

# Fifty Years of FAPESP and the Development of Science in São Paulo

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In 1966, the ISI database, accessible via the Web of Science, showed 42 scientific articles by authors from Brazil. Six of them lived in the state of São Paulo and represented 14% of the national total. Ten years later, Brazil's scientific production was 26 times greater (1,073 articles) and São Paulo's share was 90 times larger (535 articles, or 48% of the national total). Since then, São Paulo's share has ranged between 47% and 52%.

It's not hard to realize that FAPESP, established in 1962, has played a role in this growth. Nor is it hard to perceive that FAPESP is not solely responsible for this progress: science in Brazil as a whole and in São Paulo in particular has grown and progressed thanks to the combined efforts of state and federal development agencies, and the emergence of some excellent universities.

We must not forget that while these agencies financed equipment, materials and personnel training, the leaders of the research efforts are the professors, researchers, university students, and research institutes.

An enormous driving force behind the enhanced scientific capabilities was the development of graduate schools in Brazil during the period from 1966 to 1976. In São Paulo, the University of São Paulo (USP) and some other schools that functioned separately at the time and later combined to form São Paulo State University (UNESP) established graduate schools. During that same period, the state government created the State University of Campinas, better known as Unicamp.

FAPESP was created in the midst of a growing scientific community that was better qualified and more demanding with regard to the quality of assistance offered by the Foundation, as established in the São Paulo state constitution.

In 1962, FAPESP received 428 applications for financial aid and approved 329. Of these, 57 were grants of various kinds; the others were for aid to research work. An analysis of the figures from the annual reports by the Foundation's Executive Board shows a remarkable trend: in 2011, 20,600 applications for assistance were received, of which 12,356 were approved.

Using as reference the report published on the occasion of FAPESP's tenth anniversary in 1973 at the impetus of Prof. Oscar Sala, who was then the scientific director, and coordinated by Prof. Tamás Szmrecsányi, we see that during its first decade FAPESP received 10,500 applications for assistance, approximately half as many as it would later receive in 2011 alone. The following table\* depicts the change in the number of requests

granted annually, compared with the average recorded during the first ten years of FAPESP and the figure for 2011.

Field of Knowledge	Annual Average 1962-71	2011
Health	100	3,813
Human and Social Sciences	98	2,174
Engineering	70	1,476
Biological Sciences	128	1,364
Agronomy	58	1,285
Chemistry	54	513
Physics	72	422
Computer Science and Engineering	0	309
Mathematics and Statistics	28	298
Geology	25	268
Architecture	7	198
Economics	6	145
Astronomy and Space Science	8	57
Interdisciplinary Studies		34

Not only did the number of articles published by São Paulo scientists in international journals soar from 83 in 1972 to 15,202 in 2007, their impact also increased. Authors from 1972 had received, as of 1977, 0.18 citations per article per year (the most often quoted has received 44 citations to date). However, authors from 2007 have received 1.5 citations per article per year (78 of them have more than 78 citations. The most-often quoted of the 2007 group has 582).

Science in São Paulo has thrived in both quantity and quality. FAPESP's 50 years of effort has contributed to this, but as we celebrate this anniversary, we do well to remember that scientific development in this state has involved cooperation among many different institutions. Although the 50 years of FAPESP experience has been vital, it bears repeating that the development of science in São Paulo could not have occurred without the support of the National Council on Scientific and Technological Development (CNPq), the Coordinating Agency for Improvement of Higher Education Personnel (Capes), and the Brazilian Innovation Agency (Finep), and without the efforts of the growing community of active researchers at the state's institutions of higher learning and research.

\* "Pesquisa e Desenvolvimento," Tamás Szmrecsányi (coordinator), FAPESP, 1973.

# Half a Century of FAPESP

**Celso Lafer**, President of FAPESP

The idea of establishing a permanent source of funds for use in encouraging science and technology and thereby support the economic and social development of the state of São Paulo began to germinate 70 years ago, when São Paulo scientists demonstrated their ability to solve the technical and scientific issues necessary to national defense when called on to collaborate in the Brazilian war effort.

With the democratization that followed the end of the *Estado Novo* (New State) period, the academic community and the 1946 State Constituent Assembly joined forces to include, in the 1947 state Constitution, a provision calling for support to research. This initiative was sponsored by deputies from political parties of different perspectives, especially Lincoln Feliciano of the Social Democratic Party (PSD) and Caio Prado Júnior of the Brazilian Communist Party (PCB).

Article 123 of the São Paulo Constitution stipulates that “support for scientific research shall be fostered by the state, through a foundation as intermediary, organized in such a way as may be established by law.”

The single paragraph of Article 123 provided a fundamental element that gave the future institution autonomy in maintaining stability in the performance of its mission. It reads: “The state shall annually allocate to that foundation, as income for its exclusive administration, a sum not less than the equivalent of one-half of one percent of total ordinary revenues.”

The actual creation of the Foundation was included in the Action Plan adopted by the Carvalho Pinto Administration. Approved by the state Legislative Assembly in 1959, the Plan fulfilled that goal by enacting Law 5.918, of October 18, 1960, endorsed by the governor. Two years later, the Foundation began to function in accordance with by-laws approved in Decree No. 40.132 of May 23, 1962, signed by Carvalho Pinto.

Once again, an exemplary effort of integration between the scientific community and the legislative and executive branches of the São Paulo government resulted in the adoption of solid republican principles for action that were reflected in FAPESP by-laws that have remained current and effective ever since.

Throughout this half century, FAPESP has adhered to the basic lines of action adopted by those who conceived and established it: to support quality research in all fields of knowledge, without distinguishing between theoretical and applied research, through a decision-making process that uses the “peer review” system, with grants earmarked for the training

of researchers and the financing of regular projects proposed by researchers already trained.

But in order to “construct the authority” of FAPESP – according to Hannah Arendt’s understanding of the concept – something more needed to be added to what the Foundation had already been doing since its creation. And so, in addition to the exponential increase in the number of projects evaluated and selected, the activities of the Foundation underwent important changes in the organizational paradigms of the research.

Contributing to this change was the decision by the 1988 State Constituent Assembly, which in a new example of integration between the academic community and the legislative branch raised the percentage of annual state revenue allocated to FAPESP from 0.5% to 1% and added technological development to its mission. The initiative came from Deputies Aloysio Nunes Ferreira and Fernando Leça and is reflected in Article 271 of the 1989 state Constitution.

The Research, Innovation and Dissemination Centers (RIDC) established time limits on the independent operations of complex centers in strategic areas of research. Other comprehensive research programs were created, featuring complicated organizational structures. Examples of these are the Brazilian Biodiversity Research (Biota-FAPESP) for the study of biodiversity and recommendation of policies for its sustainable use; the Program for Research on Bioenergy (BIOEN), implementing research projects on bioenergy; and the FAPESP Global Climate Change Research Program. Closer relationships with the business community with a view to encouraging innovation in production are contemplated under the Research Partnership for Technological Innovation (PITE) and the Innovative Research in Small Businesses Program (PIPE).

The internationalization of FAPESP, brought about through agreements with similar entities around the world, has been a constant in recent years. It is a response to the challenge represented by the importance of the potential for interaction between Brazilian and foreign researchers for the advancement of knowledge.

Thanks to the efforts of all those who have served on its Board of Trustees and Executive Board over the past 50 years, its personnel, and the São Paulo scientific community, FAPESP has been able to help raise the standing of São Paulo in Brazil and in the world at large, with the knowledge generated by the research it sponsors.