



ANNUAL
REPORT
FAPESP

2023

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YEAR 2023

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INTRODUCTION

Following a period of three years in which the number of research proposals submitted to FAPESP fell, clear signs of a resumption of demand for both scholarships and research grants were seen in 2023.

This was the result of the return to normal by countless laboratories and graduate studies programs, but it was also a response to action taken by FAPESP to foster a resumption of research in São Paulo.

This Annual Report summarizes the numerous initiatives undertaken by FAPESP to stimulate demand for new projects, such as support for young investigators, innovative startups and new research centers, among others.

An action that merits particular emphasis is the São Paulo State Special Program of Support for Research Infrastructure. In 2023, FAPESP approved 56 proposals to purchase large items of research equipment resulting from three calls issued in 2022 and corresponding to an aggregate investment of \$ PPP 184.4 million. In parallel, it issued a new call for the acquisition of small and medium items of equipment corresponding to investment of \$ PPP 81.9 million. By means of these investments, FAPESP promoted the modernization and expansion of São Paulo's research infrastructure and encouraged the resumption of research. This action was not an isolated initiative, as can be seen below.

The number of scholarships active in the year and disbursement for this funding line increased 9.6% and 21% respectively compared with 2022. The growth was driven mainly by scholarships for research abroad, which rose 37% in number and 51% in disbursement, showing that researchers resumed the pursuit of qualification and partnerships with universities and research institutions in other countries following the end of the restrictions imposed by the COVID-19 pandemic.

Scholarships awarded for research projects conducted in Brazil also grew, albeit more slowly. The number of projects supported rose 5.9% and disbursement rose 7%, mainly owing to growth of investment in scholarships for Master's degrees (27%) and Scientific Initiation (17%). Altogether, the number of new scholarships contracted for in Brazil was 11% higher than in 2022.

FAPESP took steps to stimulate demand for scholarships and attract more young people into research activities. For example, it associated with the Brazilian Academy of Sciences (ABC) in the Aristides Pacheco Leão Program to Stimulate Scientific Vocations, which offers scholarships for undergraduate students at institutions that conduct research projects led by members of ABC. In addition, in late 2023 it partnered with Roberto Marinho Foundation to issue a call for proposals entitled Communicating Science, whereby it will award more than 200 scholarships under the Science Media Program to undergraduates with the aim of qualifying them to disseminate science and technology content and engaging them in research. The call was issued in late 2023, and the new scholarships are not yet accounted for in this Annual Report.

Research Grants rose in number (12%) and disbursement value (14.6%). These totals also take into account the scholarships linked to this funding line.

FAPESP's support for Thematic Projects, which are conducted by large groups of researchers and have long-term funding, increased 9% in terms of disbursement and 6% in the number of projects funded. Support for Young Investigators increased even more, with disbursement growing 16.5% and the number of projects active in the year rising 11%. Specifically for this academic career stage, initiatives implemented by FAPESP in 2023 included the Generation Program and Project Initial Π (Pi), a call to attract young PhDs in partnership with the National Council for Scientific and Technological Development (CNPq), among others. The Generation Program was created to encourage researchers to submit proposals for riskier projects with the potential to produce disruptive results.

In Research for Innovation, disbursement rose 23% compared with 2022. Several initiatives were undertaken for the Innovative Research in Small Business Program (PIPE), for example, including PIPE Start, which helps entrepreneurs with initial validation of innovative technological solutions, and PIPE for Knowledge Transfer (PIPE-KT), which encourages small enterprises to achieve proof of concepts via research originating in higher education or research institutions. FAPESP also partnered successfully with SEBRAE-SP (the São Paulo branch of the Brazilian Small Business Support Service) and FINEP (the Brazilian Innovation Agency) to help companies commercialize new products and technologies, as well as issuing calls for the accreditation of accelerators and seed capital funds. Some of these measures affected the 2023 results: the number of grants and scholarships linked to PIPE projects rose 17% and disbursement rose 52%.

Also in Innovation, FAPESP issued a call to select one more Engineering Research Center (ERC), to be established with Citrusuco. In 2023, 18 ERCs set up by FAPESP in partnership with companies and other institutions were operating.

Implementation was under way at three of the ten Applied Research Centers (ARCs) in Artificial Intelligence selected in a 2021 joint call with the Ministry of Science, Technology and Innovation (MCTI), the Ministry of Communications (MCom) and the Brazilian Internet Steering Committee (CGI.br).

A survey conducted by FAPESP's Indicators and Planning Unit found the leverage of public funds invested in ERCs and ARCs to be 4.8, well above the expected number, which was 2. In other words, the public money invested in these research centers is multiplied by 4.8 via the matching investments made by companies and other partner institutions.

This Report also notes strong growth of FAPESP's investment in the implementation of Science for Development Centers (SDCs), which saw an increase of 279% year over year in 2023, with 28 SDCs selected in two calls for proposals up and running in the year. SDCs involve collaboration by researchers at universities and research institutions with government agencies and others in pursuit of solutions to challenges previously set by departments of the São Paulo State Government. In 2023, FAPESP issued the third call for proposals to establish new SDCs.

Other highlights include FAPESP's investment in Public Education Research Grants, which rose 369% year over year, mainly owing to PROEDUCA, a program implemented in partnership with the

São Paulo State Department of Education. It issued its second call for proposals in 2023. Its remit is to contribute to the improvement of public policies and innovative pedagogical approaches that facilitate learning and reduce educational inequalities.

In 2023, FAPESP announced the selection of five proposals for new Research, Innovation and Dissemination Centers (RIDCs) in health, biology, agronomy and veterinary medicine. They were approved in the first of five calls to be held until 2025. The year also saw the third call for proposals to establish research centers in exact sciences, earth sciences and engineering. Proposals submitted for the second call, issued in 2022, are still being analyzed and are for three new RIDCs in human and social sciences, architecture and urbanism, and economics and administration.

FAPESP continued to invest in the creation of a fertile environment for the advancement of research in São Paulo. The series of monthly lectures begun as part of the commemorations of its sixtieth anniversary continued in 2023 with eight lectures on interdisciplinary subjects of great interest to the academic community in São Paulo, delivered by Brazilian and foreign specialists. It also held two in-person Interdisciplinary Schools, each lasting four days – one in exact and natural sciences, engineering and medicine; and the other in humanities, social sciences and arts. They offered 120 researchers with postdoctoral scholarships from FAPESP or other funders – half based in São Paulo and the rest in other parts of Brazil – an opportunity to meet leading scientists, discuss their work, and establish professional ties with Brazilian and foreign colleagues.

As in recent years, the visibility of FAPESP and the research it supports increased in the media at home and abroad. In 2023, the increase was 6%, for a cumulative rise of 182% since 2018. Social networks also exhibited a strong rise in interest. In science diffusion, FAPESP continued to invest in attracting new audiences. In 2023, it finished implementing a database that will support its Memory Center, which was to be launched in 2024 with the mission of preserving its history and the memory of research in São Paulo State.

In sum, 2023 was a year of vigorous resumption of scientific activity, reflected in the substantial growth of investment in science, technology and innovation.

Marco Antonio Zago

President, Board of Trustees, FAPESP

ABOUT THIS REPORT



This Annual Report on FAPESP's activities in 2023 details the results of its investment in scientific and technological research using funds transferred by constitutional mandate from the São Paulo State Treasury, and from other sources. It highlights FAPESP's contributions to the advancement of science and innovation in São Paulo, and to the solutions to many economic and social challenges faced by the state and the nation.

The Report refers to FAPESP's funding instruments – research scholarships/ fellowships and research grants – awarded by FAPESP to further six funding strategies:

- 1) Training of Human Resources for S&T;
- 2) Research for Knowledge Advancement;
- 3) Research for Innovation;
- 4) Research on Strategic Themes;
- 5) Support for Research Infrastructure; and
- 6) Knowledge Diffusion.

These six strategies translate respectively into:

- 1) scholarships/fellowships in Brazil and abroad to support the training of human resources for research;
- 2) support for long-term research, and regular research grants;
- 3) research conducted in partnership with companies;
- 4) strategic projects in areas such as biodiversity, bioenergy, climate change, and public policy, among others;
- 5) support for modernization and conservation of research facilities; and
- 6) dissemination of scientific and technological research findings.

The indicators for the results of funding instruments presented in the Report are: amounts disbursed, numbers of active projects, and numbers of projects contracted for between January and December.

The classification of funding instruments (scholarships/fellowships and research grants) by funding strategy provides insight into the objectives of FAPESP's investment in research by accounting for all types of funding linked to approved projects, and distinguishing among support for long- and short-term research projects, projects selected in calls for proposals and projects submitted spontaneously, support for human resource training, and support for scientific exchange and research infrastructure, among others.

HOW THIS REPORT IS STRUCTURED

SÃO PAULO STATE'S ST&I SYSTEM: indicators for São Paulo State's Science, Technology & Innovation (ST&I) System, giving the reader an overview of the state's importance to scientific and technological development in Brazil.

CHAPTER 1 – FAPESP IN 2023: institutional information on FAPESP and its governance system; indicators of the composition of its income; data for disbursement, active projects and projects contracted for during the year; and time series for 2017-2023. The information is organized by funding strategy, major knowledge area, institution, and scholarships or research grants pertaining to each strategy. The key items in FAPESP's budget execution during the year, funding and institutional advances, and noteworthy research projects supported by FAPESP and highlighted by the media are also presented in this chapter.

CHAPTER 2 – FUNDING STRATEGIES: information on the programs covered by the six research strategies, detailing disbursement, active projects, projects contracted for during the year, and examples of outstanding achievements and research results.

CHAPTER 3 – RESEARCH COLLABORATION AND CO-FUNDING: promotion of collaborative research in Brazil and abroad; co-funding initiatives; investment and partnerships with funding agencies, academic institutions and companies during the year.

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SÃO PAULO STATE'S
ST&I SYSTEM

2023

SÃO PAULO ST&I SYSTEM



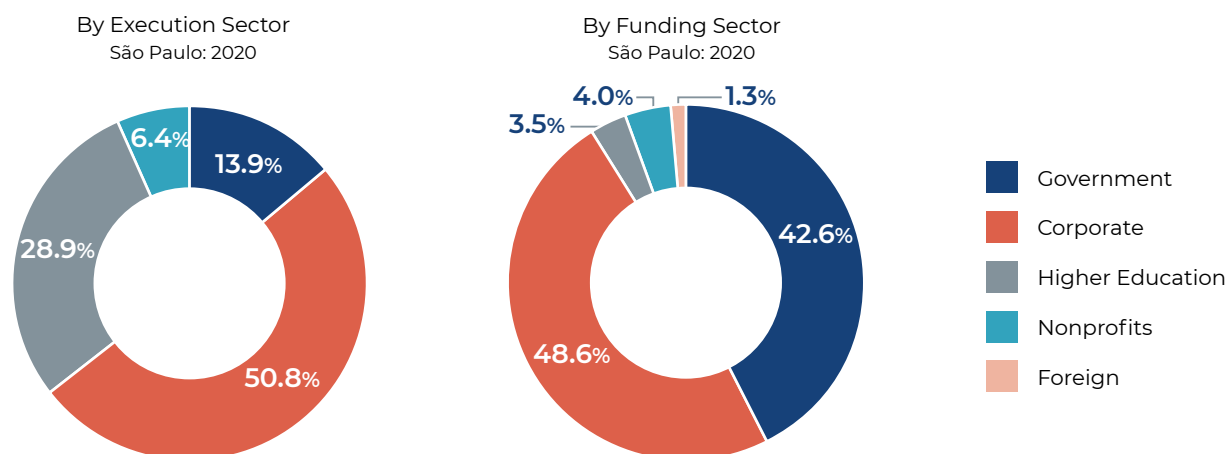
Sources: FAPESP, DPCTA, Planning, Studies and Indicators (GIP). Chart by FAPESP (2022).
IBGE – Technological Innovation Survey (PINTEC, 2017).

R & D EXPENDITURE

Execution and Funding Sector (in \$ PPP* millions) – São Paulo State: 2020

Funding Sector	Execution Sector				Amount per Funding Source
	Government	Corporate	Higher Education	Nonprofits	
Government	1,404.4	385.0	723.6	111.0	4,624.0
Corporate	93.9	4,996.0	9.7	166.5	5,266.1
Higher Education	-	-	379.3	-	379.3
Nonprofits	2.2	0.0	13.3	414.8	430.3
Foreign	7.1	188.89	5.5	5.5	136.8
Amount per Execution Sector	1,507.6	5,499.8	3,131.4	697.8	10,836.6

* \$ PPP = Purchasing Power Parity. Source: <https://data.worldbank.org/indicator/PA.NUS.PPP>



Sources: FAPESP, DPCTA, Planning, Studies and Indicators (GIP). Data: FAPESP – Survey of São Paulo ST&I System (2020). IBGE – Technological Innovation Survey (PINTEC, 2017).

Note: Corporate expenditure on in-house R&D calculated on the basis of the 2017 PINTEC survey's results for São Paulo (chart 2.8), using variations in value added by economic sectors and excluding public companies classified as CNAE 72 as these are covered under research institutions.

RESEARCHERS IN SÃO PAULO STATE

Type of Institution, São Paulo State– 2018-2020

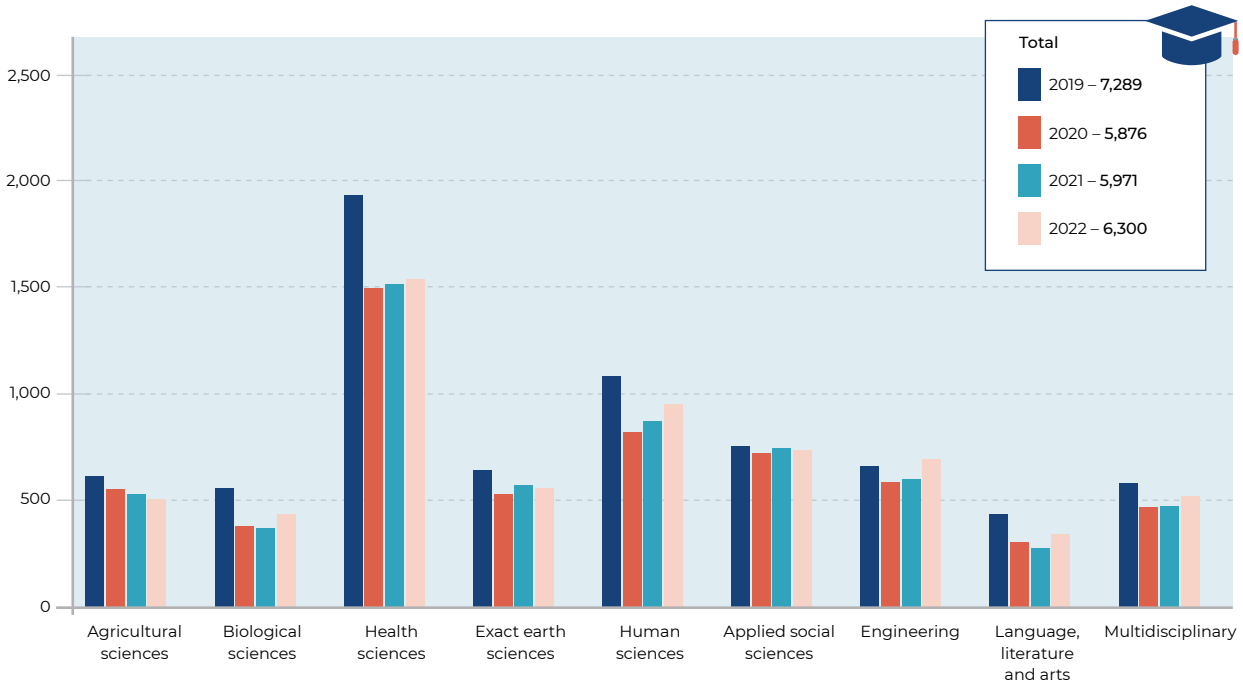
Type of Institution	2018	2020
Research Institute	4,339	4,071
Higher Education Institute	39,007	36,233
Healthcare institutions with R&D	2,978	3,837
Companies	33,721	33,427
TOTAL	80,045	77,568

Source: FAPESP, DPCTA, Planning, Studies and Indicators (GIP). Data: FAPESP – Survey of São Paulo ST&I System (2018, 2020, 2022). IBGE – Technological Innovation Survey (PINTEC, 2017); administrative records for PhD and postdoc scholarships awarded by FAPESP, CAPES and CNPq.

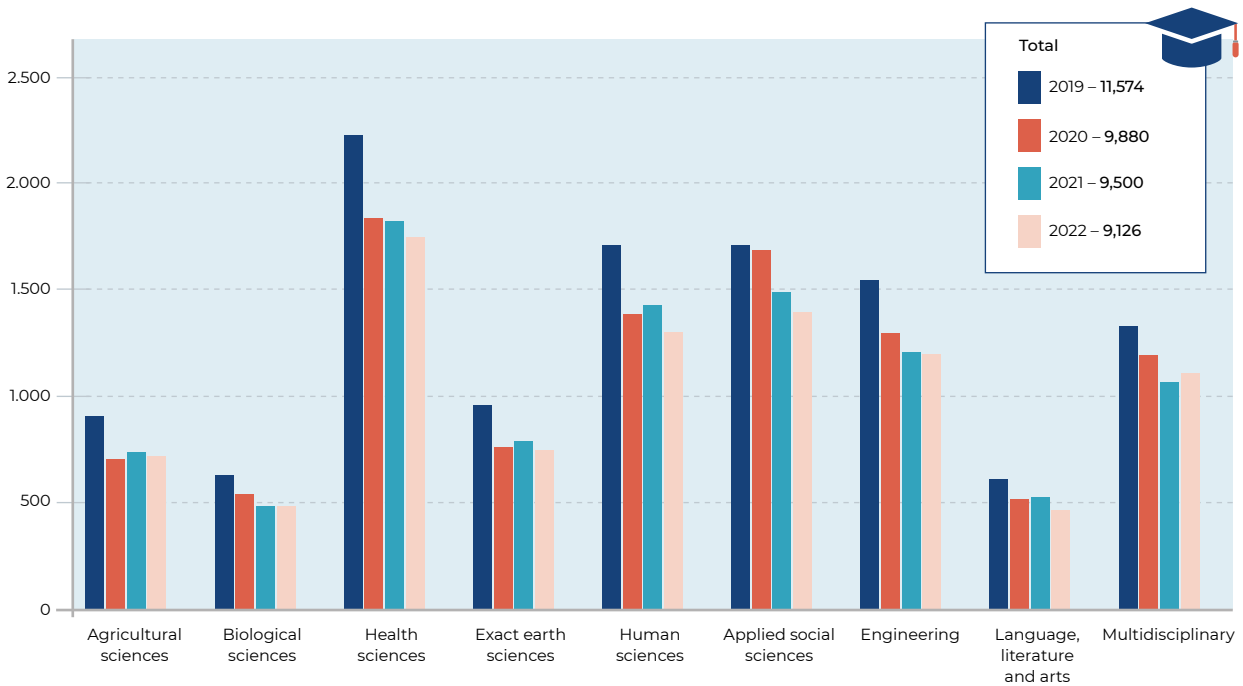
Note: amounts for each type of executor refer to the number of researchers affiliated with institutions thus classified plus the number of PhD and postdoc scholarship awardees at these institutions. The number of affiliated researchers is a simple count of people involved in R&D activities. Researchers in companies were quantified based on the ratio of the estimated number of researchers to in-house R&D expenditure as per PINTEC 2017 (the latest edition available). This ratio was applied to estimated expenditure on the same activities in 2020, adjusted for inflation between December 2017 and December 2020 measured by the IBGE's broad consumer price index (IPCA). The total does not correspond to the sum of the sectors because it includes scholarship awardees in institutions not covered by the categories presented.

TRAINING OF HUMAN RESOURCES

PhDs awarded, by knowledge area – 2019-2022



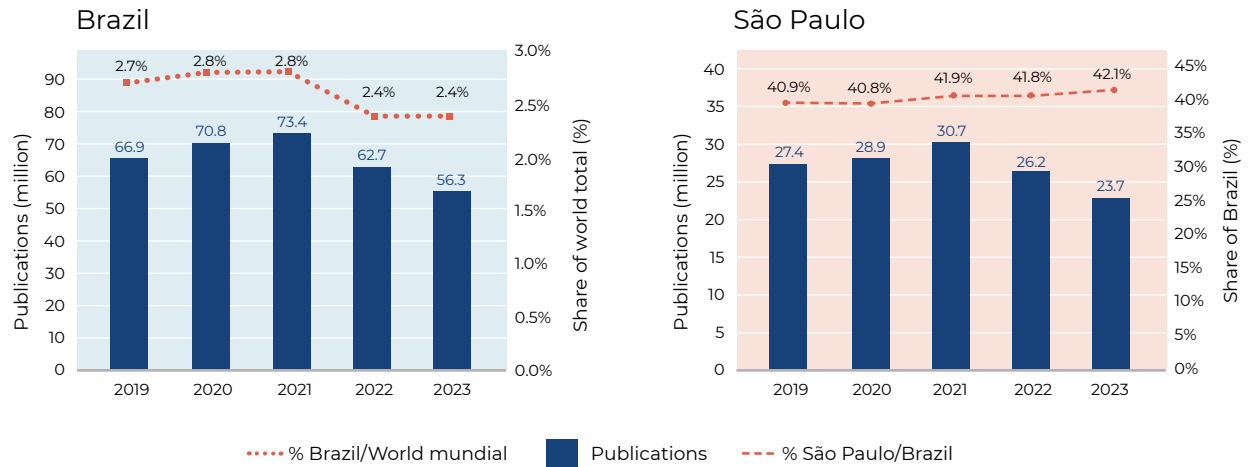
Títulos de MESTRADO, por áreas do conhecimento – 2019 a 2022



Source: CAPES, Sucupira Platform student database (data downloaded in April 2024).

SCIENTIFIC PUBLICATIONS

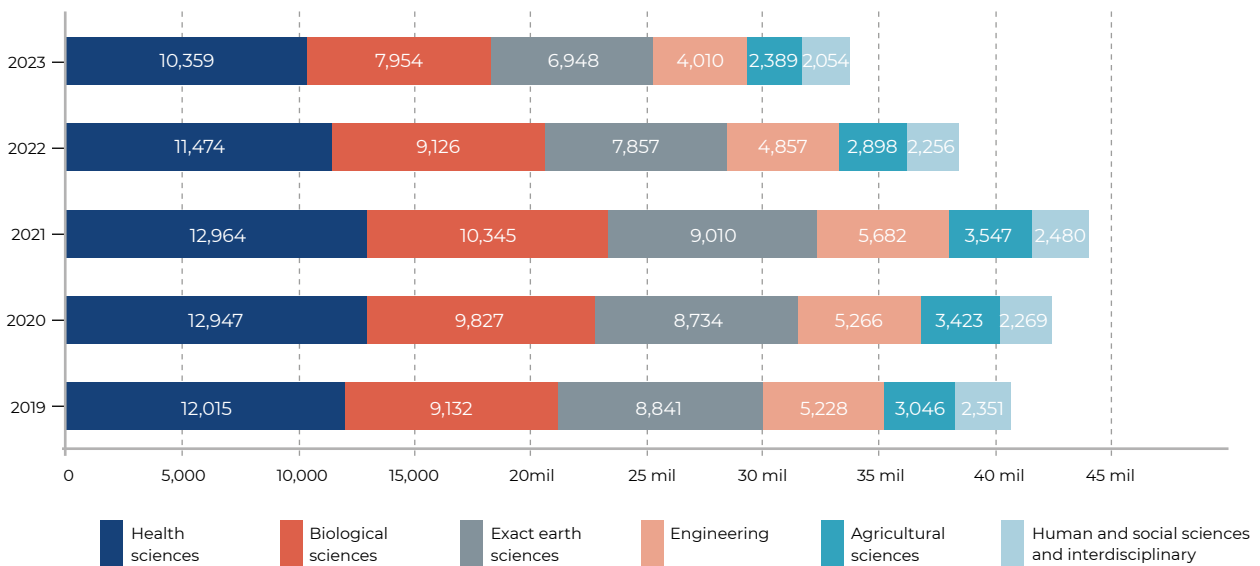
N° of publications – Total (million) and share (%)
Brazil and São Paulo – 2019-2023



Sources: Clarivate, InCites (data downloaded on April 15, 2024).

Note: publications are Articles, Reviews and Proceedings Papers as per Clarivate’s Web of Science database. A publication is assigned to a geographic unit if at least one of the authors has an address there.

Publications by FAPESP Major Knowledge Area
São Paulo – 2019-2023



Sources: Clarivate, InCites (data downloaded on April 15, 2024).

Note: publications are Articles, Reviews and Proceedings Papers as per Clarivate’s Web of Science database, grouped according to knowledge areas specified by FAPESP. A publication is assigned to a geographic unit if at least one of the authors has an address there. The number of scientific publications in São Paulo is lower than the sum of publications in all research areas because a publication can be included in more than one knowledge area.



CHAPTER 1



FAPESP IN 2023

About FAPESP

Governance

Proposal selection

Evaluation of FAPESP's Programs

Research Funding Strategies

Income and expenditure

Disbursement with grants and fellowships

Commitments assumed

Funding advances

Institutional advances

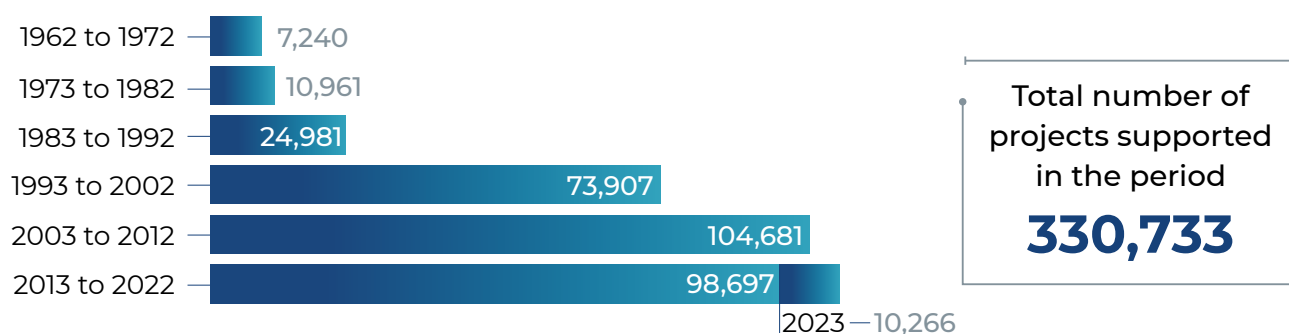
Highlights of supported research projects

ABOUT FAPESP

The São Paulo Research Foundation (FAPESP) is one of Brazil's leading public agencies for the funding of research. FAPESP was formally created in 1960 by State Law 5918 (dated October 18, 1960), which established that its remit was to support scientific research and science dissemination in São Paulo State. It began operating in 1962 in accordance with Decree 40132 (dated May 23, 1962). Called for by São Paulo State's 1947 Constitution and ratified by its 1989 Constitution, FAPESP receives 1% of the state's annual tax revenue to carry out its mission of investing in scientific and technological development.

This investment takes the form of scholarships, fellowships and grants to fund research projects in all knowledge areas led by researchers affiliated with public or private higher education and research institutions in São Paulo State, and by researchers employed by companies based in the state.

CHART 1 NUMBER OF PROJECTS SUPPORTED – 1962 TO 2023



GOVERNANCE

FAPESP is governed by a Board of Trustees and an Executive Board. The São Paulo State Constitution guarantees its administrative autonomy. The Board of Trustees sets general guidelines and makes key decisions regarding scientific policy, administrative affairs and asset management.

The Board has 12 members, who each serve a six-year term renewable once. Six trustees are appointed directly by the state governor, and the others are chosen by the governor from three-name shortlists submitted by public and private higher education and research institutions in São Paulo State. FAPESP's president and vice president are appointed by the governor from a three-name shortlist drawn up by the Board of Trustees from among its own members.

The Executive Board (CTA) is responsible for the day-to-day running of FAPESP. It has three members: the Executive Director or CEO; the Scientific Director; and the Administrative Director or CAO. They are chosen by the governor from three-name shortlists drawn up by the Board of Trustees and are retained by FAPESP for up to three years, renewable for two further terms.

PROPOSAL SELECTION

Research proposals submitted to FAPESP for support from its various funding lines are evaluated by peer review. Committees of experts called Area Panels coordinate the proposal assessment process in major knowledge areas under the aegis of FAPESP's Scientific Directorate.

The relevant Area Panel selects ad hoc reviewers to analyze each proposal and issue a merit assessment. The proposal then returns to the Area Panel, which issues an approval or denial recommendation to the Scientific Directorate. The Scientific Directorate makes the final decision, with the assistance of a supervisory panel comprising 20 associate coordinators. Decisions must be ratified by the Executive Board and may also have to be endorsed by the Board of Trustees.

TABLE 1 AD HOC REVIEWERS AND ASSESSMENTS

Evolution – 2018 to 2023

N° of assessments by reviewers	N° of reviewers by year					
	2018	2019	2020	2021	2022	2023
1 to 4	7,821	8,016	8,272	7,797	6,962	6,202
5 to 9	1,103	1,184	1,194	1,087	1,321	1,158
10 to 14	75	71	120	126	181	201
15 or +	4	8	13	11	19	23
Total of reviewers	9,003	9,279	9,599	9,021	8,483	7,584

TABLE 2 N° OF ASSESSMENTS

By reviewers' region of origin – 2018 to 2023

	2018	2019	2020	2021	2022	2023
NORTH						
12	15	22	19	22	14	
NORTHEAST						
304	293	315	275	309	235	
CENTER-WEST						
221	228	244	228	231	246	
SOUTHEAST						
São Paulo State	19,724	20,762	21,719	19,433	21,093	19,752
Other states	1,141	1,125	1,172	1,034	1,076	974
SOUTH						
592	598	618	508	519	392	
NOT IDENTIFIED						
149	149	132	819	356	132	
Total	22,143	23,170	24,222	22,316	23,606	21,745

EVALUATION OF FAPESP'S PROGRAMS

FAPESP's programs are regularly evaluated in terms of their scientific, societal and economic impacts. Executive summaries and full reports on the evaluations are available on its portal in Portuguese (www.fapesp.br/avaliacao) and in English (fapesp.br/en/evaluation). Links to articles deriving from these initiatives and published in special-interest journals can be found on the same pages. The evaluations cover FAPESP's key activities: cross-border cooperation agreements; scientific initiation, master's and PhD scholarships; the Innovative Research in Small Business Program (PIPE), the BIOTA-FAPESP Program, the Multi-User Equipment Program, the Young Investigator Program, the Research Partnership for Technological Innovation Program (PITE), and the Public Policy Program. FAPESP makes changes to its initiatives in response to these evaluations with the aim of increasing the effectiveness of its actions. The process has been enhanced over the years, not least by an exchange of experiences with funding agencies in other countries. The evaluations now involve questionnaires for completion by the researchers and institutions awarded funding, as well as control groups with proponents whose applications for funding are turned down.



SEE
fapesp.br/pdf/peer_review.pdf

FAPESP'S PROJECT SELECTION PROCESS

1

Area Panels receive applications

Each application received goes to the Area Panel for the corresponding knowledge area. The Area Panel analyzes the abstract and the principal investigator's institutional affiliation.

2

Selection of ad hoc reviewers and issuance of assessment reports

The Area Panels select specialists with specific competencies in each project's subject matter to act as ad hoc reviewers, who analyze the proposals and issue expert opinions on their merit. The ad hoc reviewers are chosen so as to avoid potential conflicts of interest. FAPESP uses a program based on algorithms and integrated into the Management Support System (SAGE) to analyze data from processes such as reviewer history, project research areas, keywords, conflicts etc. and suggest lists of possible reviewers for each new proposal. These lists are presented to the Area Panels, which make the final selection based on the recommendations.

7,584 ad hoc reviewers produced 21,745 assessments in 2023

3

Analysis by Area Panel

The proposal returns to the Area Panel, which analyzes the reviewers' assessments and recommends approval or denial by the Scientific Directorate.

51% Life Sciences

28% Natural Sciences and Engineering

20% Human and Social Sciences

1% Interdisciplinary

4

Analysis by Supervisory Panel

The Scientific Directorate also works with a Supervisory Panel comprising **20** researchers who are Area Panel members and recognized leaders in their respective fields. They review the recommendations made by the Area Panels to assure compatibility with the available merit assessments. They may endorse recommendations, or question them and suggest further analysis, among other measures.

5

Decision by Scientific Directorate

The Scientific Directorate's decisions are based on the recommendations of the Supervisory Panel and Area Panels.

73 days was the average time taken to analyse each of the 15,215 initial assessments

6

Approval by Executive Board

The Executive Board (CTA) **deliberates** on the applications for research funding, subject to ratification by the Board of Trustees.

7

Board of Trustees

The Board of Trustees **examine** the Executive Board's approvals, **ratifying** them if appropriate.

RESEARCH FUNDING STRATEGIES

FAPESP classifies its support for scientific and technological development in São Paulo State into six funding strategies:

Training of Human Resources for S&T

Regular scholarships/fellowships for undergraduate and graduate students in Brazil and abroad, not associated with other research grants. **In Brazil:** Scientific Initiation, Master's, PhD, Direct Doctorate, Postdoc, Aristides Pacheco Leão Program to Stimulate Scientific Vocations. **Abroad:** Research Fellowship Abroad (RFA), postdoc level; Research Internship Abroad (RIA) to fund research conducted abroad while a scholarship/fellowship is in progress in Brazil. Training scholarships and fellowships associated with research projects are accounted for in other strategies.

Research for Innovation

A set of research programs that prioritize collaboration between business organizations and universities or research institutions and stimulate technological innovation in São Paulo State. **Programs:** Research Partnership for Technological Innovation (PITE); Engineering Research Centers/ Applied Research Centers (ERCs/ARCs); ARCs in Artificial Intelligence in partnership with the Ministry for Science, Technology and Innovation (MCTI); Innovative Research in Small Business (PIPE); Intellectual Property Policy (PAPI); associated research grants and scholarships/fellowships.

Support for Research Infrastructure

A set of programs whereby FAPESP assures the infrastructure required for the continuity of research. **Programs:** Multi-User Equipment; FAP-Livros (Books), Equipment Repair, Institutional Overhead, Access to REDNESP (formerly Rede ANSP), Support for Infrastructure (collections, laboratories etc).

Research to Advance Knowledge

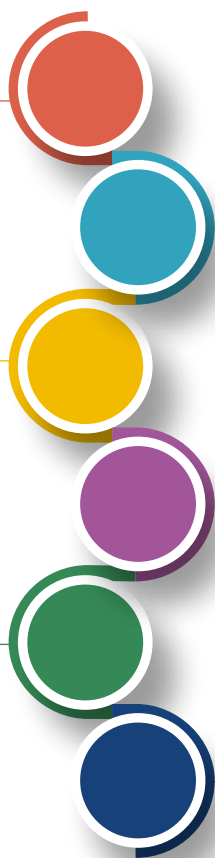
Long term: support for basic and applied research via Thematic Projects, RIDC, SPEC and YI programs, Special Projects, New Generation Program (Project Generation and Project Initial Π (Pi) Research Grants), associated research grants/scholarships. **Short term:** support for basic and applied research via Regular Research Grants and associated scholarships/ fellowships, and regular grant modalities: visiting researchers from abroad, scientific publications, and participation in or organization of scientific or technological meetings.

Research on Strategic Themes

A set of programs whereby FAPESP stimulates the formation of research groups to focus on topics considered strategic to the development of São Paulo State and Brazil, including support for the modernization of research institutions in the state. **Programs:** BIOTA-FAPESP (biodiversity); BIOEN (bioenergy); Science for Development Centers (SDCs); Global Climate Change (RPGCC); eScience and Data Science; Public Policy (PPP); Public Education (EP); Plan for Institutional Development of State Research Institutions (PDIP); associated grants and scholarships/ fellowships.

Diffusion, mapping and evaluation of research

Initiatives to inform FAPESP's stakeholders about its science policy guidelines and the results and societal and economic impacts of the scientific knowledge produced in São Paulo State with FAPESP's support; and actions to measure the results of its activities, map research institutions, and evaluate the overall status of research in the state.



TOTAL INCOME AND EXPENDITURE

FAPESP's income consists of 1% of São Paulo State's annual tax revenue, transferred by the state treasury in compliance with the state constitution, and receipts from other sources, such as own income and joint research funding agreements with other institutions and companies.

FAPESP's budget execution in 2023 is summarized below. The funding activities described in the Report, as well as the other main items of income and expenditure, are shown on a cash flow basis. FAPESP's complete financial statements on an accrual basis, as required by law, can be found at www.fapesp.br/balancos.

Total income in 2023:

\$ PPP*
944,045,268
 ↑4% on 2022.

* \$ PPP = Purchasing Power Parity.
 Source: <https://data.worldbank.org/indicator/PA.NUS.PPP>

TABLE 3 TOTAL INCOME AND EXPEDITURES IN 2023

INCOME	\$ PPP
State treasury transfers	782,429,721
Federal funds	1,994,049
Own income (net)	159,621,498
TOTAL	944,045,268
DISBURSEMENT	\$ PPP
Grants	312,819,019
Scholarships	247,136,542
SUBTOTAL	559,955,561
Other expenses associated with grants	17,295,927
Refunds relating to cooperation agreements	145,035
SUBTOTAL	577,396,523
Running costs*	43,809,217
Institutional investment	8,636,705
Expenses relating to incentives for Institutional Development Plan (PDI)	1,916,528
Expenses carried over from previous years	682,287
TOTAL	632,441,260
Cash and cash equivalents at year-end	311,604,008

* FAPESP is required by law to limit running costs to 5% of its annual budget.

TABLE 4 ANNUAL EVOLUTION OF FAPESP'S INCOME – 2017-2023 (\$ PPP)

Income	2017	2018	2019	2020	2021	2022	2023
State treasury transfers	455,496,047	483,512,668	553,497,705	575,971,407	693,958,404	781,923,130	782,429,721
Other incomes	93,272,210	78,076,958	42,074,337	14,723,161	37,429,281	125,757,560	161,615,547
Total	548,768,257	561,589,626	595,572,042	590,694,568	731,387,685	907,680,690	944,045,268

DISBURSEMENT FOR GRANTS, SCHOLARSHIPS AND FELLOWSHIPS

In 2023, FAPESP disbursed \$ PPP 559,955,561 for 23,029 active research projects, of which 10,266 were contracted for in the year. Compared with 2022, disbursement to fund research rose 16%, and new projects contracted for rose 18%.

Charts 2 and 3 summarize investment broken down by funding strategy and knowledge area. Tables 4 to 13 present indicators for institutions, annual growth, consolidated funding for all scholarships and all grants, existing commitments, and commitments to be assumed in the years ahead.

\$ PPP 559,955,561
to fund **23,029**
research projects.

CHART 2 DISBURSEMENT, ACTIVE PROJECTS AND NEW PROJECTS CONTRACTED FOR IN 2023
By funding strategy

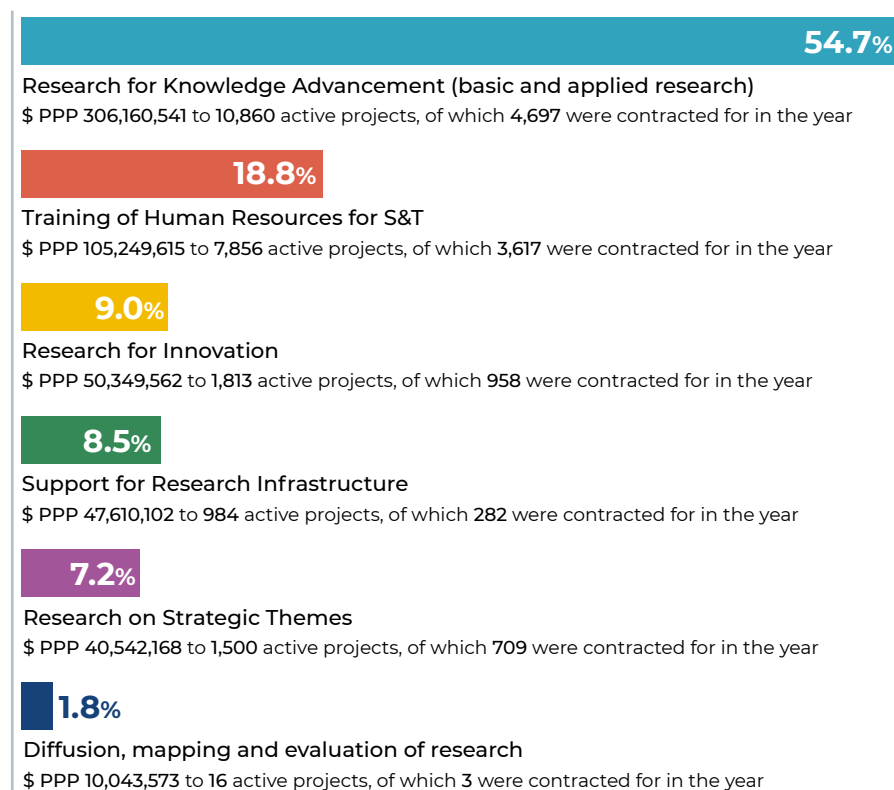


CHART 3 DISBURSEMENT, ACTIVE PROJECTS AND NEW PROJECTS CONTRACTED FOR IN 2023

By major knowledge areas

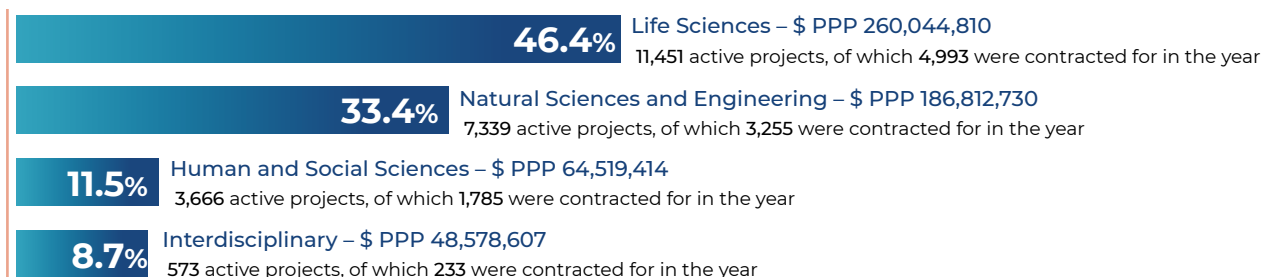


TABLE 5 DISBURSEMENT, ACTIVE PROJECTS AND NEW PROJECTS CONTRACTED FOR IN 2023

By institution

Institution	Disbursement		Active projects		News projects contracted	
	\$ PPP	%	N°	%	N°	%
University of São Paulo (USP)	243,113,572	43.4	8,788	38.0	3,625	35.3
University of Campinas (Unicamp)	78,712,727	14.1	3,190	13.9	1,289	12.6
São Paulo State University (Unesp)	58,408,407	10.4	3,705	16.0	1,816	17.7
Federal Institutions	82,070,849	14.7	3,768	16.5	1,757	17.2
Federal de University of São Paulo	26,454,249	4.7	1,236	5.4	571	5.6
Federal University of São Carlos	23,369,698	4.2	1,430	6.2	709	6.9
National Center for Research in Energy and Materials (CNPEM)	11,429,219	2.0	196	0.9	82	0.8
Federal University of the ABC	8,739,587	1.6	444	1.9	196	1.9
Brazilian Agricultural Research Corporation	2,834,382	0.5	106	0.5	36	0.4
National Space Research Institute (INPE)	2,642,975	0.5	82	0.4	24	0.2
Aeronautical Technology Institute (ITA)	2,428,686	0.4	97	0.4	49	0.5
Other	4,172,053	0.8	177	0.8	90	0.9
Companies	37,236,966	6.6	1,370	5.9	774	7.5
State research institutions	33,290,511	5.9	999	4.4	380	3.7
São Paulo State Department of Health	22,822,772	4.1	599	2.6	240	2.3
São Paulo State Department of Economic Development, Science, Technology and Innovation	4,088,169	0.7	127	0.6	40	0.4
São Paulo State Department of Agriculture and Supply	5,117,389	0.9	215	0.9	80	0.8
São Paulo State Department of Environment, Infrastructure and Logistics	1,262,181	0.2	58	0.3	20	0.2
Private higher education and research institutions	53,815,709	3.9	1,122	4.9	576	5.6
Scientific associations and societies	1,178,048	0.2	34	0.1	23	0.2
Municipal institutions	393,914	0.1	21	0.1	10	0.1
Government of other states	77,998	0.0	1	0.0	1	0.0
Other institutions	3,416,951	0.6	31	0.1	15	0.1
Total	559,955,561	100.0	23,029	100.0	10,266	100.0

TABLE 6 ANNUAL EVOLUTION OF THE DISBURSEMENT (\$ PPP)

By funding strategies		2017	2018	2019	2020	2021	2022	2023
Funding Strategies								
Training of Human Resources for Research		135,402,194	131,522,911	130,559,806	98,061,692	69,907,938	82,210,026	105,249,615
Research for Knowledge Advancement	Long-term research	160,832,022	190,850,872	188,499,668	152,179,415	173,961,686	183,083,466	229,278,690
	Regular grants not associated to other grants	85,922,183	89,869,416	87,936,995	44,259,418	48,815,893	62,271,814	76,881,851
Research for Innovation		39,542,186	51,022,082	50,034,027	42,568,890	34,245,414	38,596,082	50,349,562
Research on Strategic Themes		17,606,051	24,536,592	33,066,684	22,992,180	26,054,915	33,468,200	40,542,168
Support for Research Infrastructure		39,344,201	51,216,717	53,246,198	56,474,563	40,459,367	50,296,608	10,043,573
Diffusion, mapping and evaluation of research		6,597,215	7,556,294	7,926,525	6,784,184	7,076,154	8,461,326	10,043,573
Total		485,246,052	546,574,884	551,269,903	423,320,342	400,521,367	458,387,521	559,955,561

TABLE 7 ANNUAL EVOLUTION OF THE NUMBER OF PROJECTS CONTRACTED

By funding strategies		2017	2018	2019	2020	2021	2022	2023
Funding Strategies								
Training of Human Resources for Research		4,021	4,386	3,921	2,557	2,496	3,302	3,617
Research for Knowledge Advancement	Long-term research	1,881	2,048	2,330	1,612	1,641	2,283	2,761
	Regular grants not associated to other grants	2,924	2,960	2,657	1,503	1,338	1,626	1,936
Research for Innovation		731	836	733	756	756	724	958
Research on Strategic Themes		314	344	454	360	317	496	709
Support for Research Infrastructure		310	359	337	237	273	278	282
Diffusion, mapping and evaluation of research		5	13	11	2	2	11	3
Total		10,186	10,946	10,443	7,027	6,823	8,720	10,266

TABLE 5 DISBURSEMENT, ACTIVE PROJECTS AND NEW PROJECTS CONTRACTED FOR IN 2023
Scholarships/fellowships and grants by funding strategies

Funding Strategies		Disbursement \$ PPP	Active projetscts	New projects contracted
TOTAL GERAL		559,955,561	23,029	10,266
TRAINING OF HUMAN RESOURCES FOR RESEARCH		105,249,615	7,856	3,617
Scholarships and Fellowships not associated with research grants	In Brazil	63,818,160	6,716	2,885
	Scientific Initiation (SI)	7,655,277	3,109	1,705
	Master (MS)	7,408,468	960	397
	Doctorate (DR)	23,104,773	1,520	417
	Direct Doctorate (DD)	5,211,032	400	104
	Aristides P. Leão Program to Stimulate Scientific Vocations	281,288	40	47
	Postdoc (PD)	20,157,322	687	215
	Abroad	41,431,455	1,140	732
	Research Internships Abroad (RIA)	31,929,082	926	598
	RIA – SI	1,585,460	109	97
	RIA – MS	2,913,016	153	111
	RIA – DR	12,920,880	394	226
	RIA – DD	3,234,047	100	61
RIA – PD	11,275,679	170	103	
Research Fellowships Abroad (RFA) – PD not associated	9,502,373	214	134	
RESEARCH FOR KNOWLEDGE ADVANCEMENT		306,160,541	10,860	4,697
Long-term Research	Thematic Project Grant and associated scholarships/ fellowships and grants	127,016,706	3,958	1,477
	Research, Innovation and Dissemination Centers (RIDC) and associated scholarships/fellowships and grants	41,798,247	886	353
	Young Investigator grants and associated scholarships/ fellowships and grants	40,170,719	1,607	607
	Special Project grants and associated scholarships/fellowships and grants	10,894,952	22	8
	São Paulo Excellence Chair (SPEC) and associated scholarships/fellowships and grants	2,471,559	71	25
	New Generation Program and associated grants	6,926,508	280	291
Subtotal		229,278,691	6,824	2,761
Regular Research Grants not associated with other grants	Regular Research Grants not associated to other grants and associated scholarships/fellowships	65,671,659	3,306	1,290
	Regular Grants (meetings, organization, publications, visiting researchers) not associated to other grants	11,210,191	730	646
Subtotal		76,881,850	4,036	1,936
RESEARCH FOR INNOVATION		50,349,562	1,813	958
	Research Partnership for Technological Innovation Program (PITE) and associated scholarships/fellowships and grants	2,521,266	94	36
	Engineering Research Centers/Applied Research Centers (ERC/ARC) and associated scholarships/fellowships and grants	9,751,089	358	156
	Innovative Research in Small Business Program (PIPE), Fellowship PE and associated scholarships/fellowships and grants	36,991,127	1,359	766
	Intellectual Property Support Program (PAPI-Nuplitech) and associated scholarships/fellowships and grants	826	2	0

Funding Strategies		Disbursement \$ PPP	Active projctcts	New projects contracted
	Innovation Districts	654,926	0	0
	Indicator 2 IoT Investments Fund	430,328	0	0
RESEARCH ON STRATEGIC THEMES		40,542,168	1,500	709
	FAPESP Research Program on Biodiversity Characterization, Conservation, Restoration and Sustainable Use (BIOTA) and associated scholarships/fellowships and grants	10,376,864	433	167
	FAPESP Bioenergy Research Program (BIOEN) and associated scholarships/fellowships and grants	5,407,418	166	53
	FAPESP Research Program on Global Climate Change (RPGCC) and associated scholarships/fellowships and grants	6,917,602	234	80
	FAPESP Research Program on eScience and DataScience and associated scholarships/fellowships and grants	544,692	40	22
	Institutional Development Plan for State Research Institutions (RIs)	6,096,078	130	33
	Research in Public Policies Program (PPP) and associated scholarships/fellowships and grants	3,077,350	41	10
	Public Education Research Program (EP)	996,048	261	206
	Science Journalism (MídiaCiência) fellowships not associated to other grants	178,328	16	10
	Science for Development Centers (SDC-SP)	6,947,788	179	128
SUPPORT FOR RESEARCH INFRASTRUCTURE		47,610,102	984	282
	Multi-User Equipment Program	12,674,440	486	50
	Equipment Repair Program	2,164,791	160	79
	REDNESP	6,325,440	1	0
	Overhead for REDNESP Connectivity	479,481	13	5
	Overhead for Research Institution Infrastructure	14,655,193	253	88
	Overhead for Program Coordination	484,059	17	4
	Support for Infrastructure (museums, information repositories, documents and biological collections)	10,826,698	54	56
DIFFUSION, MAPING AND EVALUATION OF RESEARCH		10,043,573	16	3
	<i>Pesquisa FAPESP</i> magazine	4,828,302	1	0
	Dissemination of scientific knowledge in São Paulo State	1,939,940	2	1
	Mapping of research units in São Paulo State (BV)	730,444	1	0
	ST&l Indicators for São Paulo State	497,240	12	2
	Studies of the general condition of research in São Paulo State	430,888	0	0
	Others (contracts)	1,616,759	0	0

TABLE 9 ANNUAL EVOLUTION OF DISBURSEMENT AND NUMBER OF PROJECTS CONTRACTED – 2017 TO 2023
By scholarships/fellowships and grants

Types ⁽¹⁾		2017	2018	2019	2020	2021	2022	2023
Scholarships	Disbursement (\$ PPP)	212,596,872	225,612,672	236,799,075	198,924,248	163,489,765	194,975,424	247,136,542
	Projects contracted	6,584	7,276	7,107	5,035	5,067	6,650	7,609
Grants	Disbursement (\$ PPP)	272,649,180	320,962,212	314,470,828	224,396,094	237,031,602	263,412,098	312,819,019
	Projects contracted	3,602	3,670	3,336	1,992	1,756	2,070	2,657

(1) For detailed breakdown of disbursements for all types of scholarships and grants, see Table 10 to 13..

TABLE 10 GRANTS – OVERVIEW – NUMBER OF PROJECTS CONTRACTED IN 2023
By types or program and funding strategies

Types	Funding strategies	Research for knowledge advancement		Research for Innovation	Research on Strategic Themes	Support for Research Infrastructure	Diffusion, mapping and evaluation of research	Total
		Long-term research	Regular Grants not associated to other grants					
Research Grants – Regular ⁽³⁾		179	1,523	19	30		1	1,752
Research Grants (Programs)		238	0	295	94	278	0	905
Thematic		63						63
Young Investigators – Phase 1		28						28
Young Investigators – Phase 2								0
RIDC		5						5
Generation Project		30						30
Project Initial TI (Pi)		109						109
PITE				3				3
PIPE		1		285				286
ERC/ARC				3				3
BIOTA					27			27
BIOEN					9			9
Global Climate Change					17			17
eScience/Data Science					6			6
Public Policies (PPP)					5			5
Public Education		2			25			27
Science for Development Centers					5			5
Multi-user Equipment				4		50		54
Equipment Repair						79		79
REDNESP								0
Infrastructure Program						53		53
Overhead – Institutional Research Infrastructure						88		88
Overhead – Program Coordinator						3		3
Overhead – REDNESP						5		5
Total		417	1,523	314	124	278	1	2,657

TABLE 11 GRANTS – OVERVIEW – DISBURSEMENT IN 2023 (\$ PPP)

By types or program and funding strategies

Types	Funding strategies		Research for Innovation	Research on Strategic Themes	Support for Research Infrastructure	Diffusion, mapping and evaluation of research	Total
	Long-term research	Regular Grants not associated to other grants					
Research Grants – Regular ⁽³⁾	2,866,688	71,886,540	359,992	480,952	0	7,900,978	83,495,150
Research Grants (Programs)	124,653,237	0	29,821,444	24,236,665	47,479,621	0	226,190,967
Thematic	62,693,064						62,693,064
Special Projects	10,552,831						10,552,831
SPEC	1,126,125						1,126,125
Young Investigators – Phase 1	12,608,761			371,666			12,980,427
Young Investigators – Phase 2	6,580,150			296,611			6,876,761
RIDC	24,822,152						24,822,152
Generation Project	1,112,205						1,112,205
Project Initial IT (Pi)	4,602,272						4,602,272
PITE			1,549,477	71,269			1,620,746
PIPE			24,529,538	134,957			24,664,495
ERC/ARC			3,412,085				3,412,085
Intellectual Property (PAPI/Nuplitech)			826				826
BIOTA	390,668			5,164,261			5,554,929
BIOEN	125,185		248	2,903,070			3,028,503
Global Climate Change				3,272,740			3,272,740
eScience/Data Science				191,555			191,555
Institutional Development Plan for State Research Institutions (PDip)				3,534,436			3,534,436
Public Policies (PPP)				3,239,005			3,239,005
Public Education	39,824			437,161			476,985
Science for Development Centers				4,619,934			4,619,934
Multi-user Equipment			329,270		12,674,440		13,003,710
Equipment Repair					2,164,791		2,164,791
REDNESP					6,325,440		6,325,440
Infrastructure Program					10,815,574		10,815,574
Overhead – Institutional Research Infrastructure					14,655,193		14,655,193
Overhead – Program Coordinator					364,702		364,702
Overhead – REDNESP					479,481		479,481
Total	127,519,925	71,886,540	30,181,436	24,717,617	47,479,621	7,900,978	309,686,117
Innovation Districts (FIPE)			654,926				654,926
Indicator 2 IoT Investments Fund			430,328				430,328
Other (contracts)						2,047,648	2,047,648
Total Geral	127,519,925	71,886,540	31,266,690	24,717,617	47,479,621	9,948,626	312,819,019

(3) Regular research grants comprise Research Grants – Regular, Grants for Meeting Organization, Grants for Participation in Meetings, Publication Grants, and Visiting Researcher Awards. Small differences in subtotals may occur due to rounding.

TABLE 12 SCHOLARSHIPS/FELLOWSHIPS – OVERVIEW – NUMBER OF PROJECTS CONTRACTED IN 2023
By types or program and funding strategies

Types	Funding strategies	Training of Human for Research	Research for Knowledge Advancement		Research for Innovation	Research on Strategic Themes	Diffusion, mapping and evaluation or research	Support for Research Infrastruct.	Total ⁽¹⁾
			Long-term	Regular Grant					
Regular Scholar/Fellowships		2,885	29	1,462	92	202	0	0	4,670
Scientific Initiation (SI)		1,704	1	588	19	54			2,366
Master's (MS)		397	2	215	13	39			666
Doctorate (DR)		417		157	27	28			629
Direct Doctorate (DD)		104		134		10			248
Postdoctorate (PD)		215	26	368	33	71			713
APL Program to Stimulate Scientific Vocations		48							48
Regular Fellowships Abroad		732	3	430	22	55	0	0	1,242
Research Fellowships Abroad (RFE) - PD		134		17		4			155
Research Internships Abroad (RIA)		598	3	413	22	51			1,087
RIA – SI		97		58	1	4			160
RIA – MS		111		56	3	8			178
RIA – DR		226		102	6	13			347
RIA – DD		61		76	2	7			146
RIA – PD		103	3	121	10	19			256
Subtotal		3,617	32	1,892	114	257			5,912
Fellowships – Training		0	346	313	384	156	2	4	1,205
Technical Training (TT)			346	303	383	140	2	4	1,178
Scientific Journalism (JC)				10	1	16			27
Research Fellowships (Programs)		0	35	139	146	172	0	0	492
PE					140				140
BIOTA						1			1
Public Education				34		159			193
Young Investigator				17					17
Generation Project				22					22
Attracting Young PHDs			35	66	6	12			119
Total		3,617	413	2,344	644	585	2	4	7,609

TABLE 13 SCHOLARSHIPS/FELLOWSHIPS – OVERVIEW – DISBURSEMENT IM 2023 (\$ PPP)

By types or program and funding strategies

Types	Funding strategies	Training of Human for Research	Research for Knowledge Advancement		Research for Innovation	Research on Strategic Themes	Diffusion, mapping and evaluation or research	Support for Research Infrastruct.	Total ⁽¹⁾
			Long-term	Regular Grant					
Regular Scholar/Fellowships		63,818,160	1,708,738	64,067,185	4,671,253	8,496,911		0	142,762,247
Scientific Initiation (SI)		7,650,532	1,749	2,655,165	85,007	262,977			10,655,430
Master's (MS)		7,408,468	16,183	3,828,406	243,167	619,884			12,116,108
Doctorate (DR)		23,104,773		10,369,110	879,805	1,259,658			35,613,346
Direct Doctorate (DD)		5,211,032		7,644,659	180,630	501,845			13,538,166
Postdoctorate (PD)		20,157,322	1,690,806	39,569,845	3,282,644	5,852,547			70,553,164
APL Program to Stimulate Scientific Vocations		286,033							286,033
Regular Fellowships Abroad		41,431,455	91,326	28,682,822	1,424,418	4,148,432		0	75,778,453
Research Fellowships Abroad (RFE) - PD		9,502,373		1,061,857	236,325	477,167			11,277,722
Research Internships Abroad (RIA)		31,929,082	91,326	27,620,965	1,188,093	3,671,265			64,500,731
RIA – SI		1,585,460		842,361	11,674	76,650			2,516,145
RIA – MS		2,913,016		1,519,135	72,669	235,844			4,740,664
RIA – DR		12,920,880		6,419,981	213,724	1,164,678			20,719,263
RIA – DD		3,234,047		4,280,193	139,380	416,134			8,069,754
RIA – PD		11,275,679	91,326	14,559,295	750,646	1,777,959			28,454,905
Subtotal		105,249,615	1,800,064	92,750,007	6,095,671	12,645,343			218,540,700
Fellowships – Training			2,935,492	4,858,958	6,245,271	2,055,574	94,948	130,481	16,320,724
Technical Training (TT)			2,935,492	4,729,269	6,205,966	1,836,590	94,948	105,690	15,907,955
Participation in Course (PC)					2,924				2,924
Scientific Journalism (JC)				129,689	36,381	218,984		24,791	409,845
Research Fellowships (Programs)			259,754	4,149,800	6,741,929	1,123,635		0	12,275,118
PE					6,696,202	28,168			6,724,370
BIOEN						63,349			63,349
BIOTA						224,772			224,772
Public Education				123,174		477,861			601,035
Young Investigator				3,073,915		250,645			3,324,560
Generation Project				469,926					469,926
Attracting Young PHDs			259,754	482,785	45,727	78,840			867,106
Total		105,249,615	4,995,310	101,758,765	19,082,872	15,824,551	94,948	130,481	247,136,542

(1) Encompasses all scholarships and fellowships, both associated and unassociated with grants. Small differences in subtotals may occur due to rounding.

COMMITMENTS ASSUMED

Table 14 shows commitments relating to grants and scholarships/fellowships contracted for as at December 31, 2023, and to be implemented in the years ahead. The total is **\$ PPP 1 billion**, including \$ PPP 265.1 million for payment of scholarships/fellowships and \$ PPP 700 million for grants. Table 15 shows commitments broken down by funding strategy.

TABLE 14 COMMITMENTS CONTRACTED FOR AS AT DECEMBER 31, 2023

By grants and scholar/fellowships

COMMITMENTS	\$ PPP
Grants	795,340,334
Scholar/fellowships	265,173,546
TOTAL	1,060,513,880

TABELA 15 INVESTMENT IN SUPPORT FOR RESEARCH IN 2023 (\$ PPP)

By funding strategies and running costs

INVESTMENT IN SUPPORT FOR RESEARCH	2022 commitments not disturbed	Grants awarded in 2023	Total commitments	Total disbursement	Balance (commitments)
Training of Human Resources for Research	102,974,927	123,934,559	226,909,486	105,249,615	121,659,871
Research for Knowledge Advancement	496,812,124	346,508,767	843,320,890	306,160,540	537,160,350
Research for Innovation	65,181,616	72,529,112	137,710,728	50,349,562	87,361,167
Research on Strategic Themes	86,089,519	49,211,108	135,300,627	40,542,169	94,758,459
Support for Research Infrastructure	57,220,707	202,533,710	259,754,418	47,610,101	212,144,316
Diffusion, Mapping and Evaluation for Research	7,187,262	10,286,029	17,473,291	10,043,573	7,429,717
Running costs allocated to research funding	0	17,295,927	17,295,927	17,295,927	0
TOTAL	815,466,155	822,299,212	1,637,765,367	577,251,487	1,060,513,880

Disbursements contracted for with regard to scholarships/fellowships and grants should be added to submissions currently being analyzed, active calls as yet without commitments, and allocations to be made to investment funds, giving a total of **\$ PPP 2.3 billion** to be disbursed in the next two years, in addition to other long-term commitments (Table 16).

TABLE 16 COMMITMENTS ASSUMED

\$ PPP

	Total	2024	2025
Grants contracted for	1,060	694	698
Submissions in analysis	848	359	318
Active calls for proposals	278	22	38
Investment funds (FIP)	55	5	12
Brazilian Internet Steering Committee (CGL.br)	97	48	28
TOTAL	2,338⁽¹⁾	1,128	1,094

⁽¹⁾ Included projects for other years, in addition to 2024 and 2025.

ADVANCES IN FUNDING



In 2023, FAPESP continued to extend funding opportunities for young researchers via initiatives such as Project Generation and scholarships to attract young PhD holders. It also invested in new funding initiatives via PIPE to enable small enterprises to build ties with major well-established programs that have investors. It allocated funds to the Multi-User Equipment Program, to archives and collections, to the establishment of new Research, Innovation and Dissemination Centers (RIDC), to Centers for Research on Artificial Intelligence, and to Science for Development Centers (SDCs), among others.

ATTRACTING YOUNG PHDs

FAPESP and the National Council for Scientific and Technological Development (CNPq) issued a call for proposals to support projects that attract young PhDs with the aim of creating more favorable conditions for them to pursue their careers in São Paulo State. Through this call, CNPq will award junior and entrepreneurial postdoctoral fellowships, which FAPESP will supplement via scholarships to attract young PhDs.

ARISTIDES PACHECO LEÃO PROGRAM TO STIMULATE SCIENTIFIC VOCATIONS

FAPESP and the Brazilian Academy of Sciences (ABC) selected 47 proposals submitted by undergraduates for internships in research institutions, where they will be welcomed by members of ABC, familiarize themselves with ongoing scientific projects, and contribute to their execution.

NEW GENERATION PROGRAM

The New Generation Program supports early-career researchers via two funding lines. Project Generation selects research projects based on bold ideas presented by researchers who graduated less than 11 years previously, earned a PhD less than six years prior to the deadline for submitting proposals, and are not gainfully employed on the contracting date. A Generation scholarship is also awarded to the principal investigator, who must be dedicated exclusively to the project. The other line is Initial Π (Pi), which supports projects submitted by scientists hired at least eight years previously by universities and research institutions. In this case, the PI must also submit a teaching plan associated with the research project, which may include associated master's and PhD scholarships, as well as equipment and other material resources. The funding lasts five years and aims to foster successful careers in research and teaching.

ADVANCES IN FUNDING

ARTIFICIAL INTELLIGENCE APPLIED TO HEALTH

FAPESP announced a call for proposals to establish up to two Centers for Research on Artificial Intelligence Applied to Health under the Program for Engineering Research Centers/Applied Research Centers (ERCs/ARCs). They will conduct innovation-oriented scientific and technological research to solve health-related problems. FAPESP will allocate **\$ PPP 4 million: \$ PPP 2 million** for a center focusing on solutions for direct healthcare, and **\$ PPP 2 million** for a center focusing on data science for health-related research and management.



SUPPORT VIA PIPE FOR SMALL ENTERPRISES TO ATTRACT INVESTORS

FAPESP issued two new calls for proposals with the aim of helping small enterprises supported by the Innovative Research in Small Business Program (PIPE) to attract investors. Projects selected in the first call will increase access to electronic equity crowdfunding platforms for former and current participants in the program. Those selected in the second call will increase access to funding from networks of angel investors, focusing on those interested in investing in startups originating in scientific research.

MULTISTRATEGY INVESTMENT FUNDS AND SEED FUNDS

FAPESP issued a public call for multistrategy investment funds and seed capital funds that are fundraising or investing in deep techs to present joint funding proposals. FAPESP will invest in the selected funds on condition that the latter invest matching amounts in companies that have participated or are currently participating in the FAPESP Innovative Research in Small Business Program (PIPE). Its allocation will correspond to 15% of each fund's committed capital or BRL 30 million, whichever is less. The call was part of a number of initiatives to help small firms supported by PIPE attract investors with various profiles and survive "death valley", an early stage in science-based innovation when many startups fail without reaching the market or generating positive cashflow.

in addition to the call for proposals just issued, FAPESP joined the Criatec 4 and Indicator 2 IoT funds sponsored by BNDES, Brazil's national development bank, with participation by public and private investors. FAPESP will allocate **\$ PPP 12 million** to each of these two funds for a period of four to five years to provide funding to enable these firms to scale to market.



FAPESP AND SEBRAE-SP PARTNERSHIPS

In 2023, the results were announced of three calls for proposals involving partnerships between FAPESP and SEBRAE-SP (the São Paulo branch of the Small Business Support Service), and a fourth call to be completed in 2024 was issued.

PIPE Start

In the first call, entitled “PIPE Start FAPESP SEBRAE: embarking on the deep tech journey” (2023), 20 proposals were selected (fapesp.br/16503). The purpose of this call is to support entrepreneurs in the initial stage of validating ideas for novel technological solutions and business models that may have potential market viability. The 2024 edition, with the same aim, was issued in December 2023 (fapesp.br/16463).

PIPE FAPESP-Sebrae

Results were announced in 2023 for two other calls for proposals that will enable funding to be awarded for the commercial development of innovative solutions and their introduction into the market. Six proposals were selected in the second “PIPE FAPESP-SEBRAE call: from research to the market – supplementation”, aimed at supplementing active direct and indirect Phase 2 PIPE projects (fapesp.br/16234). Eight proposals were selected in the third “PIPE FAPESP-SEBRAE call: from research to the market”, under the aegis of PIPE Direct Phase 2, whether or not they were related to projects supported in Phase 1 (fapesp.br/16628).

TECNOVA III

In 2023, FAPESP issued two calls for proposals in collaboration with FINEP, the Brazilian Innovation Agency: one for accreditation of accelerators, and the other to register institutions that operationalize corporate internationalization programs. Both calls aim to provide services to startups supported by PIPE FAPESP and the Tecnova III Program.

The call to register accelerators will involve investment of \$ PPP 30,737 per company. The call to accredit institutions that promote internationalization will entail investment of a maximum of \$ PPP 11,065 per company to pay for the services – \$ PPP 7,377 from the National Development, Scientific and Technological Fund (FNDCT), and the rest from FAPESP.

PIPE-KT

FAPESP launched a new variant of the Innovative Research in Small Business Program (PIPE) focusing on knowledge transfer (KT). It will support proofs of concept arising from research that originates in higher education or research institutions and is of interest to small enterprises, strengthening the links between academia, industry and markets. The results

ADVANCES IN FUNDING

of the first call were announced in 2023: three proposals were selected relating to topics of interest to the programs BIOTA, BIOEN and RPGCC. One proposal was selected in the second call, issued in 2023, focusing on topics of interest to RIDCs, ERCs/ARCs and SDCs.

PROEDUCA

In 2023 FAPESP and the São Paulo State Department of Education (SEDUC) issued the second of three calls for proposals under the PROEDUCA program for research on basic education. The program supports the enhancement and development of public policies and teaching methods that improve educational attainment and reduce inequality in the school system. **Thirty-two** proposals were approved under the first call, issued in 2022, and announced in 2023. The last call will be issued in 2024.



PUBLIC POLICY RESEARCH

A call issued in 2023 for the Public Policy Research program (PPP) resulted in selection by FAPESP of **70** proposals submitted jointly by researchers and public administrators with the aim of conducting research projects to contribute to the formulation, review,

improvement, monitoring or implementation of public policies. Projects will receive up to **\$ PPP 143,442** per year for a maximum of four years.

RESEARCH, INNOVATION AND DISSEMINATION CENTERS (RIDCS)

By 2026 FAPESP will select **18** new RIDCs in six proposal submission cycles organized into major knowledge areas. The first call, issued in 2021, was for research in health sciences, biological sciences, agronomy and veterinary medicine, resulting in the selection of five new RIDCs announced in 2023. The second call was for the selection of **three** RIDCs in human and social sciences, architecture and urbanism, economics and management; pre-proposals were submitted in 2022. The third call was issued in 2023 and will be completed in 2024, focusing on natural sciences and engineering.



SCIENCE FOR DEVELOPMENT CENTERS (SDCS)

In 2023 FAPESP issued the third call for proposals to establish Science for Development Centers (SDCs), in which it will invest up to **\$ PPP 61.4 million**. In the 24 existing SDCs, researchers affiliated with universities and research institutions join forces with managers of public bodies in São Paulo State to pursue solutions to challenges previously defined by departments of the state government.

AMAZON +10

Amazon+10 is an initiative led by the National Council of State Research Foundations (CONFAP) and the National Council of State Departments of Science, Technology and Innovation (CONSECTI), in partnership with the National Council for Scientific and Technological Development (CNPq), to support collaborative research on biodiversity conservation, climate change, protection of traditional peoples and communities, urban challenges, and the bioeconomy in the Amazon. In 2023 it held a call for proposals to organize scientific expeditions and will allocate **\$ PPP 24.2 million** to fund research that extends scientific knowledge of sociobiodiversity in little-known areas of the world's largest tropical rainforest.



SUPPORT FOR RESEARCH INFRASTRUCTURE

In 2023 FAPESP announced the selection of **56** proposals submitted under three calls that had been issued in 2022 for the Multi-User Equipment Program, relating to equipment for scientific and technological use and innovation, and document archives and/or historiographic and biological collections. It also issued a new call for acquisition of small and medium items of equipment.

INSTITUTIONAL ADVANCES



FAPESP LECTURES 2023

fapesp.br/conferencias

In 2023 FAPESP continued with the series of monthly lectures and conferences begun as part of the events held in 2021 and 2022 to commemorate its sixtieth anniversary. These events involve interdisciplinary themes of broad interest in science, the arts, technology and innovation. Lectures are delivered by experts from Brazil and abroad who are recognized leaders in their field. The topics and speakers are chosen by a transdisciplinary committee of researchers appointed by Marco Antonio Zago, President of FAPESP. The chair is Fernando Ferreira Costa (UNICAMP), and the other members are Oswaldo Baffa Filho and Esther Imperio Hamburger (USP); Ciro Antonio Rosolém (UNESP); and Maria de Fátima Morethy Couto and Carlos Alfredo Joly (UNICAMP).

DATE	EVENT	SPEAKER	MODERATOR
April 28	1st FAPESP Lecture 2023 Science in Brazil: current highlights and outlook	Ricardo Galvão President, CNPq	
May 25	2nd FAPESP Lecture 2023 Viruses, pandemics and vaccines	Esper Kallás Medical School, USP	
June 30	3rd FAPESP Lecture 2023 Climate change, plant nutrition and food production	Marta Vasconcelos Catholic University of Portugal (UCP)	
August 25	4th FAPESP Lecture 2023 Sirius: a new era for Brazilian science with a fourth-generation synchrotron	Harry Westfahl Junior National Synchrotron Light Laboratory (LNLS)	Oswaldo Baffa Filho Ribeirão Preto School of Philosophy, Sciences and Letters (FFCLRP), USP
September 29	5th FAPESP Lecture 2023 The world of porous media in agriculture and the environment	Martinus Theodorus (Rien) van Genuchten Federal University of Rio de Janeiro (UFRJ) / University of Utrecht, Netherlands	Silvio Crestana EMBRAPA Agricultural Instrumentation
October 10	6th FAPESP Lecture 2023 Human evolution: achievements and challenges	Bernard Wood George Washington University (GWU) / Smithsonian Institution	Carlos Alfredo Joly UNICAMP
October 27	7th FAPESP Lecture 2023 Why we need transformative scenarios for people and nature: Operationalizing the Nature Futures Framework	Laura Pereira Global Change Institute, University of the Witwatersrand (Wits)	Carlos Alfredo Joly UNICAMP
November 24	8th FAPESP Lecture 2023 RRoots that emerge: interweavings of art and science	Rosana Paulino School of Communications and Arts (ECA-USP) / London Print Studio / Bellagio Center	Esther Império Hamburger , USP

FAPESP INTERDISCIPLINARY SCHOOLS 2023

fapesp.br/escolafapesp2023

Based on its prior experience with the São Paulo Schools of Advanced Science program (espca.fapesp.br/home) and internationally with the Lindau Nobel Laureate Meetings (www.lindau-nobel.org), as well as the success of the FAPESP 60 Years Schools, in 2023 FAPESP held two in-person events: the Interdisciplinary School in Exact and Natural Sciences, Engineering and Medicine, and the Interdisciplinary School in Humanities, Social Sciences and Arts, each lasting four days.

Both schools offered 120 postdoctoral scholarship awardees – half supported by FAPESP and half by funders in other states – an opportunity to:

- Find out about the research conducted by science leaders in Brazil and abroad in various knowledge areas;
- Find out about these leaders' academic careers, how their research lines were established, and the challenges faced in their knowledge areas;
- Discuss their own work via short oral presentations (pitches) and posters to specialists in their field and related areas;
- Network with Brazilian and foreign researchers so as to establish lasting professional relationships.

FAPESP 2023 INTERDISCIPLINARY SCHOOL
Exact and Natural Sciences, Engineering and Medicine
November 5-8, 2023



SPEAKERS	TOPIC
Iscia Lopes Cendes Medical School, UNICAMP	Exploring the cutting-edge omics technologies: revolutionizing epilepsy research
Fabio Rubio Scarano UNESCO Chair on Futures Literacy, UFRJ	The regeneration of GAIA
Ricardo Gazzinelli Federal University of Minas Gerais (UFMG)	The circadian cycle and immunometabolism in malaria
Robert Jeraj University of Wisconsin School of Medicine and Public Health	Artificial intelligence in the era of precision medicine
Antony Watts Honorary Professor, University of Oxford (UK)	The importance of water in membrane receptor function – implications for optogenetics
Duilia de Mello Catholic University of America (CUA), Washington D.C. (USA)	Galaxy evolution – using telescopes as time machines
MASTERCLASS	
Joel Zito Araújo Filmmaker and writer	The ethics of silence
Graziela Bortz Institute of Arts, UNESP	Music and knowledge production at the University

INSTITUTIONAL ADVANCES

FAPESP 2023 INTERDISCIPLINARY SCHOOL
 Humanities, Social Sciences and Arts
 December 10-13, 2023



SPEAKER	TOPIC
Arturo Alvarado Center for Sociological Research, College of Mexico (Colmex)	Illegalismos y organizaciones criminales en metrópolis latinoamericanas: una comparación entre São Paulo y Ciudad de México
Giuliana Bruno Department of Art, Film and Visual Studies, Harvard University	Atmospheres of projection: environmentality in art and screen medial
Jane Ohlmeyer Trinity College Dublin	Making Ireland: Ireland, imperialism and the early modern world
Manuela Carneiro da Cunha University of Chicago / USP	The relevance of indigenous knowledge
Márcio Seligmann-Silva UNICAMP	The testimonial turn in historical thought
Roberto Simanovski Excellence Cluster Temporal Communities at Freie Universität Berlin	GPT'S Accent. The colonial side-effect of globally used AI
MASTERCLASS	
Fábio Cury ECA, USP	Musical performance as object and result of artistic research
Antonia Pereira Bezerra Federal University of Bahia (UFBA)	Forum theater and working with differences – gender, identity and race

FAPESP'S PARTICIPATION IN COP28 AT DUBAI

Representatives of FAPESP, other research funders and oceanographic research institutions from several countries met during COP28, the United Nations Climate Change Conference held in Dubai, United Arab Emirates (UAE), on November 30-December 12, 2023, to strengthen a scientific coalition that will establish the International Panel for Ocean Sustainability (IPOS). The coalition, formed in April 2023 at a meeting in Brussels, Belgium, expects the official launch of IPOS to take place at the next UN Ocean Conference, scheduled for 2025 in Nice, France. It is intended to act as an intelligence center, scientific in essence but capable of translating scientific information into decisions by policymakers. Its primary goal, therefore, will be to provide a space for scientists to talk not to each other but to policymakers and political decision makers worldwide.



NEW SAGE / OSCAR SALA PLATFORM

FAPESP digitizing all of its printed documents as part of a general digital transformation in line with guidelines laid down by the state government. Its management support system (Sistema de Apoio à Gestão, or SAGE), used for almost two decades by researchers to submit proposals and by our own staff as well as outside reviewers to analyze and track projects, as well as to serve as a basis for program and project accountability, is facing fresh challenges due to the exponential growth of scientific production. Moreover, the technology that runs SAGE is now quite old, making updates and improvements increasingly costly and complex.

To tackle the challenges, the Executive Board set up a working group (CTA Resolution 38, dated Jan. 31, 2023) that will reformulate SAGE to make it simpler and capable of meeting user needs as they evolve. The group conducted a thorough analysis and, on October 11, 2023, launched an electronic bidding process (Pregão Eletrônico 17/2023) for information systems development, maintenance and support. A contract with the winning company will be signed in 2024.

The new system that replaces SAGE will be called Oscar Sala Platform. It will be a milestone in operationalizing, modernizing and enhancing the efficiency of the programs and research projects funded by FAPESP.

ILP-FAPESP CYCLE



FAPESP and the São Paulo State Assembly Institute (ILP) formalized a partnership to hold scientific and technological dissemination events at ALESP, the assembly's Portuguese-language acronym (short for Assembleia Legislativa do Estado de São Paulo). Some **180 researchers** have taken part in **47** such meetings since 2017, discussing emerging topics with the aim of contributing to the

improvement of public policies. ILP is an arm of ALESP responsible for offering free courses open to all citizens and providing technical and thematic support to members of the state legislature.

INSTITUTIONAL ADVANCES

AMAZON DAY

FAPESP organized the event Amazon Day: Science for the Amazon during the ninth edition of the Science Summit in New York, part of the agenda of the 78th session of the United Nations General Assembly (UNGA78), whose central theme was peace, prosperity, progress and sustainability. As host, FAPESP assembled researchers, specialists and Indigenous leaders, among others, to discuss the role of science, technology and innovation in the transition to a sustainable development model in the Amazon.

CENTRO DE MEMÓRIA FAPESP (MEMORY CENTER FAPESP)



In 2023 work neared completion on the structuring of the FAPESP Memory Center, conceived as part of the commemorations of FAPESP's sixtieth anniversary in 2022. Its purpose is to contribute to the preservation of the memory of research in São Paulo State by means of structured dissemination of the archives for funded research projects, oral history recorded by researchers, publication of institutional documents, and production of thematic exhibitions, among other activities. Its aims also include strengthening FAPESP's identity, culture and reputation. Managed by the Communication team, it will curate, assure proper technical treatment and organize the dissemination of documental material showing the institution's trajectory over time and its role in fostering scientific and technological research in São Paulo State (*see p. 86*).



THE THERAPY WITH CAR T-CELLS OFFERS HOPE FOR PEOPLE WITH HARD-TO-TREAT TYPES OF CANCER

In 2023, Brazil's national health surveillance agency (ANVISA) approved a clinical trial of chimeric antigen receptor (CAR) T-cell therapy for blood cancer. The Ministry of Health has committed BRL 100 million for clinical trials. The approval was important as a step toward the implementation of a larger plan: producing cellular products – cells altered in the laboratory – for the treatment of different kinds of cancer and other diseases. This approach to combating cancer, which uses defense cells donated by the patient and modified in the laboratory, was first trialed in Latin America in 2019 by researchers at the Center for Cell-Based Therapy (CTC), a Research, Innovation and Dissemination Center (RIDC) established by FAPESP at the University of São Paulo (USP) in Ribeirão Preto. To date, the experimental treatment has been administered to 17 leukemia or lymphoma patients at CTC, with full remission within about a month in most cases. All were severe cases for which there were no longer any therapeutic options. Articles published in [pubmed](https://pubmed.ncbi.nlm.nih.gov/31676276), [ncbi.nlm.nih.gov/31676276](https://www.frontiersin.org/journals/immunology/articles/10.3389/fimmu.2023.1226518/full), www.frontiersin.org/journals/immunology/articles/10.3389/fimmu.2023.1226518/full e www.nature.com/articles/s41409-024-02283-6.

FAPESP Process 13/08135-2

RIDC-CTC

Clinical Medicine

Ribeirão Preto Blood Center (HC-FMRP-USP)

Reports on the novel technique in its different stages appeared in **2,264** media outlets in 2023.

agencia.fapesp.br/49859

ARTIFICIAL INTELLIGENCE CAN PREDICT SURVIVAL OF COLORECTAL CANCER PATIENTS WITH UP TO 80% ACCURACY

A study supported by FAPESP as part of the project “Control of cancer in São Paulo State (ConeCta-SP): from knowledge to action” was one of the first to predict the survival of cancer patients by using AI to analyze a large database and verifying the validity of these models in Brazil. The study involved groups from São Paulo State Cancer Center Foundation (FOSP), the University of São Paulo's School of Public Health (FSP-USP), Hospital A.C. Camargo and the Mauá Institute of Technology (IMT). An article on its findings was published in *Scientific Reports*: www.nature.com/articles/s41598-023-35649-9.

FAPESP Process 21/11794-4

Science for Development Center (SDC)

Collective Health

FOSP

Reports on the study appeared in **21** media outlets.

agencia.fapesp.br/50304

BIOMATERIAL DEVELOPED AT SÃO PAULO STATE UNIVERSITY PROVES CAPABLE OF ACCELERATING BONE REGENERATION

Researchers at São Paulo State University's Botucatu Institute of Biosciences (IBB-UNESP) developed a novel biomaterial that speeds up osteoblast (bone cell) differentiation. The invention has the potential to be used in bone regeneration, bone grafting and dental implants, among other procedures. An article about it was published in the *Journal of Biomedical Materials Research*: doi.org/10.1002/jbm.b.35319.

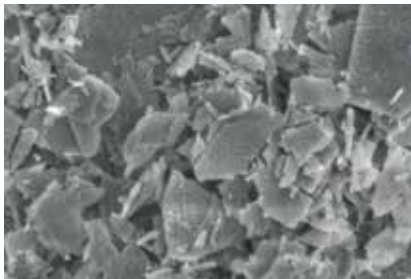


Image: Willian Fernando Zambuzzi/Unesp

FAPESP Process 19/26854-2

Research Grant – Regular

Biochemistry

IBB-UNESP, Botucatu

Reports on the research appeared in **54** media outlets.

agencia.fapesp.br/50084

RESEARCH HIGHLIGHTS – 2023

SCIENTISTS DISCOVER THAT A PROTEIN ASSOCIATED WITH NEURODEGENERATIVE DISEASES IS ALSO LINKED TO CHILDHOOD BRAIN CANCER

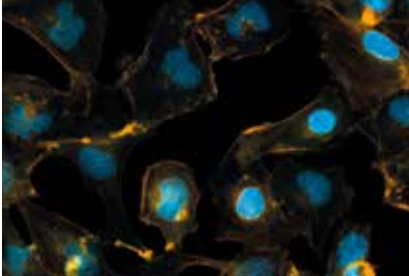


Image: Amanda Faria Assoni

A protein that has been widely studied owing to its association with neurodegenerative diseases such as amyotrophic lateral sclerosis (ALS) is also linked to medulloblastoma, a type of central nervous system cancer. A study led by a group of Brazilian scientists has shown in vitro and in vivo that the gene VAPB (vesicle associated membrane protein-associated protein B/C) is linked to cell proliferation

in these tumors. The discovery points to a potential marker of severity and, after more research, a future therapeutic target. An article on the study was published in *Scientific Reports*: www.nature.com/articles/s41598-023-45319-5.

FAPESP Process 13/08028-1
RIDC HUG-CEL
Genetics
IB-USP

Reports on the research appeared in **57** media outlets.

agencia.fapesp.br/50418

STARTUP DEVELOPS RAPID TEST TO DETECT CERVICAL CANCER

Ziel Biosciences developed a cervical sample self-collection kit and rapid test that can immediately detect cancer cells, somewhat similarly to a store-bought pregnancy test. If the result is negative, the test should be repeated a year later. If positive, the woman should consult a specialist. The device is intended only for screening. The startup is partnering with city governments to have municipal health workers call on local women and give them the collector.

FAPESP Process 16/08367-9
PIPE
Collective Health
Company Ziel Biosciences Pesquisa, Desenvolvimento e Diagnóstico Ltda.

Reports on the invention appeared in **287** media outlets.

<https://agencia.fapesp.br/50539>

BRAZILIANS DISCOVER RING ON QUAOAR, A “COUSIN” OF PLUTO

A study conducted by 59 scientists at research institutions in 14 countries, including several Brazilians, discovered that Quaoar, one of the large objects orbiting beyond Neptune, has a ring around it. The researchers said the ring points to previously unknown orbital dynamics and could lead to a revision of the current theory (which dates from the nineteenth century) on how planetary rings are formed in the Solar System. The first author of the article reporting the discovery was Brazilian scientist Bruno Morgado, affiliated with the Federal University of Rio de Janeiro's Valongo Observatory. The co-authors included four researchers at São Paulo State University's School of Engineering and Sciences (FEG-UNESP) in Guaratinguetá. The article appeared in *Nature*: www.nature.com/articles/s41586-022-05629-6.

FAPESP Process 16/24561-0
Thematic Project
Space Engineering
FEG-UNESP

Reports on the discovery appeared in **1,164** media outlets.

jornal.unesp.br/2023/02/08/descoberta-de-anel-ao-redor-de-corpo-celeste-alem-da-orbita-de-netuno-pode-levar-a-revisao-da-teoria-sobre-formacao-dessas-estruturas-no-sistema-solar



UNIQUE IMAGE OBTAINED BY BRAZILIAN SCIENTISTS WITH HIGH-SPEED CAMERA SHOWS HOW LIGHTNING RODS WORK



Photo: Diego Rhamon/INPE

With a high-speed camera, physicist Marcelo Saba, a researcher at the National Space Research Institute (INPE), and PhD candidate Diego Rhamon obtained a unique image of lightning strikes showing details of the connections to various lightning rods on nearby buildings. The image was so special that it was featured on the cover of *Geophysical Research Letters (GRL)*, one of the most important

scientific journals in the field: agupubs.onlinelibrary.wiley.com/doi/10.1029/2022GL101482.

FAPESP Process 22/04616-5
Participation in Meeting Abroad
Geosciences
INPE

Reports on the research appeared in
89 media outlets.

agencia.fapesp.br/40693

LUZIO, WHO LIVED IN SÃO PAULO 10,000 YEARS AGO, WAS AMERINDIAN LIKE INDIGENOUS PEOPLE NOW, DNA REVEALS

A study led by researchers at the University of São Paulo's Museum of Archeology and Ethnology (MAE-USP) revealed that Luzio, the oldest human skeleton found in São Paulo State, was a descendant of the ancestral population that settled the Americas at least 16,000 years ago and gave rise to all present-day Indigenous peoples, such as the Tupi. The study was conducted in partnership with researchers at the University of Tübingen's Senckenberg Center for Human Evolution and Paleoenvironment in Germany. Based on Brazilian archeological genomic data, it also offered an explanation for the disappearance of the oldest coastal communities, who built the icons of Brazilian archeology known as sambaquis, huge mounds of shells and fishbones used as dwellings, cemeteries and territorial boundaries, and often referred to as middens. An article on the research was published in *Nature Ecology & Evolution*: www.nature.com/articles/s41559-023-02114-9.

Processes FAPESP 17/16451-2 and
20/06527-4 Processes

Archeology
YI and MUE
MAE and ICB-USP with Senckenberg
Center for Human Evolution and
Paleoenvironment, University of
Tübingen, Germany

Reports on the discovery appeared in
122 media outlets.

agencia.fapesp.br/42015

BIODEGRADABLE SENSOR MONITORS LEVELS OF PESTICIDES VIA DIRECT CONTACT WITH SURFACE OF FRUIT AND VEGETABLES



Photo: Paulo Augusto Raymundo Pereira

Researchers at the University of São Paulo (USP) and the Federal University of Viçosa (UFV) developed a sustainable sensor that can be placed directly on the surface of a vegetable or fruit to detect the presence of pesticides. Known for this reason as "plant-wearable", it is made of cellulose acetate, a material derived from wood pulp and has the potential to help assure food safety in a world that increasingly

suffers from environmental and health problems caused by excessive use of agrochemicals. An article on the invention was published in *Biomaterials Advances*: www.sciencedirect.com/science/article/pii/S2772950823003990.

FAPESP 22/02164-0, 20/09587-8,
23/07686-7 and 16/01919-6 Processes
Research Grants – Regular, BP DR, BP TT
and BP PD
Sanitary Engineering, Chemistry and
Physics
IQSC-USP and IFSC-USP

Reports on the invention appeared in
69 media outlets.

agencia.fapesp.br/50444

RESEARCH HIGHLIGHTS – 2023

STARTUP WILL TRAIN BEES TO IMPROVE POLLINATION AND PRODUCTION OF COFFEE BY SCENT

PollinTech – a startup founded by researchers at the State University of Campinas (UNICAMP), the University of São Paulo (USP) in Ribeirão Preto (USP) and the São Paulo State Agency for Agribusiness Technology (APTA) in Piracicaba, and supported by PIPE FAPESP – developed synthetic biomolecules from blends of artificial odors that pollinators perceive as the natural scent of coffee blossom. It plans to use the technology to train sniffer bees to recognize the fragrance of economically important crops such as coffee (*Coffea arabica*) and pollinate them more efficiently.

FAPESP Process 21/06790-0
PIPE

Zoology

Company João Marcelo Robazzi
Bignelli Valente Aguiar

Reports on the technology appeared in **108** media outlets.

<https://agencia.fapesp.br/40577>

STUDY SHOWS THAT RIO GRANDE RISE WAS ONCE A GIANT MINERAL-RICH TROPICAL ISLAND NEAR BRAZIL

A study led by scientists at the University of São Paulo (USP) showed that the Rio Grande Rise (RGR), a possibly continental basaltic plateau and chain of seamounts now submerged in the South Atlantic Ocean some 1,200 km from the coast of Brazil, was a giant tropical island, rich in minerals and covered with vegetation, between 45 million and 40 million years ago. The study involved almost ten years of research and yielded new information on the geology of the RGR, which has about the same area as Spain. An article on the study was published in *Scientific Reports*: www.nature.com/articles/s41598-023-46273-y#Sec8.

Process FAPESP 14/50820-7

Thematic Project

Oceanography

IO-USP and University of Southampton (UK)

Reports on the study appeared in **12** media outlets.

agencia.fapesp.br/50249

STUDY PROPOSES USE OF ARTIFICIAL INTELLIGENCE TO DIAGNOSE AUTISM SPECTRUM DISORDER

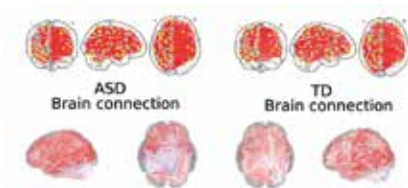


Image: researcher archive

Researchers used magnetic resonance imaging to train a machine learning algorithm to help diagnose autism. The study involved physicists, statisticians, physicians and neuroscientists from centers in Brazil, France and Germany. It was based on brain imaging data for 500 people, about half of whom (242) had been diagnosed with ASD, and is expected to be useful to assist specialists, especially in cases involving diagnostic uncertainty. An article on the study was published in *Scientific Reports*: www.nature.com/articles/s41598-023-34650-6.

FAPESP 19/23293-0, 19/22277-0 and 19/26595-7 Processes

Research Grant - Regular, BP-DR
Physics and Computer Science
ICMC-USP, São Carlos

Reports on the research appeared in **100** media outlets.

agencia.fapesp.br/41877

CHAPTER 2



FUNDING STRATEGIES

Training of Human Resources for Research

Basic and Applied:

- Long-term research and
- Regular Grants not associated to other grants

Research for Innovation

Research on Strategic Themes

Support for Research Infrastructure

Diffusion of Scientific Knowledge, Mapping of
Research Units and Studies of the General Condition
of Research in São Paulo State



FAPESP meets the demand for qualification of undergraduates and graduate students in São Paulo State by awarding regular scholarships in Brazil and abroad. Regular scholarships in Brazil support academic training at different levels: Scientific Initiation (SI), Master's (MS), Doctorate (DR), Direct Doctorate (DD), Postdoc (PD).

FAPESP has an agreement with the Ministry of Education's Higher Research Council (CAPES) to fund MS, DR, DD and PD scholarships and fellowships.

FAPESP also partners with the Brazilian Academy of Sciences (ABC) in the Aristides Pacheco Leão Program to Stimulate Scientific Vocations, which selects 50 undergraduates each year for summer internships at laboratories led by members of ABC. In 2023 FAPESP and ABC selected 47 proposals submitted under the program.

Postdoc scholarship awardees are offered the Research Career Consolidation Mentoring Initiative (mentoriapd.fapesp.br), a set of activities complementary to their education and training designed to help them pursue a career competently and responsibly in academia, industry or government.

Other training scholarships are covered by the budgets for the grants to which they are linked (see *Tables 12 and 13, pp. 32-33*).



\$ PPP 105.2 million

to **7,856** active projects

TYPES – REGULAR SCHOLARSHIPS/FELLOWSHIPS NOT ASSOCIATED WITH GRANTS

IN BRAZIL

Scientific Initiation (SI) – www.fapesp.br/bolsas/ic

Master's (MS) – www.fapesp.br/bolsas/ms

Doctorate (DR) – www.fapesp.br/bolsas/dr

Direct Doctorate (DD) – www.fapesp.br/bolsas/dd

Direct Doctorate MD-PhD – www.fapesp.br/bolsas/dd-md-phd

Postdoctorate (PD) – www.fapesp.br/en/postdoc

ABROAD

Research Internships Abroad (RIA) – www.fapesp.br/en/bepe

Research Fellowships Abroad (RFA)

Details of each program can be found in Table 8 (pp. 26-27).

HIGHLIGHTS

In 2023 FAPESP’s Board of Trustees approved a **6.7%** rise in scholarships awarded in Brazil. It also approved a rise of about **33%** in scholarships abroad, which were last adjusted in 2012. The rise was calculated to catch up with inflation in the countries to which most recipients of scholarships abroad went in the period.

FAPESP announced a call entitled Equity, Diversity, Inclusion/ Scientific Initiation (EDI/IC) for undergraduates admitted to university via affirmative action and with ongoing grants from FAPESP. The aim was to encourage them to join São Paulo State’s research and innovation system.

FAPESP issued a call jointly with the National Council for Scientific and Technological Development (CNPq) for proposals to keep young PhD holders in São Paulo State by creating favorable conditions for them to pursue their careers there. CNPq will award junior and corporate postdoctoral scholarships, which FAPESP will complement.

TABLE 17 TRAINING OF HUMAN RESOURCES FOR RESEARCH

Types of scholarships/fellowships, disbursement, number of actives projects and new projects contracted for in 2023

Scholarships/ Fellowships	Life Sciences		Natural Sciences and Engineering		Human and Social Sciences		Interdisciplinary	
	Disbursement \$ PPP	New projects contracted	Disbursement \$ PPP	New projects contracted	Disbursement \$ PPP	New projects contracted	Disbursement \$ PPP	New projects contracted
In Brazil	32,808,950	1,702	13,219,033	649	17,727,098	534	63,079	0
Abroad	17,497,900	289	10,862,658	176	13,070,897	267	0	0
RIA	13,314,593	243	7,740,223	143	10,874,266	212	0	0
RFA	4,183,307	46	3,122,435	33	2,146,631	55	0	0
Total	50,306,850	1,991	24,081,691	825	30,797,995	801	63,079	0



FUNDING STRATEGIES

RESEARCH FOR KNOWLEDGE ADVANCEMENT

Almost half of all FAPESP's funding is allocated to research projects with ambitious goals aimed at advancing knowledge and solving problems, requiring long-term support in the vast majority of cases. This funding line includes Thematic Projects, the Young Investigator and São Paulo Excellence Chair (SPEC) programs, Special Projects, and Research, Innovation and Dissemination Centers (RIDCs). It also includes short-term research projects supported by Regular Research Grants.



**\$ PPP 306.1
million**

to **10,860**
active projects.

RELATED PROGRAMS

LONG-TERM RESEARCH

Thematic Project Grant – www.fapesp.br/thematic

São Paulo Excellence Chair (SPEC)

Research, Innovation and Dissemination Centers (CEPID/RIDC) – cepid.fapesp.br/en

Young Investigators Grants (JP/YIG) – www.fapesp.br/en/yia

Special Projects

New Generation Program:

- Project Generation – www.fapesp.br/projetogeracao
- Initial TT (Pi) Project Research Grants – www.fapesp.br/projetoinicialpi

REGULAR GRANTS NOT ASSOCIATED TO OTHER GRANTS

Research Grants – Regular – www.fapesp.br/apr

Visiting Research Award – www.fapesp.br/en/visiting

Publications Award – www.fapesp.br/auxilios/publicacoes

Participation in Scientific Meeting Award – www.fapesp.br/auxilios/participacao

Organization of Scientific Meeting Award – www.fapesp.br/auxilios/organizacao

- São Paulo School of Advanced Science (SPSAS) – espca.fapesp.br/home

TABELA 18 BASIC AND APPLIED RESEARCH

Disbursement and new projects contracted in 2023 – by major knowledge area

Programs	Life Sciences		Natural Sciences and Engineering		Human and Social Sciences		Interdisciplinary	
	Disbursement \$ PPP	Projects contracted	Disbursement \$ PPP	Projects contracted	Disbursement \$ PPP	Projects contracted	Disbursement \$ PPP	Projects contracted
Thematic and associated	67,680,297	661	50,349,129	620	8,563,725	182	423,555	14
Special projects and associated	0	0	10,748,543	7	146,409	1	0	0
RIDC and associated	9,733,822	155	10,082,072	146	2,134,065	42	19,848,288	10
YIG and associated	24,958,036	320	12,354,851	194	2,731,156	90	126,676	3
SPEC and associated	1,165,647	10	677,610	9	459,810	2	168,492	4
New Generation	3,065,072	117	3,200,893	125	657,437	48	3,106	1
Regular Grants not associated to other grant	41,721,729	979	23,144,882	619	7,440,138	317	4,575,101	21
Total	148,324,603	2,242	110,557,980	1,720	22,132,740	682	25,145,218	53

THEMATIC PROJECTS

Goals: support for research projects with ambitious aims conducted by multidisciplinary teams for up to five years. Includes National Institutes of Science and Technology (NISTs), in partnership with the Ministry for Science, Technology and Innovation via the National Council for Scientific and Technological Development (CNPq).

TABELA 19 THEMATIC

Disbursement, number of active projects and new projects contracted in 2023

Fellowships and Grants associated	Disbursement \$ PPP	New projects contracted	Active projects
Regular Grants – Thematic Projects	62,693,064	63	490
Research Grants – Regular	1,878,949	116	157
Other grants	27,601	1	1
Regular Fellowships in Brazil	40,615,847	816	2,463
Regular Fellowships Abroad	18,538,907	255	455
Other fellowships	3,262,338	226	392
Total	127,016,706	1,477	3,958

YOUNG INVESTIGATORS GRANTS (JP/YIG)

Goals: attracting young PhDs from Brazil and other countries to create new research groups, and training new science leaders with the aim of building a scientific community of excellence in São Paulo State. Phase 2 of the program aims to consolidate research lines initiated by researchers who previously received support from the program and achieved excellence in their performance during the development of their projects.

TABELA 20 YOUNG INVESTIGATORS

Disbursement, number of active projects and new projects contracted in 2023

Fellowships and Grants associated	Disbursement \$ PPP	New projects contracted	Active projects
Research Grants – YIG Phase 1	12,608,762	28	209
Research Grants – YIG Phase 2	6,580,150	0	73
Research Grants – YIG Phase 2 BIOEN	125,185	0	2
Research Grants – YIG Phase 2 BIOTA	390,668	0	4
Research Grants – Regular	429,784	35	54
Young Investigators Fellowships	3,073,915	17	86
Regular Fellowships in Brazil	11,351,848	341	901
Regular Fellowships Abroad	4,654,345	101	147
Other fellowships	956,062	85	131
Total	40,170,719	607	1,607

SPECIAL PROJECTS

Goals: support for projects with significant scientific impact via participation in international consortia to assure access to high-cost next-generation equipment and technology for researchers in São Paulo State, such as participation in the Giant Magellan Telescope (GMT) to be built in the Chilean Andes.

NEW GENERATION PROGRAM

Goals: support for early-career researchers via two funding lines:

Project Generation – selects research projects based on bold ideas presented by researchers who graduated less than 11 years previously, earned a PhD less than six years prior to the deadline for submitting proposals, and are not gainfully employed on the contracting date. A Generation scholarship is also awarded to the principal investigator, who must be dedicated exclusively to the project.

Project Initial Π (Pi) – supports projects submitted by scientists hired at least eight years previously by universities and research institutions. The PI must also submit a teaching plan associated with the research project, which may include associated master's and PhD scholarships, as well as equipment and other material resources. The funding lasts five years.

SÃO PAULO EXCELLENCE CHAIR (SPEC)

Goals: support for high-level researchers based abroad to come to Brazil to set up research centers at universities in São Paulo State. They remain affiliated with their home institutions but undertake to stay in Brazil for 12 weeks per year for the duration of the project, which must last at least five years. They each coordinate a group of FAPESP scholarship awardees comprising postdoctoral researchers, PhDs, and scientific initiation students.

TABLE 21 SPECIAL PROJECTS

Disbursement, number of active projects and new projects contracted in 2023

Fellowships and Grants associated	Disbursement \$ PPP	New projects contracted	Active projects
Research Grants – Special Projects	10,552,831	0	2
Regular Fellowships in Brazil	176,470	3	8
Regular Fellowships Abroad	24,475	0	1
Other fellowships	141,176	5	11
Total	10,894,952	8	22

TABLE 22 PROJECTS GENERATION AND INITIAL Π (PI)

Disbursement, number of active projects and new projects contracted in 2023

Fellowships and Grants associated	Disbursement \$ PPP	New projects contracted	Active projects
Research Grant – Initial Π (Pi)	4,602,272	109	108
Research Grant – Generation	1,112,205	30	27
Research Grants – Regular	0	1	1
Fellowships Generation Program	469,926	22	22
Regular Fellowships in Brazil	648,491	106	103
Regular Fellowships Abroad	51,794	7	3
Other fellowships	41,819	16	16
Total	6,926,508	291	280

TABELA 23 SPEC

Disbursement, number of active projects and new projects contracted in 2023

Fellowships and Grants associated	Disbursement \$	New projects contracted	Active projects
Research Grants – SPEC	1,126,125	0	13
Research Grants – Regular	884	1	1
Regular Fellowships in Brazil	1,115,547	14	45
Regular Fellowships Abroad	196,934	6	8
Other fellowships	32,069	4	4
Total	2,471,559	25	71

RESEARCH, INNOVATION AND DISSEMINATION CENTERS (RIDC)

Goals: conducting basic or applied research on specific issues for up to 11 years; actively contributing to innovation via technology transfer; production of public policy input; extension activities for primary and secondary schools and the general public. Eighteen new RIDCs will be selected by 2026 in six proposal submission cycles divided by major knowledge area. The first cycle, calling for proposals in life sciences, biological sciences and agronomy and veterinary medicine, was launched in 2021. The results were announced in 2023, with the selection of five new centers (38 proposals were submitted). Preliminary proposals were submitted in 2022 for the second cycle, which will select three centers in human and social sciences, architecture and urbanism, and economics and management.

TABLE 24 RIDC

Disbursement, number of active projects and new projects contracted in 2023

Fellowships and Grants associated	Disbursement \$ PPP	New projects contracted	Active projects
Research Grants – RIDC	24,822,152	5	22
Research Grants – Regular	557,071	26	36
Other grants	12,223	2	1
Regular Fellowships in Brazil	10,158,982	182	589
Regular Fellowships Abroad	5,216,366	61	121
Other fellowships	1,031,453	77	117
Total	41,798,247	353	886

DISSEMINATION ACTIVITIES – RIDC 2023

Ciência por Elas 2023 (Science for Girls 2023)

To encourage girls to pursue a scientific career, the Ribeirão Preto branch of the University of São Paulo’s Institute of Advanced Studies (IEARP-USP), in partnership with the State University of Campinas (UNICAMP) and the Center for Cell-Based Therapy (CTC), held the fourth edition of *Ciência Por Elas*, an event for female schoolchildren in grades 6-9. Theoretical and practical activities take place with researchers from partner institutions and Oswaldo Cruz Foundation (Fiocruz). A science diffusion group called *Ilha do Conhecimento* (“Knowledge Island”) and the Metabolism Control Laboratory at the University of São Paulo’s Ribeirão Preto Medical School (FMRP-USP) also helped organize the event.

Exploring the Amazon through a computer game with 3D simulation

Users of an educational computer game called *Virtual Forest* can have fun connecting with the Amazon and exploring the forest via realistic 3D simulations. Digital tools enable the visitor to find out about representative plants and animals, and the knowledge acquired there by different Indigenous groups. The game was developed by Interactive Science Space (Espaço Interativo de Ciências, EIC), a group at the Center for Research and Innovation in Biodiversity and Drug Discovery (CIBFar).

Ludo Educativo: more than 20 million views

The virtual game portal *Ludo Educativo*, one of the dissemination projects of the Center for Development of Functional Materials (CDMF), surpassed 20 million views from its inception on August 4, 2010. As well as educational games, the portal offers printed activities and a platform to help elementary and middle schoolchildren understand and memorize classroom subjects while having fun.

HIGHLIGHTS

The third call for proposals in natural sciences and engineering was announced. The submission process ends in 2024.

OS CEPID APOIADOS NO ANO

22 RIDCs were supported by FAPESP – 17 selected in 2013 and 5 submitted in the 2021 call and approved in 2023:

Detailed information about each center can be found at cepid.fapesp.br/en.

1	Center for Research and Innovation in Biodiversity and Drug Discovery (CIBFar): IFSC-USP – São Carlos;
2	Center for Research on Toxins, Immune Response and Cell Signaling (CeTICS): Butantan Institute – São Paulo;
3	Center for Cell-Based Therapy (CTC): HCMRP-USP – Ribeirão Preto;
4	Center for Research in Optics and Photonics (CEPOF): IFSC-USP – São Carlos;
5	Center for Metropolitan Studies (CEM): CEBRAP-USP – São Paulo;
6	Food Research Center (FoRC): FCF-USP – São Paulo;
7	Center for Research, Education and Innovation in Vitreous Materials (CeRTEV): CCET-UFSCar – São Carlos;
8	Center for Mathematical Sciences Applied to Industry (CeMEAI): ICMC-USP – São Paulo;
9	Human Genome and Stem Cell Research Center (HUG-CELL): IB-USP – São Paulo;
10	Brazilian Institute of Neurosciences and Neurotechnology (BRAINN): FCM-UNICAMP – Campinas;
11	Center for the Study of Violence (NEV): FFLCH-USP – São Paulo;
12	Obesity and Comorbidities Research Center (OCRC): FCM-UNICAMP – Campinas;
13	Center for Research on Inflammatory Diseases (CRID): FMRP-USP – Ribeirão Preto;
14	Center for Research on Redox Processes in Biomedicine (Redoxome): IQ-USP – São Paulo;
15	Center for Computing in Engineering and Science (CCES): IQ-UNICAMP – Campinas;
16	Research, Innovation and Dissemination Center for Neuromathematics (NeuroMat): IME-USP – São Paulo;
17	Center for Development of Functional Materials (CDMF): UFSCar – São Carlos;
18	São Paulo Antimicrobial Resistance Institute (Project ARIES): UNIFESP – São Paulo;
19	Center for Research on Carbon in Tropical Agriculture (CCARBON): ESALQ-USP – Piracicaba;
20	Cancer Theranostics Innovation Center (CancerThera): Blood Center-UNICAMP – Campinas;
21	Center for Research on Biodiversity and Climate Change (CBioClima): IB-UNESP – Rio Claro;
22	Center for Research on Biology of Bacteria and Bacteriophages (B3): IQ-USP – São Paulo.

REGULAR GRANTS – SPONTANEOUS DEMAND

The funding strategy Research for Knowledge Advancement also encompasses fast-track research projects supported by Regular Research Grants awarded in response to applications submitted spontaneously by researchers with doctoral degrees. This type of support is extended to individual projects (Research Grants – Regular), expenditure on visits by researchers from other parts of Brazil or other countries (Visiting Researcher Grants), organization of scientific meetings (Science Meeting Organization Grants), participation in scientific meetings in Brazil or abroad (Science Meeting Participation Grants), and books, articles and other publications in scientific journals reporting original research results (Publication Grants).

HIGHLIGHTS

FAPESP updated the rules for Scientific Meeting Organization Grants and Scientific Meeting Participation Grants to allow support for hybrid and online meetings (in-person meetings were already supported). Meetings are now classified into seminars/workshops, and larger events such as conferences, symposia and congresses organized by professional or scientific associations in Brazil and abroad. In the case of Scientific Meeting Participation Grants, researchers can apply once a year for support for participation in online events hosted in Brazil or abroad.

São Paulo School of Advanced Science (SPSAS)

SPSAS awards are a type of Regular Grant for Science Meeting Organization to support short courses for graduate students and postdocs from Brazil and elsewhere delivered by leading Brazilian and foreign scientists. In 2023, FAPESP selected seven schools in the 17th call for SPSAS proposals.

TABLE 25 REGULAR GRANTS

Disbursement, number of active projects and new projects contracted in 2023

Research Grants not associated and fellowships and grants associated to them	Disbursement \$ PPP	New projects contracted	Active projects
Research Grants – Regular	60,532,832	853	2,567
Research Grants – Participation in Scientific Meetings in Brazil	109,397	49	44
Research Grants – Participation in Scientific Meetings abroad	1,748,352	210	205
Research Grants – Organization of Scientific Meetings in Brazil and abroad	7,111,333	211	217
Research Grants – Publications in Brazil	549,078	132	196
Research Grants – Publications abroad	53,845	5	14
Research Grants – Visiting Researcher	330,010	10	12
Research Grants – Visiting Researcher abroad	1,451,693	53	64
Regular Fellowships in Brazil	1,708,738	29	57
Regular Fellowships Abroad	91,326	3	2
Other fellowships	3,195,246	381	658
Total	76,881,850	1,936	4,036



FAPESP runs a number of research programs that promote collaboration between companies and universities or research institutions to stimulate the development of technological innovation in São Paulo State. As part of this strategy, FAPESP supported a study to establish conceptual and operational parameters for the creation of Innovation and Creativity Districts in São Paulo and Campinas.



\$ PPP 50.3 million

to **1,813** collaborative
research projects –
universities and companies.

RELATED PROGRAMS

Engineering Research Centers (ERCs)/Applied Research Centers (ARCs) – www.fapesp.br/cpe/home

Research Partnership for Technological Innovation Program (PITE) – www.fapesp.br/en/12050

Innovative Research in Small Business Program (PIPE) – www.fapesp.br/pipe

Intellectual Property Support Program (PAPI-Nuplitech) – www.fapesp.br/pi

Innovation Districts

Indicator 2 IoT Investment Fund (see p. 34 and p. 36)

FAPESP's NEW IP POLICY GUIDELINES

FAPESP's new intellectual property policy guidelines, altered by Ordinance nº 77 on February 17, 2022, govern the assignment of IP rights and income relating to creations originating in its funding programs. The intellectual property policy can be read in Portuguese at: fapesp.br/pi.

As of 2022, companies hold IP rights to their funded research and are required to protect them, in line with FAPESP's IP policy for research conducted by universities and research institutions.

INNOVATION DISTRICTS

Researchers at FIPE, an economics think tank, are conducting a feasibility study on the creation of Innovation Districts as planned areas of São Paulo State designed to foster innovation located near universities and research institutions, and containing high-tech companies, startup incubators and accelerators. The study began by analyzing the current site of the CEAGESP wholesale market in São Paulo City and will be extended to other areas along the Pinheiros River and near the University of São Paulo (USP), Butantan Institute, the Technological Research Institute (IPT) and the Nuclear and Energy Research Institute (IPEN), among others.

TABLE 26 RESEARCH FOR INNOVATION

Disbursement and number of new projects contracted for as research in partnership with companies in 2023, by major knowledge area

Programs	Life Sciences		Natural Sciences and Engineering		Human and Social Sciences		Interdisciplinary	
	Disbursement \$ PPP	New projects contracted	Disbursement \$ PPP	New projects contracted	Disbursement \$ PPP	New projects contracted	Disbursement \$ PPP	New projects contracted
ERC/ARC and associated	3,142,007	67	5,585,124	80	132,932	4	890,426	5
PIPE and associated	15,612,361	288	26,943,414	369	1,796,881	44	2,665,471	65
PI TE and associated	829	9	1,684,750	26	0	0	7,675	1
Intellectual Property and associated	0	0	764	0	0	0	62	0
Innovation Districts	0	0	0	0	0	0	654,926	0
Indicator 2 IoT Investment Fund	0	0	0	0	0	0	430,328	0
Total	19,583,807	364	24,214,052	475	1,902,813	48	4,648,888	71

ENGINEERING RESEARCH CENTERS/ APPLIED RESEARCH CENTERS (ERCs/ARCs)

ERCs and ARCs operate in accordance with an innovative collaborative research model: they enable companies' research teams to conduct effective collaboration with researchers at a university and/or research institution for a long period (five to ten years), creating shared knowledge in areas of common interest with significant potential for application of results. Research projects are co-funded by FAPESP and partner companies. Host institutions are responsible for operating costs and salaries.

IN 2023

\$ PPP 9.8 million for 358 research projects conducted by 25 ERCs/ARCs established in partnership with companies, social organizations and academic institutions.

TABLE 27 ERC/ARC

Disbursement, number of active projects and new projects contracted in 2023

Fellowships and Grants associated	Disbursement \$ PPP	New project contracted	Active projects
Research Grant – ERC/ARC	3,412,333	3	26
Research Grant – Regular	331,338	14	19
Other grants	189,158	2	20
Regular Fellowships in Brazil	4,050,399	81	207
Regular Fellowships Abroad	1,381,246	20	32
Other fellowships	386,615	36	5
Total	9,751,089	156	358

HIGHLIGHTS

In 2023 FAPESP issued a call for proposals to set up an ERC in partnership with Citrusuco that will develop innovative solutions for citrus growers. The process is under way.

Three AI ARCs are being set up: Data Center for Smart Industry (CDI2), Center of Excellence in Artificial Intelligence for Renewable Energies; and Research Really Applied in Artificial Intelligence: Education for the Fourth Industrial Revolution (PRAIA Educação).

SUPPORTED ERCs/ARCs

Detailed information on each center can be found at www.fapesp.br/cpe/home.

The following 18 ERCs/ARCs were up and running in 2023:

	FAPESP Process	Name	Partner	Hosted at
1	2016/23218-0	Genomics for Climate Change Research Center (GCCRC)	EMBRAPA	UNICAMP
2	2017/11631-2	Center for Innovation in New Energies (CINE) CINE – Computational development of materials using atomistic simulations, meso-scale, multi-physics and AI for energy applications	Shell	IQ-USP de São Carlos
3	2017/11937-4	CINE – Sustainable methane conversion route with advanced electrochemical technologies		IPEN
4	2017/11958-1	CINE – Advanced energy storage division		FEC-UNICAMP
5	2017/11986-5	CINE – Generating and storing new energies: fostering technological development in Brazil		IQ-UNICAMP
6	2017/15736-3	Energy Production Innovation Center (EPIC)	Equinor (antiga Statoil)	School of Mechanical Engineering (FEM), UNICAMP
7	2017/25258-1	Sugarcane Plant Health Research Center (Cepenfito)	Grupo São Martinho	School of Agrarian and Veterinary Sciences (FCAV), UNESP Jaboticabal
8	2018/02317-5	São Paulo Advanced Research Center for Biological Control (SparcBio)	Koppert	Luiz de Queiroz College of Agriculture (ESALQ), USP
9	2019/07665-4	ERC in Artificial Intelligence (C4AI)	IBM	USP
10	2019/12553-0	Brazilian Center for Applied Research on Early Childhood (CPAPI)	Fundação Maria Cecília Souto Vidigal	Instituto de Ensino e Pesquisa (Insper)
11	2020/13139-0	Center of Excellence for Novel Target Discovery (CENTD)	GSK	Butantan Insitute
12	2020/15230-5	Research Center for Innovation in Greenhouse Gas Emission (RCGI2)	Shell	Engineering School (POLI), USP
13	2021/00199-8	ERC in Smart Networks and Services for 2030 (SMARTNESS)	Ericsson	UNICAMP
14	2021/00408-6	Center for Research in Immuno-Oncology (CRIO)	GSK	Albert Einstein Jewish-Brazilian Institute for Education and Research
15	2021/05251-8	ERC in Plasticulture (CEP)	Braskem	Interdisciplinary Hub for Energy Planning (NIPE), UNICAMP
16	2021/11258-5	ERC for Aerial Mobility of the Future (ERC-AMF)	Embraer	Aeronautical Technology Institute (ITA)
17	2022/03698-8	Offshore Technology Innovation Center (OTIC)	Shell	Engineering School (POLI), USP
18	2022/04006-2	Center for Plant Molecular Breeding (CPMB)	Embrapa	Center for Molecular Biology and Genetic Engineering (CBMEG), UNICAMP

SUPPORTED ERCs/ARCs

The following seven ARCs in artificial intelligence were up and running in 2023, having been selected in a 2021 call issued jointly with the Ministry of Science, Technology and Innovation (MCTI), the Ministry of Communications (MCom) and the Brazilian Internet Steering Committee (CGI.br):

	Processo FAPESP	Nome do Centro	Parceria	Sede
19	2020/09706-7	Reference Center in Artificial Intelligence (CEREIA)	Three S&T institutes: PUC-RJ, Federal University of Piauí, and University of Fortaleza	Federal University of Ceará (UFC)
20	2020/09770-7	Center of Excellence in Applied Research on Artificial Intelligence for Industry		Senai Cimatec, na Bahia
21	2020/09835-1	Artificial Intelligence Recreating Environments (IARA)		Institute of Mathematics and Computer Science (ICMC), USP São Carlos
22	2020/09838-0	Brazilian Institute of Data Science (BIOS)		School of Electrical and Computer Engineering (FEEC), UNICAMP
23	2020/09850-0	ARC in Artificial Intelligence for the Evolution of Manufacturing to Industry 4.0		Technological Research Institute (IPT)
24	2020/09866-4	Center for Innovation in Artificial Intelligence for Health (CIA-Saúde)		Institute of Exact Sciences (ICEx), Federal University of Minas Gerais (UFMG)
25	2022/00741-0	Center of Excellence in AI for Cybersecurity		IT Center, UFPE

Since execution of the program began ten years ago, FAPESP has stimulated **29** ERCs and ARCs focusing on innovation. It has done so by establishing technical and financial partnerships with companies and other institutions. **Twenty-five** centers were active in 2023, seven of them in AI. Some were set up outside São Paulo State under co-funding agreements with MCTI.

The approach is long-term, interdisciplinary, and oriented toward solving complex problems. Since its inception the program has supported centers at **15** research institutions involving some **30** companies and more than **100** research institutions.

Considering the resources of the Brazilian Internet Steering Committee, in addition to associated processes, FAPESP has so far disbursed **\$ PPP 49.5 million** for the program, while partner companies and institutions have contributed **\$ PPP 236.4 million**, or **4.8** times the amount invested by FAPESP. This leverage is far more than the factor of 2 on which the initial concession of the centers was based.

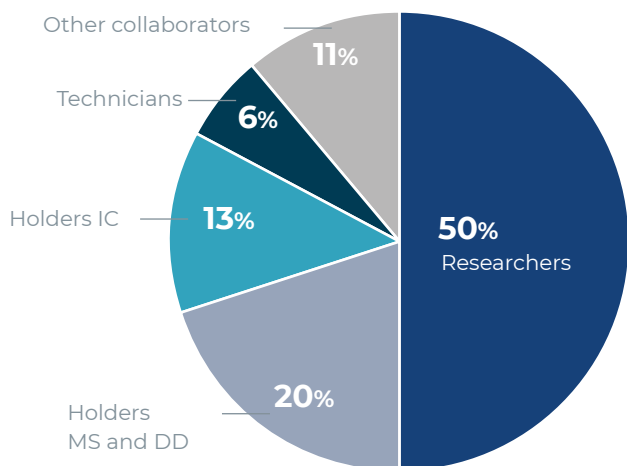
The funding model also calls for non-financial contributions by partner institutions, which so far correspond to some \$ PPP 377 million.

More than 1,800 researchers, some 590 postdocs, 200 technicians, over 900 master’s and doctoral scholarship awardees and 550 holders of scientific initiation scholarships have been involved in the activities of ERCs and ARCs in this ten-year period (Chart 4).

The centers focus on a wide array of research interests, some of which are more frequent, as shown in the word cloud.



CHART 4 HUMAN RESOURCES
Participation in ERC and ARC activities



Note: information on the financial contributions made by companies and the personnel involved in the centers’ activities was obtained in a primary survey conducted by FAPESP’s Planning, Studies and Indicators Unit, and its Research for Innovation team.

ERC HIGHLIGHTS IN 2023

World's first ethanol-to-hydrogen plant

A project to build the world's first fueling station supplying renewable hydrogen from ethanol was launched by Shell in 2023 as an initiative of the Research Center for Greenhouse Gas Innovation (RCGI). On completion in July 2024 the fueling station at the University of São Paulo (USP) will have 425 square meters of floor space and the capacity to generate 4.5 kg of hydrogen per hour. Several companies are providing support or partnership. The equipment was developed and fabricated by Hytron.

The ethanol used to produce hydrogen will be supplied by Raízen, the world's top producer of ethanol from sugarcane. Computer simulations to make the plant more efficient will be led by SENAI's Institute for Innovation in Biosynthetics and Fibers. The hydrogen produced by the station will fuel three buses belonging to São Paulo's metropolitan mass transit corporation (EMTU/SP). To test the hydrogen's performance, Toyota has given the project a Mirai, the world's first mass-produced fuel cell electric sedan. Fuel cell EVs are powered by compressed hydrogen gas that feeds into an onboard fuel cell stack, which converts the fuel's chemical energy into electrical energy. This electricity then powers the car's electric motors.

<https://agencia.fapesp.br/42182>

RCGI joins international consortium to coordinate collaboration on zero-carbon initiatives

RCGI has joined Technology Without Borders (TWB), a consortium of five research centers from Africa, Australia, the Netherlands, Japan and the United Kingdom. The initiative was launched during the 2023 United Nations Climate Change Conference (COP28) in Dubai. Led by Scotland's Net Zero Technology Centre (NZTC), the consortium is a hub for zero-carbon collaboration. The aim is to lay a basis for developing countries to eliminate carbon emissions. Each partner will collaborate with developing countries to identify technology and innovation opportunities, provide its technology experts to support the program, and actively participate in feasibility studies and field tests, among other activities.

<https://agencia.fapesp.br/51142>

New theoretical model paves way for more efficient supercapacitors

A team of researchers affiliated with the Center for Innovation in New Energies (CINE) developed a mathematical model to optimize supercapacitor efficiency by minimizing the undesirable losses that occur in these devices and are usually overlooked in the scientific literature. Supercapacitors can be key elements of systems that store energy from clean sources like sunlight and wind. Such sources are renewable, free and inexhaustible, but also intermittent.

<https://agencia.fapesp.br/41907>

GCCRC researchers develop protocol to accelerate editing of tropical corn's genome

Researchers at the Genome for Climate Change Research Center (GCCRC) developed a new protocol to accelerate editing of the genome of tropical corn. The study, published in the journal *Frontiers in Genome Editing*, shows that the protocol can be three times more efficient than the usual one, pointing to the possibility of novel varieties of corn adapted to the Brazilian climate.

<namidia.fapesp.br/487346>

RESEARCH PARTNERSHIP FOR TECHNOLOGICAL INNOVATION PROGRAM (PITE)

PITE supports scientific and technological research projects conducted at universities or research institutions in São Paulo State in cooperation with researchers at companies in Brazil or abroad. Research proposals can be submitted at any time (PITE Spontaneous Demand) or in response to calls issued under the aegis of cooperation agreements between FAPESP and partner companies interested in solutions to challenges facing the companies, an industry or an economic sector (PITE Agreements).

PARTNER COMPANIES

- PITE Agreements – 6 companies with 65 active projects and 21 new projects contracted for:

Agilent, Embraer (under the aegis of a cooperation agreement with the European Union – Horizon 2020), Empresa Brasileira de Pesquisa e Inovação (Embrapii), Kryptus Segurança da Informação Ltda. (via an agreement with MCTI/CGI.br), Microsoft and Sabesp.

- PITE Spontaneous Demand – 9 companies with 29 active projects and 15 new projects contracted for:

EMS, Laboratório BioVet S.A., Maiz Indústria e Comércio de Produtos Agropecuários Ltda., Medicines for Malaria Venture, Cetesb, bioMérieux Brasil e three non-mapped units, of which one in partnership with UNESP in São João da Boa Vista, and two with USP in Lorena.

IN 2023

\$ PPP 2.5 million to support **94** research projects conducted by partnerships between companies and universities or research institutions

TABLE 28 PITE

Disbursement, number of active projects and new projects contracted in 2023

Fellowships and Grants associated	Disbursement \$ PPP	New projects contracted	Active project
Research Grant – PITE	1,594,476	3	29
Research Grant – Regular	0	2	2
Other grants	140,112	2	4
Regular Fellowships in Brazil	620,330	11	37
Regular Fellowships Abroad	43,172	2	2
Other fellowships	168,174	16	20
Total	2,521,265	36	94

INNOVATIVE RESEARCH IN SMALL BUSINESS PROGRAM (PIPE)

PIPE supports entrepreneurs who want to convert knowledge into novel products or services. Applications can be submitted at any time for funding for proof-of-concept testing (Phase 1), project development proper (Phase 2), and PIPE Invest.

FAPESP gives entrepreneurs selected for Phase 1 an opportunity to enhance their business plans and align projects with market demand, increasing their chances of success, via the PIPE High Tech Entrepreneurship Training Program (PIPE Entrepreneur). PIPE Invest allocates supplementary funds to startups and small and medium enterprises that have begun developing innovative processes or products with PIPE’s support, have strong success potential, and already have an interested investor. The aim is to enhance the technology and accelerate market insertion of the innovation.

Through an agreement with FINEP, the Brazilian government’s innovation agency (PIPE-PAPPE Grants), FAPESP also supports industrial and commercial development of innovative products (Phase 3).

For FAPESP’s initiatives to help companies supported by PIPE attract investors, and the call it issued to raise money from investment funds, see p. 36. For results of PIPE-KT, PIPE Start and Tecnova III calls, see pp. 37-38.

IN 2023

\$ PPP 37 million in **1,359** research projects.

Since the program's inception in 1997, FAPESP has awarded **4,184** PIPE grants to **1,998** companies in **166** cities in São Paulo State.

HIGHLIGHTS

Twenty projects selected in a call issued by PIPE Start FAPESP SEBRAE involve preliminary validation of ideas for novel technological solutions and business models. PIPE Start FAPESP supports innovative product and process design where the technological solution or business model has not yet been formatted or validated.

A joint call issued by FAPESP and the São Paulo State Basic Sanitation Corporation (SABESP) was the fourth in the history of their relationship and their first to support PIPE projects.

Other calls are highlighted on pp. 36-38.

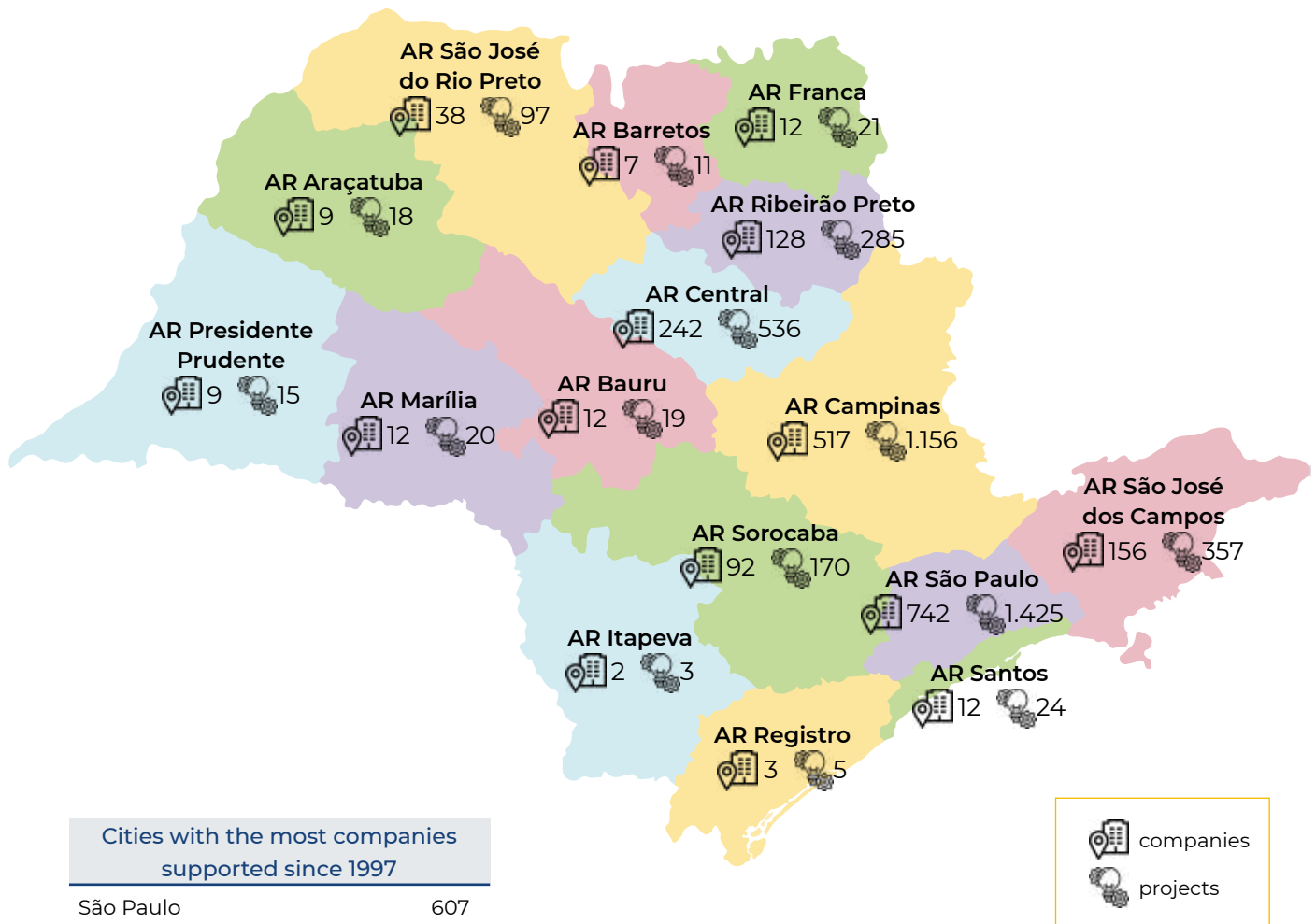
TABLE 29 PIPE

Disbursement, number of active projects and new projects contracted in 2023

Fellowships and Grants associated	Disbursement \$ PPP	New projects contracted	Active projects
Research Grant – PIPE	24,529,538	285	559
Research Grants – Regular	28,654	3	3
Fellowship – Research in Small Business (PE)	6,696,202	140	253
Regular Fellowships in Brazil	523	0	1
Regular Fellowships abroad	2,924	0	0
Other fellowships	5,733,284	338	543
Total	36,991,127	766	1,359

CHART 5 GEOGRAPHY OF INNOVATION IN SÃO PAULO STATE – 2023

Companies supported by PIPE in Administrative Regions (AR) of São Paulo – since 1997



Cities with the most companies supported since 1997

São Paulo	607
Campinas	246
São Carlos	214
São José dos Campos	132
Ribeirão Preto	90
Piracicaba	70
Botucatu	32
Sorocaba	32
Araraquara	25
São José do Rio Preto	23

PIPE HIGHLIGHTS 2023

Healthtech wins one of world's most important prizes for design

Brazilian startup brain4care won the IF Design Award, one of the world's most prestigious prizes, recognizing excellence in global design impact. The healthtech's pitch was for the third generation of its innovative intracranial compliance monitoring solution. It won the award in the category Medical/Healthcare.

pesquisaparinovacao.fapesp.br/3050

Startups supported by PIPE figure in Brazilian rankings for innovation performance

In 2023, 15 startups operating in various segments and supported by PIPE figured in the rankings "100 Startups to Watch", now into its sixth edition, and "100 Open Startups". In the former, a total of 2,076 startups applied, and were scored for business, team, degree of innovation, market potential, and solution maturity. Cromai, Doroth and SciCrop were selected in the category agribusiness, Biolinker in industry, and Neuralmind in legal. Epistemic, Neogenys and Onkos were the PIPE-supported firms ranked among the top 100 in health, and Data Machina made the list in technology. SciCrop was also listed in the latter ranking. "100 Open Startups" focuses on connections and relationships established by startups with large corporations.

pesquisaparinovacao.fapesp.br/2918

An innovative crop sprayer drone with an automated refueling system

A crop sprayer drone developed by Model Works, a startup based in São Paulo State, features several advantages over traditional crop spraying technology. It has an onboard generator powered by liquid fuel and an innovative automated refueling system that increases its range. It can be used to spray both large and small areas, saving time, economizing inputs, cutting costs, and mitigating environmental impacts.

<https://agencia.fapesp.br/41569>

iSystems implements AI-based solution for biofuel production

iSystems has implemented Leaf, a software tool based on artificial intelligence (AI), for Atvos, one of Brazil's leading producers of biofuels. The solution, which the firm developed and patented, focuses on control and optimization of industrial processes to raise productivity, save resources and reduce their environmental impact. Leaf deploys AI to identify trends and patterns as a decision-making aid, and to minimize failures and maximize efficiency in manufacturing.

<https://agencia.fapesp.br/44802>

Portable device helps harbor pilots maneuver large vessels into port

Maneuvering a large ship into port is a complex and hazardous task. To assist harbor pilots, the skilled professionals who steer ships through confined waters on the approach to ports, estuaries and cargo terminals, Navigandi developed a high-precision portable device with integrated hardware and software that transmits dynamic real-time information via a smart platform. The firm was founded in 2019 in São Paulo City and specializes in maritime equipment. It has already produced the first prototype of the maneuvering support system.

<https://agencia.fapesp.br/50108>



FUNDING STRATEGIES

RESEARCH ON STRATEGIC THEMES

This funding line covers a group of programs through which FAPESP seeks to encourage research projects on topics considered strategic to the development of São Paulo State and Brazil. It includes support for the institutional development plan for research institutions in the state and support for Science for Development Centers (SDCs).



\$ PPP 40.5 million

for **1,500** active projects.

RELATED PROGRAMS

FAPESP Research Program on Biodiversity (BIOTA) – fapesp.br/en/biota

FAPESP Bioenergy Research Program (BIOEN) – fapesp.br/en/bioen

FAPESP Research Program on Global Climate Change – fapesp.br/pfpmcg

Research on Public Policies Program (PPP) – fapesp.br/politicaspUBLICAS

Research on Public Policies for the SUS (PP-SUS) – fapesp.br/ppsus

Public Education Research Program – fapesp.br/46

Science Journalism (MídiaCiência) – fapesp.br/jornalismocientifico

FAPESP Research Program on eScience&Data Science – fapesp.br/en/escience

Institutional Development Plan for Research Institutions in São Paulo State (PDIp) – fapesp.br/11414

Science for Development Centers (SDC-SP) – fapesp.br/14936

TABLE 30 RESEARCH ON STRATEGIC THEMES

Disbursement and new projects contracted for in 2022, by major knowledge area

Programs	Life Sciences		Natural Sciences and Engineering		Human and Social Sciences		Interdisciplinary	
	Disbursement \$ PPP	New projects contracted	Disbursement \$ PPP	New projects contracted	Disbursement \$ PPP	New projects contracted	Disbursement \$ PPP	New projects contracted
BIOTA and associated	8,647,392	157	1,073,566	5	313,102	3	342,804	2
BIOEN and associated	2,562,875	25	2,695,628	27	0	0	148,915	1
Global Climate Change and associated	1,823,424	21	4,690,141	52	333,259	7	70,778	0
Research on Public Policies and associated	2,825,735	2	70,272	6	1,167,018	206	10,373	2
eScience & Data Science and associated	354,226	4	168,375	9	21,649	8	442	1
Science Journalism not associated	29,198	0	22,248	1	94,226	7	32,656	2
PDIp and associated	4,472,338	21	1,623,740	12	0	0	0	0
SDC-SP and associated	4,839,393	68	1,327,791	34	218,177	19	562,427	7
Total	25,554,581	298	11,671,761	146	2,147,431	250	1,168,395	15

BIOTA-FAPESP

Goals: mapping, cataloguing and characterizing biodiversity in São Paulo State; and defining mechanisms of conservation, restoration and assessment. The program’s strategic plan for the next eight years, BIOTA 2030, was drafted with the academic community’s participation via public consultation and seminars held by the program on the results of funded research projects, endeavoring to correlate these discussions with the Sustainable Development Goals (SDGs) adopted by the United Nations.

HIGHLIGHT

Eleven proposals were selected under the Discoveries and Collections call issued in 2022 as part of the initiatives undertaken in accordance with the program’s strategic plan for the next eight years. Proposals were required to focus on creating and maintaining biodiversity and ecosystem services, which correspond to two of the five legs of BIOTA 2030. The others are synthesis, transformation, and entrepreneurship. In 2023, FAPESP issued a call entitled BIOTA-FAPESP: Transformation – Promoting Transitions to Sustainability, with \$ PPP 2.5 million allocated for proposals that transform the program via innovations to address current challenges and strengthen the integration of knowledge with society via transdisciplinary approaches.

TABLE 31 BIOTA

Disbursement, number of active projects and new projects contracted in 2023

Fellowships and Grant associated	Disbursement \$ PPP	New projects contracted	Active projects
Research Grant BIOTA	1,577,424	18	69
Research Grant BIOTA – PIPE	75,768	3	3
Research Grant BIOTA – JP	672,160	2	14
Research Grant BIOTA – Thematic	2,701,508	4	29
Research Grant BIOTA – SDC	103,237	0	1
Research Grant BIOTA – Organization	43,412	0	2
Regular Grants	171,553	12	17
Regular Fellowships in Brazil	2,921,705	56	174
Research Fellowships Abroad	1,509,409	18	37
Fellowships BIOTA – PE	8,426	1	1
Fellowships BIOTA – JP	216,346	0	5
Other fellowships	375,916	53	81
Total	10,376,864	167	433

BIOEN

Goals: stimulating and organizing research and development by academic and industrial laboratories to advance and apply knowledge in areas relating to bioenergy production in Brazil.

HIGHLIGHT

The program organized a meeting for researchers and representatives of public- and private-sector enterprises to discuss how to extend the energy transition to aviation, which accounts for 2%-3% of global greenhouse emissions.

TABLE 32 BIOEN

Disbursement, number of active projects and new projects contracted in 2023

Fellowships and Grant associated	Disbursement \$ PPP	New projects contracted	Active projects
Research Grant BIOEN	1,047,829	8	32
Research Grant BIOEN – Thematic	877,248	1	7
Research Grant BIOEN – PIPE	0	0	1
Research Grant BIOEN – PITE	8,564	0	1
Research Grant BIOEN – JP	404,310	0	6
Research Grant BIOEN – SPEC	565,120	0	1
Regular Grants	69,990	5	7
Other Research Grants	271,445	0	4
Regular Fellowships in Brazil	1,030,674	20	64
Regular Fellowships abroad	898,252	11	18
Fellowships BIOEN – JP	49,234	0	1
Fellowships BIOEN – PE	14,115	0	1
Other fellowships	170,637	8	23
Total	5,407,418	53	166

SCIENCE FOR DEVELOPMENT CENTERS (SDCs)

Goals: funding for scientists at universities and research institutions, managers of state and municipal agencies, companies and non-governmental organizations in São Paulo State to collaborate on problem-oriented projects with social or economic relevance to the state for a five-year period.

HIGHLIGHT

FAPESP issued the third call for proposals to set up SDCs, allocating a total of **\$ PPP 61.4 million** and a maximum of BRL 2 million per year per project.

In the first two calls (issued in 2019 and 2021), 28 SDCs were selected and will conduct research on health, energy, agriculture, advanced manufacturing, smart cities, public safety and environmental management.

TABLE 33 SDC

Disbursement, number of active projects and new projects contracted in 2023

Bolsas e Auxílios vinculados	Desembolso \$ PPP	Projetos contratados	Projetos vigentes
Research Grant SDC	4,619,934	5	25
Regular Grants	110,459	4	5
Regular Fellowships in Brazil	1,306,053	77	93
Regular Fellowships abroad	261,404	6	6
Other fellowships	649,938	36	50
Total	6,947,788	128	179

SDCs approved in the 2019 and 2021 calls

	FAPESP Process	Name of the Center	Principal Investigator	Institution
1	2020/07055-9	Center for Cell-Based Therapy (CTC)	Dimas Tadeu Covas	Ribeirão Preto Blood Center
2	2020/07065-4	Multicenter program using PSMA radioligands for prostate cancer diagnosis and treatment	Wilson Aparecido Parejo Calvo	Nuclear and Energy Research Institute (IPEN)
3	2020/07040-1	Center for R&D in Immunobiologics (CeRDI)	Ana Maria Moro	Butantan Institute
4	2020/06830-9	Fish for health – improving the nutritional quality of farmed fish	Daniel Eduardo Lavanholi de Lemos	Oceanographic Institute (IO-USP)
5	2020/06694-8	BIOTA Synthesis – Center for Analysis and Synthesis of Nature-Based Solutions	Jean Paul Walter Metzger	Institute of Advanced Studies (IEA-USP)
6	2020/06984-6	Development of production chain for metallic components by additive manufacturing	Mário Boccalini Júnior	São Paulo State Technological Research Institute (IPT)
7	2020/07015-7	PBIS – Integrated Biotechnological Platform for Healthy Ingredients	Maria Teresa Bertoldo Pacheco	Food Technology Institute (ITAL)
8	2020/07045-3	Biotechnological and genomic strategies for quality, productivity and sustainable management of citrus, coffee and sugarcane in São Paulo State	Mariângela Cristofani-Yaly	Campinas Institute of Agronomy (IAC)

	FAPESP Process	Name of the Center	Principal Investigator	Institution
9	2020/07019-2	Center for Science Applied to Security (CCAS-FGV)	João Luiz Becker	São Paulo Business School (EAESP-FGV)
10	2021/11762-5	Center for Water and Food Security in Critical Zones	Humberto Ribeiro da Rocha	Institute of Astronomy, Geophysics and Atmospheric Sciences (IAG-USP)
11	2021/11872-5	SDC in Xenotransplantation	Silvano Mario Attilio Raia	Medical School (FM-USP)
12	2021/11380-5	São Paulo Center for Energy Transition Studies (CPTEn)	Luiz Carlos Pereira da Silva	School of Electrical and Computer Engineering (FEEC), UNICAMP
13	2021/11794-4	Cancer Control in São Paulo State (ConeCta-SP): from knowledge to action	Victor Wunsch Filho	Cancer Foundation (FOSP), São Paulo State Dept. of Health (SSSP)
14	2021/11905-0	SDC for Innovation in Medicine and Health (inLab.iNova)	Giovanni Guido Cerri	FM-USP
15	2021/11922-2	SDC for Climate Neutrality of Beef Cattle Raising in Tropical Regions	Renata Helena Branco Arnandes	Animal Science Institute, São Paulo State Dept. of Agriculture (SAASP)
16	2021/11936-3	Center for Translational Science and Development of Biopharmaceuticals	Benedito Barraviera	Center for Research on Venom and Venomous Animals, São Paulo State University (CEVAP-UNESP)
17	2021/11944-6	Continuous improvement of vaccines: Center for Viral Surveillance and Serological Assessment (CeVIVAS)	Sandra Coccuzzo Sampaio Vessoni	Butantan Institute
18	2021/11955-8	Solutions for combating emerging diseases in fish farming: diagnosis, vaccines and genetic selection	Maria Jose Tavares Ranzani de Paiva	Fisheries Institute, SAASP
19	2021/11962-4	CEUCI – Urbanization Research Center for Knowledge and Innovation: urban fringe knowledge areas – guidelines for sustainable implementation with support of information modeling	Maria Gabriela Caffarena Celani	School of Civil Engineering, Architecture and Urbanism, (FECAU-UNICAMP)
20	2021/11963-0	Center for Thromboembolic Diseases (CDT)	Joyce Maria Annichino Bizzacchi	Hematology and Hemotherapy Center, UNICAMP
21	2021/11967-6	Solutions for Post-Consumption Waste: Packaging and Products	Eloisa Elena Correa Garcia	Food Technology Institute (ITAL)
22	2021/11968-2	Center for Animal Health R&D	Liria Hiromi Okuda	Biology Institute
23	2021/11959-3	Center for Innovation in Urban Public Policy	Ciro Biderman	São Paulo Business School (EAESP-FGV)
24	2021/11946-9	Technological Innovation Platform for Health Emergencies	Durvanei Augusto Maria	Butantan Institute
25	2021/11965-3	Center for Sustainable Management of Pests, Diseases and Weeds	Mário Eidi Sato	Biology Institute
26	2020/06950-4	Live Knowledge R&D Center	João Eduardo Ferreira	Institute of Mathematics and Statistics (IME-USP)
27	2021/11940-0	Restoration of native vegetation in Atlantic Rainforest by strategic combination of mandatory measures and voluntary commitments (SDC-EMA)	Paulo Guilherme Molin	Center for Natural Sciences, UFSCar
28	2022/09319-9	SDC in Digital Agriculture (CCD-AD/SemeAr)	Sílvia Maria Fonseca Silveira Massruhá	EMBRAPA

INSTITUTIONAL DEVELOPMENT PLAN FOR STATE RESEARCH INSTITUTIONS (PDIp)

Goals: support for modernization initiatives at **12 research institutions** in São Paulo State with research proposals selected in a 2018 call, disbursing funds for capital and running costs (fixed assets, consumables and contractors, among others), and for scholarships and research grants.

TABLE 34 PDIp

Disbursement, number of active projects and new projects contracted in 2023

Fellowships and Grant associated	Disbursement \$ PPP	New projects contracted	Active projects
Research Grant PDIp	3,534,435	0	12
Regular Grants	22,136	4	4
Other Research Grants	778,306	1	13
Regular Fellowships in Brazil	1,012,852	9	58
Regular Fellowships abroad	320,847	7	11
Other fellowships	467,502	12	32
Total	6,096,078	33	130

INSTITUTIONS SUPPORTED

- Adolfo Lutz Institute;
- Agronomy Institute;
- Biology Institute;
- Butantan Institute;
- Dante Pazzanese Institute;
- Botany Institute;
- Nuclear and Energy Research Institute (IPEN);
- Technological Research Institute (IPT);
- Food Technology Institute (ITAL);
- Animal Science Institute;
- Geology Institute;
- Office of Endemic Disease Control (SUCEN).

SCIENCE JOURNALISM (MÍDIACIÊNCIA)

Goals: supporting the education and training of science disseminators by awarding undergraduate and graduate scholarships under the aegis of the José Reis Program. In 2023 FAPESP allocated \$ PPP 178,328 to this program, which had 16 active projects and awarded ten new fellowships.

The rules governing science journalism scholarships were updated for the first time since 1999. The main changes were extending the initial term to 12 months, renewable for another 12 months, and lifting the requirement that awardees work as interns in companies or departments of communication.

TABLE 35 SCIENCE JOURNALISM

Disbursement, number of active projects and new projects contracted in 2023

Fellowships and Grant associated	Disbursement \$ PPP	New projects contracted	Active projects
Fellowship – Science Journalism	178,328	10	16
Total	178,328	10	16

HIGHLIGHTS

A call for proposals entitled **Communicating Science** was issued in October 2023 by FAPESP and Canal Futura, an educational television channel belonging to Roberto Marinho Foundation. Proposals in any knowledge area may be submitted by undergraduates. Those selected will receive a Science Journalism scholarship to develop podcasts, videos or reels for social media, and filmed or written reportage on science projects. The aim is to train undergraduates to disseminate information about S&T, and to promote their engagement with scientific research and diffusion.

RESEARCH PROGRAM ON GLOBAL CLIMATE CHANGE (RPGCC)

Goals: support for research projects that contribute to decisionmaking on the societal and economic impacts of global warming for Brazil. The researchers involved belong to international networks and are at the forefront of important discoveries and recommendations on mitigation measures in the Amazon, coastal areas and major cities, among others.

HIGHLIGHTS



The program celebrated 15 years in a ceremony held on August 29 at FAPESP. Researchers and guest speakers addressed the following topics: Climate change now; Cities facing climate change; Oceans, terrestrial ecosystems and food production in the context of climate change. Also in 2023, two research proposals were selected in a call entitled “Accelerating the energy transition in São Paulo and Brazil”. The projects focus on the transition to a low-carbon economy and neutralization of emissions.

TABLE 36 RPGCC

Disbursement, number of active projects and new projects contracted in 2023

Fellowships and Grant associated	Disbursement \$ PPP	New projects contracted	Active projects
Research Grant RPGCC	500,147	13	18
Research Grant RPGCC – JP	195,941	1	4
Research Grant RPGCC – Thematic	576,652	3	17
Research Grant – Regular	106,816	4	11
Other Research Grants	150,876	0	1
Regular Fellowships in Brazil	1,989,355	31	121
Regular Fellowships abroad	1,043,751	12	30
Other fellowships	354,064	16	32
Total	6,917,602	80	234

eSCIENCE E DATA SCIENCE

Goals: supporting integration between research groups involved in investigating algorithms, computational modeling and data infrastructure, and groups of scientists involved in other knowledge areas.

Two proposals were selected in 2023 under a 2022 call with an allocation of **\$ PPP 8.6 million** for investment in collaborative projects led by researchers in computation and human and social sciences. One related to automatic translation of Indigenous languages, and the other to crime, insecurity and legitimacy.

TABLE 37 eSCIENCE E DATA SCIENCE

Disbursement, number of active projects and new projects contracted in 2023

Fellowships and Grant associated	Disbursement \$ PPP	New projects contracted	Active projects
Research Grant eScience	91,784	4	9
Research Grant eScience – Thematic	99,771	2	3
Regular Fellowships in Brazil	175,092	8	17
Regular Fellowships abroad	113,935	1	2
Other fellowships	64,110	7	9
Total	544,692	22	40

RESEARCH PROGRAMS ON PUBLIC POLICIES

Objetivo: supporting research on solutions to social needs that result in implementation of public policies.

- **FAPESP Research Program on Public Policies (PPP);**
- **Research on Public Policies for the Unified Health Service (PP-SUS)** – supports projects oriented to preventive action by Sistema Único de Saúde (SUS, Brazil's public health service), in partnership with the Ministry of Health and the São Paulo State Department of Health (SEDUC).
- **Public Education** – funding for research projects to develop new initiatives that contribute to improvements in primary and secondary public education. FAPESP and SEDUC agreed to issue three calls for proposals under the PROEDUCA program between 2022 and 2024, with the aim of contributing to public policies and teaching methods that improve educational attainment and reduce inequality in the school system.

TABLE 38 PPP AND PUBLIC EDUCATION

Disbursement, number of active projects and new projects contracted in 2023

Fellowships and Grants associated	Disbursement \$ PPP	New projects contracted	Active projects
PPP	3,077,350	10	41
PPP Grants	2,943,632	4	19
Regular Fellowships in Brazil	61,180	1	3
Regular Fellowships abroad	833	0	0
Other fellowships	71,705	5	19
Public Education	996,048	206	261
EP Grants	437,161	25	32
Regular Grants	0	1	1
EP Fellowships	477,861	159	203
Other fellowships	81,026	21	25

HIGHLIGHTS

FAPESP selected **70** proposals in a call for proposals under the PPP program. The proposals were drafted jointly by scientific researchers and public administrators with the aim of conducting research to contribute to the formulation, revision, improvement, monitoring or implementation of public policies. Projects will receive up to **\$ PPP 143.4** per year in funding for a maximum of four years.

For PROEDUCA, **32** proposals were selected under the 2022 call and a second call was announced.

A book entitled *Repensar a universidade III: saberes e práticas* (“Rethinking universities III: knowledge and practices”) was published in 2023, with a launch event during the



Fifth Forum on Academic Performance and International Comparisons, held at FAPESP. This is the third volume in Project Metrics, an initiative coordinated by Jacques Marcovitch, a former Rector of the University of São Paulo, on a comprehensive framework for measuring the impact of universities.

The book is suitable for a readership that includes academic institution heads and staff, offering a detailed discussion of the challenges faced by universities at a time of change and an analysis of selected solutions.



FAPESP maintains seven programs that assure provision of the infrastructure needed for the advancement of research in São Paulo State.



\$ PPP 47.6 million
to **984** active projects.

RELATED PROGRAMS

Multi-user Equipment – www.fapesp.br/emu

Equipment Repair – www.fapesp.br/339

Support for Infrastructure – www.fapesp.br/paip

Three types of Technical Reserve (RT) – www.fapesp.br/rt

- Overhead – Program Coordination
- Overhead – Institutional Research Infrastructure
- Overhead – Rednesp

Access to Rednesp (Research and Education Network at São Paulo) – www.fapesp.br/49

Details of each program can be found in Table 6 (pp. 26-27).

TABLE 39 SUPPORT FOR RESEARCH INFRASTRUCTURE

Disbursement, number of active projects and new projects contracted in 2023

Fellowships and Grants associated	Disbursement \$ PPP	New projects contracted	Active projects
Support for Infrastructure (museums, information repositories, documents and biological collections)	10,815,574	53	52
Multi-user Equipment	12,674,440	50	486
Equipament Repair	2,164,791	79	160
Rednesp	6,325,440	0	1
Overhead – Institutional Research Infrastructure	14,655,193	88	253
Overhead – Program Coordination	364,702	3	8
Overhead – Rednesp	479,481	5	13
Fellowships associated	130,481	4	
Total	47,610,102	282	984

MULTI-USER EQUIPMENT (EMU)

Goal: support for acquisition of high-budget scientific instruments, as well as supplies and services needed for their functioning, requested by research groups at higher education and research institutions in São Paulo State, for shared use.

EQUIPMENT REPAIR

Goal: repair and maintenance of equipment.

SUPPORT FOR INFRASTRUCTURE

Goal: maintenance of museums, information repositories, documents and biological collections.

OVERHEAD

Additional funding for institutions to cover unforeseen expenses in research projects supported by scholarships and grants. Funding is also offered for overhead expenses relating to REDESP Connectivity, Program Coordination and, as part of the São Paulo State Program for Research Infrastructure Support (PAIP), Institutional Research Infrastructure – this is the RTI funding line for collective infrastructure benefiting an institution's research projects. The rules are at: www.fapesp.br/rti.

REDNESP ACCESS

Goals: interconnecting academic networks and other information systems at higher education and research institutions in São Paulo State with each other and with institutions outside the state, as well as connecting these networks and systems to the internet.

IN 2023

REDNESP set a new record for transmission of academic data at Supercomputing 2023 in Denver, Colorado (USA). In the demonstration, a "tsunami" of data originating all over the world converged on the convention center.

\$ PPP 184.4 million

for **56** proposals selected in three calls issued in 2022.

A new call was issued in the same year for the acquisition of small and medium items of equipment. FAPESP allocated BRL 200 million to the projects selected in this call. The rules are available at: www.fapesp.br/16266 (more on p. 33 – *Funding Advances*).

HIGHLIGHT

The list of multi-user equipment projects funded by FAPESP, classified by type, is at: www.bv.fapesp.br/pt/equipamentos_multiusuarios.



FUNDING STRATEGIES

DIFFUSION OF SCIENTIFIC KNOWLEDGE, MAPPING OF RESEARCH UNITS AND STUDIES OF THE GENERAL CONDITION OF RESEARCH IN SÃO PAULO STATE

This funding strategy encompasses science diffusion initiatives via *Pesquisa FAPESP* magazine, Agência FAPESP (AF) newsletter and website, FAPESP Innovative R&D newsletter, and social media, as well as other outlets, focusing on the societal, economic and environmental impacts of the research projects supported by FAPESP. The results can be seen from several indicators, such as the number of references to FAPESP in Brazilian and foreign media, the number of subscribers to *Pesquisa FAPESP*, Agência FAPESP and Innovative R&D, and the number of followers on social media, among others.

The funding strategy also includes information relating to the mapping of research units and assessments of the general condition of research in São Paulo, as required by the law that created FAPESP.



\$ PPP 10 million
allocated to research diffusion, mapping and evaluation projects.

MOST ADMIRER BY JOURNALISTS



In 2023, *Pesquisa FAPESP* magazine was elected best specialized science journalism outlet in the annual contest for prizes known as Prêmio Einstein + Admirados da Imprensa de Saúde, Ciência e Bem-estar (“Most Admired in the Media on Health, Science and Wellbeing”).



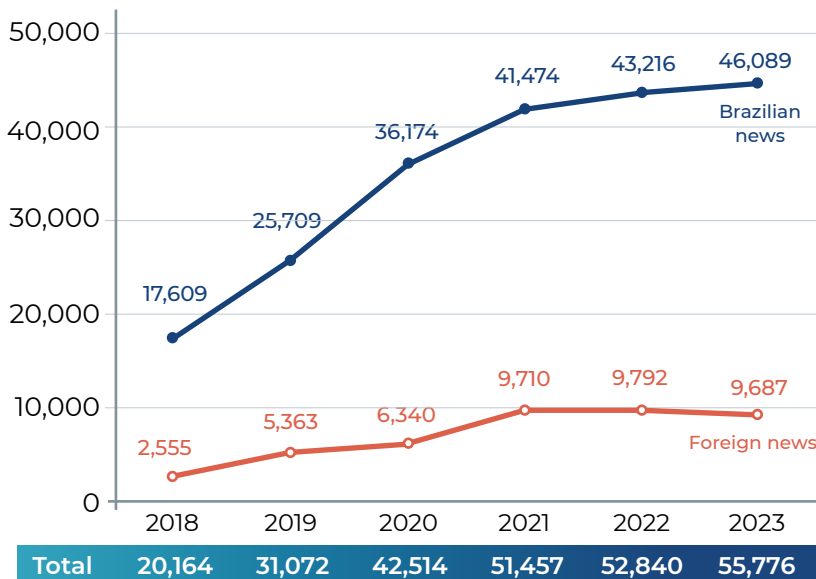
Agência FAPESP was one of three finalists in the news agency category, after winning the prize for two consecutive years (in 2021 and 2022). In this edition, the winner was Agência Brasil.

The prizes are an initiative of the Albert Einstein Jewish-Brazilian Charitable Society (SBIBAE) in partnership with Jornalistas&Cia.

FAPESP'S VISIBILITY IN THE MEDIA

The number of news stories about FAPESP rose **6%** in 2023 compared with 2022 and **182%** compared with 2018.

CHART 6 ANNUAL CHANGE OF NEWS ABOUT FAPESP





PAPER EDITION (monthly)

- Print run averaging **29,700** per month in 2023.
- Newsvendor sales averaging **752** per month (**↓17.2%**)*.
- **5,386** paying subscribers in December 2023 (**↓16%**).
- **3,674** copies per month distributed to high schools in São Paulo State.
- **4 international issues** – two in English and two in Spanish.

The March issue was the most sold in 2023 (**1,067 copies**). The cover featured a story about ChatGPT headlined “O salto na inteligência artificial” (The leap in artificial intelligence). It discussed new developments in software and their ethical implications for research. Next came the July issue, with a story about dementia (**1,005 copies sold**).

* Partial numbers – sales of the last four issues in 2023 had not been fully booked when this report went to press.



WEBSITE

Site traffic fell **11%** in 2023 in terms of hits, users and page views:

- **5.08 million** visits (sessions) – monthly average 423,000 (**↓10.2%**).
- **4.05 million** users – monthly average 337,000 (**↓10.8%**).
- **6.14 million** page views – monthly average 511,000 (**↓13.1%**).

TRAFFIC





The digital content produced by Pesquisa FAPESP is accessed by organic search (via search engines such as Google) or direct search (via the URL).

IN 2023

- ↑34.5% Direct search – **22% of total** (1.15 million sessions)
- ↓10.0% Organic search – **69% of total** (3.5 million sessions)
- ↑60.0% Via social media – **5.25% of total** (267,000 sessions)
- ↑10.0% Via *newsletter* – **0.96% of total** (49,000 sessions)

The social media platforms that sent most readers to *Pesquisa FAPESP's* website were X (formerly Twitter), with **59%**, and Facebook, with **28%**. Instagram's share rose significantly, reaching **9%** in 2023 (up from **2.1%** in 2022).

PESQUISA FAPESP ON SOCIAL MEDIA

Plataform	Followers	Engagement (interactions)	Site traffic from social media
 Facebook	184,514	114,400 (↓19%)	28% (↑25%)
 X, ex-Twitter	97,468	85,340 (↑107%)	9% (↑2,1%)
 Instagram	77,897	1,713,996 (↑554%)	59% (↑69,5%)
 YouTube	92,166	41,225 (↑36%)	0.4% (↑0,7%)

RADIO PROGRAM AND PODCAST

A new “Pesquisa Brasil” radio program was produced every week in 2023. The program is a partnership between Pesquisa FAPESP and Rádio USP, broadcast on Fridays and reproduced by several other university radio stations (UNICAMP, UFSCar, UNESP Bauru). It presents a roundup of news and five interviews on a central topic. All programs are available as podcasts from the main aggregators, such as Spotify and Deezer.

OTHER DETAILS

- **35** news stories, **15** videos, **9** infographics and **2** photographs produced by the magazine were licensed in 2023 for use in elementary and middle school textbooks.
- **1,438** items of content from *Pesquisa FAPESP* were reproduced by other media outlets, including online and print versions of Brazil's leading newspapers.
- Also in 2023, **445** news stories produced by the magazine were cited in theses, dissertations, term papers, journals, books and websites.

AGÊNCIA FAPESP NEWS AGENCY (DAILY UPDATES)



Agência FAPESP completed 20 years with almost **139,000** subscribers (↓5%), more than **3.2 million** visits to its websites in three languages (↑4.7%) and **299,000** followers on social media (↑11%) – led by LinkedIn (↑46.7%) and Instagram (↑18.3%).

The number of news stories with content from Agência FAPESP carried by domestic and foreign media outlets fell 9% and 13% respectively. In contrast, the number of times projects and researchers supported by FAPESP were mentioned in the media’s own stories rose 36%.



138,994 subscribers (Chart 7)

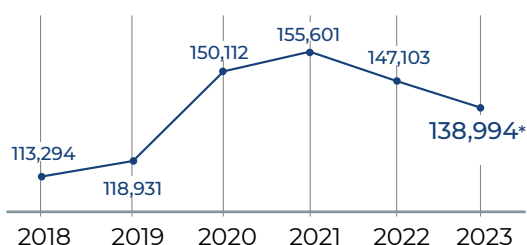
- Portuguese (daily circulation): **129,773**
- English (weekly): **7,754**
- Spanish (weekly): **1,467**



VISITS (Table 40)

- **3.2 million** (↑4.7%) visits to Agência FAPESP’s websites in all three languages.

CHART 7 ANNUAL CHANGE TO TOTAL NUMBER OF SUBSCRIBERS



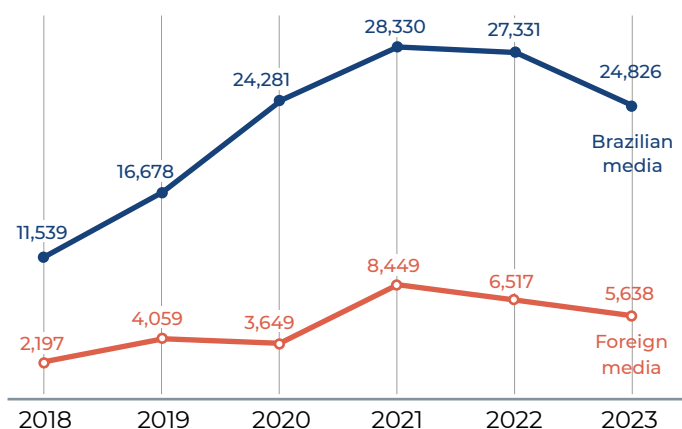
* The drop in the number of subscribers was due to a review of the mailing list. Source: Administrator System of Agência FAPESP.

TABLE 40 ANNUAL CHANGE TO TOTAL NUMBER OF VISITS TO SITES

	Portuguese	English	Spanish	Total
2018	2,864,555	58,079	45,573	2,968,207
2019	3,736,768	80,564	58,199	3,875,531
2020	4,995,997	90,111	87,858	5,173,966
2021	4,045,155	115,781	307,065	4,468,001
2022	2,807,764	86,215	198,601	3,092,580
2023	2,964,545	85,261	187,859	3,237,665

Source: Google Analytics, April 22nd, 2024.

CHART 8 NUMBER OF NEWS STORIES PUBLISHED BY MEDIA OUTLETS WITH AGENCIA FAPESP CONTENT



Total	2018	2019	2020	2021	2022	2023
	13,736	20,737	27,930	36,779	33,848	30,464

AGÊNCIA FAPESP IN THE MEDIA

In 2023, media outlets published **30,464** news items (↓10%) with content from Agência FAPESP.

The above annual figures are sum totals of media citations, reproductions and edited versions of texts published on Agência FAPESP’s websites and content from the daily newsletter sent by its Media Relations team to the Brazilian press and to the EurekAlert and DiCYT platforms.

Source: Sistema FAPESP Na Mídia.

SOCIAL MEDIA – Agência FAPESP



X (Twitter) – @AgenciaFAPESP

- **84,021** followers: 232 news in 2023 (↑0.3%).
- **1,984** posts.
- MOST POPULAR POSTS IN 2023: “Study points to link between schizophrenia and vascular alterations in the brain” (**236** engagement and **4,376** impressions); “New fossil assemblage highlights complexity of classifying silesaurid phylogeny” (**231** engagements and **5,404** impressions).



LinkedIn – @fapesp

- **78,247** followers: 24,908 news in 2023 (↑46.7%).
- **238** posts.
- MOST POPULAR POSTS IN 2023: “Biodressing accelerates healing of skin lesions in diabetic mice” had the most interactions (**2,885**), and impressions, **49,997**.



YouTube – /fapespagencia

- **52,248** subscribers: 3,800 in the year (↑8%).
- **202** videos posted.
- **630,500** views and **4.4 million** impressions.
- MOST POPULAR POSTS IN 2023: “Image produced by high-speed camera shows how lightning rods work”, with **168,700** views.



Facebook – @agfapesp

- **51,610** followers: 74 news in 2023 (↑0.3%).
- **1,206** posts.
- MOST POPULAR POSTS IN 2023: “Image produced by Brazilians using high-speed camera shows how lightning rods work” (**6,025** engagements and **70,300** people reached); “Academic careers need to become more attractive and capable of retaining young talent, scientists argue” (**1,400** engagements and **12,900** people reached).



Instagram – @agenciafapesp

- **35,354** followers: 5,481 news in 2023 (↑18.3%).
- **248** posts.
- MOST POPULAR POSTS IN 2023: Ancestry is a better indicator of breast cancer risk than skin color, study shows”, with **2,835** interactions.

FAPESP INNOVATIVE R&D (PESQUISA PARA INOVAÇÃO – SEMANAL)



50 newsletters produced in 2023.



75,283 visits to the website (↑28%).



11,834 email subscribers, up 351 in the year.




681 news stories carried in domestic and foreign media using content from the newsletter.


DISTRIBUTION

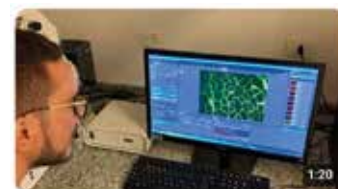
The newsletter is also distributed to members of CIESP/FIESP, SIMPI, Embrapii, ANPROTEC, CNPEN, EMBRAPA, DCTA, CIETEC, Supera Parque (RP), Chambers of Commerce (US, UK, Japan, Germany), technology parks in São Paulo and other states, innovation hubs (Itaú Cubo, Bradesco Inovabra etc.), trade associations (e.g. ABFIN, ABIMAQ), and innovation agencies.

VISUAL MEDIA

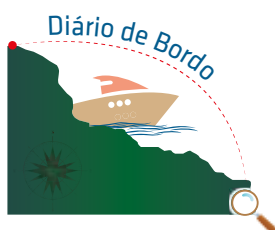
- Video reportage: 20 news stories (interviews with researchers, coverage of events, science seminars).
- 202 new videos posted to Agência FAPESP’s social media.

 In 2023, 630,500 views and 2.6 million impressions, totaling 4.4 million views.

 45 videos published and posted in the year for the Ciência SP (“São Paulo Science”) series, joining a collection of 220 episodes. Information from the series was broadcast by Rádio UNESP in weekly insertions during scheduled programming.



TRAVEL LOG SERIES (DIÁRIO DE BORDO)



Agência FAPESP sent a reporter to cover an oceanographic expedition exploring part of South America’s northern coast on board the Marion Dufresne, France’s largest maritime research vessel and one of the largest in the world. The journalist was invited to cover the expedition by France’s National Center for Scientific Research (CNRS).

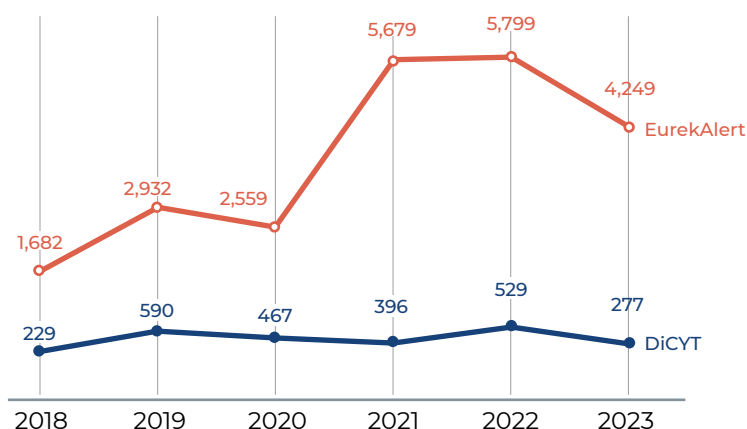
The expedition began on June 12 at Paramaribo in Suriname and ended on July 2 at Recife, capital of Pernambuco State in Brazil. It was staffed by almost 50 scientists affiliated with universities and research institutions in Brazil and France. The travel log video series comprises seven episodes.

MEDIA RELATIONS

- **777** responses to media enquiries.
- **190** texts in English from Agência FAPESP posted on EurekAlert.
- Posts on EurekAlert resulted in **4,249** reproductions by foreign media outlets and **213,000** views by journalists.
- **131** publications by DiCYT on Agência FAPESP topics resulted in **277** reproductions by Spanish-language media outlets.
- Content produced by Agência FAPESP in Portuguese and sent daily to media outlets contributed to publication of **14,897*** news items by Brazilian media outlets.

* These are also available in the Chart 7 (see p. 78).

CHART 9 ANNUAL CHANGE IN INTERNATIONAL COVERAGE VIA EUREKALERT AND DICYT



Source: Sistema FAPESP Na Mídia, April 18th 2024.

"FAPESP NA MÍDIA" WEBSITE

namidia.fapesp.br

This website and the related database serves as the raw material for FAPESP's media coverage statistics and analysis, as well as providing a daily electronic clipping service for internal use. The cataloguing procedure includes the FAPESP grant numbers corresponding to the research projects mentioned, so that links to the news stories can also be included on the Virtual Library (BV) pages presenting projects and researchers.

Specific pages were created for all RIDCs and ERCs/ARCs funded by FAPESP, with news items referring to each of these centers.

IN 2023

The "FAPESP na Mídia" website contains a searchable catalogue of over **393,700** news items relating to FAPESP, carried by media outlets in Brazil and abroad since 1999.

The website logged **76,600** visits in 2023.

RANKING OF MOST WIDELY CITED OR REPRODUCED* NEWS STORIES IN 2023

TABLE 41 BRAZILIAN MEDIA

Top 10 news stories in terms of media coverage

	TITLE
1,223	Patient achieves complete remission of cancer with innovative therapy in São Paulo (g1.globo.com/sp/sao-paulo/noticia/2023/05/29/paciente-com-cancer-ha-13-anos-tem-remissao-completa-em-sp-em-um-mes-apos-terapia-celular-em-estudo-na-rede-publica.ghtml).
1,097	Excavation at DOI-Codi finds traces of blood and wall inscriptions (agenciabrasil.ebc.com.br/direitos-humanos/noticia/2023-08/escritos-de-presos-politicos-podem-surgir-em-escavacoes-no-doi-codi).
995	Adolescents who use smartphones for more than three hours a day suffer more from back pain (agencia.fapesp.br/40960).
693	ANVISA authorizes gene therapy trial for cancer patients (www.gov.br/anvisa/pt-br/assuntos/noticias-anvisa/2023/anvisa-autoriza-pesquisa-clinica-com-celulas-201ccar-2013-t201d-no-brasil).
657	Propolis improves immunity and reduces chronic inflammation in HIV patients (agencia.fapesp.br/41392).
590	Brazilian vaccine against Covid-19 gets good results in trials (agenciabrasil.ebc.com.br/saude/noticia/2023-05/vacina-brasileira-contra-covid-19-tem-bons-resultados-em-testes).
588	Innovative technology to treat skin cancer will be used by Brazil's public health clinics (pesquisaparinovacao.fapesp.br/2797).
571	Study identifies a protein that could be a target for a vaccine against spotted fever (agencia.fapesp.br/41641).
534	Vaccination protects children against sequelae of Covid-19 (agenciabrasil.ebc.com.br/saude/noticia/2023-10/vacinacao-protege-criancas-de-sequelas-da-covid-19).
519	Young entrepreneurs lack incentives (agencia.fapesp.br/41825).

*Source: Sistema FAPESP Na Mídia, April 18th 2024.

TABLE 42 FOREIGN MEDIA

Top 10 news stories in terms of media coverage

	TITLE
693	Astrónomos brasileiros descobrem improbable anillo en torno a planeta enano (jornal.unesp.br/2023/02/08/descoberta-de-anel-aoredor-de-corpo-celeste-alem-da-orbita-de-netuno-pode-levar-a-revisao-da-teoria-sobre-formacao-dessas-estruturas-no-sistema-solar).
629	Scientists make "disturbing" find on remote island: plastic rocks (www1.folha.uol.com.br/cotidiano/2023/02/cientistas-descobrem-rochas-de-plastico-em-arquipelago-do-espírito-santo.shtml).
568	Poor diet linked to 14 million cases of type 2 diabetes globally, study suggests (now.tufts.edu/2023/04/17/study-links-poor-diet-14-million-cases-type-2-diabetes-globally).
362	Can the lingering effects of a mild case of COVID-19 change your brain? (www.aan.com/PressRoom/home/PressRelease/5050).
262	Study: Teens who use smartphones for more than 3 hours a day suffer spinal problems (www.eurekalert.org/news-releases/985323).
235	Descubren que un tipo de ejercicio podría aliviar e incluso retrasar los síntomas del Alzheimer (www.eurekalert.org/news-releases/994459).
197	Luzio, who lived in São Paulo 10,000 years ago, was Amerindian like Indigenous people now, DNA reveals (www.eurekalert.org/news-releases/997108).
196	Trouble in the Amazon (www.nature.com/immersive/d41586-023-02599-1/index.html).
178	La Amazonía albergaría más de 10.000 sitios arqueológicos por descubrir (www.eurekalert.org/news-releases/1003406).
159	Researchers shed light on how exercise preserves physical fitness during aging (www.eurekalert.org/news-releases/975797).

*Source: Sistema FAPESP Na Mídia, April 18th 2024.

FAPESP PORTAL

www.fapesp.br

The **Portal FAPESP** is the main interface between FAPESP and the general public, offering information on rules and regulations, funding lines, scholarship opportunities, agreements, and pages on many programs, events and institutional publications, among other items. It also provides access to other FAPESP sites, such as Agência FAPESP, Pesquisa FAPESP magazine, the FAPESP Innovative R&D newsletter, and FAPESP na Mídia, among others.

In 2023, Agência FAPESP’s websites in Portuguese, English and Spanish were renovated in terms of layout, infrastructure, databases and publication systems. Specific sites were created for important events, such as FAPESP Lectures, the São Paulo State Conference on Science, Technology and Innovation, and the 2023 Annual Meeting of the Global Research Council (GRC). The site for the Institutional Researcher Support Office (EAIP) was given new functionality, and updates were implemented on the sites for important initiatives such as Amazon+10, and FAPESP and the Sustainable Development Goals.

IN 2023

14.5 million visits to Portal FAPESP – home page and all hosted sites (↓2%).

21.5 million pages views.



PUBLICATIONS

www.fapesp.br/publicacoes

Editorial production (writing, editing, revising, graphic design and art editing) of books, reports, booklets on the research programs funded by FAPESP and other printed and digital materials.

In 2023, more than 450 communication items were produced, including visual identity and logo creations, certificates, PowerPoint presentations, folders, booklets on events and FAPESP’s programs, the Annual Report on the activities of FAPESP in Portuguese and English, and advertisements on opportunities of interest to the scientific community.



FUNDAÇÃO ROBERTO MARINHO PARTNERSHIPS

PRÊMIO CIÊNCIA PARA TODOS (SCIENCE FOR ALL AWARDS)

The second edition of the Science for All awards selected five research projects by public schools in São Paulo. The awards were created to encourage scientific activities by teachers and pupils in public schools and promote student engagement with science and its applications in the day-to-day lives of the school community. The second edition rewarded research projects in all knowledge areas that used scientific methods to propose solutions to concrete problems related to the 17 Sustainable Development Goals (SDGs) established by the United Nations in Agenda 2030.

CO.EDUCA

This free-of-charge digital platform was launched in 2023 with multimedia content produced by Futura channel, FAPESP and other partners for use in the classroom and teacher training.

COMMUNICATING SCIENCE

This program offers scholarships to encourage and train undergraduate students to diffuse scientific and technological information, and to engage in research and science dissemination (see p. 70).

CENTRO DE MEMÓRIA (MEMORY CENTER)

centrodememoria.fapesp.br



FAPESP set up its Memory Center as part of the sixtieth anniversary commemorations in 2022. Its mission is to contribute to the preservation of the memory of research in São Paulo State by structured dissemination of the collection of supported projects, recording of researchers' oral histories, publishing of institutional documents, and production of

thematic exhibitions, among other activities. Coordinated by FAPESP's Communication Unit, the Memory Center is responsible for custody, technical processing and diffusion of documents and references that can be used to reconstruct the institution's trajectory over time and its role in fostering scientific and technological research in São Paulo State.

In 2023, implementation of the Gesdoc database was completed. It was customized to include documentation pertaining to FAPESP, which will be made available on the website. The API to enable user to search for information was developed, and construction of the website was also completed. The management team began inserting into the database documents relating to FAPESP processes from 1962 to 1991, meeting minutes, interviews, news stories, obituaries, photographs and videos, among others. The Memory Center's website is scheduled for launch in the first half of 2024.

EVENTS

www.fapesp.br/eventos

FAPESP held **92** science diffusion events, **29** of which were in-person, **34** online, and **29** hybrid (both in-person and online). More than **4,600** people took part in these events in person and during livestreaming or watched recordings of them on Agência FAPESP's YouTube channel (more than **50,000 views**). The highlights included the 2023 CONFAP Forum, the FAPESP 2023 Lectures, the ceremony held to commemorate the fifteenth anniversary of the FAPESP Research Program on Global Climate Change, the ILP-FAPESP Cycle, and events held to welcome foreign delegations, among others.

INDICATORS OF SCIENCE, TECHNOLOGY AND INNOVATION IN SÃO PAULO

In 2023, FAPESP's Studies and Indicators Unit (GEI) executed activities on two fronts:

Production of data and statistics on the ST&I universe in São Paulo State

- Institutional mapping;
- Exploration of methodologies and classification standards;
- Collection of primary data on expenditure on personnel engaging in R&D activities in São Paulo State;
- Treatment, organization and harmonization of several databases for the production of statistics and indicators;
- Construction of the institutional site for ST&I indicators.

Refinement of information on FAPESP's funding lines

- Treatment of data and revision of concepts and nomenclature;
- Redesign of Virtual Library (BV) and monitoring of its operations;
- Creation of new functionality and revision of information provided by BV;
- Construction of information panel encompassing all processes (submission, qualification, analysis, contracts, and contract duration).

VIRTUAL LIBRARY (BV)



- **3,128,730** visits to the site in 2023.
- **5,213,122** page views in the year.
- **282,949 records** on grants, scholarships and fellowships funded by FAPESP between 1992 and 2023.
- **22,000 records** on research projects available in the retrospective database (1962-91).
- More than **195,000** scientific and academic publications associated with research projects funded by FAPESP.

Source: Google Analytics, BV Log (Admin System), Retrospective Database of Research Projects Supported by FAPESP, 1962-91.



CHAPTER 3



PARTNERSHIPS FOR RESEARCH COLLABORATION AND CO-FUNDING

Partnership

Institutional funding

Higher education and research institutions

Research funding agencies and bodies

Companies

Research collaboration with funding agencies and academic organizations
and companies

Map of research collaboration agreements

FAPESP Week



PARTNERSHIPS FOR RESEARCH COLLABORATION AND CO-FUNDING

PARTNERSHIPS

FAPESP promotes research collaboration in Brazil and abroad to strengthen and broaden the domestic and global impact of the science produced in São Paulo State. As well as fostering collaboration by means of institutional instruments in a continuous flow, FAPESP enters into co-funding agreements with higher education and research institutions, funders, and companies.

Some agreements require the partner organization to transfer its share of the funding to FAPESP in order for disbursement to happen. Others call for the partner to transfer its share of funding directly to the institution that will host the research project supported.



4,790 collaborative research projects;

\$ PPP 138.5 million disbursed for collaborative research.

TABLE 43 DOMESTIC AND INTERNATIONAL PARTNERSHIPS FOR RESEARCH COLLABORATION AND CO-FUNDING

Disbursement, number of active projects and new projects contracted in 2023, including associated scholarships/fellowships and grants, by type of funding and partner

Collaborative research by type partner organization	Disbursement from FAPESP (\$ PPP)	Active projects	New projects contracted
Institutional funding	88,576,789	2,658	1,870
Domestic academic cooperation	7,569,298	285	280
International academic cooperation	81,007,491	2,373	1,590
Higher education and research institutions	2,349,858	189	60
International partnerships	2,349,858	189	60
Research funding agencies and bodies	35,382,884	1,491	610
Domestic partnerships	20,447,227	1,002	453
International partnerships	14,835,657	489	157
Domestic and foreign companies	12,272,355	452	192
Total	138,481,886	4,790	2,732

Researchers in São Paulo who want to conduct research in cooperation with researchers abroad can submit proposals for FAPESP’s regular funding lines at any time, whether or not FAPESP has an agreement with the institution with which the foreign partner is affiliated.

INSTITUTIONAL FUNDING

Of the total disbursed in the year to support academic cooperation:

- **\$ PPP 64.5 million** (↑46%) funded Research Internships Abroad (RIA) ranging from scientific initiation to postdoctoral;
- **\$ PPP 11.2 million** (↑80%) funded Research Fellowships Abroad (RFA) at the postdoctoral level;
- **\$ PPP 2.8 million** (↑146%), went to grants for visits by researchers from abroad to São Paulo to deliver courses or contribute to research groups;
- **\$ PPP 2.1 million** (↑89%) went to grants for participation by researchers from São Paulo in scientific meetings held abroad.
- **\$ PPP 7.7 million** (↑62%) funded visits by researchers from other parts of Brazil and participation in or organization of scientific meetings in Brazil

IN 2023

\$ PPP 88.6 million
for **2,658** active projects
submitted to FAPESP in
continuous flow.

TABLE 44 MOST FREQUENT DESTINATIONS AND ORIGINS IN 2023

	Grantees RIA	Grantees RFA	Scientific meetings	Visiting researchers	TOTAL
Africa	6	0	8	1	15
North America	338	45	52	13	448
Latin America and Caribe (with Brazil)	24	3	293	34	354
Asia	12	2	10	7	31
Europe	678	96	155	51	981
Oceania	29	8	5	0	41
TOTAL	1,087	154	523	106	1,918

HIGHER EDUCATION AND RESEARCH INSTITUTIONS

FAPESP has stepped up research collaboration by issuing joint calls for proposals with higher education and research institutions in Brazil and abroad. Research funding is shared between the parties in these cases.

In 2023, **79** cooperation agreements – five signed in the year – were active with **76** foreign and **three** domestic institutions. FAPESP's contribution to funding under these agreements was **\$ PPP 2.3 million**, with partner institutions contributing matching funds. Joint calls were issued with the University of Birmingham, and with Fulbright and Georgetown University.

RESEARCH FUNDING AGENCIES AND BODIES

In 2023, **79** research co-funding agreements with other agencies and funders were active. One was signed during the year with China-LAC Technology Transfer Center (CLTTC); **54** of the agreements are with foreign funders and **25** with Brazilian funders, while **21** agreements are with multilateral agencies – two signed during the year – and **eight** with domestic research funding associations.

Of the total invested by FAPESP under co-funding agreements with domestic funders, the amount transferred by partners to trigger its disbursement was **\$ PPP 10.8 million**. In the other cases, where transfers are made directly to the institution hosting the project supported, FAPESP and its partners disbursed similar amounts.

In domestic partnerships, the most noteworthy development was an alliance among 25 of the 27 state research foundations (FAPs) to fund the Amazon+10 Initiative (see p. 37). The Scientific Expeditions calls, issued in partnership with CNPq, will invest **\$ PPP 24.2 million** in funding for research to extend scientific knowledge of sociobiodiversity in little-known parts of the world's largest tropical rainforest. Proposals must focus on multidisciplinary scientific expeditions to the Amazon region lasting up to 36 months.

HIGHLIGHT

With Canada's New Frontiers in Research Foundation (NFRF), FAPESP participated in the International Initiative for Research on Climate Change Adaptation and Mitigation (IIRCC), a multilateral research funding initiative that includes funders in Brazil (FAPESP), Canada, Germany, Norway, South Africa, Switzerland, the United Kingdom and the United States. Its goal is to leverage international experience to address the global challenges caused by climate change.

COOPERATION WITH INTERNATIONAL PARTNERS – CALLS ISSUED IN 2023

- National Research and Innovation Agency (ANII), Uruguay;
- National Research Agency (ANR), France, and Belmont Forum;
- Biodiversa+;
- Bavarian Academic Center for Latin America (BAYLAT);
- M-ERA.NET;
- National Center for Scientific Research (CNRS), France;
- National Science and Technology Council (CONACYT), Paraguay;
- National Scientific and Technological Research Council (CONICET), Argentina;
- Czech Science Foundation (GACR);
- Global Alliance for Chronic Diseases (GACD);
- National Research Foundation of Korea (NRF);
- National Natural Science Foundation of China (NSFC);
- National Science Foundation (NSF), United States;
- Natural Environment Research Council (NERC), United Kingdom;
- Swiss National Science Foundation (SNSF);
- Trans-Atlantic Platform (T-AP).

	Main domestic co-funders	Additional information
1	Ministry of Science, Technology and Innovation (MCTI) and Brazilian Internet Steering Committee (CGI.br)	See ARCs AI, p. 59
2	Brazilian Innovation Agency (FINEP)	See Research for Innovation, p. 56
3	CONFAP and state research foundations (FAPs)	See Amazon+10, p. 37
4	Brazilian Micro and Small Enterprise Support Service (SEBRAE)	See Research for Innovation, p. 56
5	Nacional Council for Scientific and Technological Development (CNPq)	See Scholarships and Thematic Projects, p. 48 and p. 51
6	São Paulo State Government, via Pitch Gov SP and Science for Development Center (SDC) program	See pp. 68-69
7	São Paulo State Department of Environment, Infrastructure and Logistics (SEMIL)	
8	SEADE Foundation	
9	Maria Cecilia Souto Vidigal Foundation	
10	Jô Clemente Institute (ex-APAE)	

COMPANIES

In 2023, **25** companies funded scientific and technological research in partnership with FAPESP, ten of them via Engineering Research Centers/Applied Research Centers (ERCs/ARCs).

FAPESP disbursed **\$ PPP 9.7 million** to support **358** research projects conducted by **16** of the **25** ERCs/ARCs active during the year. Out of **265** active projects, **192** were contracted for in 2023. The amount disbursed does not include FAPESP's investment in ARCs in Artificial Intelligence (ARCs AI) set up in partnership with MCTI/CGI.br (see pp. 59-60).

The ERC/ARC Program requires partner companies to match FAPESP's investment in funding during the life of the agreement, while host institutions match both contributions in the form of laboratory and other infrastructure, salaries for researchers and support personnel etc.

In addition, **15** other companies are co-funding research via PITE Agreements and PITE Spontaneous Demand (see p. 61). In 2023, **94** projects were ongoing, with **\$ PPP 2.5 million** from FAPESP, and **34** were newly contracted for.

FAPESP's percentage share of PITE co-funding depends on the degree of innovation in the proposals and the associated technological risks, ranging from 20% to 70% of the budget. A list of co-funding companies can be seen at www.fapesp.br/acordos/en.

TABLE 45 PARTNERSHIPS WITH DOMESTIC AND FOREIGN COMPANIES – BY FUNDING STRATEGY

Disbursement, number of active projects and new projects contracted in 2022, including scholarships/fellowships and grants associated

Funding Strategies	Disbursement \$ PPP	Active projects	New projects contracted
Research for Innovation – Local partnerships	10,599,519	398	161
ERC/ARC	8,238,714	319	130
PITE Agreements	1,211,236	50	16
PITE Spontaneous Demand	1,149,569	29	15
Research for Innovation – Foreign partnerships	1,672,836	54	31
ERC/ARC	1,512,375	39	26
PITE Agreements	160,461	15	5
Total	12,272,355	452	192

RESEARCH COLLABORATION WITH FUNDING AGENCIES, ACADEMIC ORGANIZATIONS AND COMPANIES

ACADEMIC ORGANIZATIONS



79 active
agreements

76 foreign institutions;
3 local institutions.

FUNDING AGENCIES



108 active
agreements

79 agencies (54 foreign and 25 local);
21 multilateral agencies;
8 local associations.

The list of organizations
with which FAPESP
has agreements is at

fapesp.br/acordos/en

PARTNER COMPANIES

9* co-funders of Engineering Research Centers (ERCs): GSK, Shell, Embrapa, Equinor, Grupo São Martinho, Koppert, IBM, Ericsson and Braskem.

5 foreign and 4 local;
128 active projects;
43 newly contracted for in the year.

10 co-funders under PITE Agreements: Agilent, Embraer (via an agreement with the European Union), Embrapii, Kryptus Segurança da Informação Ltda., Microsoft, and SABESP.

2 foreign and 8 local;
65 active projects;
21 newly contracted for in the year.

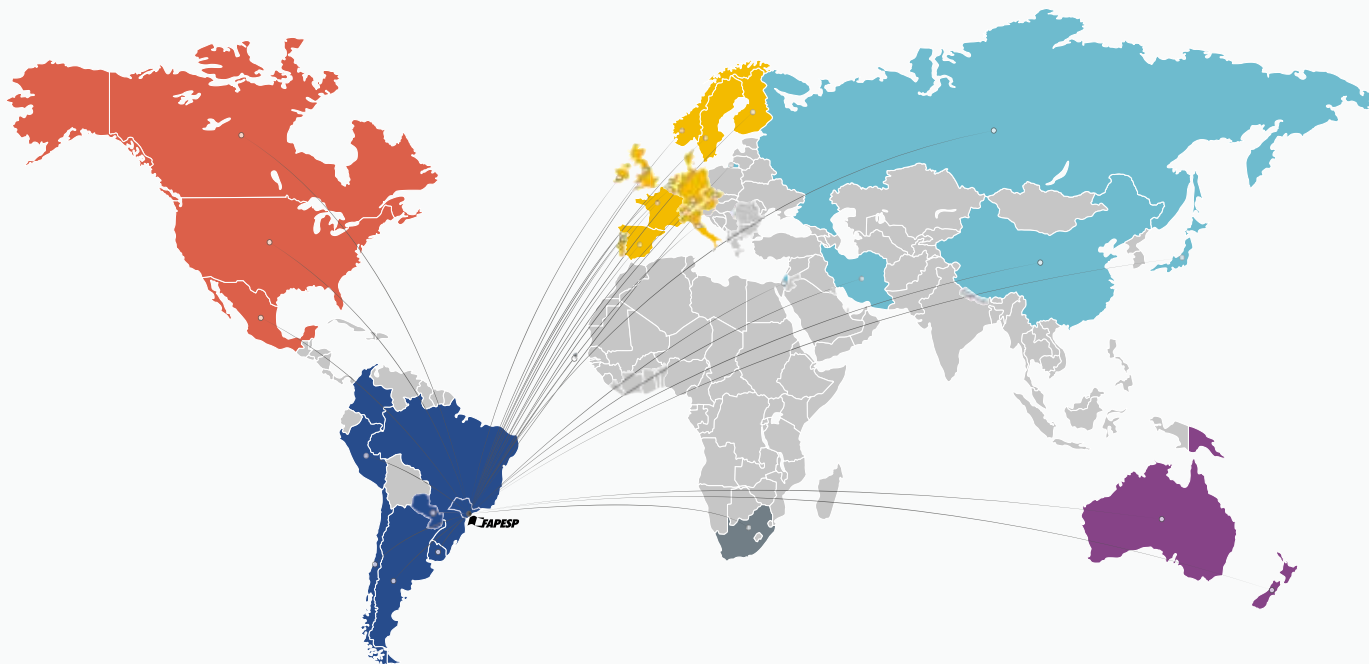
9 local partner companies under PITE Spontaneous Demand: EMS, BioVet S.A., Maiz Ind. e Com. de Produtos Agropecuários Ltda., Cetesb, Medicines for Malaria Venture, bioMérieux Brasil.

29 active projects;
15 newly contracted for in the year.

Three unmapped units: two in partnership with USP in Lorena, and one with UNESP in São João da Boa Vista.

* One of the ERC co-funders is not a company (Maria Cecilia Souza Vidigal Foundation). The ARCs in AI are not included in this count.

MAP OF AGREEMENTS WITH FUNDING AGENCIES,
ACADEMIC ORGANIZATIONS AND COMPANIES



AFRICA
 4 organizations of 3 countries
 3 funding agencies
 1 academic institutions

NORTH AMERICA
 21 organizations of 3 countries
 10 funding agencies
 8 academic institutions
 3 companies

SOUTH AMERICA
 58 organizations of 6 countries
 (with Brazil: 49 organizations)
 24 funding agencies
 6 academic institutions
 7 associações financiadoras
 21 companies

ASIA
 10 organizations of 7 countries
 6 funding agencies
 4 academic institutions

EUROPE
 68 organizations of 17 countries
 26 funding agencies
 38 academic institutions
 4 companies

OCEANIA
 7 organizations of 1 country
 7 academic institutions

And 21 multilateral agencies.

FAPESP WEEK

Held in partnership with universities and research institutions abroad, FAPESP Week aims to bring together researchers with outstanding production in their fields to discuss ongoing research and the development of new collaborative projects. The first edition of the event was held in Washington, United States, in October 2011.

Nineteen more editions have been held to date. The latest edition took place in France in November 2019. The series was interrupted by the COVID-19 pandemic and will resume in 2024.



www.fapesp.br/week

FAPESP WEEK HELD – 2011 TO 2019



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