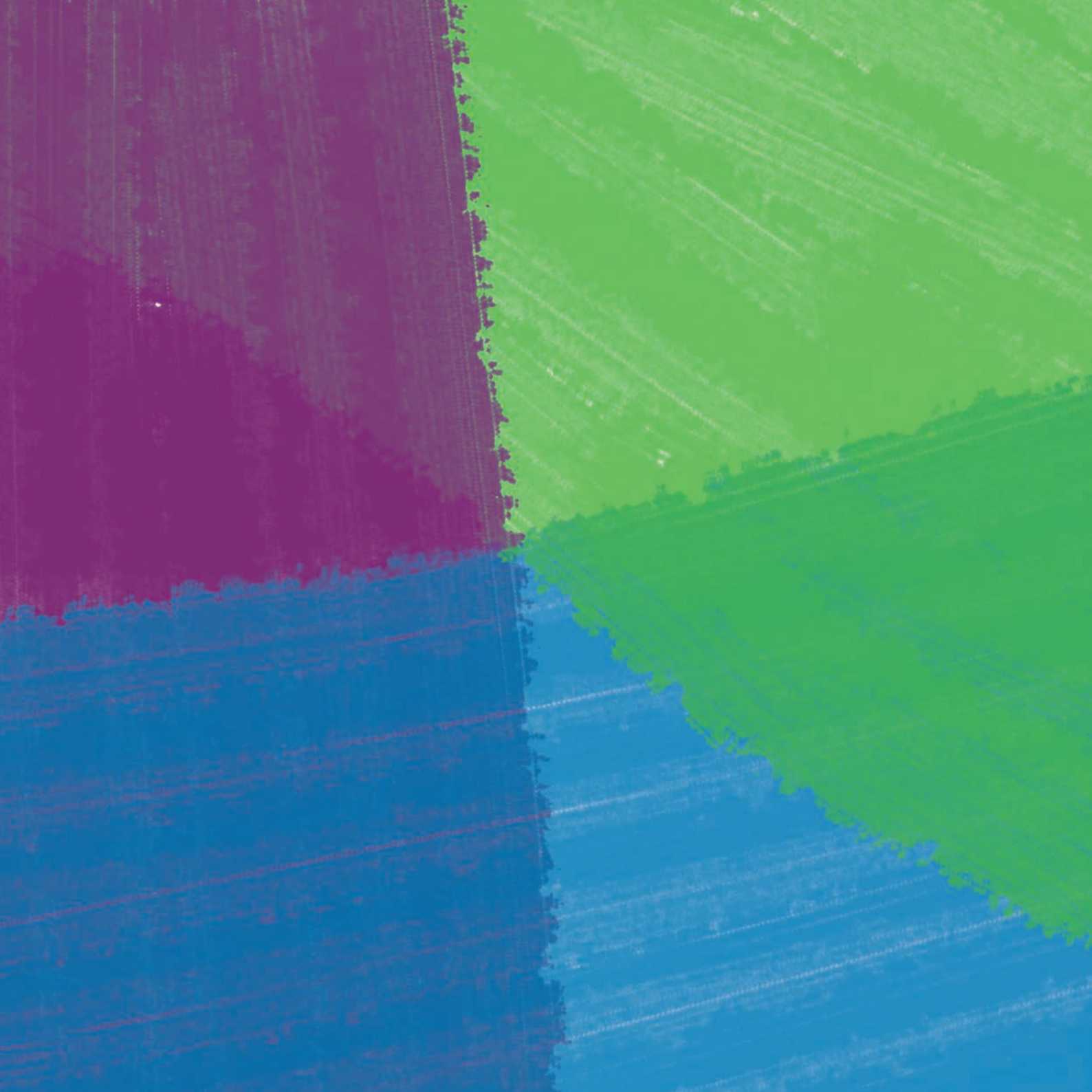
Research, Innovation
and Dissemination Centers

RIDC



Science at the cutting edge of knowledge

CEPID
CENTROS DE PESQUISA, INOVAÇÃO E DIFUSÃO

FAPESP launched its Research, Innovation and Dissemination Center (RIDC) Program in 2000 to provide long-term funding for multi-institutional research centers of excellence in São Paulo State.

The program supports RIDCs in all knowledge areas. Their mission is to develop fundamental or applied research at the cutting edge of knowledge with a significant commercial and social impact, contribute to innovation via technology transfer, and offer educational and knowledge dissemination activities to elementary and high school teachers, students and the general public.

The program periodically issues call for proposals, from which awardees are selected by Brazilian and foreign reviewers, and an international committee. RIDCs receive funding for up to 11 years, enabling them to target ambitious research objectives, build stable teams with outstanding qualifications, develop large-scale research in science and technology, and fulfill their remits comprehensively.

In addition to funding from FAPESP, RIDCs are also supported by their host institutions via funding for faculty, technicians, auxiliary personnel and infrastructure. They also receive funding from industry and other research development agencies. Altogether they represent one of Brazil's largest investments in research.

The RIDC Program issued its first call for proposals in 2000. Eleven centers were selected and supported until 2013. A second call issued in 2011 led to the selection of 17 RIDCS out of 90 proposals submitted.

www.cepid.fapesp.br

OPPORTUNITIES

MANY OPPORTUNITIES FOR POSTGRADUATES, YOUNG INVESTIGATORS AND POSTDOCS ARE AVAILABLE IN THE CEPIDS. WWW.FAPESP.BR/OPORTUNIDADES AND THE SITES OF THE CENTERS.

COVER PHOTO LÉO RAMOS

Optics and Photonics Research Center (Cepof)

www.cepid.fapesp.br/en/cepof

PRINCIPAL INVESTIGATOR
Vanderlei Salvador Bagnato

CONTACT
optica@ifsc.usp.br, vander@ifsc.usp.br e secretariago@ifsc.usp.br

MAIN INSTITUTION
Instituto de Física de São Carlos / Universidade de São Paulo (USP)

ASSOCIATED INSTITUTIONS
Empresa Brasileira de Pesquisa Agropecuária (Embrapa); Hospital do Câncer de Barretos (HCB); Universidade Estadual de Campinas (Unicamp); Universidade Federal de Pernambuco (UFPE); Universidade Federal de São Carlos (UFSCar).

CePOF explores new applications for optics and photonics on three main fronts: cold atoms, plasmonics, and biophotonics.

Established as a result of the RIDC Program's first call for proposals, CePOF conducts research on the basic aspects of light/biological tissue interaction, from proof of principle to clinical applications, as well as laboratory and clinical research. The results are used to develop new products, create startups and collaborate with existing companies.

For example, CePOF has successfully tested a compound extracted from the roots of turmeric (*Curcuma longa L.*) as a weapon against larvae of the mosquito that transmits dengue, and has developed a potential new therapy for arthrosis in the form of a device that simultaneously uses ultrasound and laser, applying for a patent to INPI, Brazil's patent office, in March 2014. In partnership with Instituto Atlântico, an ICT consultancy based in Fortaleza, Ceará, it is developing the first prototype of a digital X-ray machine using only Brazilian technology.

The knowledge created is disseminated to the general public in several ways, such as videos exhibited via its own TV channel or educational vignettes aired hourly by a radio station in the São Carlos region for nursery, elementary, high school and undergraduate students.

Center for Research on Toxins, Immune-Response and Cell Signaling (CeTICS)

www.cepid.fapesp.br/en/cetics

PRINCIPAL INVESTIGATOR
Hugo Aguirre Armelin

CONTACT
cetics@butantan.gov.br

MAIN INSTITUTION
Instituto Butantan / Secretaria Estadual de Saúde

ASSOCIATED INSTITUTIONS
Academia Nacional de Medicina, EUA; Universidade de Cardiff, Reino Unido; Universidade de Glasgow, Reino Unido; Universidade de Lausanne, Suiça; USP; Universidade de Stanford, EUA; Universidade de Toyama, Japão; Unesp; UFMG; Universidade do Chile; Universidade de Lisboa, Portugal; Universidade D'Orleans, França; Unifesp; Universidade de Erlangen-Nuremberg, Alemanha; Universidade Yeshiva/Faculdade de Medicina Albert Einstein, EUA; Universidade de Londres, Inglaterra; Instituto Nacional de Doenças Infecciosas Lazzaro Spallanzani IRCCS, Roma; Universidade de Roma Tor Vergata, Roma; Instituto de Medicina Experimental, ANM-CONICET, Argentina; Universidade Paris Descartes, França; Instituto de Biologia e Tecnologia - SIMOPRO /CEA-Saclay, França; Instituto Pasteur, França.

CeTICS studies the biochemical, molecular and cellular mechanisms of toxins with therapeutic potential in order to establish proof of concept based on the analysis of molecular signaling networks.

One of its research goals is to characterize new molecular targets and drugs with therapeutic potential for pain control. For example, its researchers have identified a new molecule with analgesic activity called Bunodosin 391 (BDS 391), originally isolated from and characterized in the venom of *Bunodosoma cangicum*, a sea anemone. This molecule's structural similarity to serotonin suggested they should investigate the possible effects of BDS 391 on pain transmission pathways and its use as a tool to characterize the molecular mechanisms triggered by the activation of serotoninergic receptors. The studies will serve as a springboard for the use of these molecules in new analgesic drug design.

CeTICS is continuing the research conducted by the former Center for Applied Toxinology (CAT). Established as a result of the RIDC Program's first call for proposals, CAT patented several proteic toxins that were starting-points for pharmaceutical innovation in partnership with local industry. The results of the research undertaken by CeTICS will also be transferred to industry through processes mediated by Butantan Institute's Office of Technology Transfer.

Center for Metropolitan Studies (CEM)

www.cepid.fapesp.br/en/cem

PRINCIPAL INVESTIGATOR
Marta Teresa da Silva Arretche

CONTACT
contato@centrodametropole.org.br

MAIN INSTITUTION
Universidade de São Paulo (USP)
Centro Brasileiro de Análise
e Planejamento (Cebrap)

ASSOCIATED INSTITUTIONS
Instituto de Educação e Pesquisa (Insper); Instituto Nacional de Pesquisas Espaciais (Inpe); King's College, Reino Unido; Universidade Estadual de Campinas (Unicamp); Universidade Federal de São Carlos (UFSCar).

Established as a result of the RIDC Program's first call for proposals, CEM has since consolidated its reputation as a center of excellence in georeferenced observation of cities. Following the second call in 2013 it expanded the scope of its research to include analysis of the role of public policy in reducing poverty and social inequality.

CEM's research agenda comprises the following four lines of action: analysis of the relationship between change, democracy and inequality in Brazil in the last 50 years; the impact of public policy on poverty reduction; the role of political institutions; and the different forms of governance in urban areas.

For example, it has completed a large-scale survey of the evolution of inequality in Brazil in the last 50 years and a study of housing conditions in 113 municipalities of metropolitan São Paulo, metropolitan Campinas, the Santos metropolitan area, the Paraíba Valley and the north coast of São Paulo State based on a reclassification of census sectors, calculation of new estimates, and creation of cartographic archives.

Besides information, CEM offers technical assistance in public policy and supplies the academic community, schools and other groups with geoprocessing tools and databases.

CEM (PHOTO LÉO RAMOS)

CEM

Center for Research and Innovation in Biodiversity and Drug Discovery (CIBFar)

www.cepid.fapesp.br/en/cibfar

PRINCIPAL INVESTIGATOR
Glaucius Oliva

CONTACT
cibfar@ifsc.usp.br

MAIN INSTITUTION
Instituto de Física de São Carlos / Universidade de São Paulo (USP)

ASSOCIATED INSTITUTIONS
Universidade Estadual de Campinas (Unicamp); Universidade Estadual Paulista (Unesp); Universidade Federal de São Carlos (UFSCar).

CIBFar's mission is the biological prospecting of Brazilian flora to identify compounds with antiparasitic, antibacterial and anticancer activities, as well as research in toxicology and pharmacokinetics to develop patentable drugs.

Examples include research based on latex from *Jatropha curcas L*, a plant with high medicinal potential from which CIBFar's researchers isolated jatrophidin I, a peptide shown to be an inhibitor of aspartic protease in fluorometric assays on pepsin. CIBFar is currently investing in new experiments with the aim of evaluating the compound's activity on other proteases, such as renin and HIV protease, important molecular targets for the development of drugs against hypertension and AIDS respectively.

CIBFar's research continues the investigations performed by the Center for Structural Molecular Biotechnology (CBME), one of the RIDCs selected by FAPESP in the program's first call and supported between 2001 and 2013.

CIBFar partners with the Center for Scientific & Cultural Diffusion at the Federal University of São Carlos (UFSCar) for the development of educational activities, including training programs for undergraduate students, graduates and researchers with an emphasis on biodiversity research methodologies, as well as programs for elementary and secondary schools, teacher training, web-based distance education projects, demonstrations of experiments in schools, science fairs, and lectures.

Human Genome and Stem-Cell Research Center (HUG-CELL)

www.cepid.fapesp.br/en/hugcell

PRINCIPAL INVESTIGATOR
Mayana Zatz

CONTACT
mayazatz@usp.br
genoma@ib.usp.br

MAIN INSTITUTION
Instituto de Biociências / Universidade de São Paulo (USP)

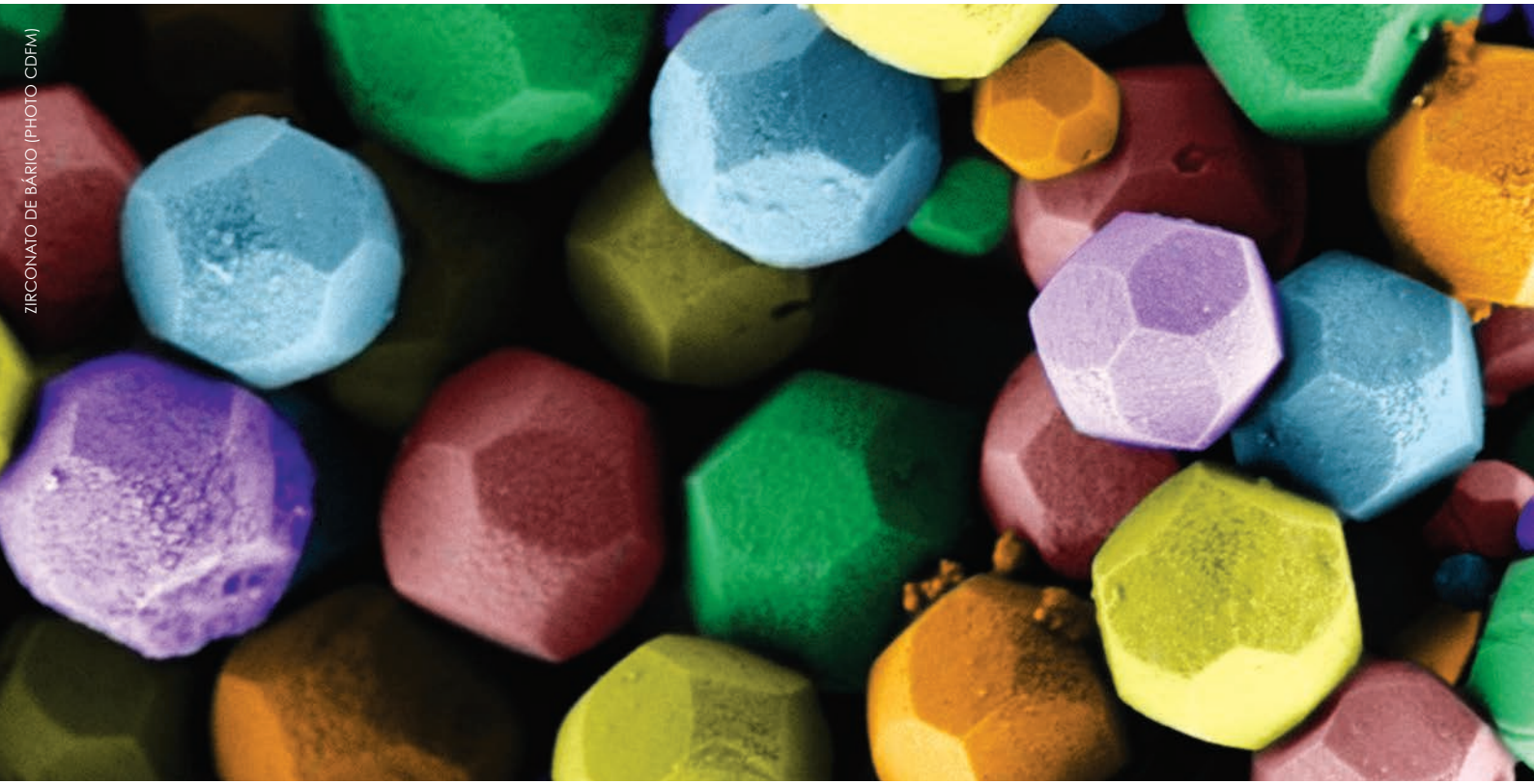
ASSOCIATED INSTITUTIONS
Fleury AS; Fundação Zerbini; Hospital Albert Einstein; Instituto do Coração (Incor/USP); Universidade de Utrecht, Holanda; Universidade Federal de São Paulo (Unifesp).

HUG-CELL performs research on the genetics and genomic instability associated with aging and degenerative diseases, epigenetic mechanisms involved in the manifestation of these diseases, and phenotypic variability in individuals with Mendelian disease mutations.

The institution is also developing a project to compare genome variation and brain functioning in healthy Brazilians aged over 80 with a group aged over 60. Its researchers have already identified more than a dozen genes responsible for certain genetic diseases and developed tests for 45 of these, for example. The team are also conducting stem cell research with the aim of developing targets for cell therapy.

These lines of research are a continuation of the activities performed by the Human Genome Research Center, which was supported following the RIDC Program's first call and focused on the study of gene expression and differentiation in complex genetic disorders.

HUG-CELL actively carries out the mission of disseminating knowledge to make genetics more accessible to society through interaction with schools, teachers and students. It is part of the team responsible for the Science Adventure Project, a set of science kits designed by scientists concerned with the need to improve science teaching in public schools.



ZIRCONATO DE BÁRIO (PHOTO CDFM)

Center for Research and Development of Functional Materials (CDFM)

www.cepid.fapesp.br/en/cdfm

PRINCIPAL INVESTIGATOR
Elson Longo da Silva

CONTACT
elson@iq.unesp.br

MAIN INSTITUTION
Universidade Estadual Paulista (Unesp)

ASSOCIATED INSTITUTIONS
Centro de Tecnologia da Informação Renato Archer (CTI); Centro Nacional de Pesquisa em Energia e Materiais (CNPEM); Fundação de Apoio à Capacitação em Tecnologia da Informação (FacTI); Instituto de Pesquisas Energéticas e Nucleares (Ipen); Universidade de São Paulo (USP); Universidade Federal do ABC (UFABC); Universidade Federal de São Carlos (UFSCar); Universidade Federal de São Paulo (Unifesp).

CDFM is an evolution of the Multidisciplinary Center for the Development of Ceramic Materials (MCDCM), which received financial support from FAPESP in the first phase of the RIDC program. MCDCM focused on synthesizing materials with controlled chemical composition, microstructure, and morphology.

The new center uses these competencies to research and develop nanostructured functional materials and solve problems relating to renewable energy, health and the environment, among others.

For example, researchers at CDFM recently discovered a material with bactericidal, photoluminescent and photodegrading properties that could be of great interest to the food industry, among others.

CDFM offers an education program for high school teachers that includes extension courses on the use of information and communication technology. It is also responsible for Nanoarte, an exhibition that combines science and art by producing figures from digitally colorized electron scanning microscope images. The exhibition has toured cities in Brazil and Europe, and can be viewed on CDFM's website.

Center for the Study of Violence (NEV)

www.cepid.fapesp.br/en/nev

PRINCIPAL INVESTIGATOR
Sergio Franca Adorno de Abreu

CONTACT
nev@usp.br

MAIN INSTITUTION
Universidade de São Paulo (USP)

ASSOCIATED INSTITUTIONS
Colégio do México, México; Faculdades Latino-Americanas de Ciências Sociais, FLACSO-Equador; Universidade da Califórnia, EUA; London School of Economics, Reino Unido; Universidade de Oxford, Reino Unido; Universidade de Cambridge, Reino Unido; Universidade do Arizona, EUA; Fórum Brasileiro de Segurança Pública; Instituto de Pesquisa Social da Universidade Goethe de Frankfurt, Alemanha.

NEV investigates the construction of legitimacy for public institutions in São Paulo State through day-to-day interaction between citizens and institutions, especially city governments, schools, health centers, police services, and local judicial apparatuses.

Law and order, as well as human rights policy, are the founding themes of this RIDC, which was established as a result of FAPESP's first call for proposals. It had been set up as a research center at the University of São Paulo (USP) in 1987 with the mission of understanding why democracy in Brazil had not yet succeeded in assuring public security and law enforcement with respect for human rights. The current research agenda calls for the development of several lines of investigation regarding the rule of law and democracy, such as monitoring human rights violations, public policy for law enforcement, impunity and criminal justice, values and attitudes to violence and human rights, and cross-border organized crime and violence. The results suggest that continuing human rights violations coexist with the inefficacy of the state and low levels of public trust in the institutions charged with promoting the universality of rights and democratic principles.

NEV participated actively in drafting the national and state human rights programs and implementing a police ombudsman in São Paulo, among other initiatives. The center holds courses, training programs and seminars, and shares experience in research, georeferencing and data analysis with several government agencies.

NEV

Center for Cell-Based Therapy (CTC)

www.cepid.fapesp.br/en/ctc

PRINCIPAL INVESTIGATOR
Dimas Tadeu Covas

CONTACT
marazago@usp.br

MAIN INSTITUTION
Fundação Hemocentro de Ribeirão Preto / Universidade de São Paulo (USP)

ASSOCIATED INSTITUTIONS
King's College, Reino Unido; Universidade da Califórnia, EUA; Universidade de Feinberg, EUA; Universidade de Leiden, Holanda; Universidade de Montreal, Canadá; Universidade de Munique, Alemanha; Universidade de Northwestern, EUA; Universidade de Oxford, Reino Unido; Universidade de Paris, França; Universidade do Sul da Califórnia, EUA; Universidade Estadual Paulista (Unesp); Universidade Federal de São Carlos (UFSCar); Universidade Guelph, Canadá.

CTC focuses on basic and applied stem cell research and a multidisciplinary program that studies the molecular and biological characteristics of normal and pathological cells, as well as evaluating their potential therapeutic use. It aims to generate Brazilian lineages for use in preclinical studies and investigate the mechanisms involved in the state of pluripotency, as well as diseases such as dyskeratosis congenita, Fanconi anemia, hemophilia A, and Parkinson's.

For example, researchers at CTC, in partnership with scientists at the US National Institutes of Health (NIH), have successfully transformed skin cells from patients with the genetic mutation that causes aplastic anemia into pluripotent stem cells similar to embryonic stem cells. They have also developed a recombinant factor VIII production platform, for which a patent application has been filed with the United States Patent & Trademark Office (USPTO).

CTC was established as a result of the RIDC Program's first call for proposals, has a solid technology transfer project centering on the improvement of public healthcare services, and also has a science education program.

Center for Research, Technology and Education in Vitreous Materials (CeRTEV)

www.cepid.fapesp.br/en/certev

PRINCIPAL INVESTIGATOR
Edgar Dutra Zanotto

CONTACT
dedz@ufscar.br
acmr@ufscar.br

MAIN INSTITUTION
Departamento de Engenharia de Materiais / Universidade Federal de São Carlos (UFSCar)

ASSOCIATED INSTITUTIONS
Universidade de São Paulo (USP).

CeRTEV's mission is to develop glass-ceramic materials with new functionalities such as high mechanical strength, high electrical conductivity, and biological, optical or catalytic activity, among others.

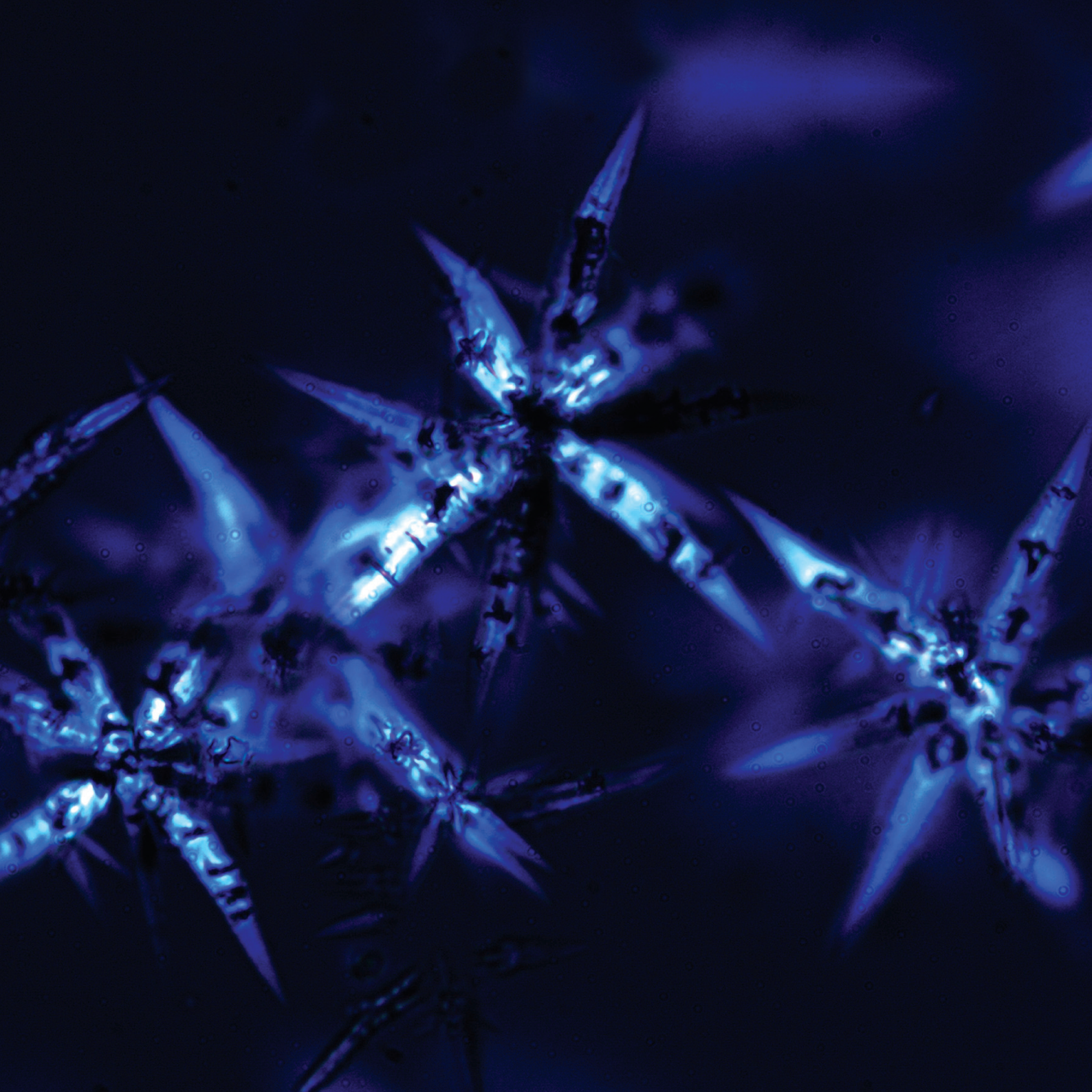
The laboratories that participate in CeRTEV focus on the investigation of optical materials (e.g. laser safety eyewear), structural reinforcement materials for use in dentistry, energy storage devices (electrolytes, high-temperature sealants), and catalytically active systems.

For example, the researchers are testing a glass-ceramic material called biosilicate obtained by controlled crystallization of a special glass using heat treatment. Biosilicate offers significant advantages over conventional glass. One of its key features is bioactivity. On coming into contact with body fluids such as saliva or blood plasma, biosilicate undergoes reactions that lead to surface coating with hydroxycarbonate apatite (HCA), a compound chemically similar to the mineral phase of bone. As a result, it can bond with bones, teeth and even cartilage.

This research agenda is supplemented by educational activities, and by technology development and transfer.

CERTEV (PHOTO VLADIMIR FOK(IN)

CeRTEV



Center for Computational Engineering and Sciences (CCES)

www.cepid.fapesp.br/en/cces

PRINCIPAL INVESTIGATOR
Munir Salomão Skaf

CONTACT
skaf@iqm.unicamp.br

MAIN INSTITUTION
Instituto de Química / Universidade Estadual de Campinas (Unicamp)

ASSOCIATED INSTITUTIONS
Biocelere Agroindustrial Ltda. (Biocelere); Universidade de Buenos Aires, Argentina; Universidade de Graz, Áustria; Universidade do Texas, EUA; e Universidade de Yale, EUA.

CCES develops and applies advanced computational methods to solve problems at the cutting edge of science and engineering and to advance technological innovation and dissemination of knowledge in eScience.

Its main focus is on the use of computer simulation and modeling to pursue solutions to complex problems in chemistry, physics, mechanical engineering, geophysics, genomics, and computer science. Despite the differences between these areas, they share certain problems characterized by the need to understand interactions among the various objects comprised in the systems concerned, from atoms and molecules (physics and chemistry) to complex materials (engineering). For example, modeling based on the technique of computer simulation by molecular dynamics has led to a better understanding of nanomaterials and biomolecular systems of interest for the development of drugs and bioenergy. The database and high-performance computing research conducted by CCES enables scientists to study and understand the interactions among particles. This has a direct impact, for example, on the study of second-generation bioethanol production. Another example of the research done at CCES concerns carbon nanomaterials and how they can be used to create stronger materials for the fabrication of robots and prosthetics. This requires joint work in physics, chemistry and mechanical engineering, which study these materials from the nanometric scale up to the visible level of the materials and objects fabricated. CCES also carries out research in data science, involving the control, curating and handling of large volumes of scientific data.

CCES

Obesity and Comorbidities Research Center (OCRC)

www.cepid.fapesp.br/en/ocrc

PRINCIPAL INVESTIGATOR
Licio Augusto Velloso

CONTACT
obesity.ocrc@gmail.com

MAIN INSTITUTION
Faculdade de Ciências Médicas / Universidade Estadual de Campinas (Unicamp)

ASSOCIATED INSTITUTIONS
Instituto do Coração (Incor/USP); Universidade Estadual Paulista (Unesp).

OCRC's mission is to augment knowledge of the causes and mechanisms that lead to obesity and all the frequently associated diseases, such as diabetes, hypertension, atherosclerosis and certain types of cancer, as well as to investigate new pharmacological, nutritional and physical approaches to these disorders.

For example, studies performed in partnership with the National Obesity & Diabetes Institute, one of the federal government's National Science & Technology Institutes (NSTIs) supported by FAPESP, have shown that the gastrointestinal tract is linked to the insulin resistance displayed by patients with obesity and type 2 diabetes, the most common type of diabetes. These results suggest that control of obesity and type 2 diabetes should begin with the gastrointestinal tract.

OCRC also invests in preventive guidance programs for high school students and seniors. For example, its publication "Living well with diabetes" is a comic book with information and healthcare recommendations relating to type 1 and type 2 diabetes.

The institution also develops screening methods for the detection of diseases in collaboration with industry.

Food Research Center (FoRC)

www.cepid.fapesp.br/en/forc

PRINCIPAL INVESTIGATOR
Bernadette Dora Gombossy de Melo Franco

CONTACT
forc@usp.br

MAIN INSTITUTION
Faculdade de Ciências Farmacêuticas / Universidade de São Paulo (USP)

ASSOCIATED INSTITUTIONS
Instituto de Tecnologia dos Alimentos (Ital); Instituto Mauá de Tecnologia (IMT); Universidade Estadual de Campinas (Unicamp); Universidade Estadual Paulista (Unesp).

FoRC pursues four lines of research. The first is biological systems in food, focusing on the characterization of food in terms of biodiversity, micronutrients and macronutrients, among other compounds that can be beneficial to health. The aim is to elucidate the molecular mechanisms that regulate biosynthesis and catabolism using genomics, proteomics, metabolomics, and bioinformatics.

The second is nutrition and health, addressing the impact of food components on the nutritional status of population groups and their potential ability to reduce the risk of disease.

The third is food safety and quality, focusing on health hazards posed by microbial pathogens and chemical contaminants throughout the food production chain in a “farm-to-fork” approach.

The fourth is new technology and innovation, including the identification of new ingredients with specific functionalities, the devising of nutritious and safe new foods, and the creation of new packaging systems to promote health and safety. This line of research also involves evaluation of the environmental impact of food processing.

Among FoRC’s most important contributions to date is its translation into Portuguese of the guide to food safety issued by the International Commission on Microbiological Specifications for Foods (ICMSF), containing useful information for the Brazilian food processing industry. Technology transfer is also an important goal for FoRC.

FoRC

Center for Research on Redox Processes in Biomedicine (Redoxoma)

www.cepid.fapesp.br/en/redoxoma

PRINCIPAL INVESTIGATOR
Ohara Augusto

CONTACT
admcepid@iq.usp.br

MAIN INSTITUTION
Instituto de Química /
Universidade de São Paulo (USP)

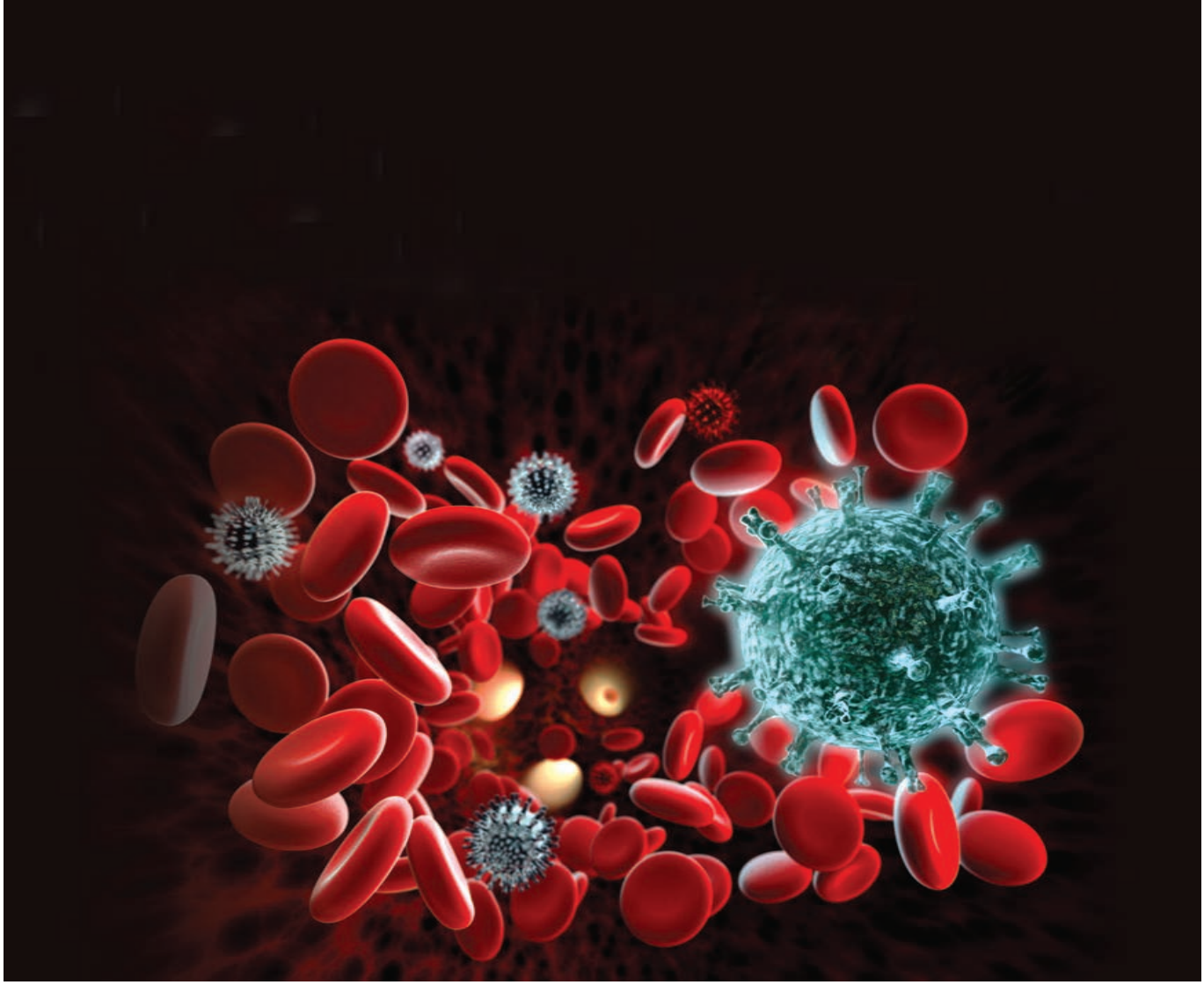
ASSOCIATED INSTITUIONS
AC Camargo Cancer Center; Centro Nacional da Pesquisa Científica (CNRS), França; Comissão de Energia Atômica e Energia Alternativa (CEA), França; Instituto Butantan (IBu); Instituto do Coração (Incor/USP); National Institute on Aging, EUA; Universidade da República, Uruguai; Universidade de Aarhus, Dinamarca; Universidade de Boston, EUA; Universidade de Harvard, EUA; Universidade de Koç, Turquia; Universidade de Madri, Espanha; Universidade de Milwaukee, EUA; Universidade de Rochester, EUA; Universidade Emory, EUA; Universidade Estadual Paulista (Unesp); Universidade Federal de São Paulo (Unifesp); Universidade Liverpool John Moores, Reino Unido.

Redoxoma investigates the mechanisms whereby oxidizing agents and radicals mediate physiological and pathophysiological processes, seeking to transfer the results of its research to commercial and/or socially relevant applications, and also using them in educational and knowledge dissemination activities.

The study of redox processes can elucidate disease mechanisms and reveal new therapeutic targets, justifying the substantial scientific interest in redox maintained over the years. In practical terms it can lead to the design of new therapeutic, nutritional and environmental strategies, and to the development or enhancement of industrialized products.

Several of the Center's contributions represent important steps forward in understanding specific aspects of the reactivity of oxidizing species, visible light and UV, structural determinants of the action of antioxidant and pro-oxidant proteins, and redox signaling linked to the mitochondrial metabolism, aging, proteasome, vascular biology and thiol proteins. New conceptual advances are expected and will contribute to the elucidation of metabolic, vascular and protein aggregation-related disease mechanisms.

The institution offers courses for undergraduate and graduate students, extension courses, and continuing education for chemistry and biology teachers through the University of São Paulo (USP). It also organizes science diffusion events and conducts research on chemistry and biochemistry teaching with a focus on redox processes.



Center for Research on Inflammatory Diseases (CRID)

www.cepid.fapesp.br/en/crid

PESQUISADOR RESPONSÁVEL
Fernando de Queiroz Cunha

CONTATOS
fdqcunha@fmrp.usp.br

INSTITUIÇÃO SEDE
Faculdade de Medicina de Ribeirão Preto / Universidade de São Paulo (USP).

CRID conducts integrative and translational research on the mechanisms underlying inflammatory diseases with the aim of identifying new therapeutic targets. In subsequent stages it will develop new molecules that interfere with the targets characterized.

To this end it has a team of researchers in the basic areas of genetics, molecular and cellular biology, immunology, biochemistry, chemistry, pharmacology and bioinformatics; and in the key clinical areas of rheumatology, pulmonology, radiology, neurology, infectology and dermatology.

The research involves high-performance molecular and genetic screening, experimental models of inflammatory diseases, identification of signaling pathways, advanced computer modeling techniques, and chemical synthesis of compounds, as well as the search for new natural molecules in plants and arthropod saliva.

For example, researchers at CRID have developed and patented a clinical test that can be used even before treatment begins to identify patients with rheumatoid arthritis who do not respond to the drug methotrexate (MTX), considered the gold standard for combating the disease. Also, they are partnering with a pharmaceutical company to develop a new class of analgesic and anti-inflammatory drugs that act by allosterically blocking the C5aR1 receptor.

CRID also conducts educational activities and engages in knowledge diffusion to the scientific community, patients and the general public. The main aim of these actions is to disseminate information about inflammatory diseases to raise public awareness and build closer ties between academia and society.

CRID

Brazilian Research Institute of Neuroscience and Neurotechnology (BRAINN)

www.cepid.fapesp.br/en/brainn

PRINCIPAL INVESTIGATOR
Fernando Cendes

CONTACT
fcendes@unicamp.br

MAIN INSTITUTION
Faculdade de Ciências Médicas / Universidade Estadual de Campinas (Unicamp)

ASSOCIATED INSTITUTIONS
Centro de Tecnologia da Informação Renato Archer (CTI); Centro Nacional de Pesquisa Científica (CNRS), França; Universidade College London (UCL), Reino Unido; Universidade de Erlangen, Alemanha; Universidade de Montreal, Canadá; Universidade de Phillips, Alemanha; Universidade Estadual Paulista (Unesp); Universidade Federal de São Paulo (Unifesp); Universidade Federal do ABC (UFABC).

BRAINN investigates the basic mechanisms of epilepsy and stroke, as well as the associated lesions. Its findings are applied in prevention, diagnosis, treatment and rehabilitation, and contribute to a better understanding of brain functions under normal and abnormal conditions.

For example, the institution offers genomic counseling to a group of patients at the University of Campinas's Medical School (FCM-UNICAMP). The service includes tests to identify genetic predisposition to diseases and help choose the most appropriate preventive measures or treatment. The next step is to make the service available to the general public.

The possibility of future disease is identified by whole exome sequencing, a technique for analyzing all the DNA sequences that govern the production of proteins essential to proper functioning of the organism. This can lead to early discovery of neurological diseases such as epilepsy, Parkinson's and Alzheimer's, or to the detection of a predisposition to certain kinds of cancer.

The institution has a knowledge diffusion and education plan encompassing the creation of websites, online TV and radio programs, and specific social networks, blogs, and microblogs, as well as the expansion of an existing magazine and publication of books to help disseminate neuroscience in the community.

BRAINN

Research, Innovation and Dissemination Center for Neuromathematics (NeuroMat)

www.cepid.fapesp.br/en/neuromat

PRINCIPAL INVESTIGATOR
Jefferson Antonio Galves

CONTACT
neuromat@numec.prp.usp.br

MAIN INSTITUTION
Instituto de Matemática e Estatística / Universidade de São Paulo (USP)

ASSOCIATED INSTITUTIONS
EUA – Universidade Princeton, Universidade de North Carolina, Universidade de Memphis, Universidade da Califórnia, Universidade de Nova York, National Institutes of Health, Universidade Purdue, Watson Research Center; Brasil – USP, Unicamp, UFRJ, UFMG, UFPE, UFRN, UFOP; Uruguai – Instituto de Matemática Pura e Aplicadal, Universidade de la República; Argentina – Universidade de Buenos Aires, Universidade de San Andrés, Universidade Nacional de Córdoba; Itália – Universidade Roma Tre, Universidade de L'Aquila, Instituto de Ciência Gran Sasso; França – Universidade Paris-Descartes, Universidade de Cergy-Pontoise, École Polytechnique; Inglaterra – Universidade Cambridge; Holanda – Universidade de Utrecht, Universidade de Eindhoven.

NeuroMat is the first Brazilian research institution dedicated to the construction of a mathematical theory of the brain. Its mission is to formulate a new conceptual framework within which to interpret the data obtained from neurophysiological experiments and tests. Its team comprises researchers in mathematics, computer science, statistics and neurobiology from Brazilian and foreign universities.

The main lines of research include the development of a new class of stochastic processes to model neural systems and a new class of stochastic processes guided by context tree models. These lines help advance neural dynamics theory, especially with regard to the hypothesis that the brain assigns models to stimuli. Mathematical research is complemented by computer simulation of neural networks performed at NeuroMat's high-performance computer center. NeuroMat's research extends into several related fields, including experimental neurobiology, computational neuroscience, rehabilitation of patients with neurological conditions, and database science.

In technology transfer, its main aim is to develop open-source computer tools capable of handling the large volume and diverse types of data collected from neurophysiological experiments and tests. This involves the creation of a software platform to organize, control and manage clinical and experimental neurophysiological data, and a cross-border repository to make the data freely available.

In dissemination, its mission is to deepen the understanding of the challenges presented by cutting-edge neuromathematics in the general scientific culture. This calls for education and training activities involving students, teachers and journalists, alongside communication to improve the available material on theoretical neuroscience, especially via the network.

Center for Research in Mathematical Sciences Applied to Industry (CeMEAI)

www.cepid.fapesp.br/en/cemeai

PRINCIPAL INVESTIGATOR
José Alberto Cuminato

CONTACT
contatocemeai@icmc.usp.br

MAIN INSTITUTION
Instituto de Ciências Matemáticas e de Computação / Universidade de São Paulo (USP)

ASSOCIATED INSTITUTION
Instituto de Aeronáutica e Espaço (IAE); Universidade Estadual de Campinas (Unicamp); Universidade Estadual Paulista (Unesp); Universidade Federal de São Carlos (UFSCar).

CeMEAI's mission is to transfer mathematical knowledge to other areas of science and to industry. It functions as a "mathematics clinic" where companies and institutions interact with researchers qualified to produce diagnoses of products or services.

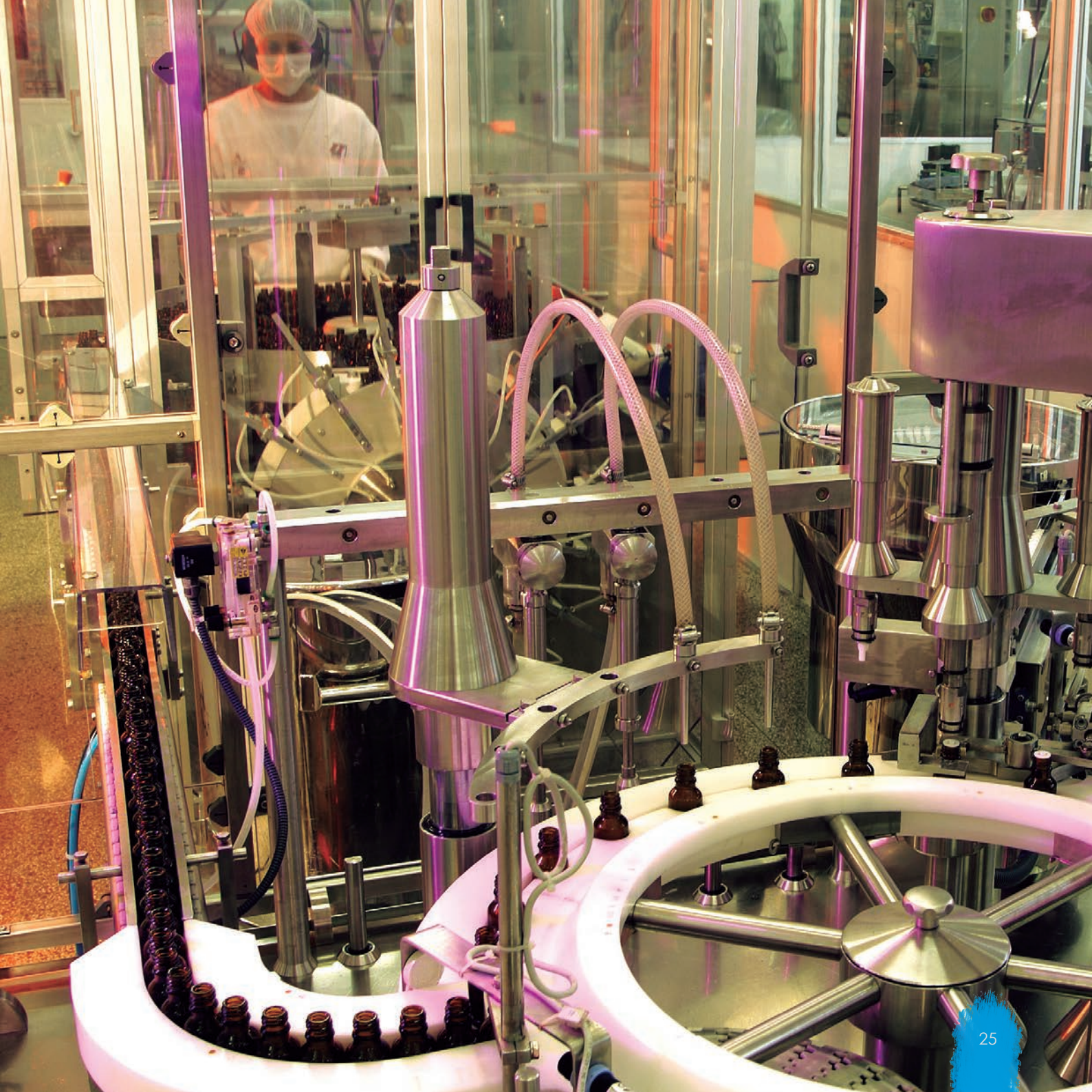
Its activities take place in an interdisciplinary environment, emphasizing technology transfer, education, and knowledge dissemination for industrial and governmental applications.

It is working on more than 70 projects for partners such as Embraer, Eletrobras, Oxiteno and Electrolux. Projects are grouped into four major areas: applied optimization and operational research; computer intelligence and software engineering; computational fluid mechanics; and risk assessment.

For example, one of these projects involves the development of a computer system applied to casting processes for a stainless steel manufacturer located in São Carlos, São Paulo State. CeMEAI partnered with Fultec Inox to create a computer program designed to improve furnace load placement and cut production times. This was achieved: processes that previously lasted two hours now take five minutes. When the results were published, several other firms contacted the institution in search of information and possible partnerships.

CeMEAI

CEMEAI (PHOTO BIOLAB)



Antonio Prudente Center for Cancer Research and Treatment (APCC)

www.cepid.fapesp.br/en/apcc

PRINCIPAL INVESTIGATOR
Fernando Soares

CONTACT
www.accamargo.org.br

MAIN INSTITUTION
AC Camargo Cancer Center.

SUPPORTED BY FAPESP: 2001-2013

Approved in the 2000 RIDC call for proposals, APCC became one of the foremost cancer diagnosis, prognosis and treatment centers in Latin America. Installed in Hospital A.C. Camargo, it contributed with more than 1 million expressed sequence tags (EST) generated from normal and tumor tissues. It was considered the first, largest and most important biorepository in Latin America, with tumor samples from more than 30,000 people.

The institution also created molecular biology platforms and invested in bioinformatics to integrate these platforms with the tumor bank, while also linking the samples to clinical data. Thanks to this effort, it successfully identified novel molecular markers for diagnosis and prognosis.

The research conducted by this RIDC (2001–2013) has continued at the Ricardo Brentani International Research Center and its laboratory infrastructure has been taken over by the Center for Investigative Pathology (CPI), both part of the A.C. Camargo Cancer Center.

Center for Sleep Studies

www.cepid.fapesp.br/en/sono

PRINCIPAL INVESTIGATOR
Sérgio Tufik

CONTACT
www.sono.org.br

MAIN INSTITUTION
Universidade Federal de São Paulo (Unifesp)

ASSOCIATED INSTITUTIONS
Associação Fundo de Incentivo à Pesquisa (Afip).

SUPPORTED BY FAPESP: 2001-2013

Established as a result of the first RIDC call in 2000, the Center for Sleep Studies extended scientific understanding of sleep's functions and the physiological basis for the need to sleep, as well as helping to develop and validate novel diagnostic and therapeutic approaches to the consequences of sleep deprivation.

For example, the institution conducted studies that identified a link between respiratory disorders during sleep and cardiocirculatory problems, as well as a correlation between poor sleep and hormonal dysfunction.

This RIDC succeeded in having polysomnographies included in the list of procedures provided free of charge by SUS, the national health system. Polysomnographies, or sleep studies, record certain body functions as the patient sleeps, resulting in an assessment of the key variables that indicate the quality of the patient's sleep and its impact on health.

The institution's research on sleep disorders and working conditions contributed to laws imposing rest requirements for bus drivers and similar occupations.

Its team researched the two-way correlation between sleep quality and the various disorders caused by insomnia or poor sleep. Cardiac alterations, immunological problems, psoriasis, erectile dysfunction and even cancer were some of the conditions reported. Information was also disseminated on apnea and the harmful effects of snoring.

The research proceeds at the Sleep Institute, part of Federal University of São Paulo (UNIFESP), which also hosted the Center for Sleep Studies during the period of FAPESP's support (2001–2013).

Center for Research into Optics and Photonics – Campinas (CePOF)

www.cepid.fapesp.br/en/cepofcampinas

PRINCIPAL INVESTIGATOR
Hugo L. Fragnito

CONTACT
cepof@ifi.unicamp.br

MAIN INSTITUTION
Universidade Estadual de Campinas (Unicamp)

ASSOCIATED INSTITUTIONS
Instituto de Pesquisa Energética e Nuclear (Ipen).

SUPPORTED BY FAPESP: 2001-2013

Supported by FAPESP's RIDC Program from 2001 to 2012, CePOF Campinas conducted basic research on systems and devices for light generation, emission, transmission, modulation, processing, amplification and detection for use in optical communications, medicine and dentistry, among other applications.

Hosted by the University of Campinas (UNICAMP), the institution won a leading position in the global research race relating to fiber optic parametric amplifier technology. Whereas the available systems guarantee a maximum bandwidth of 30 nanometers [one nm equals one thousandth of a millimeter] in the region of optical communications, researchers at CePOF Campinas achieved a bandwidth of 115 nm. The greater the bandwidth, the larger the number of lasers per fiber and the higher the traffic capacity.

Besides this outstanding achievement, CePOF Campinas created an education and dissemination program designed to enhance science and especially physics teaching in high schools and technical colleges. The Vacation Physics Project, for example, continues to take place annually in July at UNICAMP's Gleb Wataghin Physics Institute.

CePOF

About FAPESP

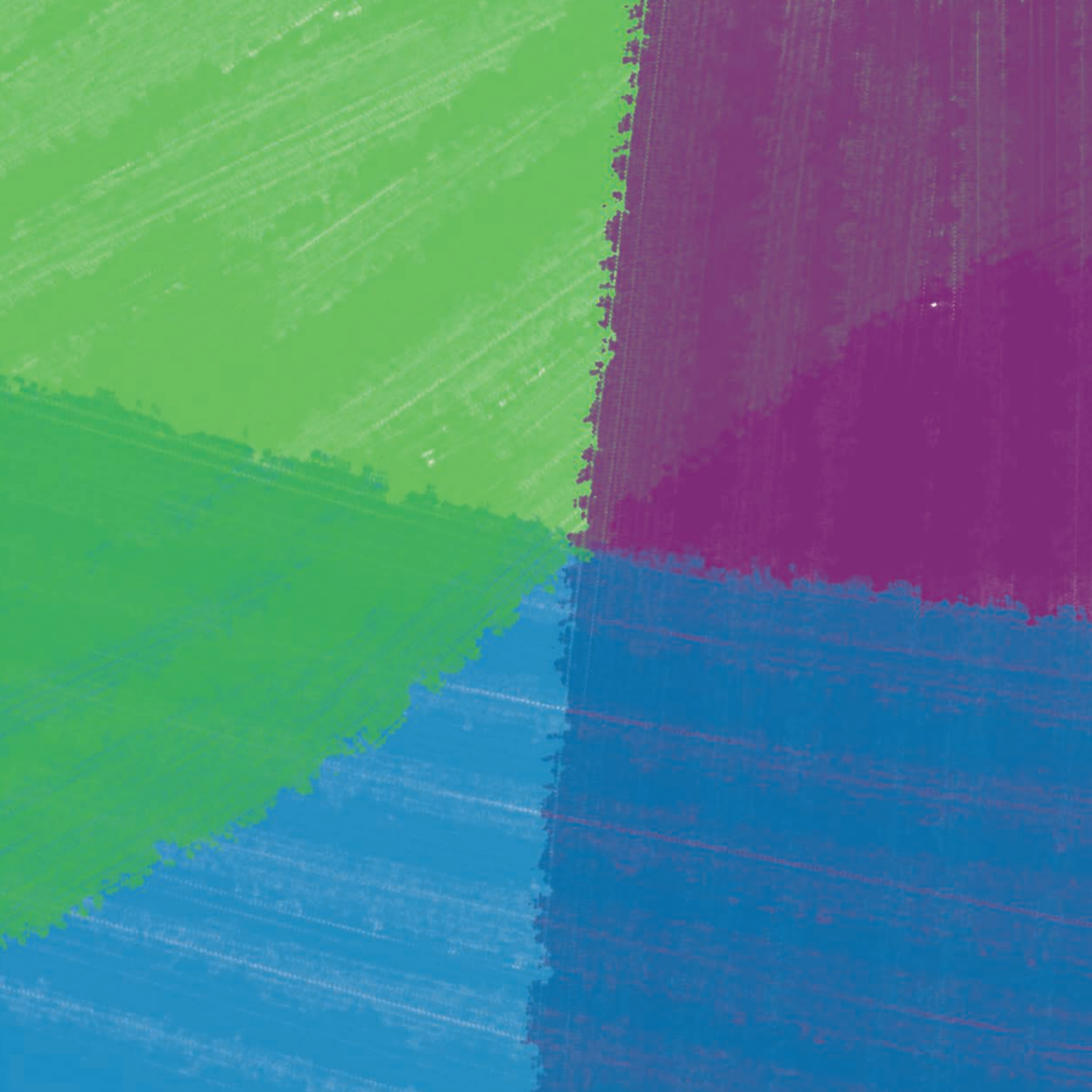
The São Paulo Research Foundation (FAPESP) is one of the main sponsoring agencies in Brazil. Established in 1962, FAPESP mission is to support knowledge advancement, enlarge research infrastructure and promote research associated with its application through providing scholarships, in Brazil and abroad, and grants to projects developed by researchers from higher education or research institutions in the State of São Paulo, in all areas of knowledge.

FAPESP also funds research in areas that are considered strategic for Brazil and crucial to advancing science worldwide, through programs related to major themes such as global climate change (RPGCC – www.fapesp.br/en/rpgcc), bioenergy (BIOEN – www.fapesp.br/en/bioen) and biodiversity (BIOTA-FAPESP – www.fapesp.br/en/biota).

It also provides funds for application-driven research through innovation programs, in collaboration with private companies, and research programs in public policies, in partnership with public and third sector organizations.

www.fapesp.br/en

Research supported by FAPESP can be consulted at FAPESP Grant Database (www.bv.fapesp.br). More about the research results in the Agência FAPESP (www.agencia.fapesp.br)



SÃO PAULO RESEARCH FOUNDATION

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

www.fapesp.br/en

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