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# *Science and Technology in the State of São Paulo, Brazil*

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# Brazil: 206 million people, 7<sup>th</sup> GDP



Brazil



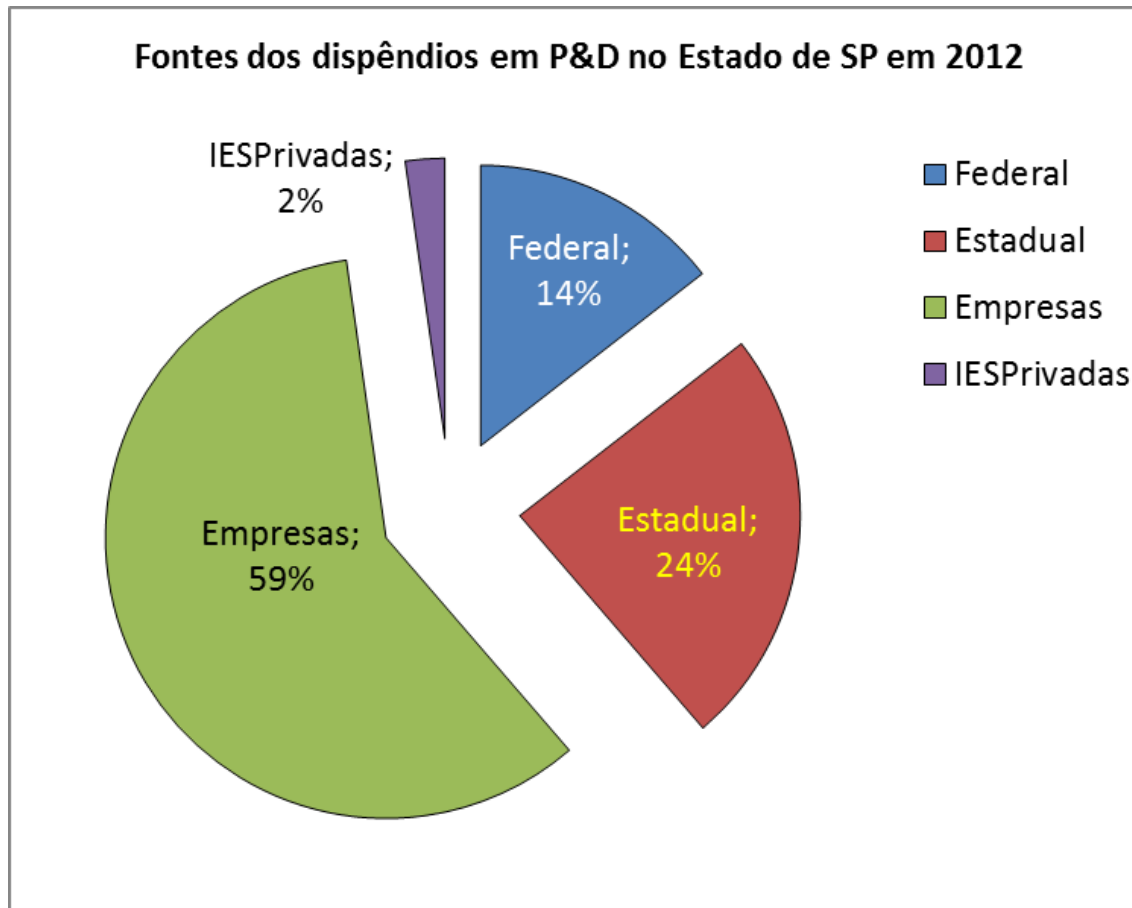
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# State of São Paulo, Brasil



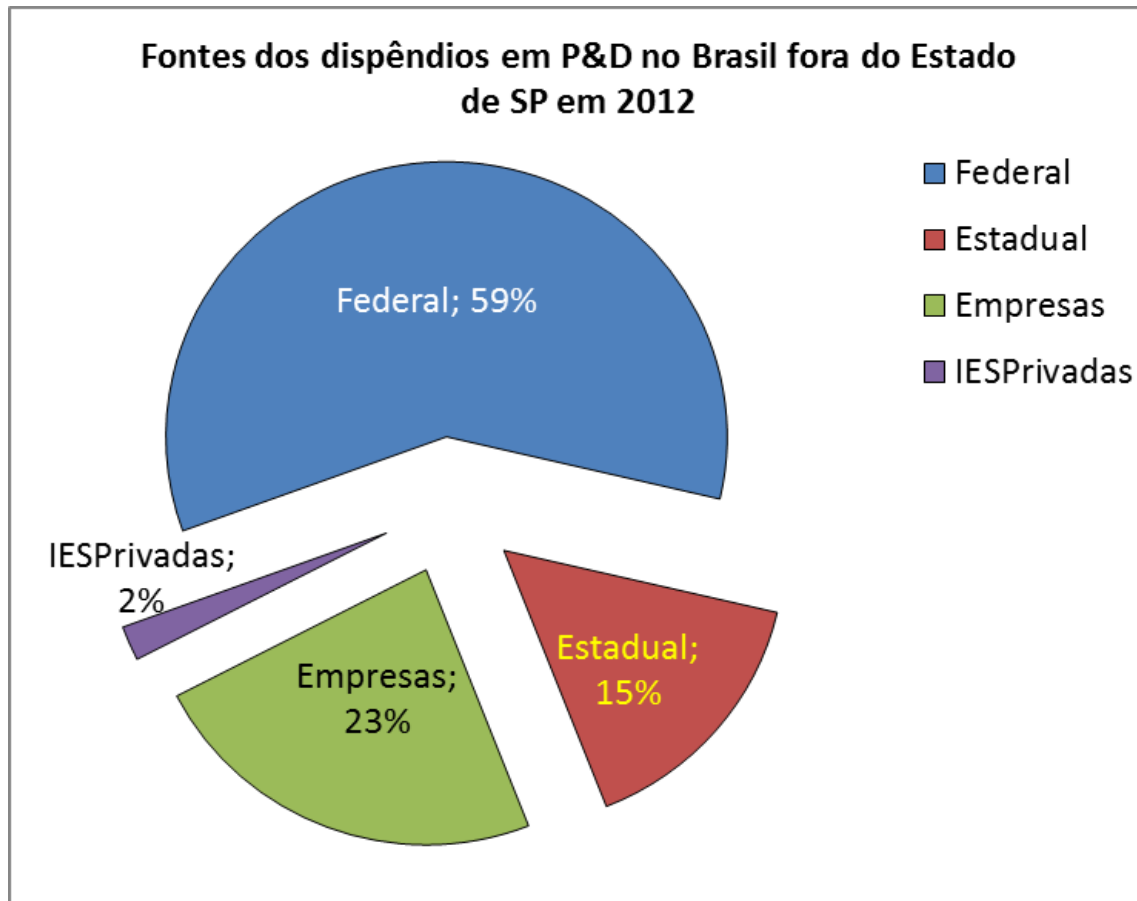
42	Million people
32%	of Brazil's GDP
45%	of Brazilian science
13%	of State budget to HE and R&D
1.7%	GDP for R&D
3	State Universities
4	Federal H.E. institutions
52	State Tech Faculties
45%	of the PhDs graduated in Brazil (6,131 in 2014)
22	Research Institutes (19 state/3 federal)

# São Paulo: R&D Expenditures, 2012, by source



- R&D intensity – 1.7% of state GDP  
– From 1.52% in 2008
- Gov. expenditure  
– State 63%  
– Federal 37%

# Brasil, outside São Paulo: R&D expenditures, 2012, by source



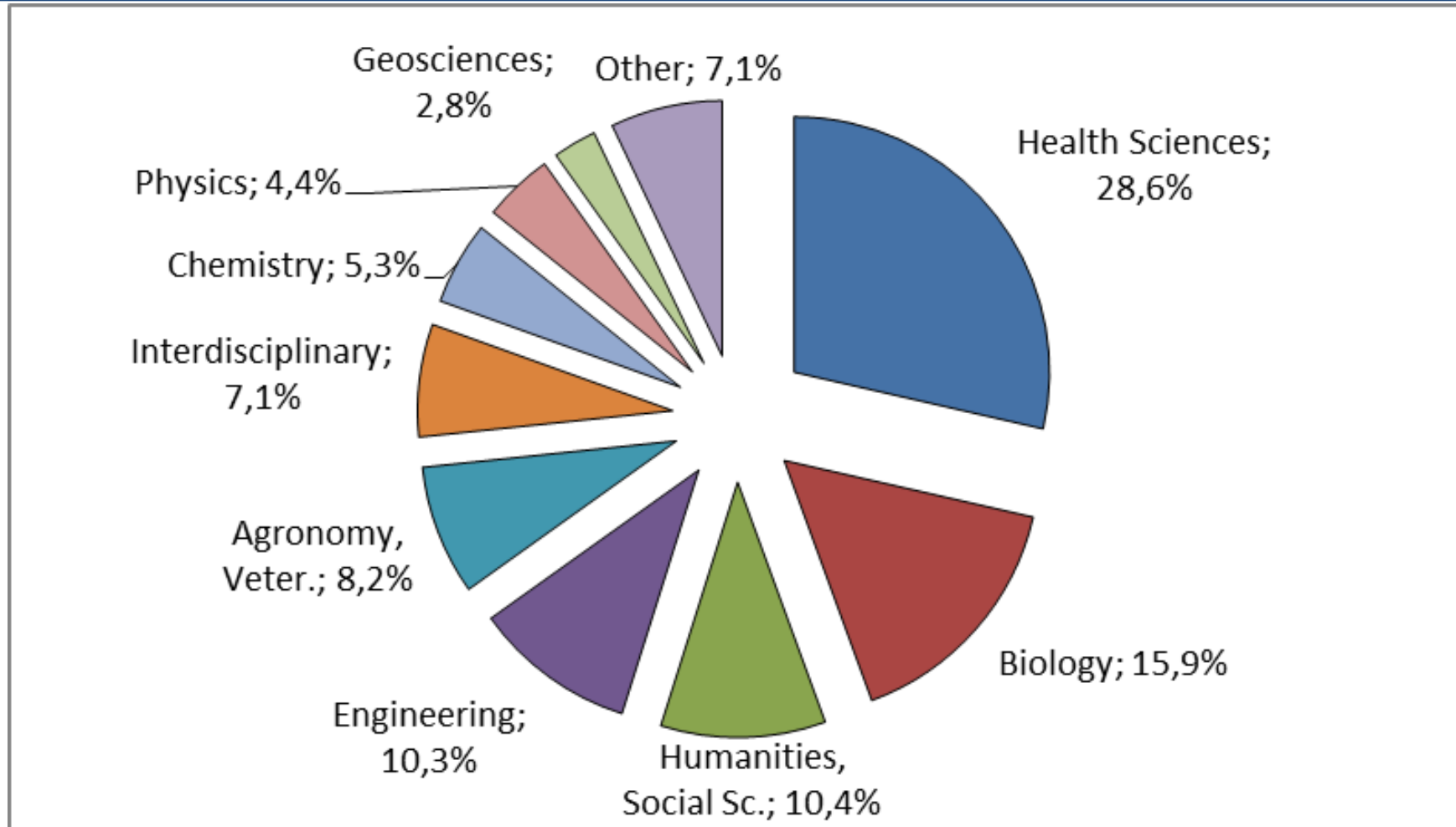
- R&D intensity – 0.95% of GDP
- Gov. expenditure
  - States 19%
  - Federal 81%

# Fapesp: São Paulo Research Foundation

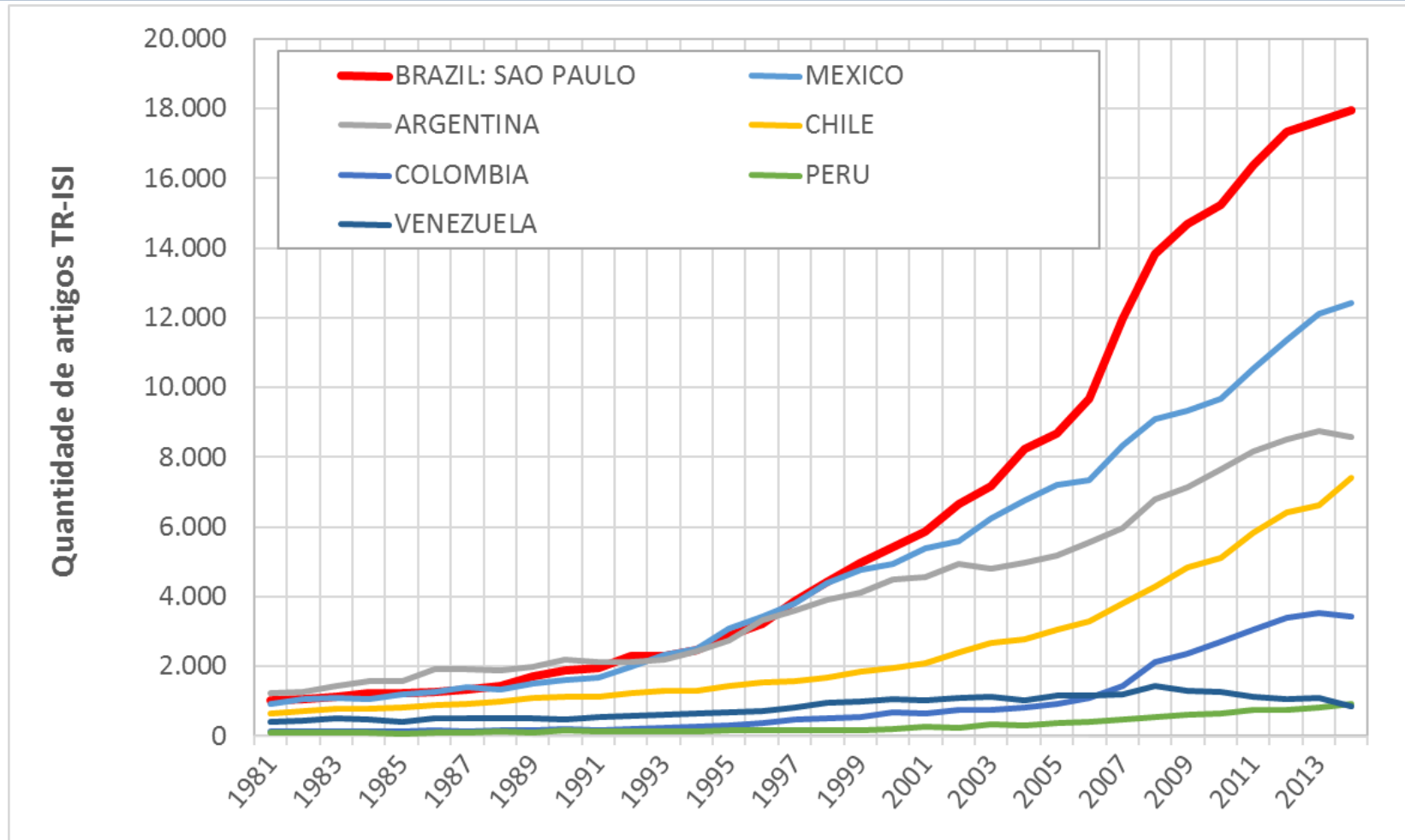
- Mission: support research in all fields
- Funded by the State of São Paulo with 1% of all state revenues
- All proposals are peer reviewed (25,000 proposals in 2015)
  - Average time for decision– 64 days; 40% success rate
- Annual budget: \$PPP 629 millions in 2015
  - Fellowships
    - In Brazil: 2,000 SI, 1,100 MSc, 3,000 DrSc, 2,000 Post-docs, 800 others
    - Abroad: 1,200 per year
  - Academic R&D
    - RIDC/11 years, Thematic/5 years, Young Investigators/4 years, Regular/2 years
  - University-Industry Joint R&D: Microsoft, Agilent, Braskem, Oxiteno, SABESP, VALE, Natura, Petrobrás, Embraer, Padtec, Biolab, Cristalia, Whirlpool, Boeing, Astra-Zeneca, Intel
    - Engineering Res. Centers: 10 years joint grants FAPESP/Industry – PCBA, GSK, Natura, BG
  - Small bussiness R&D (PIPE): 1,500 SBE's (three awards per week in 2015)

# FAPESP expenditures, 2014

## Total: R\$ 1.153 billion



# São Paulo produces more articles than any country in Latin America







Invertebrate Systematics

NITRIC OXIDE Biology and Chemistry Official Journal of the European Chemical Society

February 13, 2004 Volume 64 Number 4 Pages 1299-1360

Cancer Research

PHARMACOLOGICAL RESEARCH An Official Journal of the Association of Pharmaceutical Scientists

nature SINK OR SOURCE? Through biotechnology, scientists are creating carbon sinks to help reduce atmospheric CO2

Journal of the American College of Cardiology Zeitschrift für Naturwissenschaften NEW STRUCTURES

AIP The Journal of Chemical Physics

nature Citrus pathogen sequenced

Science Signaling

Microbes and Infection

PCCP Physical Chemistry Chemical Physics

Analyst

PHYSICAL REVIEW LETTERS

NANOTECHNOLOGY

FRESHWATER RESEARCH

Analyst

CrystEngComm

Analyst

JOC

Science Vanishing fauna

METEORITICS & PLANETARY SCIENCE

CHEMPHYSICHEM

PHYSICAL REVIEW LETTERS

Acta Crystallographica Section E Structure Reports Online

Science

THE JOURNAL OF PHYSICAL CHEMISTRY

METEORITICS & PLANETARY SCIENCE

JOURNAL OF MATERIALS

nature reviews NEUROSCIENCE

Journal of NANOSCIENCE NANOTECHNOLOGY

JOC The Journal of Organic Chemistry

SCIENCE and TECHNOLOGY

ZEITSCHRIFT FÜR KRISTALLOGRAPHIE

ADVANCED FUNCTIONAL MATERIALS

PHYSICAL REVIEW LETTERS

PHYSICAL REVIEW LETTERS

# FAPESP-Industry-University Engineering Research Centers

- Center is hosted in a university, PI is a professor
  - Adjunct Director is a researcher from the company as a visiting professor at the university
  - Other company researchers as visiting professor are more than welcome
- 10 year contract; R\$ 2 – 6 million per year from FAPESP and Company, plus labor costs by university
  - Typical proportion: FAPESP:Industry:University - 1:1:2
- One center selected, other five in selection
  - Peugeot-Citroen (PCBA)
    - Biofuel Engines Engineering Research Center; hosted at Unicamp (incl. ITA, USP, Mauá); PCBA+FAPESP - R\$ 16 million + in-kind by host univ. (est. R\$ 16 million)
  - GSK
    - Engineering Research Center on Sustainable Chemistry; R\$ 32 million + in-kind by host university
    - Engineering Research Center on Target Discovery; R\$ 32 million + in-kind by host university
  - Natura: Applied Research Center on Well-being and Human behavior
    - R\$ 20 million + in-kind by host university
  - BG: ERC Natural Gas

# FAPESP+Peugeot-Citroen: Advanced Research Center for Biofuel Engines

- 10year contract
- Unicamp, USP, Mauá, ITA
- Researchers from universities and from company
  - Vice-director is a Company scientist
- Other 4 ERCs:
  - Natura
  - Glaxxo-Smith-Kline, GSK
    - Green Chemistry
    - Target Discovery
  - British Gas, BG

FAPESP inaugura Centro de Pesquisa em parceria com a PSA Peugeot Citroën



*Iniciativa apoiará o desenvolvimento de motores movidos a biocombustíveis com participação de pesquisadores da USP, Unicamp, ITA e Instituto Mauá de Tecnologia*

A Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP) e a PSA Peugeot Citroën do Brasil anunciaram ontem, dia 04 de novembro de 2014, na sede da FAPESP, o lançamento do Centro de Pesquisa em Engenharia "Professor Urbano Ernesto Stumpf", para desenvolvimento de motores de combustão interna, adaptados ou desenvolvidos especificamente para biocombustíveis e de estudos sobre a sustentabilidade dos biocombustíveis.

# FAPESP-BG Brasil-Poli, USP: Engineering Research Center on Natural Gas

## FAPESP e BG Brasil selecionam Centro de Pesquisa para Inovação em Gás Natural

30 de julho de 2015



**Agência FAPESP** – A FAPESP e a BG Brasil, empresa do BG Group, anunciam o resultado da seleção de uma proposta para implantação do Centro de Pesquisa para Inovação em Gás Natural (CIG).

O projeto será coordenado por Julio Meneghini, professor do Departamento de Engenharia Mecânica da Escola Politécnica da Universidade de São Paulo (Poli-USP) e pesquisador principal do Centro, e por Alexandre Breda, gerente de Projetos Ambientais do BG Group. A sede será na Poli/USP, responsável pelo apoio institucional e administrativo aos pesquisadores envolvidos.

A seleção da proposta foi feita com base em pareceres de assessores no Brasil e no exterior sobre as propostas apresentadas em resposta a Chamada Pública, lançada no âmbito do acordo de cooperação assinado entre a FAPESP e a BG Brasil em setembro de 2013.

O CIG contará com apoio de longo prazo da FAPESP, BG Brasil e da USP para desenvolver pesquisa científica de classe internacional nas áreas de Engenharia, Física e Química e em Políticas Energética e Econômica. O contrato entre as instituições será assinado nos próximos meses, celebrando a implantação do CIG.



Proposta selecionada em chamada propõe ampliar a participação do gás natural na matriz energética (foto: BG Group)

# Glaxo, Smith, Kline (GSK) and FAPESP

- GSK-FAPESP Center for Target Discovery
  - Butantan Institute
  - Identification of molecular targets and signaling pathways applicable to inflammatory diseases as reumathoid arthritis, metabolic syndrome, neurodegenerative diseases
  - Use of natural products such as venoms and animal secretions to be validated as theurapeutic targets for new drugs

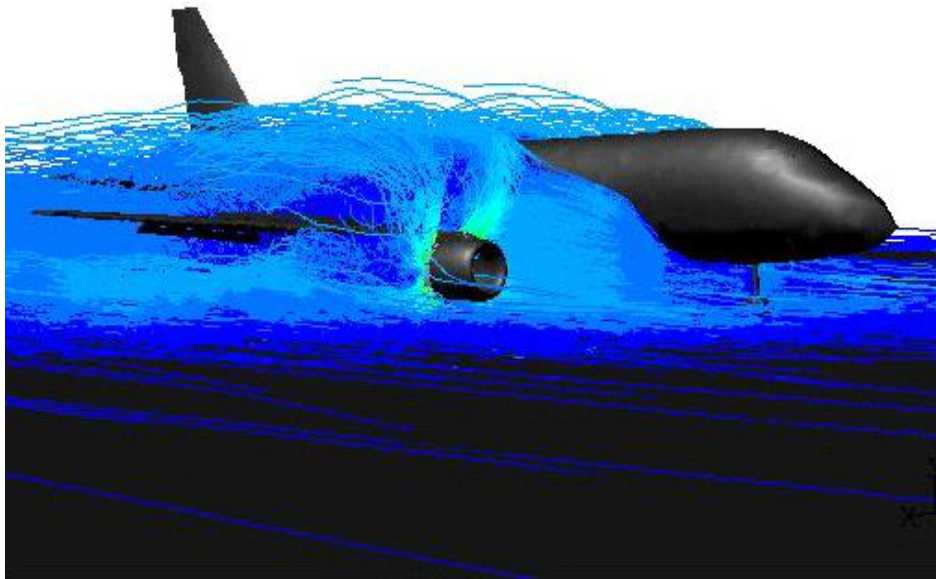
FAPESP Funding:	R\$	12,731,369.84
GSK Funding:	R\$	11,361,576.90
Instituto Butantan Funding:	R\$	33,343,991.30

- GSK-FAPESP Center for Green Chemistry
  - Federal Univ. S. Carlos; with Unicamp, USP-RP, UNESP, UFSC
  - Reducing environmental impact in organic synthesis
  - Use of sustainable solvents, energy sources, safer reactants, cleaner processes, renewable feedstocks

FAPESP Funding:	R\$	5,094,554.59
GSK Funding:	R\$	5,490,642.06
UFSCAR Funding:	R\$	20,378,752.10

# *Embraer-FAPESP: R&D to build an innovative jet*

Computational Fluid Dynamics  
(CFD) simulation and tests  
Research co-funded by FAPESP,  
using several universities



# Advanced Molecular Biology for Health and Agriculture



Supported by:

02/25/2015 09h47



## Latin America's first kinase laboratory

Center located at Unicamp involves an investment of R\$ 18 million from Fapesp

### Unicamp

On March 10, Unicamp will launch the first research center of biology in Latin America (LA) in the area of protein kinases, molecules that are highly required in the pharmaceutical industry due to their signaling characteristics and the regulation of important biological processes. The laboratory, called Biology Center in Protein Kinase, relies on the partnership with São Paulo Research Foundation (Fapesp) and the Structural Genomics Consortium (SGC).

abbvie



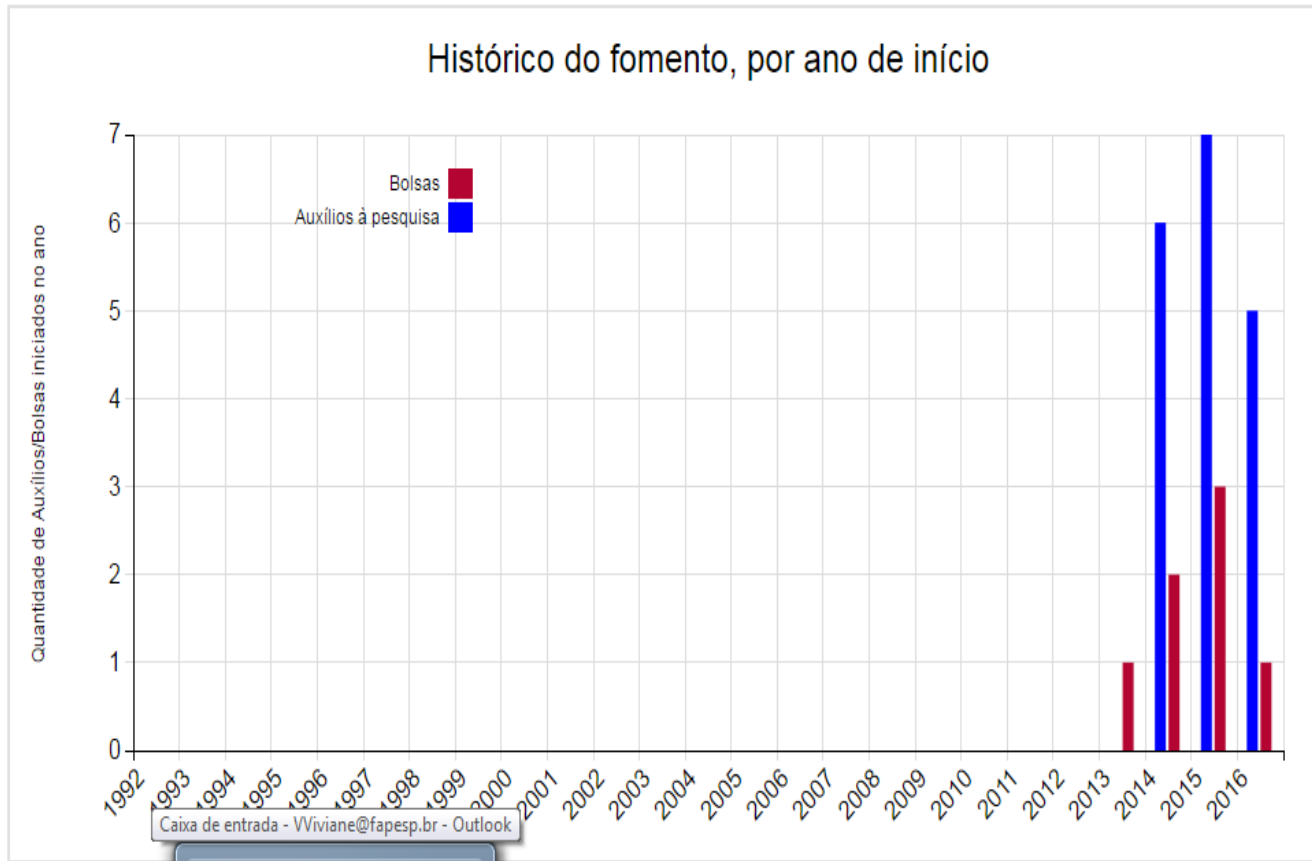




# *FAPESP international collaboration: bringing foreign scientists to SP*

- Post doctoral fellowships (671 new awards in 2015)
  - Stipend, travel, some research money
- Young Investigator Awards (60 new awards in 2015)
  - Stipend, travel, full research support in a 4-year grant
- Visiting scientists
  - 275 in 2010 (travel, stipend; 2 weeks to 12 months)
- São Paulo Schools of Advanced Science (SPSAS)
  - Each one brings 50-100 young PhD students from abroad
- São Paulo Excellence Chairs (SPEC)
  - For senior level scientists from abroad: full research grant for staying 12 weeks per year in SP for 3-5 years

# Agreement signed by FAPESP-NWO on November 21, 2012, valid for a period of five years



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- **Joint Research Projects Biobased Economy 2013**
  - **FAPESP-ESRC-NWO Joint Call for Transnational Collaborative Research Projects Sustainable Urban Development 2014**
  - **FAPESP-NWO Call for Proposals: Advanced Instrumentation for Astronomy 2015**
  - **Data-driven research on Sports & Healthy Living 2016**

# To know about research in São Paulo: FAPESP Newsletter – in English

- <http://agencia.fapesp.br/en/>

The screenshot displays the homepage of the Agência FAPESP website in English. The browser address bar shows <http://agencia.fapesp.br/home/>. The website header includes the logo "Agência FAPESP" and navigation links for "NEWS", "VIDEOS", and "SUBSCRIBE". Social media icons for Facebook, Twitter, YouTube, and RSS are also present. The main content area features a carousel of news items:

- FAPEWeek 2016 set to celebrate cooperation between scientists in Brazil and the US** (with a logo for Michigan State University).
- Milky Way expanded from inside out**: Study by team including Brazilian scientists published in *The Astrophysical Journal Letters* shows that formation of the galaxy's stars began in the center and then spread outwards.
- Respirator mask reduces effects of pollution on the heart**.
- Novel biomarker technique gauges field success of insect that parasitizes crop pests**.
- Washington seminar scrutinizes reduction in Brazilian inequality**.
- Dengue Chikungunya** (with an image of a mosquito).
- Promising strategies to combat AIDS pandemic**.
- Interview with Andre Geim | Nobel Prize in Physics 2010** (with a video player).

At the bottom of the carousel, there is a "SEE ALL NEWS" link and a set of navigation dots. Below the carousel, there are two promotional banners: "Agência FAPESP in social media" and "Newsletter Agência FAPESP Sign up for the Agência FAPESP Newsletter. It's free." The Windows taskbar at the bottom shows the system tray with the date "ENG 20:58" and the page number "20".

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Thank you