ANNUAL ACTIVITY REPORT

2016

OSGEMEOS

SÃO PAULO RESEARCH FOUNDATION

Rua Pio XI, 1500, Alto da Lapa
05468-901 - São Paulo, SP - Brazil
+55 (11) 3838-4000

www.fapesp.br

“The Carnival Is Over”
2016
São Paulo, Brazil
Photo: Filipe Berndt

OSGEMEOS Portrait
2015
New York, USA
Photo: Martha Cooper

OSGEMEOS

FAPESP 2016

ANNUAL ACTIVITY REPORT

2016

“Silos”
2014
Vancouver Bienalle
Vancouver, Canada
Photo: Roaming-the-planet
2016
ANNUAL
ACTIVITY REPORT

executive summary
YEAR 2016

SÃO PAULO STATE GOVERNOR
Geraldo Alckmin

SECRETARY OF ECONOMIC DEVELOPMENT, SCIENCE AND TECHNOLOGY
Márcio França

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José Goldemberg

VICE PRESIDENT
Eduardo Moacyr Krieger

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Carlos Henrique de Brito Cruz

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Joaquim José de Camargo Engler

YEAR 2017

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Joaquim José de Camargo Engler (until February 14th)
Fernando Menezes de Almeida (beginning May 10th)
INTRODUCTION

Despite the economic problems facing Brazil in 2016, FAPESP was able to maintain its commitments and pace in financing research.

Even with the adverse scenario of negative real growth in the transfers by the São Paulo Treasury to FAPESP due to reduced state income, the on-going research projects under Special Programs and Research in Technological Innovation advanced in real terms in 2016.

Not only assuring the continuity of on-going projects, FAPESP also expanded the contracting of new research projects by 4% and adjusted the value of its fellowships by 11%. In total, 10,480 new projects were contracted between research fellowships in Brazil (5,491) and abroad (1,162), and 3,827 research grants were awarded.

In 2016, the total disbursements by FAPESP were $ PPP 533.9 million in purchasing power parity (PPP), supporting 24,685 projects, of which 53% were application oriented, 39% were for the advancement of knowledge, and 8% were in support of research infrastructure. Life sciences received the most benefits with 40.5% of the total. With 37%, the exact sciences, earth sciences, and engineering came in second.

Particularly noteworthy was the growing cooperation between FAPESP and the business sector. For example, in 2016, four new projects per week were funded under the Innovative Research in Small Business Program (PIPE), which supports research in small companies.

Moreover, another Engineering Research Center was installed, which brings the number to five. For each Brazilian real invested by FAPESP in these centers, which last up to 10 years, the partner company adds another real, and the affiliated university or research institute contributes two.

Among FAPESP’s international cooperation projects, a total of 904 research grants and 1,162 fellowships abroad were financed. In 2016, 25 new cooperation agreements (over two per month) were signed with other development and research institutes and foreign universities, which increased the number of FAPESP’s current international agreements to 169.

As part of this effort, we held FAPESP Week, a successful events program started in 2011, which allows researchers from São Paulo to showcase their projects in other countries alongside their colleagues from the host nation to exchange knowledge and assess new challenges. In 2016, FAPESP Week was held in Michigan and Ohio and in the Uruguayan city of Montevideo, which brought together scientists from various countries in South America.
INTRODUCTION

One of FAPESP’s legal obligations is to publicize the activities that it finances. In 2016, almost 10,000 notices about its financed research projects were published in over 1,000 communication vehicles, including 251 in 97 media outlets in 23 countries abroad.

Moreover, the FAPESP portal and its sites were accessed 10 million times; the Pesquisa FAPESP magazine was distributed monthly to 26,000 subscribers; the daily bulletins from the Agência FAPESP were sent to over 100,000 subscribers; and the weekly bulletin Pesquisa para Inovação (Research for Innovation) was distributed to another 100,000. The Biblioteca Virtual (Virtual Library) site, whose collection includes research that FAPESP has financed since 1992, received nearly 4 million visitors.

In 2017, when FAPESP celebrates its 55th anniversary, we hope that Brazil manages to overcome the economic recession afflicting it for the past two years and to regain the rates of absolute real growth in disbursements that it enjoyed until 2014.

THE ARTISTS

We continue in the tradition of illustrating our annual report with the work of artists from the state of São Paulo to emphasize the universality of human knowledge that has steered FAPESP’s mission and helped distinguished FAPESP among the large research financing agencies worldwide.

As we did in 2015, we offered this space to young artists in 2016. We selected Gustavo and Otávio Pandolfo, known worldwide as OSGEMEOS, who were born in the city of São Paulo in 1974. They started as graffiti artists and remain so. Over time, they have perfected their art – in painting, design, and sculpture – which they continue to develop on the streets, as well as in the studio.

OSGEMEOS admirably represent the spirit of innovation, challenge, audacity, contemporaneity and internationalism that mark FAPESP’s activities and that are summarized in this report.

José Goldemberg
President of FAPESP

São Paulo, August 2017
In the state of São Paulo, there are **62 entities** with mission guided to research activities, in addition to **14,595 innovative companies**.

6
Universities
3 state
3 federal

4
Independent Institutions of Higher Education
2 state
2 federal

34
Public Funded Research Institutes
23 state
5 federal
6 EMBRAPA research units

18
Private Research Institutes
9 in privative hospitals
9 other

12,783 industrial companies
1,773 service companies
39 other

INNOVATION

1,599 PATENTS
for inventions requested from the INPI (National Institute of Industrial Property) by state residents in the state (31% of the total)

INNOVATIVE COMPANIES

<table>
<thead>
<tr>
<th>Leading Sectors (percentage of the sector total)</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food products – 1,276 (44.8%)</td>
<td></td>
</tr>
<tr>
<td>Metal products – 1,186 (24.2%)</td>
<td></td>
</tr>
<tr>
<td>Plastic and rubber articles – 1,150 (35.2%)</td>
<td></td>
</tr>
<tr>
<td>Information technology – 1,036 (48.8%)</td>
<td></td>
</tr>
<tr>
<td>Clothing and accessories – 1,304 (19.9%)</td>
<td></td>
</tr>
<tr>
<td>Other – 8,643</td>
<td></td>
</tr>
</tbody>
</table>

Source: Survey of Technological Innovation, Brazilian Institute of Geography and Statistics (PNTETC 2014, IBGE)
Companies that implemented product and/or process innovation in the period 2012 to 2014

INNOVATION

CITIES WITH THE GREATEST NUMBER OF PATENTS

<table>
<thead>
<tr>
<th>City</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>São Paulo</td>
<td>1,599</td>
</tr>
<tr>
<td>Campinas</td>
<td>654</td>
</tr>
<tr>
<td>São Carlos</td>
<td>31</td>
</tr>
<tr>
<td>São José dos Campos</td>
<td>30</td>
</tr>
<tr>
<td>Sorocaba</td>
<td>24</td>
</tr>
<tr>
<td>Unesp</td>
<td>24</td>
</tr>
<tr>
<td>Unicamp</td>
<td>68</td>
</tr>
<tr>
<td>Whirlpool</td>
<td>62</td>
</tr>
<tr>
<td>Natura</td>
<td>19</td>
</tr>
</tbody>
</table>

Source: INPI 2016
73.7 RESEARCHERS IN THE STATE

42,600
Higher Education

27,000
in Companies

4,100
in State, Federal and Private Research Institutes

Degrees granted by state institutions in 2016

7,252 DOCTORATES
(35% of the country total)

11,168 MASTERS
(24% of the country total)

20,169 SCIENTIFIC WORKS PUBLISHED
in journals listed on the Web of Science (Thomson-Reuters)
by authors residing in the state

44% of the works authored by Brazilians – a 29% increase from the number in 2010

8,178 SCIENTIFIC WORKS WITH INTERNATIONAL CO-AUTHORS
41% of total publications
Increase of 96% since 2010

COUNTRIES WITH THE MOST FREQUENT CO-AUTHORS

<table>
<thead>
<tr>
<th>WORKS</th>
<th>EVOLUTION FROM 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>3,493</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1,441</td>
</tr>
<tr>
<td>Spain</td>
<td>1,156</td>
</tr>
<tr>
<td>Germany</td>
<td>1,144</td>
</tr>
<tr>
<td>France</td>
<td>1,108</td>
</tr>
</tbody>
</table>

Source: Coordination and Improvement of Higher Level or Education Personnel (CAPES), 2016
Source: Indicators FAPESP of S&T – 2016 preliminary data
Source: InCities Thomson-Reuters 2016
EXPENDITURES ON R&D IN SÃO PAULO
BY SOURCE OF FUNDING (2016)

$ PPP 13 BILLION

<table>
<thead>
<tr>
<th>Source of Funding</th>
<th>Expenditure (PPP billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPANIES</td>
<td>$ PPP 7.9 billion</td>
</tr>
<tr>
<td>STATE GOVERNMENT</td>
<td>$ PPP 3 billion</td>
</tr>
<tr>
<td>FEDERAL GOVERNMENT</td>
<td>$ PPP 1.9 billion</td>
</tr>
<tr>
<td>PRIVATE HIGHER EDUCATION INSTITUTIONS</td>
<td>2.6% – $ PPP 0.34 billion</td>
</tr>
</tbody>
</table>

Source: Indicators FAPESP of S&T – 2016 preliminary data

COMPANY EXPENDITURES ON R&D
AS A PERCENTAGE OF GDP (2015)

Source: Brazil Data – MCTI (Ministry of Science, Technology and Innovation)/ São Paulo Data: FAPESP/ Other – OECD – Main Science and Technology Indicators

(1) 2016 Data; (2) 2014 Data; (3) 2013 Data
Created in 1962, FAPESP is a public foundation funded by São Paulo taxpayers to promote the development of science and technology in the state, by supporting research projects in institutions of higher education and research, official or private, which are selected by a rigorous system of analysis based on the peer-review process.

FAPESP DISBURSEMENT FOR RESEARCH PROJECTS

$ PPP* 533.9 million
in 24,685 research projects

- Application-driven Research: 53%
- Advancement of Knowledge: 39%
- Research Infrastructure: 8%

- Life Sciences: 40.5%
- Natural Sciences and Engineering: 37%
- Interdisciplinary: 11.5%
- Human and Social Sciences: 11%

- USP: 47%
- UNESP: 13%
- UNICAMP: 13%
- Federal Institutions: 12%
- Private Institutions: 5%
- Private Companies: 5%
- State Institutions: 4%

*Purchasing Power Parity
COMPETITIVE INTERNATIONAL RESEARCH

FAPESP supports the most advanced research in São Paulo through the Research, Innovation and Dissemination Centers (RIDCs), Thematic Projects, the Young Investigators Program (YIA), São Paulo Excellence Chair (SPEC) and Engineering Research Center. Disbursements for these programs in 2015 were $ PPP 189.9 million, including expenses for Multiuser Equipment, and Fellowships and Grants associated to these programs.

<table>
<thead>
<tr>
<th>Program</th>
<th>Number of Projects</th>
<th>Amount (PPP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RIDCs</td>
<td>17</td>
<td>$ 31.4 million</td>
</tr>
<tr>
<td>Thematic Projects</td>
<td>477</td>
<td>$ 120.3 million</td>
</tr>
<tr>
<td>SPEC Thematics</td>
<td>9</td>
<td>$ 1.7 million</td>
</tr>
<tr>
<td>Young Investigator</td>
<td>313</td>
<td>$ 32.0 million</td>
</tr>
<tr>
<td>Engineering Research Center</td>
<td>4</td>
<td>$ 4.5 million</td>
</tr>
</tbody>
</table>

UNIVERSITY-BUSINESS COLLABORATION

In 2016, FAPESP contracted a new Engineering Research Center in partnership with the Brazilian company Natura and the University of São Paulo (USP), the Federal University of São Paulo (UNIFESP), and Mackenzie Presbyterian University (UPM) for a period of up to 10 years. The center will be tasked with performing research on human behavior and well-being.

Each $ PPP 1 that FAPESP invested mobilizes over $ PPP 1 from the company and $ PPP2 from the university or research institute.

Other centers exist with the companies GlaxoSmithKline (GSK), BG- Shell and Peugeot-Citroën.
FOSTERING INTERNATIONAL COOPERATION IN RESEARCH

904 research grants and 1,162 fellowships were granted in 2016 to various programs as a stimulus for international cooperation in research.

- **$ PPP 19.3 million** were committed to research that began in 2016 under agreements with universities, financing agencies, and companies.
  - 169 international cooperation agreements are in effect with organizations from 30 countries, 25 of which were signed in 2016. FAPESP resources are matched with counterparts of similar value from foreign entities; the effective value of support to these collaborations totaled approximately **$ PPP 28.2 million**.

- **$ PPP 65.8 million** were committed to 351 grants and 1,143 fellowships for scientific exchange, which were not linked with agreements in 2016.

INNOVATIVE RESEARCH IN SMALL BUSINESS PROGRAM (PIPE)

4 PROJECTS PER WEEK IN 2016

Until 2016, the program has supported 1,694 projects at 1,098 companies in 125 cities in the state of São Paulo.

228 new research projects in small business in the state in 2016
ATTRACTING YOUNG INVESTIGATORS TO THE STATE

Since 1997, FAPESP has brought 1,456 Young Investigators to São Paulo Institutions

$ PPP 21.4 million were spent on 326 Young Investigators projects in 2016

2016: 58 new Young Investigators were hired to begin their scientific careers in research organizations in the state of São Paulo

32 Life Sciences
23 Natural Sciences and Engineering
3 Human and Social Sciences

PATENTS

FAPESP has 1,234 patents registered in its name (as the patent holder or shared beneficiary).

111 in effect
982 under analysis
141 terminated

RESEARCH DATA BASE

FAPESP maintains a Research Data Base on its website that contains over 218,000 items related to all the grants and fellowships financed by the Foundation since 1992.

118,583 Fellowships in country
9,392 Fellowships abroad
90,393 Research Grants
COOPERAÇÃO EM PESQUISA
COM AGÊNCIAS
E INSTITUIÇÕES ACADÊMICAS
COM EMPRESAS
A FAPESP EM 2016

1

ABOUT FAPESP
MANAGEMENT
EVALUATION SYSTEM
INCOME
ANALYSIS OF THE YEAR
APPLICATION RESOURCES
COOPERATION IN RESEARCH
The São Paulo Research Foundation (FAPESP) is one of the main Brazilian public agencies for financing research. Formally created in 1960 (Organic Law 5.918 of October 18, 1960) with the mission to support scientific research at institutions of higher learning and research in the state of São Paulo, FAPESP began to function effectively in 1962 (Decree 40.132 of May 23, 1962).

Created under the 1947 State Constitution and ratified under the Constitution of 1989, FAPESP receives 1% of state tax revenue to support scientific and technological research, financing the investigation, cooperation, and dissemination of the science and technology produced in the state of São Paulo.

Support is given through fellowships and research grants in all areas of knowledge.

Grants are made through two large financing lines: a line for permanent, regular research through various fellowship modalities for academic qualification at different levels, at home and abroad, and through several grant modalities. This line seeks to meet the spontaneous demand of researchers and represents the most traditional form of research support as conceived since 1962.

The second financing line supports fellowships and grant requests under programs created by FAPESP and oriented toward specific strategic objectives in fields such as biodiversity, bioenergy, global climate change, eScience, technological innovation, and public policy, among others, as well as the modernization of the research infrastructure in the state of São Paulo.
FAPESP is overseen by a Board of Trustees and managed by an Executive Board. The state constitution guarantees the Foundation’s administrative autonomy. The Board of Trustees Council formulates general guidelines for FAPESP and the more important decisions regarding scientific, administrative and asset/legacy, heritage policy. The board has 12 members with six-year terms that can be renewed once. Six council members are chosen by the state Governor, and others six are named by him based on three-names selected by the public and private research and higher education institutions in the state of São Paulo. The Foundation’s president and vice-president are appointed by the state governor from a three-name list submitted by the Executive Board from among its members.

The Foundation’s Executive Board constitutes the executive directorship of FAPESP. It is composed of the chair, scientific director, and administrative director, all with a three-year mandate. The directors are appointed by the Governor based on three-name lists submitted by the Board of Trustees.

<table>
<thead>
<tr>
<th>EXECUTIVE BOARD IN DECEMBER, 2016</th>
<th>BOARD OF TRUSTEES IN DECEMBER, 2016</th>
</tr>
</thead>
</table>
| Carlos Américo Pacheco 2016 – 2019
EXECUTIVE BOARD PRESIDENT DIRECTOR | José Goldemberg 2015 – 2018
PRESIDENT |
| Carlos Henrique de Brito Cruz 2014 – 2017
SCIENCE DIRECTOR | Eduardo Moacyr Krieger 2013 – 2019
VICE PRESIDENT |
| Joaquim José de Camargo Engler 2014 – 2017
ADMINISTRATIVE DIRECTOR | Carmino Antonio de Souza 2015 – 2021 |
| Ferdinando Ferreira Costa 2012 – 2018 |
| João Fernando Gomes de Oliveira 2015 – 2021 |
| João Grandino Rodas 2012 – 2018 |
| José de Souza Martins 2013 – 2019 |
| Julio Cesar Durigan 2016 – 2022 |
| Marilza Vieira Cunha Rudge 2013 – 2019 |
| Pedro Luiz Barreiros Passos 2013 – 2019 |
| Pedro Wongtschowski 2015 – 2021 |
| Suely Vilela 2012 – 2018 |
Applications for research project grants submitted to FAPESP are selected through systematic peer review. For each field of knowledge, the Scientific Director maintains a committee of recognized experts, called Area Coordinators, with responsibility for coordinating the merit review process. The steps of this process are summarized below. To learn details of FAPESP’s Systematic Analysis, visit the following website: www.fapesp.br/analise.

### STAGES OF PROJECT ANALYSIS

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – Area Coordinators receive applications</td>
<td>Each application received by FAPESP is forwarded to the corresponding Area Panel.</td>
</tr>
<tr>
<td>2 – Selection of Ad hoc Advisors and Issuance of Expert Opinion Reports</td>
<td>After analyzing and summarizing the project and the presenter’s institutional connections, the Area Coordinator identifies specialists with specific competence in the project theme to issue an expert opinion. The choice of outside ad hoc advisors is meant to prevent potential conflicts of interest of any type in project analysis. The ad hoc advisors analyze the proposals and issue expert opinion reports.</td>
</tr>
<tr>
<td>3 – Analysis by the Area Panel</td>
<td>The procedures are developed by the Area Coordinators, who in turn analyze the expert opinions and issue a recommendation for decision by the Science Director.</td>
</tr>
<tr>
<td>4 – Analysis by the Adjunct Coordinator</td>
<td>The Science Director relies on collaboration from a group of 10 researchers who are recognized leaders in their fields. As adjunct coordinators, they act as quality control for the work of the Area Coordinators. As such, they analyze all the coordinators’ recommendations and verify their compatibility with the available expert opinion reports. They can endorse a recommendation, question it, or recommend it for further analysis.</td>
</tr>
<tr>
<td>5 – Decision by the Science Director</td>
<td>The Science Director’s decision is based on the recommendations of the Adjunct Coordinator and the Area Coordinators and via ratification by the ad referendum of the Executive Board.</td>
</tr>
</tbody>
</table>
The number of *ad hoc* advisors consulted to analyze a project depends on the field as well as the size of the budget request.

Every request for an expert opinion to an *ad hoc* advisor is accompanied by an express commitment to maintain confidentiality of names. The advisors also commit to maintaining confidentiality regarding the content of their opinion reports, and only FAPESP personnel and advisors are involved in the process of analyzing applications.

For each of the funding lines, typically, a timeline is defined to complete the analysis process, and in the large majority of cases, FAPESP has made every effort to respect the deadlines. However, the Foundation cannot entirely control the most important stage of the process, namely, analysis by the advisors. Frequently, before issuing a final opinion report, they request more information, and sometimes FAPESP itself takes the initiative to consult more than one advisor in cases where the initial opinion report is not considered sufficient to make a well-founded decision.

Applications with large budget requests are simultaneously sent to at least two *ad hoc* advisors. For this reason, they can take much longer to process than the usual applications to FAPESP in the corresponding modalities.

For the 19,769 preliminary applications received in 2016, the average time of analysis was 65 days.
FAPESP’s income totaled $ PPP 631.1 million in 2016. In nominal terms, that amount is 0.4% below its income in 2015. Nevertheless, with values corrected by the annual inflation index, the real drop was 6%. The $ PPP 496.6 million transfer by the State Treasury – corresponding to 1% of the state of São Paulo’s tax revenue, as determined by the state constitution – was 1% higher in nominal terms than the transfer in 2015. However, when corrected by the annual inflation index, the transfer was 5% lower than that in 2015.

The state treasury transfer is equivalent to 78.7% of FAPESP’s income.

By Law, FAPESP must maintain an endowment fund that generates additional revenues to be applied in research projects, complementing the funds received constitutionally from the State Treasury. In 2016, $ PPP 33.5 million (5.3% of the total income) was derived from returns on assets, and $ PPP 101.0 million (16% of the total income) came from other sources, such as agreements with institutions and businesses for the joint financing of research. Complementary revenue was also 6% lower in nominal terms.
Despite the economic problems that Brazil faced in 2016 and the adverse context of a loss in real value of São Paulo State Treasury transfers to FAPESP due to reduced state revenue, FAPESP administered these resources to assure the continuation of on-going projects started in 2016 and earlier and cautiously and responsibly expanded the financing of new research projects and increased its support of projects in areas strategic to the technological development of the state of São Paulo.

FAPESP’s total income, including the transfer from the State Treasury – equal to 1% of state revenue as mandated by the state constitution – as well as other complementary income and the revenue from the FAPESP Reserve Fund – maintained by FAPESP according to law – was $ PPP 631.1 million. In nominal terms, this amount was 0.4% lower than that in 2015, representing a 6% drop in real terms, due to the value correction by the annual inflation index.

In 2016, the treasury transferred $ PPP 496.6 million, 1% greater than the 2015 amount in nominal terms, but representing a real drop of 5%. The transfer from the State Treasury was responsible for 78.7% of FAPESP’s total income.

Income from assets and other sources came to $ PPP 134.5 million. The FAPESP Reserve Fund has made it possible for FAPESP to operate adequately, even in years with reduced real income, which has been the case over the last three years, with the sharpest drop in 2016. Nevertheless, the funds to complement the treasury transfer were also 6% less than those in 2015 in nominal terms.

Disbursements to research projects had to be adjusted to this reality. While $ PPP 533.9 million were destined for 24,685 projects in 2016, $ PPP 558.1 million were dispersed to a higher number of on-going projects (26,445) in 2015. Even so, the total number of grants awarded to new projects in 2016 was 4% higher.

Given these lines of financing, while expenditures for on-going fellowships dropped 6% in 2016, the value of the fellowships was readjusted by 11%, and the number of new fellowships awarded in 2016 was 4% higher than that in 2015.
New fellowship contracts in Brazil grew by 7%, while those abroad fell by the same percentage. For research programs, disbursements were 5% higher, and contracts rose 27% compared with 2015 values.

In the case of regular research grants, disbursements decreased (-9%), while the number of contracts in 2016 was 3% lower than that in 2015. Even so, these drops were more perceptible in modalities for specific grants, such as participation in or the organization of scientific meetings, while awards for research and for thematic projects increased 17% and 9%, respectively.

Resources for FAPESP’s strategic objectives have been distributed in similar proportions in recent years: 53% for application-driven research projects, 39% for research to advance knowledge (academic research) and 8% for research infrastructure.

**ACADEMIC RESEARCH**

In 2016, $ PPP201.1 million was destined for 20,973 projects in the financing lines that support human resource training and academic research: Regular Fellowships, Regular Grants, the Young Investigators Program (YIA), Technical Training, and the São Paulo Excellence Chair (SPEC).

**APPLIED RESEARCH**

Support for application-driven research totaled $ PPP 271.2 million and translated into a variety of programs: those that support projects for technological innovation through university-business collaborations, innovative small business research, research conducted for
special purposes and specific research in the areas of engineering, health, agronomy, and veterinary science.

The increasing cooperation between FAPESP and the business sector is particularly noteworthy. For example, in 2016, four new projects per week were contracted under the Program for Innovative Research in Small Companies (PIPE), for a total of 228 new projects, the highest number since its creation in 1997. During the year, 413 projects supported by PIPE were underway at 315 small and medium-sized companies in 48 cities in the state of São Paulo. These projects received $ PPP 26.0 million in 2016, 86% more than in 2015.

Cooperation agreements with 19 companies were in place in 2016 through the Partnership Program for Innovative Technology (PITE). Three of these agreements were signed with IBM, Koppert, and Statoil in 2016. FAPESP spent 6.4 million – 30.5% more than in 2015 – on 48 projects, those selected through joint public notices with partner companies and approved projects not linked to those agreements.

In 2016, a partnership with Natura resulted in a Research Center for Human Behavior and Well-Being. Other four Engineering Research Centers exist with the companies BG-Shell, GlaxoSmithKline (two centers) and Peugeot Citroën.

In the health field, a public notice for the Research Program for Public Policy for the National Health System (SUS) concluded in 2016, selecting 21 proposals in priority areas to strengthen the SUS in the state of São Paulo.

Guaranteed Infrastructure

The critical support needed to assure the necessary infrastructure for continued research in the state of São Paulo was maintained with 8% of FAPESP’s total disbursements, 43.9 million, destined for programs to equip, recover, and modernize research installations, train human resources and support the patent registration process, among other modalities.
In 2016, FAPESP distributed $ PPP 533.9 million to 24,685 research projects; 10,480 of them were new projects contracted over the course of the year.

The permanent line for financing research, known as the Regular Line, includes Regular Fellowships and Regular Grants. As traditionally occurs, these Regular Line received the highest volume of resources in 2016 – $ PPP 392.7 million, corresponding to 73.6% of FAPESP’s total disbursements. Of this amount, $ PPP 210.7 million (39.5%) was for Regular Fellowships, and $ PPP 182 million (34.1%) was for Regular Grants.

The remaining 26.4% of resources ($ PPP 141.2 million) was destined for on-going fellowships and grants under the sphere of the various Research Programs.

Total disbursements experienced a nominal fall of 4.4% compared with those in 2015. Disbursements for Regular Fellowships and for Regular Grants fell 6.0% and 8.9%, respectively.

By contrast, disbursements for fellowships and grants under the various Research Programs increased 5.3%.
FAPESP disbursed $ PPP 210.7 million for Regular Fellowships. This amount, 6% lower than that in 2015, corresponds to 39.5% of the total disbursed by FAPESP throughout the year.

In 2016, 14,902 fellowships were on-going, and 5,647 new fellowships were contracted, an increase of 3.7% compared with 2015.

While fellowship disbursements in Brazil were 7.7% lower than in 2015, expenditures for fellowships abroad registered a downturn of only 0.2%.

In their various modalities, fellowships in Brazil received $ PPP 161.7 million in 2016, and fellowships abroad received $ PPP 49.0 million (23.3%).

**DISBURSEMENT FOR REGULAR FELLOWSHIPS**

<table>
<thead>
<tr>
<th>Fellowships - Brazil</th>
<th>Active Fellowships</th>
<th>New Fellowships granted</th>
</tr>
</thead>
<tbody>
<tr>
<td>76.7% $ PPP 161.7 million</td>
<td>13,071</td>
<td>4,485</td>
</tr>
<tr>
<td>PD 43.4% $ PPP 70.1 million</td>
<td>2,485</td>
<td>634</td>
</tr>
<tr>
<td>DR 36.8% $ PPP 59.5 million</td>
<td>3,871</td>
<td>697</td>
</tr>
<tr>
<td>MS 8.59% $ PPP 13.9 million</td>
<td>2,044</td>
<td>731</td>
</tr>
<tr>
<td>IC 6.6% $ PPP 10.8 million</td>
<td>4,114</td>
<td>2,287</td>
</tr>
<tr>
<td>DD 4.6% $ PPP 7.4 million</td>
<td>557</td>
<td>136</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fellowships - Abroad</th>
<th>Active Fellowships</th>
<th>New Fellowships granted</th>
</tr>
</thead>
<tbody>
<tr>
<td>23.3% $ PPP 49.0 million</td>
<td>1,831</td>
<td>1,162</td>
</tr>
<tr>
<td>BEPE-PD 37.8% $ PPP 18.5 million</td>
<td>373</td>
<td>213</td>
</tr>
<tr>
<td>BEPE-DR 30.3% $ PPP 14.9 million</td>
<td>750</td>
<td>445</td>
</tr>
<tr>
<td>BPE 23.5% $ PPP 11.6 million</td>
<td>394</td>
<td>258</td>
</tr>
<tr>
<td>BEPE-DD 3.6% $ PPP 1.7 million</td>
<td>75</td>
<td>58</td>
</tr>
<tr>
<td>BEPE-MS 3.4% $ PPP 1.6 million</td>
<td>164</td>
<td>118</td>
</tr>
<tr>
<td>BEPE-IC 1.3% $ PPP 0.7 million</td>
<td>75</td>
<td>70</td>
</tr>
</tbody>
</table>

IC: Scientific and/or Technological Initiation
MS: Master’s
DR: Doctorate
DD: Direct Doctorate
PD: Postdoctorate
BEPE: Research Internships Abroad
BPE: Research Abroad
Regular Grants received the second highest amount of FAPESP’s resources in 2016, followed by Regular Fellowships – $ PPP 182 million (34.1% of FAPESP’s total disbursements).

This amount is also in line with the second highest number of on-going projects for the year – 6,667 (27.0% of the total) – and the number of new projects contracted – 3,315 (31.6%).

For Regular Grants, FAPESP primarily emphasizes supporting research projects. Regular Research Grants lead in the number of on-going projects (4,319 [64.8%]), receive the highest amount among Regular Grants ($ PPP 109.6 million [60.2%]), and boast the most contracted projects for the year (1,564 [47.2%]).

Thematic Projects are the second modality with high expenditure, retaining 31.2% of resources ($ PPP 56.7 million). In 2016, 424 on-going thematic projects (6.4% of the total) included 83 new projects contracted over the year.

Grants for Organizing Scientific Meetings received the third-highest amount of funding ($ PPP 7.5 million), with 462 new projects contracted and 464 on-going projects in 2016.
DISBURSEMENT FOR RESEARCH PROGRAMS

RESEARCH PROGRAMS

Research programs to support strategic projects in areas with specific demands are divided into Special Programs and Research for Technological Innovation Programs.

SPECIAL PROGRAMS

- Young Investigators Awards
- Special Projects
- São Paulo Excellence Chair (SPEC)
- FAPESP Research Program on eSCIENCE
- Training Human Resources for Research (Technical Capacity-Building)
- Public Education
- Scientific Journalism (Mídia Ciência/Science Media)
- Programs for Research Infrastructure
  - Research Infrastructure
  - FAP-Livros Book Program
  - ANSP Network
  - Multiuser Equipment (EMU)
  - Program Technical Reserves Institutional Research Infrastructure
  - Technical Reserves for ANSP Network
  - Technical Reserves for Program Coordination
  - Scientific Electronic Library Online (SciELO)

RESEARCH FOR TECHNOLOGICAL INNOVATION PROGRAMS

- Innovative Research in Small Business (PIPE)
- Research Partnership for Technological Innovation (PITE)
- Program for Support of Intellectual Property (PAPI/NUPLITEC)
- Research, Innovation and Dissemination Centers (RIDC)
- BIOTA-FAPESP Program
- FAPESP Bioenergy Research Program (BIOEN)
- FAPESP Research Program on Global Climate Change (RPGCC)
- Public Policy Research
- Public Policies Research for the National Health Care System (PP-SUS)
- Inter-institutional Cooperation in Brain Research (CINAPCE)
For administrative purposes, the permanent research financing lines are classified as Regular Fellowships and Regular Grants. The financing lines for specific induced programs are classified as Special Programs, which are devoted to human resource training and support for research infrastructure, and the Research for Technological Innovation Programs, whose results have clear potential applications.

FAPESP disbursed $ PPP 76.6 million to 2,173 projects in Special Programs and $ PPP 64.6 million to 943 projects in the Research for Technological Innovation Programs (15% more than that dispersed in 2015).

The bulk of the resources – $ PPP 39.5 million – was destined for 345 projects in effect in the seven modalities that comprise the Program for Research Infrastructure.

Research projects devoted to small business innovation, supported through the Innovative Research in Small Business Program (PIPE), received the second-highest amount of resources – $ PPP 26.0 million – 86% more than that dispersed in 2015.

The Young Investigators Program, dedicated to attracting young doctorate holders to the state of São Paulo to create centers of excellence in research, especially in areas, regions, or institutions without a tradition of scientific research, had 399 on-going projects that received $ PPP 21.5 million, and 17 Research, Innovation and Dissemination Centers (RIDCs) received $ PPP 20.4 million.

Notably, 10 projects are underway as part of the São Paulo Excellence Chair (SPEC) pilot program, which seeks to establish collaborations between institutions in the state of São Paulo and high-level researchers located abroad. Researchers abroad maintain links to their institutions of origin, but they must remain in Brazil for 12 weeks per year for at least five years, coordinating a group of FAPESP fellows, including post-doctoral fellows, doctoral fellows students and some scientific initiation students.
### DISBURSEMENT FOR RESEARCH PROGRAMS

$ PPP 141.2 million

(26.4% of total disbursement)

3,116 ACTIVE PROJECTS (Fellowships and Research Grants)

1,518 NEW PROJECTS GRANTED

<table>
<thead>
<tr>
<th>Special Programs</th>
<th>Disbursement</th>
<th>Active Projects</th>
<th>New Projects granted</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESEARCH INFRASTRUCTURE</td>
<td>51.6% $ PPP 39.5 million</td>
<td>345</td>
<td>152</td>
</tr>
<tr>
<td>YOUNG INVESTIGATOR AWARDS</td>
<td>28.0% $ PPP 21.5 million</td>
<td>399*</td>
<td>81*</td>
</tr>
<tr>
<td>SPECIAL PROJECTS</td>
<td>11.0% $ PPP 8.4 million</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>TECHNICAL CAPACITY-BUILDING</td>
<td>7.9% $ PPP 6.0 million</td>
<td>1,344</td>
<td>788</td>
</tr>
<tr>
<td>SPEC</td>
<td>1.0% $ PPP 0.8 million</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>PUBLIC EDUCATION</td>
<td>0.2% $ PPP 0.2 million</td>
<td>58</td>
<td>46</td>
</tr>
<tr>
<td>eSCIENCE</td>
<td>0.2% $ PPP 0.1 million</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>SCIENTIFIC JOURNALISM</td>
<td>0.1% $ PPP 0.1 million</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>


### RESEARCH FOR TECHNOLOGICAL INNOVATION PROGRAMS

<table>
<thead>
<tr>
<th>Program</th>
<th>Disbursement</th>
<th>Active Projects</th>
<th>New Projects granted</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIPE</td>
<td>40.3% $ PPP 26.0 million</td>
<td>614*</td>
<td>372*</td>
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<tr>
<td>CEPID</td>
<td>31.6% $ PPP 20.4 million</td>
<td>17</td>
<td>0</td>
</tr>
<tr>
<td>PITE</td>
<td>9.9% $ PPP 6.4 million</td>
<td>48</td>
<td>14</td>
</tr>
<tr>
<td>BIOTA</td>
<td>7.5% $ PPP 4.8 million</td>
<td>54</td>
<td>3</td>
</tr>
<tr>
<td>BIOEN</td>
<td>5.5% $ PPP 3.5 million</td>
<td>86</td>
<td>6</td>
</tr>
<tr>
<td>CLIMATE CHANGE</td>
<td>3.9% $ PPP 2.5 million</td>
<td>56</td>
<td>5</td>
</tr>
<tr>
<td>PP-SUS</td>
<td>0.8% $ PPP 0.5 million</td>
<td>45</td>
<td>21</td>
</tr>
<tr>
<td>PAPI-NUPLITEC</td>
<td>0.4% $ PPP 0.05 million</td>
<td>18</td>
<td>11</td>
</tr>
<tr>
<td>PUBLIC POLICY RESEARCH</td>
<td>0.1% $ PPP 0.02 million</td>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>

FAPESP’s disbursements to diverse areas of knowledge reflect the high degree of dynamism among them and the tradition of research, and they simultaneously pave the way for scientific research in the state of São Paulo and highlight its deficiencies and strengths.

Some areas of knowledge with a long tradition of research in the state of São Paulo have historically received more resources than others. For instance, health garnered 26.2% of FAPESP’s total disbursements in 2016. $ PPP 139.7 million was spent on 7,255 on-going research projects in this area in 2016.

Biology came in second, with 3,253 current projects receiving $ PPP 76.4 million (14.3% of the total). Interdisciplinary research projects were placed third, taking a position unprecedented since 2015. These 469 on-going projects received $ PPP 61.7 million (11.6%).

Thereafter, engineering claimed 10.7% of FAPESP’s resources. Human and social sciences received 9.4%; and agronomy and veterinary science received 7.3%.

The areas with the highest numbers of approved proposals in 2016 were health (2,967 projects), human and social sciences (1,787), engineering (1,310), biology (1,203), and agronomy and veterinary science (945).
HUMANITIES AND SOCIAL SCIENCES
$ PPP 50 million – 9.4%
1,787 new projects
4,047 active projects in the year

AGRONOMY AND VETERINARY
$ PPP 38.9 million – 7.3%
945 new projects
2,267 active projects in the year

CHEMISTRY
$ PPP 29.2 million – 5.5%
467 new projects
1,211 active projects in the year

PHYSICS
$ PPP 28.3 million – 5.3%
391 new projects
918 active projects in the year

ASTRONOMY AND SPACE SCIENCE
$ PPP 15.4 million – 2.9%
76 new projects
168 active projects in the year

MATHEMATICS AND STATISTICS
$ PPP 8.6 million – 1.6%
273 new projects
570 active projects in the year

ARCHITECTURE AND URBANISM
$ PPP 2.9 million – 0.6%
174 new projects
369 active projects in the year

ECONOMICS AND ADMINISTRATION
$ PPP 2.8 million – 0.5%
162 new projects
303 active projects in the year

COMPUTER SCIENCE AND ENGINEERING
$ PPP 8.8 million – 1.6%
289 new projects
616 active projects in the year

GEOSCIENCES
$ PPP 13.5 million – 2.5%
223 new projects
520 active projects in the year

AGRONOMY AND VETERINARY
$ PPP 38.9 million – 7.3%
945 new projects
2,267 active projects in the year
COOPERATION IN RESEARCH

FAPESP uses various mechanisms to integrate Brazilian researchers with international networks that are active on the frontiers of knowledge in diverse areas and to promote cooperation in research to realize greater international visibility and increase the impact of the science produced in the state of São Paulo.

SCIENTIFIC EXCHANGE

The Fellowships for Research Internships Abroad (BEPE) program, for example, provides an opportunity for fellows working in Brazil under FAPESP modalities to study at outstanding foreign research centers. In 2016, $ PPP 37.5 million were spent on 1,437 on-going BEPE fellowships, with 904 signed during the year. The four most sought-after destinations were the United States, the United Kingdom, France, and Spain.

There were also 394 Fellowships for Research Abroad (BPE), 258 of them contracted during the year, awarded to doctoral students to undertake research at international institutions; $ PPP 11.5 million were destined to this program.

Scientific exchange was also supported through 554 grants awarded to fellows to participate in scientific meetings in 2016. Of these meetings, 47% took place in Europe, 34% in North America (30% in the United States), 8% in Asia, 8% in Latin American and Caribbean countries, 2% in Africa, and 1% in Oceania.

Since 2011, FAPESP Week – a scientific meeting to encourage collaboration between researchers from the state of São Paulo and other countries – has taken place 14 times in partnership with institutions in Germany, Argentina, the United States, Canada, China, Spain, England, Japan, Uruguay, and FAPESP headquarters.
AGENCIES AND ACADEMIC ORGANIZATIONS

ATTRACTING RENOWNED SCIENTISTS TO SÃO PAULO

FAPESP has made various efforts to attract foreign researchers or those located abroad to work in the state of São Paulo and to strengthen relations between São Paulo and foreign research networks.

Some results of these efforts can be directly observed: 19% (93) of the FAPESP post-doctoral fellows in Brazil are foreigners, with a higher concentration in the areas of the exact and earth sciences, engineering and human and social sciences.

In 2016, FAPESP supported the visits of 177 researchers from different countries to São Paulo through the "Visiting Researcher Program from Abroad", which included participation in São Paulo Schools for Advanced Science (ESPCA), short courses administered by renowned Brazilian and foreign scientists.

Ten large and important projects are coordinated with high-level researchers located abroad through the São Paulo Excellence Chair (SPEC) program.

COOPERATION AGREEMENTS

FAPESP’s main instrument for formalizing collaboration between Brazilian and foreign scientists is through cooperation agreements established by FAPESP with renowned foreign institutions interested in jointly supporting research in areas of common interest.

Over 1,200 projects have been supported under the agreements that FAPESP maintains with approximately 200 organizations in more than 30 countries.

Twenty-five agreements with financing agencies and academic organizations were signed, resulting in a total of 175 partnerships with organizations of this kind.

One of these agreements was with a Brazilian research institute, the National Institute for Space Research (INPE), and 24 international agreements were signed with a multi-national agency (1) and organizations in the United States (7), the United Kingdom (3), Canada (2), Australia (3), France (2), China (2), Holland (1), Italy (1), Norway (1), and Chile (1).

Three more agreements can now be added to these 25 agreements celebrated with financing agencies and academic organizations: Statoil (Norway), Koppert (the Netherlands) and IBM (North America), which are described on pages 44 and 45.

To see the current and former public announcements calling for research proposals, go to www.fapesp.br/chamadas.
Cooperation Agreements

In 2016, cooperation agreements were in effect with 194 organizations, 28 of which were signed during the year.

These partnerships are with 169 international organizations in 30 countries and 25 national organizations.

- Agreements with 106 institutions of higher learning and research: 105 foreign
- Agreements with 59 financing agencies: 45 international and 14 national
- Agreements with 10 international agencies
- Agreements with 19 companies: 9 foreign and 10 national (page 44 and 45)
AFRICA 4 organizations in 2 countries
NORTH AMERICA 45 organizations in 2 countries
SOUTH AMERICA 9 organizations in 5 countries (in addition to 16 national organizations)
EUROPE 70 organizations in 14 countries
ASIA 13 organizations in 4 countries
OCEANIA 9 organizations in 1 country
### Cooperation in Research

**AFRICA**
- African North America Cooperation in Research (FAPESP in 2016)

**NORTH AMERICA**
- Canada
  - Agence Universitaire de la Francophonie (AUF)
  - Carleton University
  - Consortium Alberta, Laval, Dalhousie and Ottawa (CALDO)
  - McGill University
  - Natural Sciences and Engineering Research Council of Canada (NSERC)
  - Queen’s University at Kingston
  - National Research Council of Canada (NRC)
  - Universidades Simon Fraser, Concordia, York and Ryerson
  - University of Ontario Institute of Technology
  - University of Toronto
  - University of Victoria
  - University of Waterloo

**SOUTH AMERICA**
- Brazil
  - APAE de São Paulo
  - Associação Brasileira da Indústria de Alta Tecnologia de Produtos para a Saúde (Alimed)
  - Associação Brasileira de Pesquisa e Inovação Industrial (Embrapii)

**EUROPE**
- Germany
  - Deutsche Forschungsgemeinschaft (DFG)
  - DWH - Centro Alemão de C&I São Paulo
  - Friedrich-Alexander-Universität Erlangen-Nürnberg
  - Ministério de Educação, Ciências e das Artes do Estado Livre da Bavária (StMBW)
  - Ministério Federal da Educação e Pesquisa da Alemanha (BMBF)
  - Serviço Alemão de Intercâmbio Acadêmico (DAAD)
  - Sociedade Max Planck para o Avanço da Ciência
  - University of Münster (WWU)

**ASIA**
- China
  - Peking University (PKU)
  - Tianjin University
  - Zhejiang University

**PERSEUS**
- Argentina
  - Consejo Nacional de Investigaciones Científicas y Técnicas (Conicet)
  - Ministerio de Ciencia, Tecnología e Innovación Productiva (MINCyT) and USP-Proyecto LLAMA

**US**
- United States
  - Brown University
  - California Institute for Regenerative Medicine
  - Case Western Reserve University
  - Duke University
  - Emory University
  - Gates Foundation
  - George Washington University
  - Instituto de Pesquisa Scripps
  - John E. Fogarty International Center
  - Massachusetts Institute of Technology (MIT)
  - National Institutes of Health (NIH)
  - National Science Foundation (NSF) e universidades americanas
  - North Carolina State University
  - Ohio State University
  - Pew Latin American Fellows Program in the Biomedical Sciences (PEW)
  - Programa Dra. Ruth Cardoso (Capes/Fulbright/Universidade Columbia)
  - Smithsonian Institution
  - Texas Tech University (TTU)
  - The Scripps Research Institute
  - University of California Davis
  - University of Florida
  - University of Georgia
  - University of Illinois
  - University of Maryland
  - University of Miami
  - University of Michigan
  - University of Missouri
  - University of Nebraska - Lincoln
  - University of North Carolina - Charlotte
  - University of Texas, Austin
  - University of Virginia
  - US Department of Energy / GOAmazon
  - Vanderbilt University
  - West Virginia University (WWI)

**JAPAN**
- Japan
  - Japan Science and Technology Agency (JST)
  - Japan Society for the Promotion of Science (JSPS)
  - University of Tokyo
  - Hiroshima University

**CHILE**
- University of Chile (UCH)
- Universidad de la Frontera
- Universidad de Magallanes (UMAG)

**PARAGUAY**
- Paraguay
  - Consejo Nacional de Ciencia y Tecnología (CONACYT)
  - Consejo Nacional de Ciencia, Tecnología e Innovación Tecnológica (CONCYTEC)

**PERU**
- Peru
  - Consejo Nacional de Ciencia, Tecnología e Innovación Tecnológica (CONCYTEC)

**URUGUAY**
- Uruguay
  - Agencia Nacional de Investigación e Innovación de Uruguay (ANII)
  - Asociación de Universidades Grupo Montevideo (AUGM)

**IRELAND**
- Iran
  - Cognitive Science and Technology Council of Iran (CSTC)

**ISRAEL**
- Israel
  - Matimop
  - Technion - Instituto de Tecnologia de Israel
  - University of Haifa
  - Tel Aviv University
  - Weizmann Institute of Science

**GERMANY**
- Germany
  - Deutsche Forschungsgemeinschaft (DFG)
  - DWH – Centro Alemão de C&I São Paulo
  - Friedrich-Alexander-Universität Erlangen-Nürnberg
  - Ministério de Educação, Ciências e das Artes do Estado Livre da Bavária (StMBW)
  - Ministério Federal da Educação e Pesquisa da Alemanha (BMBF)
  - Serviço Alemão de Intercâmbio Acadêmico (DAAD)
  - Sociedade Max Planck para o Avanço da Ciência
  - University of Münster (WWI)
<table>
<thead>
<tr>
<th>AGENCIES AND ACADEMIC INSTITUTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
</tr>
<tr>
<td>• Direction Générale Opérationnelle Economie, Emploi &amp; Recherche du Service Public de Wallonie (DGO/ERR)</td>
</tr>
<tr>
<td>• Fonds de la Recherche Scientifique (F.R.S.-FNRS)</td>
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<tr>
<td>Denmark</td>
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<tr>
<td>• Innovation Fund Denmark (ex-DCSR)</td>
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<tr>
<td>• University of Copenhagen</td>
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<td>• Consejo Superior de Investigaciones Científicas (CSIC)</td>
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<td>• Universidad Complutense de Madrid</td>
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<td>• Universidad de Girona</td>
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<tr>
<td>• Universidad de Salamanca</td>
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<tr>
<td>Finland</td>
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<tr>
<td>• Academy of Finland [AKA]</td>
</tr>
<tr>
<td>France</td>
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<td>• Agence Nationale de la Recherche [ANR]</td>
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<td>• Institut National de la Santé et de la Recherche Médicale [Inserm]</td>
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<td>• ParisTech</td>
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<td>• Sorbonne Universités</td>
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<td>• BE-BASIC</td>
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<td>• Erasmus Universiteit Rotterdam</td>
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<td>• Netherlands Organization for Scientific Research [NWO]</td>
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<td>• Stichting Dutch Polymer Institute</td>
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<td>• Technische Universiteit Eindhoven [TU/e]</td>
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<td>• University of Melbourne</td>
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Since inception of the Research Partnership for Technological Innovation Program (PITE), 23 years ago, FAPESP has supported 222 projects that resulted of an interface between academia and 96 businesses. In 2016, 48 of these projects were underway, supported through the PITE-Agreement and PITE Spontaneous Demand modalities.

The PITE-Agreement projects are selected through public announcements issued jointly by FAPESP and large companies. This business-university collaboration generates opportunities for researchers to develop applied research that results in advancing Brazilian knowledge of cutting-edge technologies and supports the industry sector in terms of its technological innovation demands.

The co-financing contemplated in FAPESP’s partnership with businesses has been established in the cooperation agreements. In 2016, three new agreements were signed under the PITE Agreement modality with IBM, Koppert, and Statoil for ten years each. These agreements join active ones with 16 others: the national companies Biozeus, BP Biocombustíveis, Braskem, Fundação Grupo Boticário, Intel, Informática de Municípios [IMA], Natura, Odebrecht Agroindustrial, Sabesp and Vale and the international companies Agilent Technologies, Microsoft Research, Peugeot Citroën, AstraZeneca/MedImmune, BG E&P, and GlaxoSmithKline (GSK).

Considering present partnerships and those active in the past, FAPESP has maintained agreements with 31 companies, 20 national and 11 international, including Biolab, CI&T and Digital Assets, Dedini, Grupo Telefônica, Instituto Fleury, Ouro Fino Saúde Animal, Oxiteno, Whirlpool, Boeing, and Imprimatur Capital.

In addition, in 2016, 12 on-going projects were underway in the PITE Spontaneous Demand modality, which funds proposals between an academic researcher and a colleague linked to a company. Proposals are received in a continuous basis (unsolicited proposals).

The following organizations have been supported under this program: AgroBio – Associação das Empresas de Biotecnologia na Agricultura e Agroindústria, Cooxupé – Cooperativa Regional de Cafeicultores in Guaxupé, Companhia Brasileira de Metalurgia e Mineração, Infibra, Instituto de Estudos de Saúde Suplementar (IESS), Mahle Metal Leve, Medicines for Malaria Venture, Microsoft, MWL Brasil Rodas e Eixos, Padtec, Proveca Biotecnologia Florestal, and Structural Genomics Consortium.

In previous years, FAPESP supported proposals presented by researchers in another 60 organizations, such as Laboratório Aché, Companhia Siderúrgica Nacional, Cristália, Itautec, Petrobras, Rhodia, Suzano Papel e Celulose, Tetra Pack, and Villares Metals.
WITH COMPANIES

COMPANIES THAT CO-FINANCED PROJECTS UNDER THE PITE AGREEMENT IN 2016
- Agilent Technologies
- Microsoft Research
- IBM

ORGANIZATIONS WITH PITE SPONTANEOUS DEMAND PROJECTS SUPPORTED IN 2016
- United States
  - AstraZeneca/MedImmune
  - BG E&P
  - GlaxoSmithKline (GSK)
- United Kingdom
  - Koppert
- France
  - Peugeot Citroën
- Netherlands
  - Koppert
- Brazil
  - Biozeitus
  - BP Biocombustíveis
  - Braskem
  - Intel
  - Fundação Grupo Boticário
  - Informática de Municípios (IMA)
  - Natura
  - Odebrecht Agroindustrial (ex-ETH Bioenergia)
  - Sabesp
  - Vale [com Fapemig e Fapespa]
- Mexico
  - Massey
- China
  - CNR

BRAZIL
- AgroBio – Associação de Empresas de Biotecnologia na Agricultura e Agroindústria
- Cooxupe – Cooperativa Regional de Cafeicultores em Guaxupé Ltda.
- Companhia Brasileira de Metalurgia e Mineração
- Inibra
- Instituto de Estudos de Saúde Suplementar (IESS)
- Mahle Metal Leve
- Medicines for Malaria Venture
- Microsoft
- MWL Brasil Rodas e Eixos Ltda.
- Padtec S.A.
- Proteca Biotecnologia Florestal Ltda.
- Structural Genomics Consortium
OSGEMEOS

"O Fabricante de Estrelas" (The Star Factory)
2011
São Paulo, Brazil
Photo: Filipe Berndt
2  “Midnight Moment”
2015
New York, United States
Photo: Ka-man

3  OSGEMEOS and Blu collaboration
2010
Lisbon, Portugal
Photo: OSGEMEOS

4  Tate Modern
2008
London, United Kingdom
Photo: OSGEMEOS
“Silos”
2014
Vancouver Bienalle
Vancouver, Canada
Photo: Roaming-the-Planet
6 Hangar Bicocca
2016
Milan, Italy
Photo: Sha Ribeiro

7 OSGEMEOS and Futura collaboration
2010
New York, United States
Photo: OSGEMEOS
OSGEMEOS and JR collaboration
2016
Palais de Tokyo
Paris, France
Photo: JR
Facade of the Modern Art Museum
2010
Museu de Arte Moderna (MAM)
São Paulo, Brazil
Photo: Lostart / Ignacio Aronovich
OSGEMEOS and Banksy collaboration
2013
New York, United States
Photo: Pest Control Office
“O Silêncio da Música” (The Silence of Music) exhibit
2016
New York, United States
Photo: Max Yawney
“O Iluminado” (The Illuminated)
2016
“O Silêncio da Música” (The Silence of Music) exhibit
Lehmann Maupin Gallery
New York, United States
Photo: Max Yawney
“Momentos Mágicos” (Magic Moments)
2016
“O Silêncio da Música” (The Silence of Music) exhibit
Lehmann Maupin Gallery
New York, United States
Photo: Max Yawney
“O Beijo” (The Kiss)
2016
“O Silêncio da Música” (The Silence of Music) exhibit
Lehmann Maupin Gallery
New York, United States
Photo: Max Yawney
"Vertigem" [Vertigo] exhibit
2009
Museu de Arte Brasileira (MAB) / FAAP
São Paulo, Brazil
Photo: Lostart / Ignacio Aronovich
OSGEMEOS imagine; therefore, they exist.

Gustavo and Otávio Pandolfo are captured here (ON THE COVER) by Martha Cooper, the most outstanding American photojournalist of urban art manifestations; from São Paulo, the Pandolfo brothers were born to Brazilian parents, Margarida and Walter, and are the grandchildren of Lithuanian and Italian immigrants.

Born in 1974, Gustavo and Otávio are identical twins who grew up with their older siblings, Arnaldo and Adriana, in the Cambuci neighborhood of downtown São Paulo, where, when they were still children, their mother took them to visit an illustrious neighbor who was the biggest name in national art: Alfredo Volpi.¹

On the same street where they spent their youth, they keep a studio replete with accumulated material and affective references of all kinds that connect them with their memories and serve as the driving force behind the energy in their creations. The place is nearly a living synthesis of the peculiar repertoire that they poetically express in their artistic production. It is a place where they share common interests with creative national and international minds and many friends. Above all, it is an indispensable work reference for their alternating national sojourns and international commitments in recent years.²

From early on, at a time that permitted what today can only be lived cautiously on the city’s periphery, their street was their backyard and a font of resources for their fertile imaginations: the open-air weekly street markets constituted a generous outdoor warehouse, a supplier of discarded packaging, materials, and boxes, all useful as toys and for the structures that they invented and finally burnt up. They transformed the living room into a permanent atelier, presaging their present-day studio. These interests were immediately valued by the family and brought the twins closer to the artistic activities developed for children at the Pinacoteca of the state of São Paulo at that time. In their own way, confronted with what was occurring at school, the boys and the certainty that they intuitively held must have been reinforced by these museum encounters. This certainty was confirmed at the start of their adult lives: art was destiny.¹

Everything that is imaginary has, exists, is³

OSGEMEOS are self-taught artists. They complemented their formal studies with spontaneous learning on the streets and their daily encounters: people, rhythms, movements and colors. A cultural caldron as abundant as it was stimulating for the youth of the new freedom proclaimed over a bitter political past of dictatorship in Brazil.

¹ Depoimento de Margarida Pandolfo ao autor, SP, maio de 2017.
² Milos Kaiser: Dois em Um. Revista TRIP. Edição Especial São Paulo, nº 223, julho de 2013, SP.
The twins got to know hip hop, rap and graffiti—expressions that channeled the feelings of a specific sector of urban youth and inspired them to simultaneously experience and reinvent an order that was collapsing. They joined in and definitively earned the nickname that identifies them nationally and internationally as creators. The unique artistic identity that is the fruit of restless inquiry developed in their early years, guided by their tireless pleasure in drawing, researching, viewing and dialoguing with the world.

The singularity of their work, which emerged on walls and anonymous urban supports in the city of São Paulo in the mid-1990s, did not go unnoticed by American artists Barry McGee and Margaret Killgallen, who through their American contacts in the world of street art, revealed them directly and indirectly along with the São Paulo artistic scene, which has been heralded one of the most vibrant on the planet in the field of public art. 4

Since then, the recognition that the singular work of these painting brothers gained on the international circuit initiated one of the brands of their ongoing professional activity: partnerships and exchanges with national artists, including their brother Arnaldo, and with foreigners. For example, they painted a castle in Scotland with Nina and Nunca. With Ise, also part of a collective enterprise, a decade ago, they developed the Wholetrain Project with names as Finok, Toes, Coyo, Peter and Stile, among others. On the world scene, they have partnered with the most outstanding and iconic artists of so-called street art and contemporary art in the United States and Europe, including Blu, Aryz, Futura, JR and Banksy, with whom they have painted in over 35 countries including France, Portugal, Italy, Spain, Japan, Greece, the United States, Cuba, and Canada (IMAGES 3, 7, 8 and 10).

The fish that ate falling stars5

With a title that appears to have been plucked from the blowing winds of the Mato Grosso (a state of Brazil), the great swamp of the Brazilian poet Manoel de Barros, suggesting a poetic link between the celestial and aquatic depths, OSGEMEOS inaugurated their first individual exhibit on the Brazilian art circuit in one of the most respected contemporary art galleries in São Paulo. Nearly a manifesto, anti-white cube par excellence – internally and externally – the show expands upon the topical experiences that the twins have encountered abroad since the 1990s and vibrantly repositions for the public and local critics the production of artists who, until that time, were better known to and cultivated among us through their visual interventions in the central city area. This region and its surroundings still guard veritable jewels of murals from this period, clearly worn by time, but they are indicators of the twins’ dedication and generosity to the city, whose public


administrations from time to time dare to gray over the colorful apparitions that OSGEMEOS promote.  

A major exception is the extensive panel painted at the entrance to the São Paulo Modern Art Museum (IMAGE 9), an exuberant display of form and poetic vocabulary with which the artists animate their unusual visual narratives.

One needs to view all of life through the playful eyes!

Various and important shows grew out of the first individual exhibit cited above, circulating among Brazilian capitals or specially conceived by OSGEMEOS, carrying a legion of the public that identified with their visual universe and the issues that they publicized to the main museums and local cultural centers (IMAGE 15).

Likewise, since then the phenomenon of public receptivity and specialized criticism has continued at presentations abroad (IMAGES 4, 5 and 6). To cite the most recent examples, in 2016, both in New York, the virtual installation in all of the luminous panels in Times Square (IMAGEM 2) and in the show O Silêncio da Música (The Silence of the Music) (IMAGES 11, 12, 13 and 14) presented at the Lehmann Maupin Gallery echo their twin-like poetics. During the completion of these notes, the artists are equally active in the new European season in Helsinki, Stockholm, and Barcelona.

The images selected for this publication will reveal some of the unique characteristics that make up the work of OSGEMEOS: the intensive use of a specific yellow tone for characters and for their urban artistic signatures; the choice of various and interwoven scales of the same representation; both indoor and outdoor works; a dedication to muralism; the application of repetition and variation in their work, which implicitly and explicitly approximates their production of a musical language; the alternating use of smooth paint and spray paint; the creation of urban interventions with images and tags; the painting of singular images vs. the episodic application of stencils; social themes with transgressive connotations; figuration using the tromp l’oeil resource; environmental stage setting for installations that refer back to popular marginal construction processes; the presentation of opposites living together: the real and the idealized; the multiplicity of detail; the robotization of anthropomorphic interactive gadgets; the definition of multi-colored geometrized patterns as the background for paintings; and the recurring option for extraordinary supports, similar to Calder in 1976, among others.

Notably, a certain feminine figuration may be inspired in the remote unconscious of an ancestral matriarch; in addition, muses and nymphs are also very much present in the artists’ works (especially in their drawings) and enrich the entire set of dual elements with which they work.

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7 Henri Matisse.
Add to this element one of the most remarkable trademarks of their work: a profound identification with distinct aspects and symbols in Brazilian popular culture, notably of the periphery, signaled by the singularity of their festivities, symbology, architecture, rites and religiosity, and ways of dressing and being.

The diverse types of humans, alone or in family groupings, inhabiting this world are always caught in the midst of their daily activities. Sometimes they are represented on conventional supports or on city walls as graffiti. The figures have almond-shaped eyes and wear simple comfortable clothes with exuberant patterns “that suggest an innocent vanity.” ⁸ They are typical, anonymous beings. They have black, brown, dark, or sallow skin, and their bodies and anatomical details are delimited with outlines in the unmistakable color of açaí: spray technique invented by the twins and a great feature in their works.

In the final analysis, they pass for representatives of the mixed nature of our national identity and, irrespective of where they are represented, emit signals typical of a true Brazil; even when urban, these works are open to global communication.

**OSGEMEOS go beyond all this, however**

The North American curator Pedro Alonzo, who has permitted me to quote him, very aptly summarizes his presentation of the artists in the catalogue for the OSGEMEOS exhibit at the Institute of Contemporary Arts in Boston in 2012:

“It is difficult to label osgemeos’ poetic vision of the world: they are not solely graffiti artists, but unpredictable and visionary figurative artists who share their intimate world with the public through painting, sculpture and installation. Ultimately, osgemeos are masters at synthesizing the essence of the life that surrounds then and their personal responses to it in art.” ⁹

All right?

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