and of the Brazilian Society of Chemistry (SBQ) to promote science in the Northern region of the country, Portable Chemistry Laboratory kits were sent to Boa Vista, Roraima. By sheer coincidence, they arrived at their final destination at the same week where we celebrate the Chemist Day in Brazil, on June 18.

Responsible for the office of the Brazilian Society of Chemistry in Roraima (SBQ-RR), professor Cleria Mendonca from the State University of Roraima (UERR) is a person who does not measure efforts in fighting for a cause. Aware that it is impossible to elevate the level of Chemistry produced at UERR without first thinking of the scientific background that each student brings from his or her respective schools, professor Cleria Mendonca, who is the coordinator for the course of Licentiate in Chemistry at the State University of Roraima, promotes the improvement of Science teaching in public schools in the region, not only in Brazil but also in Guyana, a country that shares a border with the city of Boa Vista.

On June 15, 2013, the professor and her students were part of the "IV Traveling Circuit of Sciences in School: beyond the school borders", in the city of Bonfim. Located 2h away from Boa Vista, it is near the border with the British Guyana.

INCT-INOFAR ENCOURAGES SCIENCE AWARENESS IN RORAIMA

A total of 13 future Science teachers took part in this project, which seeks to connect the student with the universe of basic scientific education. During the event, the academics conducted a few experiments that they develop at the State University of Roraima at the Aldebaro Jose Alcantara State School. At the occasion, professor Cleria took the opportunity to promote the "Chemistry Everyday" collection, published by SBQ during the International Year of Chemistry in 2011. There are in total 7 theme books that may be downloaded online for free. **INCT-INOFAR** researchers are the authors of the edition that talks about "Chemistry in Health".

IV Traveling Circuit of Science in Schools

"CHEMISTRY IN HEALTH"

The e-book "**Chemistry in Health**" tries to explain at a molecular level the chemical reactions present in various health situations, bringing up everyday topics and explaining them chemically. The subjects are in a logical sequential order and go from the fecundation of the egg by the spermatozoid to breastfeeding to the explaining of puberty phenomena through chemical reactions.

THE "CHEMISTRY IN HEALTH" E-BOOK IS AVAILABLE AT:
http://quimica2011.org.br

AUTHORS:
Eliezer J. Barreiro,
Carlos Manssour Fraga and
Lidia Moreira Lima

OUTREACH ACTIVITIES

INCT-INOFAR TAKES PART IN THE 30 YEAR LIVE SCIENCE CELEBRATION

INCT-INOFAR was part, on September 26, 27, and 28, 2013 of the **II International Meeting of Science Promoters – 30 years of scientific awareness in Brazil.** The event, which brought together journalists, researchers, students, and other interested parts to discuss the trajectory of scientific awareness in Brazil and in the world, was part of the 30 year celebration of the Live Science Space.

Live Science Space is the first interactive science museum in Brazil. It was founded by a group of scientists, researchers, and educators interested in bringing these areas to the general public. Created in 1982, the museum works in a 1,600 m2 warehouse, loaned by the Government of the State of Rio de Janeiro, located at Saens Pena Square, in Tijuca. The Live Science Space is part of the Rio de Janeiro Technology Network, of the Network for the Popularization of Science in Latin America and the Caribbean (RedePop), and of the Brazilian Association of Science Centers and Museums (ABCMC).

The event, which took place at the House of Science, had room for the presentation of posters, and **INCT-INOFAR** took the opportunity to share its experiences in scientific awareness and health education with the public, focused on the safe and rational use of medications.

INCT-INOFAR ON THE 3RD FAPERJ FAIR

For the third time in a row, **INCT-INOFAR** was present at the **III FAPERJ Fair of Science, Technology & Innovation**. The event, which has the goal of presenting to society the project funded by the Foundation for Research Support in the State of Rio de Janeiro (FAPERJ), took place on October 10, 11, and 12, 2013, at the Cultural Center for Citizenship Action, in downtown Rio de Janeiro.

As a recognition of the continuous efforts of the Institute to promote Pharmaceutical Sciences and to inform the population on the safe and correct use of medications, FAPERJ highlighted the **INCT-INOFAR** booth, placing it in the main alley of the Fair.

With a 16 square meter booth that was enlightening, educational, and illustrative, INCT-INOFAR presented its "edutainment" work, showing its playful pedagogical tools developed for its actions of Education & Health in schools. The booth got a lot of attention from the public present, who took advantage of being there to ask questions on the correct use of drugs with the **INCT-INOFAR** pharmacists.

INCT-INOFAR ON THE 3RD FAPERJ FAIR

Students took the time to ask questions and take photos at the INCT-INOFAR booth

The INCT-INOFAR booth received the visit of the FAPERJ director Prof. Jerson Lima Silva (in the tie)

EVENTS WITH INCT-INOFAR BOOTH PARTICIPATION

With a goal of being closer to society, publicizing its research and extension activities to the academic community and to the public at large, the Institute makes efforts to participate in events where there are exposition fairs. In 2013, **INCT-INOFAR** had the opportunity to set up its booth in 06 different occasions. Most times, **INCT-INOFAR** was part of exposition fairs by invitation from the event organizers.

INCT-INOFAR BOOTHS:

36TH ANNUAL MEETING OF THE BRAZILIAN SOCIETY OF CHEMISTRY - RASBQ
May 25 to 28, 2013
Aguas de Lindoia, Sao Paulo.

II INCTS FOLLOW-UP AND EVALUATION SEMINAR
July 2 and 3, 2013
Brasilia, Distrito Federal.

7TH NATIONAL ENCOUNTER FOR INNOVATION IN DRUGS AND MEDS (ENIFARMED)
August 20 and 21, 2013
Sao Paulo

III FAPERJ FAIR
October 10 to 12, 2013
Rio de Janeiro

"SCIENCE, TECHNOLOGY AND INNOVATION IN SUS" MEETING
December 03 and 04, 2013
Brasilia, Distrito Federal.

XIV SBQ – RIO
December 02 to 05, 2013
Niteroi, Rio de Janeiro.


DIVULGAÇÃO CIENTÍFICA
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INSTITUTO NACIONAL DE CIÊNCIA E TECNOLOGIA DE
FÁRMACOS E MEDICAMENTOS
EDUCAÇÃO EM S
Synthesis of sunitinib
Você tomou o medicamento com estrangeiro: não faça mais...
Você só compra medicamentos na farmácia ou drogaria. Continue sempre atento. Avance 5 casas!

CLIPPING: INCT-INOFAR IN THE MEDIA

In 2013, **INCT-INOFAR** was highlighted in the mass media at different times. The following are the pieces with the highest repercussion:

INCT-INOFAR IS THE THEME OF THE "GLOBO UNIVERSITY"

The research network of INCT-INOFAR was the theme of the "Globo University" show on April 20, 2013, by Globo Television Network. The program visited the headquarters of **INCT-INOFAR**, located at the Center for Health Sciences (CCS) of the Federal University of Rio de Janeiro (UFRJ) and talked with some of its researchers about the challenge to produce new drugs and medicines in Brazil.

TO WATCH THE PROGRAM, PLEASE GO TO:
http://globotv.globo.com/rede-globo/globo-universidade/v/globo-universidade-20042013-farmacos-integra/2524746/

CLIPPING: INCT-INOFAR IN THE MEDIA

INCT-INOFAR AT THE JOURNAL EXTRA BLOG

The **INCT-INOFAR** action during the X National Science and Technology Week, at the Vessels and Knowledge Square, generated a series of pieces at the online version of Jornal Extra. Through the project "Future Reporter", the monitors themselves and the audience at the Vessels were able to record the visit to the Institute and to write articles about what they learned from the activities carried out.

"Future Reporter" is a partnership between Jornal Extra and the Vessels of Knowledge.

TO READ ALL THE ARTICLES, PLEASE GO TO:
http://www.inct-inofar.ccs.ufrj.br/naves.html

INCT-INOFAR AT THE SCIENCE JOURNAL - SBPC

Through interviews published at the edition from October 25 2013 at the Science Journal, **INCT-INOFAR** researchers went public to deal with issues regarding animal testing, particularly dogs of the beagle breed. The series of articles in the Science Journal was published after the break in at the Royal Institute, in Sao Roque – SP, by animal right activists. The **INCT-INOFAR** coordinator, Prof. Eliezer J. Barreiro (UFRJ), was a source for the article "Beagles are necessary for the development of drugs", and Prof. Marco Aurelio Martins (Fiocruz) was interviewed for the article "Attacking scientific experiments: irresponsibility".

TO READ THE ARTICLES, PLEASE GO TO:
http://www.jornaldaciencia.org.br/impresso/JC748.pdf

Desafio é desenvolver métodos alternativos

Para especialista, ainda não há previsão de tempo para que se possa substituir a experimentação *in vivo* por técnicas *in vitro*

Viviane Monteiro

Embora a área científica tenha dado um passo significativo no desenvolvimento de métodos alternativos em substituição ao uso de animais nos experimentos científicos, há ainda um longo caminho a percorrer para substituir 100% dos ensaios com animais. A análise é de José Mauro Granjeiro, membro do Conselho Nacional de Controle de Experimentação Animal (Concea).

No Brasil, os métodos alternativos estão previstos na Lei Arouca, em vigor há cinco anos. A legislação reflete uma tendência mundial como o que ocorre no Centro Europeu de Validação de Métodos Alternativos (ECVAM), existente há mais de duas décadas e que visa a promover a aceitação científica e regulatória de testes livre de animais.

Os métodos alternativos buscam contribuir com os objetivos dos três Rs, ou seja, Refinar, Reduzir ou Substituir (do inglês: *Refinement, Reduction, Replacement*) o uso de animais para experimentação. Esses métodos são baseados em técnicas *in vitro*, por exemplo, utilizando células, mas também se vem estudando estratégias para simulação em computadores.

Desafios - Apesar de a comunidade científica internacional ter avançado nos estudos e pesquisas, as análises dos fármacos, ainda, depende de testes com animais. Por exemplo, segundo Granjeiro, não é possível fazer testes de sensibilidade, de potên-

"Isso significa que precisamos desenvolver ainda uma ciência de ponta, avançada, para melhorar os métodos alternativos. Isto é, a substituição completa dos ensaios *in vivo* (animais) pelos ensaios *in vitro* ainda depende de muito estudo", destaca ele, sem dar previsão de data.

Validação - Granjeiro destaca que o Ministério de Ciência, Tecnologia e Inovação (MCTI) vem atuando fortemente nos métodos alternativos. Criou em 2012, via a portaria nº 491 (de 03.07.2012), a Rede Nacional de Métodos Alternativos (Renama) para proporcionar ao país "uma condição adequada para desenvolver e validar esses métodos alternativos".

Além de investir recursos financeiros para a implantação da Rede, o MCTI, através de uma chamada pelo CNPq, apoiou grupos de pesquisa para implementar métodos alternativos validados e para o desenvolvimento de um equivalente de pele.

Em paralelo, uma cooperação entre a Anvisa e a Fundação Oswaldo Cruz (FioCruz) resultou também em 2012 na criação do Centro Brasileiro de Validação de Métodos Alternativos (BraCVAM), coordenado por Octavio Presgrave, pesquisador da Fiocruz. A Renama e o BraCVAM atuarão em conjunto para o desenvolvimento e validação de métodos alternativos. Neste momento, o Concea e o BraCVAM vão estruturar esse processo e, certamente, acelerar o avanço nessa área.

de testes *in vitro* realizados no Brasil e no mundo em experimentos científicos. Disse, porém, ser "gigantesco" dado o avanço tecnológico.

Invasão ao Instituto Royal - O membro do Concea avalia como "negativa" a invasão de ativistas ao Instituto Royal, pois se trata de crime. "Não é por esse caminho, nem através da violência, nem pela destruição do trabalho realizado que será resolvido o desafio de promover a substituição do uso de animais nas pesquisas", destaca. "A retirada dos animais que estavam em experimentação destruiu os estudos em andamento". Ele informa desconhecer quais os estudos que estavam em andamento.

Segundo ele, os pesquisadores do Brasil trabalham com muita atenção e ética no âmbito do uso de animais. "Lógico que sempre há espaço para melhoria, e o Concea e a própria comunidade científica vêm promovendo avanço por meio da regulamentação da Lei Arouca. Parar a pesquisa com animais não é a solução."

Para ele, o "único caminho possível" é o da ciência, com ética no uso dos animais, e com pesquisa de qualidade que, efetivamente, transforme o trabalho realizado em resultado confiável. "A ciência é fundamental para que possamos inovar nos métodos alternativos."

Beagles são necessários para o desenvolvimento de fármacos

Raça é importante porque sua fisiologia aproxima-se da humana

Edna Ferreira

Nas pesquisas que desenvolvem fármacos e medicamentos, os ensaios em animais são fundamentais para avaliar a toxicidade desses produtos. De acordo com Eliezer J. Barreiro, coordenador do INCT-Inofar e professor de Química Medicinal da Universidade Federal do Rio de Janeiro (UFRJ), esse trabalho é feito para que o fármaco possa chegar a ser usado pelos seres humanos com segurança.

Segundo Barreiro, o *beagle* é usado pelos laboratórios nos testes de toxidade por ser a raça de cães cuja fisiologia mais

Cães contribuem para a pesquisa

INCT-INOFAR PUBLICATIONS

SCIENTIFIC ARTICLES

NATIONAL JOURNALS

1. DOI Oliveira, S.D., Schlittler, L.A.F.S., Antunes, A.M.S., Pereira Júnior, N. Mapeamento tecnológico da produção do bio-ácido succínico no cenário brasileiro. (2013) Cadernos de Prospecção, 6, pp. 162-173.

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ACADEMIC PRODUCTION

FINISHED MASTER DISSERTATIONS 2013

1. Allan Kardec Nogueira Alencar. Study of the pharmacological mechanism of N-acylhydrazone derivates. 2013. Dissertation (Master in Pharmacology and Medicinal Chemistry) – Federal University of Rio de Janeiro, Coordination of Improvement of Higher Education Personnel. Advisor: Eliezer Jesus de Lacerda Barreiro.

2. Sonia Oliveira. Management of industrial property in an open innovation model: the case of PETROBRAS. Dissertation (Master in Professional Master in Industrial Property and Innovation) – National Institute of Industrial Property. Advisor: Adelaide Maria de Souza Antunes.

3. Luiz Augusto da Silva Mieiro. Management of engineering projects: the importance of the communication process. 2013. Dissertation (Master in Technology of Chemical and Biochemical Processes) – School of Chemistry - UFRJ. Advisor: Adelaide Maria de Souza Antunes.

4. Andre Luiz de Souza Britto. Program of human resources of the National Agency of Oil, Gas, and Biocombustibles (PRH-ANP): The contribution for the scientific and technological development of the oil sector in Brazil. 2013. Dissertation (Master in Professional Master in Intellectual Property and Innovation) – National Institute of Industrial Property. Advisor: Adelaide Maria de Souza Antunes.

5. Rodrigo Negrelli Guzzo. Phytochemical study and evaluation of biological activity of trema micrantha (cannabaceae). 2013. Dissertation (Master in Chemistry) – Federal University of Rio de Janeiro, Coordination for the Improvement of Higher Education Personnel: Angelo da Cunha Pinto.

6. Roberta Tesch. Study of molecular modeling aiming at the identification of new ligands for adenosine receptors. 2013. Dissertation (Master in Biological Sciences (Pharmacology and Medicinal Chemistry)) – Federal University of Rio de Janeiro, Coordination for the Improvement of Higher Education Personnel. Advisor: Carlos Alberto Manssour Fraga.

7. Rosana Helena Coimbra Nogueira de Freitas. Synthesis and pharmacological evaluation of new N-acylhydrazone derivates analog to the LASSBio-1524 prototype planned as IKK-beta Inhibitors kinase inhibitors. 2013. Dissertation (Master in Chemistry) – Federal University of Rio de Janeiro, Coordination for the Improvement of Higher Education Personnel. Advisor: Carlos Alberto Manssour Fraga.

8. Luis Felipe Baumotte Osorio. Planning, synthesis and evaluation of the trypanocidal activity of new nitroimidazole oxime ethers derivative replaced as potential anti-chagas agents. 2013. Dissertation (Master in Chemistry) – Federal University of Rio de Janeiro, Coordination for the Improvement of Higher Education Personnel. Advisor: Carlos Alberto Manssour Fraga.

9. Maria Cecilia Rodrigues Simoes. Synthesis and pharmacological evaluation of new pharmaceutical prototypes inhibitors of acetylcholinesterase planned from donepezil. 2013. Dissertation (Master in Graduate Program in Chemistry) – Federal University of Alfenas, Coordination for the Improvement of Higher Education Personnel. Advisor: Claudio Viegas Junior.

10. Italo Antonio Fernandes. Synthesis and evaluation of piperidine-benzodioxole derivates planned as new leishmanicidal pharmaceuticals. 2013. Dissertation (Master in Graduate Program in Pharmaceutical Sciences) – Federal University of Alfenas, Coordination for the improvement of Higher Education Personnel. Advisor: Claudio Viegas Junior.

11. Vinicius Figueiredo Sardela. Evaluation of the use of derivatizing reagents in the study of agents stimulant of the central nervous system for analysis through gaseous chromatography of high resolution coupled with mass spectrometry. 2013. Dissertation (Master in Chemistry) – Federal University of Rio de Janeiro. Advisor: Francisco Radler de Aquino Neto.

12. Patricia Davies de Oliveira Sardela. Evaluation of the profile of urinary excretion of luteinizing hormone in Brazilian athletes. 2013. Dissertation (Master in Chemistry) – Federal University of Rio de Janeiro. Advisor: Francisco Radler de Aquino Neto.

ACADEMIC PRODUCTION

13. Filipe Costa. Development of new hypoglycemiant and anti-inflammatory substances. 2013. Dissertation (Master in Biological Sciences (Pharmacology and Medicinal Chemistry)) – Federal University of Rio de Janeiro, Coordination for the Improvement of Higher Education Personnel. Advisor: Gisele Zapata-Sudo.

14. Luiza Magalhaes Fiuza Gomes. Schiff bases with potential applications in the treatment of Alzheimer's and Osteoporosis. 2013. Dissertation (Master in Chemistry) – Federal University of Minas Gerais, Coordination for the Improvement of Higher Education Personnel. Advisor: Heloisa de Oliveira Beraldo.

15. Filipe Pereira da Costa. New candidates for prototypes for hypoglycemiant drugs with anti-inflammatory activity: LASSBio-1773 and LASSBio-1774. 2013. Dissertation (Master in Graduate Program in Pharmacology and Medicinal Chemistry) – Federal University of Rio de Janeiro. Advisor: Lidia Moreira Lima.

16. Clemilson Berto Junior. Evaluation of hypoglycemiant effect of prototypes LASSbio-1773 and LASSBio-1774 in a zebra-fish model. 2013. Dissertation (Master in Biological Sciences (Pharmacology and Medicinal Chemistry)) – Federal University of Rio de Janeiro, Coordination for the Improvement of Higher Education Personnel. Advisor: Lidia Moreira Lima.

17. Isabelle Karine da C. Nunes. New inhibitors of phosphodiasterase-4: design, synthesis, determination of physical-chemical properties and study of hepatic microsomal metabolism. Thesis (Doctorate in Graduate in Studies in Pharmacology and Medicinal Chemistry) – Federal University of Rio de Janeiro, Coordination for the Improvement of Higher Education Personnel. Advisor: Lidia Moreira Lima.

18. Luiz Henrique Agra Cavalcante Silva. Mechanisms of spasmolytic action of caulerpine, a bisindolic alkaloid isolated from algae of the Caulerpa genus, in a guinea pig ileo. 2013. Dissertation (Master in Master of Health Sciences) – Institute of Biological and Health Sciences - AL, Foundation of Research Support in the State of Alagoas. Advisor: Magna Suzana Alexandre Moreira.

19. Morgana Vital de Araujo. Study of leishmanicidal activity of combrestatin A4 derivates: a proposal for new strategies in the treatment of leishmaniasis. 2013. Dissertation (Master in Master of Health Sciences) – Institute of Biological and Health Sciences - AL, Foundation of Research Support in the State of Alagoas. Advisor: Magna Suzana Alexandre Moreira.

20. Maria Erivanda Franca Rios. Study of cytotoxic activity and antitumor potential of acetone extract of Annona Muricata L. seeds (AMSA), in experimental *in vitro* and *in vivo* models. 2013. Dissertation (Master in Graduate Studies in Pharmacology) – Federal University of Ceara. Advisor: Manoel Odorico de Moraes Filho.

21. Caio Vitor Machado Franca do Nascimento. Evaluation of the antiasthmatic potential of 7-Epiclusianon and of metallic complex 7-Epiclusianon/ Copper. 2013. Dissertation (Master in Cellular and Molecular Biology) - Oswaldo Cruz Foundation, National Council for Scientific and Technological Development. Advisor: Marco Aurelio Martins.

22. Diego de Sa Coutinho. Evaluation of anti-inflammatory and antiasthmatic effect of 15-Deoxy-Δ12,14-Prostaglandin J2 in murine models of asthma. 2013. Dissertation (Master in Human and Experimental Biology) – State University of Rio de Janeiro. Advisor: Marco Aurelio Martins.

23. Eduardo Alves Gamosa de Oliveira. Molecular and functional characterization of protein-protein interaction in protein complexes related to the control of the cellular cycle of arabidopsis thaliana. 2013. Dissertation (Master in PPG PRODBIO) – Federal University of Rio de Janeiro – Macae Campus, Carlos Chagas Filho Foundation of Research Support in the State of Rio de Janeiro. Advisor: Nelilma Correia Romeiro.

24. Fabiana Sellos. Analysis of antitumor activity of isatin analogs and convolutamidine A. 2013. Dissertation (Master in Biological Sciences (Pharmacology and Medicinal Chemistry)) – Federal University of Rio de Janeiro, Coordination for the Improvement of Higher Education Personnel. Advisor: Patricia Dias Fernandes.

ACADEMIC PRODUCTION

25. Yaskara Lessa Lisboa. Pharmacological profile of three new analogs of Convolutamidine A. 2013. Dissertation (Master in Biological Sciences (Pharmacology and Medicinal Chemistry)) – Federal University of Rio de Janeiro, Coordination for the Improvement of Higher Education Personnel. Advisor: Patricia Dias Fernandes.

26. Patricia da Silva Marques. Impact of exercise associated to gender in the remodeling of aerial pathways in a chronic allergic asthma model. 2013. Dissertation (Master in Biological Sciences (Physiology)) – Federal University of Rio de Janeiro, Carlos Chagas Filho Foundation of Research Support in the State of Rio de Janeiro. Advisor: Patricia Rieken Macedo Rocco.

27. Luciene Ruiz Baccini. Obtaining semisynthetic alkaloid derivates (-) - cassine e(-) - spectaline and evaluation of their antimalarial potential. 2013. Dissertation (Master in Chemistry) – Institute of Chemistry - UNESP, Coordination for the Improvement of Higher Education Personnel. Advisor: Vanderlan da Silva Bolzani.

FINISHED DOCTORAL THESES 2013

1. Maria Leticia de Castro Barbosa. Planning, synthesis, and pharmacological evaluation of new pharmaceutical candidates antagonists of TLR-9 receptor for the treatment of sepsis. 2013. Thesis (Doctorate in Chemistry) – Federal University of Rio de Janeiro, Coordination for the Improvement of Higher Education Personnel. Advisor: Eliezer Jesus de Lacerda Barreiro.

2. Pedro Palmeira. CATCH UP of the national pharmaceutical industry and funding for innovation: the case of BNDES acting through PROFARMA. 2013. Thesis (Doctorate in Technology of Chemical and Biochemical Processes) – School of Chemistry - UFRJ. Advisor: Adelaide Maria de Souza Antunes.

3. Sabrina Teixeira Martinez. Chemical transformations of pyrrolizidine alkaloids monocrataline and retronecin. 2013. Thesis (Doctorate in Chemistry) – Federal University of Rio de Janeiro, Coordination for the Improvement of Higher Education Personnel. Advisor: Angelo da Cunha Pinto.

4. Nailton Monteiro do Nascimento Junior. Planning synthesis and pharmacological evaluation of new ligands for chemokine receptors CC and CXC. 2013. Thesis (Doctorate in Chemistry) – Federal University of Rio de Janeiro, Carlos Chagas Filho Foundation of Research Support in the State of Rio de Janeiro. Advisor: Carlos Alberto Manssour Fraga.

5. Sabrina Schaaf Teixeira Costa Pereira. Diagnosis of phytotherapeutic drugs registered and recognized by the Ministry of Health in Brazil. 2013. Thesis (Doctorate in Public Health) – National School of Public Health Fiocruz, Coordination for the Improvement of Higher Education Personnel. Advisor: Francisco Jose Roma Paumgartten.

6. Jaqueline Soares da Silva. N-Acylhydrazone derivates improve cardiovascular dysfunction in spontaneously hyper tense rats submitted to myocardial infarction. 2013. Thesis (Doctorate in Biological Sciences (Pharmacology and Medicinal Chemistry)) – Federal University of Rio de Janeiro, Carlos Chagas Filho Foundation of Research Support in the State of Rio de Janeiro. Advisor: Gisele Zapata-Sudo.

ACADEMIC PRODUCTION

7. Rafael Pinto Vieira. Study of the pharmacological profile of Schiff bases and their interactions with metals. 2013. Thesis (Doctorate in Chemistry) – Federal University of Minas Gerais, National Council for Scientific and Technological Development. Advisor: Heloisa de Oliveira Beraldo.

8. Jeferson Gomes da Silva. Modified derivates of thiosemicarbazones and diclofenac: pharmacological profile and effect of coordination to metals. 2013. Thesis (Doctorate in Chemistry) – Federal University of Minas Gerais, National Council for Scientific and Technological Development. Advisor: Heloisa de Oliveira Beraldo.

9. Walfrido Bispo Junior. Study of antinociceptive and anti-inflammatory action of pharmaceutical prototypes. 2013. Thesis (Doctorate in RENORBIO) – Northeast Network of Biotechnology, Coordination for the Improvement of Higher Education Personnel. Advisor: Magna Suzana Alexandre Moreira.

10. Aline Bonfim Vieira. Effect of phytocompound mangiferin in isolated asthma and associated with obesity. 2013. Thesis (Doctorate in Cellular and Molecular Biology) – Oswaldo Cruz Foundation, Coordination for the Improvement of Higher Education Personnel. Advisor: Marco Aurelio Martins.

11. Carolina Uchoa Guerra Barbosa de Lima. Evaluation of acute and subchronic toxicity and antitumor activity of hydroalcoholic unprocessed extract of the leaves of rollinia leptopetala. 2013. Thesis (Doctorate in Natural and Bioactive Synthetic Products) – Federal University of Paraiba. Advisor: Margareth de Fatima Formiga Melo Diniz.

12. Bianca Torres Ciambarella. Effect of anti-TNF therapies on the chronic inflammatory pulmonary response induced by silica in mice. 2013. Thesis (Doctorate in Cellular and Molecular Biology) - Oswaldo Cruz Foundation, National Council for Scientific and Technological Development. Advisor: Patricia Machado Rodrigues e Silva Martins.

13. Tatiana Maron Gutierrez. Therapy with mesenchymal cells derived from bone marrow in an experimental model of acute pulmonary lesion of pulmonary and extrapulmonary etiology. 2013. Thesis (Doctorate in Biological Sciences (Physiology)) – Federal University of Rio de Janeiro, National Council for Scientific and Technological Development. Advisor: Patricia Rieken Macedo Rocco.

14. Mariana Alves Antunes. Impact of Therapy with Different Lineages of Mesenchymal Cells in a Murine Model of Emphysema Induced by Elastasis. 2013. Thesis (Doctorate in Biological Sciences (Physiology)) – Federal University of Rio de Janeiro, Carlos Chagas Filho Foundation of Research Support in the State of Rio de Janeiro. Advisor: Patricia Rieken Macedo Rocco.

15. Soraia Carvalho Abreu. Therapy with mononuclear cells derived from bone marrow in allergic asthma model. 2013. Thesis (Doctorate in Biological Sciences (Physiology)) – Federal University of Rio de Janeiro, National Council of Scientific and Technological Development. Advisor: Patricia Rieken Macedo Rocco.

16. Shirley Moreira Burburan. Evaluation of pulmonary effects of inhalatory anesthetics in a murine model of chronic allergic asthma. 2013. Thesis (Doctorate in Internal Medicine) – Federal University of Rio de Janeiro. Advisor: Patricia Rieken Macedo Rocco.

17. Fernanda Ferreira Cruz. Therapy with Mononuclear Cells Derived from Bone Marrow in a Murine Model of Pulmonary Emphysema Induced by Elastasis. 2013. Thesis (Doctorate in Biological Sciences (Physiology)) – Federal University of Rio de Janeiro, Coordination for the Improvement of Higher Education Personnel. Advisor: Patricia Rieken Macedo Rocco.

18. Deysi Viviana Tenazoa Wong. Mediation of TLR2 and NOD1 receptors, and of adaptor protein MyD88 in the modulation of Intestinal Mucositis induced by irinotecan. 2013. Thesis (Doctorate in Pharmacology) – Federal University of Ceara, National Council for Scientific and Technological Development. Advisor: Ronaldo de Albuquerque Ribeiro.

ACADEMIC PRODUCTION

19. Andresa Heemann Betti. Search for new chemical entities for the development of new antipsychotic drugs: pre-clinical evaluation of N-phenylpiperazine and imidazole derivates. 2013. Thesis (Doctorate in Pharmaceutical Sciences) – Federal University of Rio Grande do Sul. Advisor: Stela Maris Kuze Rates.

20. Fernanda Barja Fidalgo Silva de Andrade. Study of the protein salivary profile of obese children with a focus on changes in metainflammation mediators. 2013. Thesis (Doctorate in Clinical and Experimental Physiopathology) – University of the State of Rio de Janeiro, Carlos Chagas Filho Foundation of Research Support in the State of Rio de Janeiro. Advisor: Thereza Christina Barja Fidalgo.

21. Marcos Marcal Ferreira Queiroz. Identification of acetylcholinesterase inhibitors in tetrapterys mucronata Cav. (Malpighiaceae) and qualitative and quantitative comparison of tryptamine derivates present in the studied species and in Ayahuasca. 2013. Thesis (Doctorate in Chemistry) – Institute of Chemistry - UNESP, Foundation of Research Support in the State of Sao Paulo. Advisor: Vanderlan da Silva Bolzani.

22. Meri Emili Pinto Nascimento. Evaluation of cyclic peptides in species native to the Brazilian semiarid region and in a cultivated species: characterization and biological activity. 2013. Thesis (Doctorate in Chemistry) – Institute of Chemistry - UNESP, Foundation of Research Support in the State of Sao Paulo. Advisor: Vanderlan da Silva Bolzani.

INCT-INOFAR SCHOLARS

FIOCRUZ/RJ

Bianca Torres Ciabarella CV-Lattes
CNPq Junior Post-Doctorate Scholarship
Time: July 2013 to January 2014
Project: *"Studies of potential cellular targets and action mode of LASSBio-897 compound in control of experimental silicosis."*
Advisor: Prof. Dr. Patricia Machado Rodrigues e Silva Martins
FIOCRUZ/RJ

Julio Beltrame Daleprane CV-Lattes
CNPq Technological Development Scholarship – DTI-3
Time: March 2012 to April 2013
Project: *"Study of the potential anti-inflammatory effect of compound LASSBio 897, in models of silicosis and asthma."*
Advisor: Prof. Dr. Marco Aurelio Martins
FIOCRUZ/RJ

Vinicius Frias de Carvalho CV-Lattes
CAPES Post-doctoral Scholarship
Time: March 2010 to February 2012
Project: *"Study of pharmacological interaction of LASSBio-897 and LASSBio-294 with adenosine receptors in living cells."*
Advisor: Prof. Dr. Marco Aurelio Martins
FIOCRUZ/RJ

UNIFAL

Andre Victor Pereira CV-Lattes
CNPq Scientific Initiation Scholarship - IC
Time: June 2012 to May 2013 and September 2013 to June 2014
Project: *"Technological foresight of intermediaries and synthetic chemical entities of interest in the scope of the INCT-INOFAR."*
Advisor: Prof. Dr. Marcia Paranho Veloso

UNICAMP

Adriano Siqueira Vieira CV-Lattes
CNPq Junior Post-Doctorate Scholarship
Time: August 2009 to July 2012
Project: *"Atorvastatin synthesis"*
Advisor: Prof. Dr. Luiz Carlos Dias
Institute of Chemistry

Elsa Moreno de Viguri CV-Lattes
CNPq Junior Post-Doctorate Scholarship
Time: April 2013 to March 2014
Project: *"New quinic acid derivatives as Trypanosoma cruzi trans-sialidase inhibitors"*
Advisor: Prof. Dr. Luiz Carlos Dias
Institute of Chemistry

Javier Ceras Aresse CV-Lattes
CNPq Junior Post-Doctorate Scholarship
Time: April 2013 to March 2014
Project: *"Synthesis of Valsartan"*
Advisor: Prof. Dr. Luiz Carlos Dias
Institute of Chemistry

INCT-INOFAR SCHOLARS

Leila de Souza Conegero CV-Lattes
CNPq Junior Post-Doctorate Scholarship
Time: July 2010 to January 2011
Project: *"Fluoxetine synthesis"*
Advisor: Prof. Dr. Luiz Carlos Dias
Institute of Chemistry

UFC

Bruno Coelho Cavalcanti CV-Lattes
CNPq Junior Post-Doctorate Scholarship
Time: May 2010 to December 2010
Project: *"In vitro evaluation of cytotoxic, genotoxic and mutagenic potential of samples provided by INCT-INOFAR."*
Advisor: Prof. Dr. Leticia Veras Costa Lotufo
Unity of Clinical Pharmacology

UFG

Ana Maria Calado Dos Santos CV-Lattes
CNPq Technical Support Scholarship – AT NM
Time: January to June 2011
Project: *"In silico prediction and in vitro production of pharmaceutical prototype candidates through bioconversion of human metabolites"*
Advisor: Prof. Dr. Valeria de Oliveira
Faculty of Pharmacy

Geovana Barbara Ferreira Mendes CV-Lattes
CNPq Technical Support Scholarship – AT NM
Time: March 2013 to December 2013
Project: *"In silico prediction and in vitro production of pharmaceutical prototype candidates through bioconversion of human metabolites"*
Advisor: Prof. Dr. Valeria de Oliveira
Faculty of Pharmacy

Sarah da Silva Nunes CV-Lattes
CNPq Technical Support Scholarship – AT NM
Time: July 2011 to December 2012
Project: *"In silico prediction and in vitro production of pharmaceutical prototype candidates through bioconversion of human metabolites"*
Advisor: Prof. Dr. Valeria de Oliveira
Faculty of Pharmacy

UFMG

Carolina Neris Cardoso CV-Lattes
Technological Initiation – ITI A
Time: September 2011 to January 2012
Project: *"Semicarbazone Benzaldehyde (BS)"*
Advisor: Prof. Dr. Carlos Alberto Tagliatti
Faculty of Pharmacy

Manuela Lima Toccafondo Vieira
CV Lattes
CNPq Junior Post-Doctorate Scholarship
Time: May to August 2013
Project: "*PBPK Modelling and Simulation of LASSBio-596 Compound*"
Advisor: Prof. Dr. Carlos Alberto Tagliatti
Faculty of Pharmacy

Marcus Vinicius dos Santos CV-Lattes
Technology Undergraduate Grant – ITI A
October 2009 to March 2010
Project: *"Benzaldehyde Semicarbazone (BS)"*
Advisor: Prof. Dr. Carlos Alberto Tagliatti
Faculty of Pharmacy

Nathalia Freitas Emiliano CV-Lattes
Technological Initiation – ITI A
Time: September 2011 to January 2012
Project: *"Semicarbazone Benzaldehyde (BS)"*
Advisor: Prof. Dr. Carlos Alberto Tagliatti
Faculty of Pharmacy

Samira de Sa e Souza CV-Lattes
Technological Initiation – ITI A
Time: September 2011 to January 2012
Project: *"Semicarbazone Benzaldehyde (BS)"*
Advisor: Prof. Dr. Carlos Alberto Tagliatti
Faculty of Pharmacy

Gabrielle Luck de Araujo CV Lattes
CNPq Junior Post-Doctorate Scholarship
Time: July to December 2011
Project: *"Semicarbazone Benzaldehyde (BS): toxicological aspects"*
Advisor: Prof. Dr. Carlos Alberto Tagliatti
Faculty of Pharmacy

Wallace Carvalho Ferreira CV-Lattes
CNPQ Technical Support Grant– AT NM
August 2009 to January 2010
Project: *"Benzaldehyde Semicarbazone (BS)"*
Advisor: Prof. Dr. Marcio de Matos Coelho
Faculty of Pharmacy

UFRJ

Alan Kardec Nogueira de Alencar
CV-Lattes
CNPQ Technical Support Grant– AT NM
April to August 2010
Project: *Development of new substances for the reduction of ventricular dysfunction, caused by arterial and pulmonary hypertension.*
Advisor: Prof. Roberto Takashi Sudo
Institute of Biological Sciences (ICB)

Alan Rodrigues de Sousa CV-Lattes
CNPq Technological Development Scholarship – DTI-3
Time: February 2012 to July 2012
CNPq Technological Support Scholarship – AT NM
Time: August to 2012 to August 2013
Project: *"Scientific awareness and health education at INCT-INOFAR"*
Advisor: Prof. Dr. Eliezer J. Barreiro
LASSBio

INCT-INOFAR SCHOLARS

Alexandra Basilio Lopes CV-Lattes
CNPQ Technological Development Grant–DTI-3
June to September 2010
Project: *"Synthesis and evaluation of antinociceptive and anti-inflammatory activities of phenyl-pyridine-n-acylhydrazone compounds planned from imidazo [1,2-a] pyridine-n-acylhydrazone derivatives."*
Advisor: Prof. Eliezer J. Barreiro
LASSBio

Ana Carla Dos Santos CV-Lattes
CNPq Technological Development Scholarship – DTI-3
Time: July 2009 to June 2010
CNPq Technological Development Scholarship – DTI-2
Time: July to 2010 to June 2011
CNPq Technological Development Scholarship – DTI-1
Time: July 2011 to March 2012
Project: *"Scientific awareness and health education at INCT-INOFAR"*
Advisor: Prof. Dr. Eliezer J. Barreiro
LASSBio

Ana Cristina da Mata Silva CV-Lattes
CNPq Technological Development Scholarship – DTI-3
Time: April 2012 to June 2013
Project: *"Scientific awareness and health education at INCT-INOFAR"*
Advisor: Prof. Dr. Eliezer J. Barreiro
LASSBio

Ana Gabriela de Almeida Silva CV-Lattes
CNPq Scientific Initiation Scholarship - IC
Time: March 2013 to August 2013
Project: "Implementation and validation of pre-clinical trial model for the evaluation of the teratogenic effect of bioactive substances: evaluation of the LASSBio 468 and LASSBio 596 prototypes".
Advisor: Prof. Dr. Aloa Machado de Souza
LASSBio

Arthur Eugen Kümmerle CV-Lattes
Junior Post-Doctoral CNPQ Grant-PDJ
September 2009 to March 2010
Project: *"Study of the Inclusion of LASSBio-579 in cyclodextrin."*
Advisor: Prof. Eliezer J. Barreiro
LASSBio

Arthur Henrique Freitas do Prado CV-Lattes
CNPq Technical Support Scholarship – AT NS
Time: May 2011 to February 2012
Project: *"Scientific awareness and health education at INCT-INOFAR"*
Advisor: Prof. Dr. Eliezer J. Barreiro
LASSBio

Barbara Assis Novak CV-Lattes
CNPq Scientific Initiation Scholarship - IC
Time: September 2012 to February 2013
Project: *"Implementation and validation of pre-clinical trial model for the evaluation of the teratogenic effect of bioactive substances: evaluation of the LASSBio 468 and LASSBio 596 prototypes"*
Advisor: Prof. Dr. Aloa Machado de Souza
LASSBio

Carlos Eduardo da Silva Monteiro
CV-Lattes
CNPq Technological Development Scholarship – DTI-3
Time: May 2010 to February 2011
Project: *"Multitarget activation: strategy for symptomatic treatment of neuropathic pain"*
Advisor: Prof. Roberto Takashi Sudo
Institute of Biological Sciences (ICB)

Clemilson Berto Junior CV-Lattes
CAPES Master Scholarship
Time: October 2011 to January 2013
Project: *"Evaluation of teratogenic potential of LASSBio 596 and LASSBio 468 prototypes, antiasthma pharmaceutical candidates"*
Advisor: Prof. Dr. Aloa Machado
LASSBio

Daniel Nascimento do Amaral CV-Lattes
CAPES Master Scholarship
Time: March 2010 to February 2012
Project: *"Design, synthesis and pharmacological evaluation of new antitumor ß –tubulin inhibitor prototypes"*
Advisor: Prof. Dr. Lidia Moreira Lima
LASSBio

Douglas Rodrigues Outeiro de Oliveira
CV-Lattes
CNPq Technological Development Scholarship – DTI-3
Time: September 2013 to December 2014
Project: *"Scientific awareness and health education at INCT-INOFAR"*
Advisor: Prof. Dr. Eliezer J. Barreiro
LASSBio

Fanny Nascimento Costa CV-Lattes
CNPq Junior Post-Doctorate Scholarship
Time: July 2013 to December 2013
Project: *"The use of X ray difraction by polycrystals in the structural determination of N-acylhydrazone derivates, new drug candidates."*
Advisor: Prof. Dr. Eliezer J. Barreiro
LASSBio/RJ

INCT-INOFAR SCHOLARS

Fabricio Maia da Silva Salvador CV-Lattes
CNPq Technological Development Scholarship – DTI-3
Time: October 2012 to June 2013
Project: *"Scientific awareness and health education at INCT-INOFAR"*
Advisor: Prof. Dr. Eliezer J. Barreiro
LASSBio

Givanildo Santos da Silva CV-Lattes
CAPES Doctoral Grant
October 2009 to August 2010
Project: *"Studies for the discovery of new anti-influenza, neuraminidase inhibitor prototypes."*
Advisor: Prof. Dr. Lidia Moreira Lima
LASSBio

Hannah Carolina Tavares Domingos CV-Lattes
CNPq Scientific Initiation Scholarship - IC
Time: September 2011 to February 2012
Project: *"Qnint"*
Advisor: Prof. Dr. Claudia Rezende
Institute of Chemistry

Jean Marcell Marcelino Pena CV-Lattes
CNPQ Technical Support Grant– AT NM
From November 2013 to June 2014
Project: *"Development of a new synthetic route for preparation of generic drugs clozapine and quetiapine"*
Advisor: Prof. Dr. Angelo da Cunha Pinto
Institute of Chemistry

Jessica Silva dos Santos CV-Lattes
CNPQ Technical Support Grant– AT NM
From October to December 2010
Project: *"Scientific awareness and health education at INCT-INOFAR"*
Advisor: Prof. Dr. Lidia Moreira Lima
LASSBio

Juliana Fatima Vilacha Madeira Rodrigues dos Santos CV Lattes
CNPq Technical Support Scholarship – IC
Time: March 2012 to Mar 2013
Project: *"Planning, synthesis, and pharmacological evaluation of 1,2,3,4-tetrahydroacridine derivates, acetylcholinesterase inhibitor prototypes."*
Advisor: Prof. Dr. Eliezer J. Barreiro
LASSBio

Leandro Louback da Silva CV-Lattes
CAPES Doctoral Grant
October 2009 to August 2010
Project: *"Study of the effects of different N-acylhydrazone derivatives on the cell-to-cell interaction mechanisms and inflammatory mediators that are part of the atherosclerotic process."*
Advisor: Prof. Dr. Ana Luisa Palhares de Miranda
LASSBio

Lidilhone Hamerski Carbonezi CV-Lattes
CNPq Junior Post-Doctorate Scholarship
Time: August 2010 to January 2011
Project: *"Sunitinib synthesis"*
Advisor: Prof. Dr. Angelo da Cunha Pinto
Institute of Chemistry (IQ)

Lucia Beatriz Torres CV-Lattes
CNPq Technological Development Scholarship – DTI-2
Time: October 2010 to September 2011
CNPq Technological Development Scholarship – DTI-1
Time: October 2011 to July 2012 and July 2013 to February 2014
Project: *"Scientific awareness and health education at INCT-INOFAR"*
Advisor: Prof. Dr. Eliezer J. Barreiro
LASSBio

Luciana Almeida Piovesan CV-Lattes
CNPq Junior Post-Doctorate Scholarship
Time: February 2009 to August 2009
Project: *"Design, Synthesis and Pharmacological Evaluation of Novel Anti-Cancer Drug-Candidate Prototypes"*
Advisor: Prof. Dr. Eliezer J. Barreiro
LASSBio

Luciano da Silva Santos CV-Lattes
CNPq Scientific Initiation Scholarship - IC
Time: August to October 2011
CNPq Technical Support Scholarship – AT NS
Time: November 2011 to February 2012
Project: *"Synthesis and pharmacological activity of new ferrocene-N-acylhydrazone derivates"*
Advisor: Prof. Dr. Lidia Moreira Lima
LASSBio

Maria de Fatima do Nascimento Alfredo CV-Lattes
CNPq Technical Support Scholarship – AT NS
Time: January 2012 to June 2013
Project: *"Scientific awareness and health education at INCT-INOFAR"*
Advisor: Prof. Dr. Eliezer J. Barreiro
LASSBio

INCT-INOFAR SCHOLARS

Mariana Trad Rosner da Motta CV-Lattes
CNPq Scientific Initiation Scholarship - IC
Time: August to October 2011
Project: *"In vitro metabolism of new leishmanicidal and tripanomicidal pharmaceutical prototypes"*
Advisor: Prof. Dr. Lidia Moreira Lima
LASSBio

Marlon Daniel Tonin CV-Lattes
CNPq Technical Support Scholarship – DTI-3
Time: April 2012 to July 2012
Project: *"Novel 5-aryl-2-furfuryl-N-acylhydrazone derivatives with potent anti-inflammatory and analgesic activity: LASSBio-1609 and LASSBio-1636"*
Advisor: Prof. Dr. Carlos Alberto Manssour Fraga
LASSBio

Nailton Monteiro Nascimento Junior
CV-Lattes
CAPES Exchange Doctorate Scholarship (Dsw)
Time: March to August 2012
Project: *"Virtual screening synthesis and pharmacological evaluation of GPCRs ligands"*
Advisor: Prof. Dr. Carlos Alberto Manssour Fraga
LASSBio

Natalia Medeiros de Lima CV-Lattes
CNPq Technical Support Scholarship – AT NS
Time: August 2010 to July 2011
CNPq Technical Support Scholarship – DTI-2
July 2013 to December 2014
Project: *"Scientific awareness and health education at INCT-INOFAR"*
Advisor: Prof. Dr. Eliezer J. Barreiro
LASSBio

Pedro Gabriel Dias Lobato Pereira
CV-Lattes
CNPq Scientific Initiation Scholarship - IC
Time: August to October 2011
Project: *"Synthesis of cyclodextrin complexes of LASSBio-596 salts"*
Advisor: Prof. Dr. Lidia Moreira Lima
LASSBio

Priscila de Paula Cabral CV-Lattes
CNPq Technological Development Scholarship – DTI-3
Time: May 2012 to June 2012
Project: *"Scientific awareness and health education at INCT-INOFAR"*
Advisor: Prof. Dr. Eliezer J. Barreiro
LASSBio

Raquel de Oliveira Lopes CV-Lattes
CNPq Technical Support Scholarship – DTI-3
Time: October 2010 to December 2010
Project: *"Metabolic studies of LASSBio-596"*
Advisor: Prof. Dr. Eliezer J. Barreiro
LASSBio

Roberta Tesch CV-Lattes
CNPq Technical Support Scholarship – AT NS
Time: June 2010 to November 2010
CAPES Master Scholarship
Time: March to April 2011
Project: *"Studies of molecular modeling and structural planning of new ligands to adenosine receptors"*
Advisor: Prof. Dr. Carlos Alberto Manssour Fraga
LASSBio

Rodolfo do Couto Maia CV-Lattes
CAPES Exchange Doctorate Scholarship (Dsw)
Time: February to July 2011
Project: *"Synthesis and evaluation of antitumor activity of a new family of pyrazole-pyridone family"*
Advisor: Prof. Dr. Carlos Alberto Manssour Fraga
LASSBio

Sabrina Teixeira Martinez CV-Lattes
CNPq Technical Support Scholarship – DTI-1
Time: September 2013 to January 2014
Project: *"Bibliographical review of methodologies of synthesis of clozapine and quetiapine"*
Advisor: Prof. Dr. Angelo da Cunha Pinto
Institute of Chemistry

Tais Rubia dos Santos CV-Lattes
CNPq Scientific Initiation Scholarship - IC
Time: September to November 2011, January to June 2012 and September 2012 to February 2013
Project: *"Planning, synthesis and pharmacological evaluation of new leflunomide analogs"*
Advisor: Prof. Dr. Lidia Moreira Lima
LASSBio

Thiago Stevanatto Sampaio CV-Lattes
CNPQ Technical Support Grant– AT NM
April 2009 to March 2010
Project: *Design, synthesis and evaluation of cytotoxic properties of new TK inhibitor pharmaceutical candidate prototypes.*
Advisor: Prof. Dr. Eliezer J. Barreiro
LASSBio

USP- RIBEIRAO PRETO

Giuliana Bertozi Francisco CV-Lattes
CNPq Technical Support Scholarship – AT NM
Time: September 2010 to December 2011
Project: *"Semicarbazone Benzaldehyde (BS)"*
Advisor: Prof. Dr. Fernando de Queiroz Cunha
Faculty of Medicine of Ribeirao Preto

Ana Katia dos Santos CV-Lattes
CNPq Technical Support Scholarship – AT NM
Time: January 2012 to June 2014
Project: *"Semicarbazone Benzaldehyde (BS)"*
Advisor: Prof. Dr. Fernando de Queiroz Cunha
Faculty of Medicine of Ribeirao Preto

INCT-INOFAR RESEARCHERS

COORDINATOR

Eliezer J. Barreiro (UFRJ) CV-Lattes

VICE-COORDINATOR

Fernando de Queiroz Cunha (USP-RP) CV-Lattes

ASSOCIATED LABORATORY SUPERVISORS

Adelaide Maria de Souza Antunes (UFRJ) CV-Lattes

Angelo da Cunha Pinto (UFRJ) CV-Lattes

Carlos Alberto Manssour Fraga (UFRJ) CV-Lattes

Carlos Mauricio Rabello de Sant'Anna (UFRRJ) CV-Lattes

Claudia Ó Pessoa (UFC) CV-Lattes

Claudio Viegas Junior (UNIFAL) CV-Lattes

Francisco Jose Roma Paumgartten (FIOCRUZ/RJ - ENSP) CV-Lattes

Francisco Radler de Aquino Neto (UFRJ) CV-Lattes

François Germain Noel (UFRJ) CV-Lattes

Gisele Zapata-Sudo (UFRJ) CV-Lattes

Heloisa de Oliveira Beraldo (UFMG) CV-Lattes

Laurent Emmanuel Dardenne (LNCC) CV-Lattes

Lidia Moreira Lima (UFRJ) CV-Lattes

Luiz Carlos Dias (UNICAMP) CV-Lattes

Magna Suzana Alexandre Moreira (UFAL) CV-Lattes

Manoel Odorico de Moraes Filho (UFC) CV-Lattes

Marcia Paranho Veloso (UNIFAL CV-Lattes

Marco Aurelio Martins (FIOCRUZ/RJ) CV-Lattes

Margareth de Fatima Formiga Melo Diniz (UFPB) CV-Lattes

Nelilma Correia Romeiro (UFRJ) CV-Lattes

Patricia Dias Fernandes (UFRJ) CV-Lattes

Patricia Machado Rodrigues e Silva Martins (FIOCRUZ/RJ) CV-Lattes

Patricia Rieken Macedo Rocco (UFRJ) CV-Lattes

Ricardo Menegatti (UFG) CV-Lattes

Roberto Takashi Sudo (UFRJ) CV-Lattes

Ronaldo de Albuquerque Ribeiro (UFC) CV-Lattes

Sandra Elisa Haas (UNIPAMPA) CV-Lattes

Stela Maris Kuze Rates (UFRGS) CV-Lattes

Thereza Christina Barja Fidalgo (UERJ) CV-Lattes

Valeria de Oliveira (UFG) CV-Lattes

Vanderlan da Silva Bolzani (UNESP/ ARARAQUARA) CV-Lattes

RESEARCHERS

Adriana Ribeiro Silva (FIOCRUZ/RJ) CV-Lattes

Alberto Jose Cavalheiro (UNESP/ ARARAQUARA) CV-Lattes

Aloa Machado de Souza (UFRJ) CV-Lattes

Araken dos Santos Werneck Rodrigues (LNCC) CV-Lattes

Antonio Carlos Doriguetto (UNIFAL) CV-Lattes

Barbara Vasconcellos da Silva (UFRJ) CV-Lattes

Camila Silva de Magalhaes (UFRRJ) CV-Lattes

Carolina Horta Andrade (UFG) CV-Lattes

Catarina de Nigris Del Cistia (UFRRJ) CV-Lattes

Carlos Alberto Tagliati (UFMG) CV-Lattes

Claudia Moraes de Rezende (UFRJ) CV-Lattes

Cristina Setim Freitas (USP/RP) CV-Lattes

Cristiane Sousa Nascimento Baez Garcia (UFRJ) CV-Lattes

Debora Gonçalves Xisto (UFRJ) CV-Lattes

Dulce Helena Siqueira Silva (UNESP/ ARARAQUARA) CV-Lattes

Edna Alves dos Anjos-Valotta (FIOCRUZ/RJ) CV-Lattes

Eliane Aparecida Campesatto Mella (UFAL) CV-Lattes

Fernanda Antunes (UENFE) CV-Lattes

Helio de Mattos Alves (UFRJ) CV-Lattes

Helio Jose Correa Barbosa (LNCC) CV-Lattes

Henrique Marcelo Gualberto (UFRJ) CV-Lattes

Ian Castro-Gamboa (UNIFAL) CV-Lattes

Joao Batista Neves da Costa (UFRRJ) CV-Lattes

Jose Ricardo Sabino (UFG) CV-Lattes

Kennia Rocha Rezende (UFG) CV-Lattes

Leticia Veras Costa-Lotufo (UFC) CV-Lattes

Luciano Morais Liao (UFG) CV-Lattes

Magda Fraguas Serra (FIOCRUZ/RJ) CV-Lattes

Marcelo Henrique dos Santos (UNIFAL) CV-Lattes

Marcio de Matos Coelho (UFMG) CV-Lattes

Margarete Manhaes Trachez (UFRJ) CV-Lattes

INCT-INOFAR RESEARCHERS

Maria Regina Gomes Carneiro (FIOCRUZ/RJ) CV-Lattes

Mariana Lima Vale (UFC) CV-Lattes

Marize Campos Valadares Bozinis (UFG) CV-Lattes

Matheus Lavorenti Rocha (UFG) CV-Lattes

Newton Goncalves de Castro (UFRJ) CV-Lattes

Pedro Leme Silva (UFRJ) CV-Lattes

Priscila Vanessa Zabala Capriles Golliat (LNCC) CV-Lattes

Priscilla Christina Olsen (FIOCRUZ/RJ) CV-Lattes

Raquel Carvalho Montenegro (UFC) CV-Lattes

Regina Maria Barretto Cicarelli (UNESP) CV-Lattes

Renato Sérgio Balao Cordeiro (FIOCRUZ/RJ) CV-Lattes

Rodolfo do Couto Maia (UFRJ) CV-Lattes

Rosangela de Oliveira Alves Carvalho (UFG) CV-Lattes

Sharlene Lopes Pereira (UFRJ) CV-Lattes

Tatiana Paula Teixeira Ferreira (FIOCRUZ/RJ) CV-Lattes

Thaiana da Cunha Ferreira Mendes (UFRJ) CV-Lattes

Thiago Mattar Cunha (USP/RP) CV-Lattes

Ulisses Gazos Lopes (UFRJ) CV-Lattes

Vinicius de Frias Carvalho (FIOCRUZ/RJ) CV-Lattes

Virginia Veronica de Lima (UFRJ) CV-Lattes

SCHOLARS

Adriano Siqueira Vieira (UNICAMP) CV-Lattes

Allan Kardec Nogueira de Alencar (UFRJ) CV-Lattes

Alan Rodrigues de Sousa (UFRJ) CV-Lattes

Alexandra Basilio Lopes (UFRJ) CV-Lattes

Ana Carla Dos Santos (UFRJ) CV-Lattes

Ana Cristina da Mata Silva (UFRJ) CV-Lattes

Ana Gabriela de Almeida Silva (UFRJ) CV-Lattes

Ana Katia dos Santos (UFRJ) CV-Lattes

Ana Maria Calçado dos Santos (UFG) CV-Lattes

Andre Victor Pereira (UNIFAL) CV-Lattes

Arthur Eugen Kümmerle (UFRJ)
CV-Lattes

Arthur Henrique Freitas do Prado (UFRJ)
CV-Lattes

Barbara Assis Novak (UFRJ)
CV-Lattes

Bianca Torres Ciabarella (FIOCRUZ/RJ)
CV-Lattes

Bruno Coelho Cavalcanti (UFC)
CV-Lattes

Carlos Eduardo da Silva Monteiro (UFRJ)
CV-Lattes

Carolina Neris Cardoso (UFMG)
CV-Lattes

Clemilson Berto Junior (UFRJ)
CV-Lattes

Daniel Nascimento do Amaral (UFRJ)
CV-Lattes

Douglas Rodrigues Outeiro de Oliveira (UFRJ) CV-Lattes

Elsa Moreno de Viguri (UNICAMP)
CV-Lattes

Fanny Nascimento Costa (UFRJ)
CV-Lattes

Fabricio Maia da Silva Salvador (UFRJ)
CV-Lattes

Gabrielle Luck de Araujo (UFMG)
CV Lattes

Geovana Barbara Ferreira Mendes (UFG)
CV-Lattes

Givanildo Santos da Silva (UFRJ)
CV-Lattes

Giuliana Bertozi Francisco (USP-RP)
CV-Lattes

Hannah Carolina T. Domingos (UFRJ)
CV-Lattes

Javier Ceras Aresse (UNICAMP)
CV-Lattes

Jean Marcell Marcelino Pena (UFRJ)
CV-Lattes

Jessica Silva dos Santos (UFRJ)
CV-Lattes

Juliana Fatima Vilacha Madeira Rodrigues dos Santos (UFRJ) CV Lattes

Julio Beltrame Daleprane (FIOCRUZ/RJ)
CV-Lattes

Leandro Louback da Silva (UFRJ)
CV-Lattes

Leila de Souza Conegero (UNICAMP)
CV-Lattes

Lidilhone Hamerski Carbonezi (UFRJ)
CV-Lattes

Lucia Beatriz Torres (UFRJ)
CV-Lattes

Luciana Almeida Piovesan (UFRJ)
CV-Lattes

Luciano da Silva Santos (UFRJ)
CV-Lattes

Manuela Lima Toccafondo Vieira (UFMG)
CV-Lattes

INCT-INOFAR RESEARCHERS

Maria de Fatima do Nascimento Alfredo (UFRJ) CV-Lattes

Mariana Trad R. da Motta (UFRJ) CV-Lattes

Marlon Daniel Lima Tonin (UFRJ) CV-Lattes

Marcus Vinicius Dos Santos (UFRJ) CV-Lattes

Nailton Monteiro do Nascimento Junior (UFRJ) CV-Lattes

Natalia Medeiros de Lima (UFRJ) CV-Lattes

Nathalia Freitas Emiliano (UFMG) CV-Lattes

Pedro Gabriel D. L. Pereira (UFRJ) CV-Lattes

Priscila de Paula Cabral (UFRJ) CV-Lattes

Raquel de Oliveira Lopes (UFRJ) CV-Lattes

Roberta Tesch (UFRJ) CV-Lattes

Rodolfo do Couto Maia (UFRJ) CV-Lattes

Sabrina Teixeira Martinez (UFRJ) CV-Lattes

Samira de Sa e Souza (UFMG) CV-Lattes

Sarah da Silva Nunes (UFG) CV-Lattes

Tais Rubia dos Santos (UFRJ) CV-Lattes

Thiago Stevanatto Sampaio (UFRJ) CV-Lattes

Vinicius Frias de Carvalho (FIOCRUZ/RJ) CV-Lattes

Wallace Carvalho Ferreira (UFMG) CV-Lattes