serrapilheira

Annual report
2021

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André Cardoso
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Contents

Foreword

Founded in 2017, Serrapilheira is the first private, nonprofit institution dedicated to advancing science in Brazil. The Institute's mission is to enhance the production and dissemination of scientific knowledge through our work on two fronts: Science and Science Outreach.

On the Science front, Serrapilheira runs two programs: the Science Support Program, which not only identifies and supports research conducted by excellent young scientists, but also promotes trainings and integration events; and the Training Program in Quantitative Biology and Ecology, which offers a transdisciplinary curriculum to students who wish to pursue doctoral studies at international research centers. The Science Outreach Program maps out and sponsors professional journalism and media initiatives.

The Institute has supported almost 200 science and science outreach projects through grants from a 350 million BRL endowment fund established in 2016.

This report summarizes the highlights of Serrapilheira's activities in 2021.

To Invest in Science Is to Invest in the Future

Hugo Aguilaniu
Executive Director,
Serrapilheira Institute

Science in Brazil faced headwinds in 2021. Scientists —junior and senior— have felt the impact of repeated attacks on the scientific community. Despite earmarked funds for research, frequent and unprecedented threats of budget cuts have created a climate of uncertainty and underscore the current administration's hostility toward science.

The immediate consequence of these attacks is that Brazil's youngest and brightest scientists are choosing to leave, or, if they are already abroad, not to return. This exodus of talent has been exceptionally notable this year and a tragedy for the country, which is losing the minds most capable of thinking about its future, its economy, its culture, and the affirmation of its identity. By vehemently repudiating this policy of undervaluing science, Serrapilheira asserts its belief in the future of Brazilian researchers and science in Brazil.

We believe in Brazil to the point of investing in building a strong Brazilian science. With this in mind, we launched a training program in biology and ecology in partnership with São Paulo State University's (UNESP) South American Institute for Fundamental Research (ICTP-SAIFR). Biology and ecology are strategic fields for Brazil's sustainable development, which will depend on our ability to understand the highly complex life systems that surround us. Therefore, we believe that the mathematical, physical and computational techniques help to further the study of life science.

In order to offer high-quality transdisciplinary teaching to selected students, we have invited some of the world's most distinguished professors to participate in the annual editions of the Training Program in Quantitative Biology and Ecology. We hope to increase the number of scientists with training in these fields and facilitate their integration into international and collaborative science. We believe that these professionals will play a critical role in building our future.

Executive Summary

2021 budget

R$ 19,715 million

Actual 2021 budget

R$ 15,533 million

Accumulated support since 2018:

science

R$ 44,926,416.21

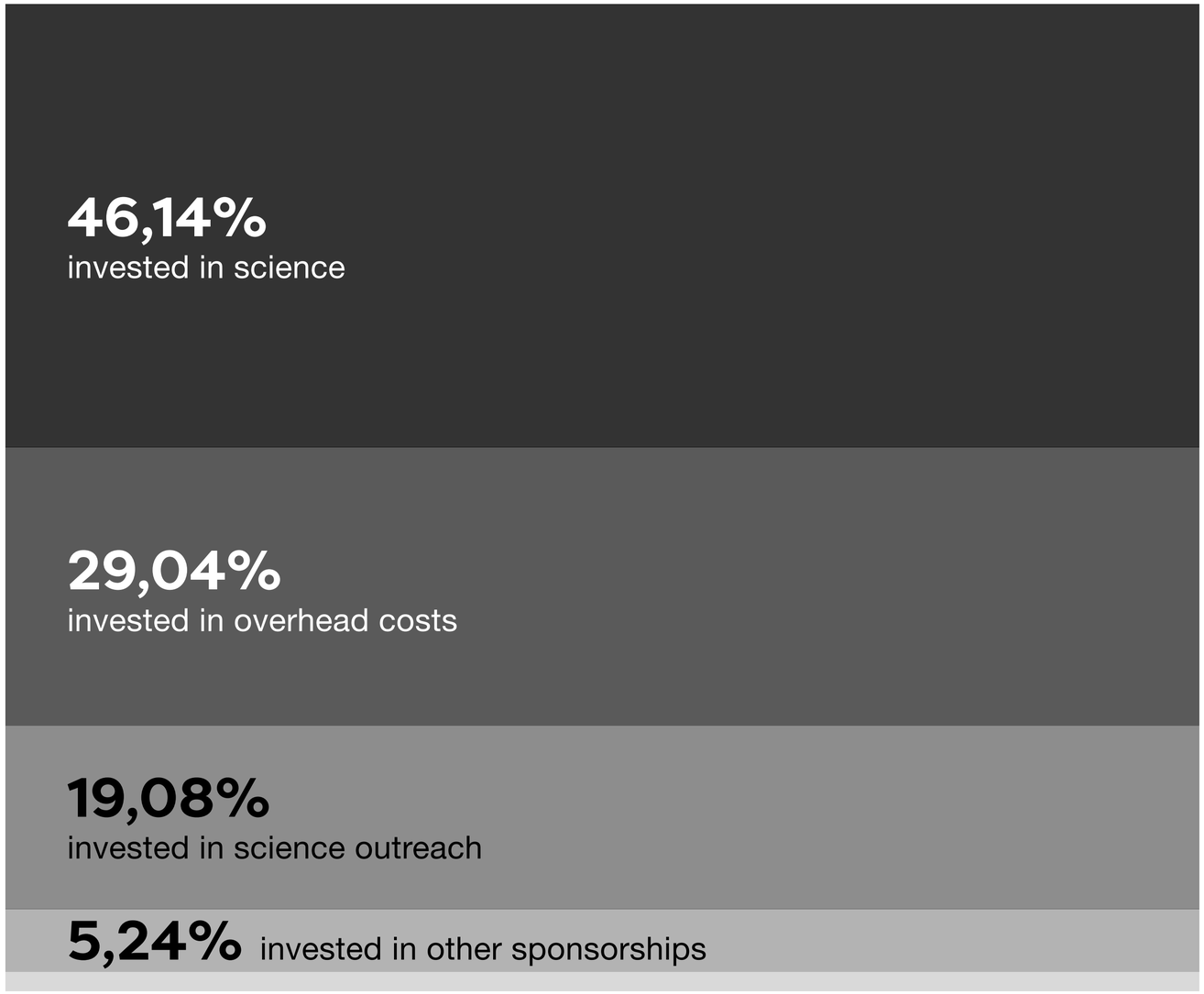
140 projects supported*

science outreach

R$ 7.907.189,35

58 projects supported*

*in addition to occasional support for events, scholarships, awards and other initiatives



Our Values

Our Values

Diversity in Science

Since its inception, Serrapilheira has been guided by the principle that diversity—racial, ethnic and gender—makes for better science: the more plural the viewpoints, the more creative the ideas that will generate fundamental questions.

We sponsored three new projects aimed at promoting diversity in science in 2021. Instituto Ibirapitanga, which focuses on racial equity and food systems, jointly funded two of them, spurring a partnership between the two institutes.

Our Values

Diversity in Science

Oguntec

Created and conducted by the Salvador, Bahia-based Steve Biko Cultural Institute and co-sponsored by Ibirapitanga Institute, Oguntec is a Bahia state only program that promotes a college prep course for students who aim to start a career in science and technology.

The Steve Biko Cultural Institute was founded in 1992 when Black teachers and students organized the first college prep course for Black and mixed-race youth in Brazil. Since then, the institute has sought to increase the representation of Black people in academic institutions as a strategy to help improve their social mobility and fight racial discrimination.

Lázaro Passos Cunha,
Coordinator, Oguntec

Grant Serrapilheira*:*
R$ 500,000

Grant Ibirapitanga*:*
R$ 500,000

Our Values

Diversity in Science

Affirmative Action in Graduate Studies Monitor (OBAAP)

Coordinated by political scientist Anna Carolina Venturini, a researcher at Afro-Cebrap (the Brazilian Center for Research and Training on Race, Gender and Racial Justice), and co-funded by the Ibirapitanga Institute, the project aims to create a national database of graduate programs whose open calls include affirmative action plans. OBAAP thus helps graduate programs by providing them with examples and templates for designing their own affirmative policies.

Anna Venturini,
Coordinator, OBAAP

Grant Serrapilheira*:*
R$ 16,161

Grant Ibirapitanga*:*
R$ 16,161

Our Values

Diversity in Science

Diversity in Brazilian Science Project

The project seeks to collect demographic data on researchers in the natural sciences (biology, geosciences, physics and chemistry), computer science and mathematics. Using different research methods, the group will create a database for future analysis by the academic community and for prospecting potential public and private policy managers. The initiative is coordinated by Luiz Augusto Campos, professor of sociology and political science at the Institute of Social and Political Studies at the Rio de Janeiro State University (IESP-UERJ) and editor-in-chief of DADOS magazine.

Luiz Augusto Campos, Coordinator, Diversity in Brazilian Science Project

Grant:

R$ 265,960

Our Values

Diversity in Science

Actions Advancing Diversity

Serrapilheira takes institutional actions to foster diversity. In 2019, we launched the **Best Practices Guide to Diversity in Science** outlining our policies and providing guidance to those who wish to prioritize diversity in their research groups.

Our Values

Diversity in Science

Learn about some of the actions Serrapilheira takes to encourage diversity:

- We extend the doctorate completion deadline in our public calls by up to two years for applicants who are mothers.

- We offer a maternity Grant of R$10,000 to Grantees who become pregnant or have children during their institute Grant. This Grant can be used as best suits each researcher's life and needs. Five Grantees have received this benefit so far.

- We cover the costs of attendance for children who are breastfeeding (up to two years of age) and a companion for events organized by the institute.

- We established a bonus mechanism for inclusion initiatives: researchers who receive a Grant of up to R$700,000 can access extra funding for integrating and training people from underrepresented groups on their research teams

- We have made the term of the contract more flexible to accommodate the maternity leave period of mothers in the Grantee's research groups. We also encourage continuing the Grant payment during the maternity leave and offering a maternity Grant, whenever possible. This payment is to be made from the project Grant

Our Values

Diversity in Science

Use of the diversity bonus from implementation in 2019 through December 2021

_ Number of *grantees* that used the diversity bonus: **21**

_ Total amount invested so far: R$ **3,47 million**

_ Number of people hired and/or being trained: **63**

_ Career stage by the numbers:
undergraduate: **29**
master's: **15**
doctorate: **13**
post-doc: **6**

_ Gender:
women: **40**
men: **23**

_ Race & ethnicity:
white: **24**
indigenous: **2**
multiracial & Black: **37**

_ Investments covered:
scholarships (Brazil and abroad)
English classes
transportation assistance
participation in scientific events
purchase of laptops and laboratory reagents

Our Values

Open and Reproducible Science

Based on the assumption that science needs to be constantly reviewed, we believe that access to it should be universal. Transparent, available, and reproducible data makes science better and more reliable, so this has been a fundamental principle and hallmark of Serrapilheira's activities since we started.

Our **Best Practices Guide to Open and Reproducible Science**, launched in 2019, is open to contributions so that it can be improved on a rolling basis. If you have any suggestions, comments, or concerns about the guide, please email us **pesquisa@serrapilheira.org**.

We continued our support in 2021 of two initiatives dedicated to open and reproducible science:

Our Values

Open and Reproducible Science

No-Budget Science Hack Week

This intensive one-week workshop aims to develop meta-science research projects in the biomedical sciences by using open access data according to the no-budget philosophy: a laptop in hand and an idea in mind. Participants develop research projects or tools that address major issues in the modern scientific process: data availability, reliability, reproducibility, publication system, resource and funding distribution, and researcher training. This was the third time Serrapilheira supported this event, which was held remotely.

Grant:
R$ 24,210

Brazilian Reproducibility Initiative

The Brazilian Reproducibility Initiative, supported since 2018, is a multicenter project for the systematic replication of experiments published by Brazilian biomedical scientists in the last 20 years, a period of significant growth for Brazilian science. It is impossible to reproduce the empirical evidence in a lot of the scientific literature in the biomedical field, therefore taking the increase in the number of articles to demonstrate progress in the natural sciences is a non sequitur.

The Initiative's network is made up of over 60 collaborating laboratories that resumed their activities in 2021 following a pause due to the pandemic.

2018 Grant:
R$ 161,000

2019 Grant:
R$ 1 million

Our Values

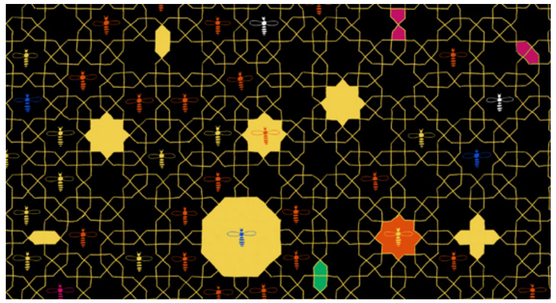
Open Science in Constant Debate

Peer review, the high costs of scientific publications and tracking citations were just some of the issues that came up in our debate on open science. These topics were explored in articles in the **Ciência Fundamental (Fundamental Science)** blog, maintained by Serrapilheira on the *Folha de S.Paulo* website and edited by the Brazilian Reproducibility Initiative and No-Budget Science Hack Week coordinators Olavo Amaral and Kleber Neves, as well as by Diversity in Brazilian Science project coordinator Luiz Augusto Campos.

Below are the entries about open science published on the Fundamental Science blog in 2021:

Science Is Not Conducted by Isolated Individuals

How to organize the way research is conducted?
Kleber Neves



La garantía soy yo

How to deal with data that is too good to be true?
Olavo Amaral

Our Values

Open Science in Constant Debate

The Naked Truth About Peer Review

Quality screening in academic science oozes authority, catches little meaning
Olavo Amaral

Peer Review: Bad with, worse without

The whole system cannot be judged by the cases that slip through the cracks
Luiz Augusto Campos
** in response to Olavo Amaral's blog post, "The Naked Truth About Peer Review"*

Scientific Publishing: A luxury market?

Who would spend a lot more to have their article in Nature?
Almost everyone
Olavo Amaral

Science Support Program

Science Support Program

A New funding Model

With the announcement of the 12 young scientists selected through the Science Support Program's 4th call for proposals in 2021, Serrapilheira refined its new model for funding research projects. Now, researchers each receive a Grant ranging from BRL 200,000 to 700,000, depending on their project's specific needs, to be used over three years. They are also still eligible to apply for the diversity bonus.

In this sense, the Institute stopped granting seed money—BRL 100,000 for one year—and now makes a more robust, long-term investment in a select group of scientists. The goal is to provide researchers with the freedom and the time required for developing quality science.

Get to know our 12 new Grantees and their research:

Science Support Program

Computer Science

Jefersson dos Santos
Federal University of Minas Gerais

Grant:
R$ 500,000

Through supervised learning (SL), how to make large-scale geographic maps from a few annotated pixels. Dos Santos accepted a position at the University of Stirling in Scotland after being selected by Serrapilheira, so he will be connected to both institutions as of May 2022.

Science Support Program

Life Sciences

Raul Costa Pereira
State University of Campinas

How human diversity and social inequalities affect urban biodiversity.

Grant:
R$ 569,500

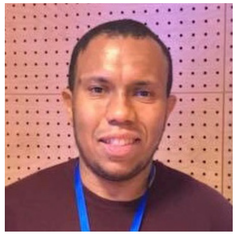
Luiz Gustavo Gardinassi
Federal University of Goiás

The role of gut microbiota in malaria resistance; possible molecular mechanisms involved.

Grant:
R$ 697,000

Mychael Lourenço
Federal University of Rio de Janeiro

Molecular pathways of cellular stress and their impacts on brain function, such as cognition and mood.



Grant:
R$ 700,000

Cristiane Calixto
Universidade de São Paulo

Research on plant responses to changes in temperature—how post-transcriptional and epigenetic mechanisms contribute to temperature memory and responses to heat in the case of rice.

Grant:
R$ 550,000

Science Support Program

Physics

Bárbara Amaral
University of São Paulo

How to exploit quantum systems to implement bit commitment protocols, a key ingredient in various applications in cryptography.

Grant:
R$ 500,000

Elisa Ferreira
University of São Paulo

Research on one of the greatest mysteries in cosmology: dark matter. Ferreira is part of the BINGO telescope project, a Brazilian-led international collaboration that aims to study the evolution of the universe.

Grant:
R$ 539,300

Thiago Fleury
International Institute of Physics/ Federal University of Rio Grande do Norte

Fleury's second project selected by Serrapilheira (he was a seed money recipient in the 2nd call for proposals) is an investigation of the mechanism behind holography, an element in quantum gravity theories.

Grant:
R$ 350,000

Science Support Program

Geosciences

Vinícius Ribau Mendes
Federal University of São Paulo

The future of South American precipitation if (or when) the Atlantic meridional overturning circulation (AMOC) collapses.

Grant:
R$ 699,376

Mathematics

Dirk Erhard
Federal University of Bahia

Understanding macroscopic phenomena by studying microscopic models of random interaction.

Grant:
R$ 335,517

Rafael Montezuma
Federal University of Ceará

New perspectives of the min-max theorem for the area functional to expand the field of study of geometric analysis in Brazil.

Grant:
R$ 491,250

Science Support Program

Chemistry

Daniel Grasseschi
Federal University of Rio de Janeiro

How coordination chemistry can be harnessed to control the electronic, optical and chemical properties of two-dimensional materials.

Grant:
R$ 700,000

Science Support Program

The Science Project Selection Process

In the nearly five years of advancing and refining our calls for proposals, we have made a point of adding more transparency to our selection process. In 2021, we launched a video on our YouTube and other social media channels that explains all the steps involved in our selection. Watch it **here**.

We also posted an **article** by our Director of Science, Cristina Caldas, on our social media, where she explains what happens after Serrapilheira selects a new group of scientists. The project follow-up—and the success and fail evaluation—is a fundamental step in the relationship based on trust and partnership that we have established with our Grantees.

Science Support Program

Some Highlights of 2021

The Stories the Oceans Tell Us

“If the oceans were a person, sediments would be its memory.” Oceanographer by training, Federal University of Paraná (UFPR) professor **Renata Nagai** studies the past of the oceans through their sediments to understand climate change and to measure the impact of human activity, especially in the Southwest Atlantic Ocean, an under-researched region compared to the Northern Hemisphere.

One of her goals is to study how this stretch of ocean was constituted before and after the Industrial Revolution to enhance our ability to predict future climate change and its impacts on a regional scale.

Renata Nagai, oceanographer and professor at the Federal University of Paraná

Grant:

R$ 98,375

Science Support Program

Some Highlights of 2021

Why Are Plants Immune to Most Pathogens?

Biologist and University of São Paulo (USP) professor **Paulo Teixeira** investigates the plant immune system. More precisely, how plants recognize microorganisms that represent danger. Such perception causes an immune response, but pathogens—fungi, viruses or bacteria that cause disease—have strategies for exploiting this defense mechanism.

Most plants are resistant to a good share of pathogens, and even microorganisms that are devastating to certain plant species usually fail to colonize others. How do plants establish durable resistance to pathogens? Although the fundamental principles of the plant immune system have emerged in recent years, genetic and molecular mechanisms of non-host resistance are still poorly understood. This is exactly the universe that this scientist aims to unravel.

Paulo Teixeira, biologist and professor at the University of São Paulo

Grant:

1st phase:

R$ 100,000

2nd phase:

R$ 700,000 +

R$ 300,000

optional diversity bonus

Science Support Program

Some Highlights of 2021

The Origins of Tropical Biodiversity

Knowing why there are so many species of plants in tropical regions and understanding the processes that created the patterns of biodiversity that we observe today is one of the research goals of Federal University of Minas Gerais (UFMG) professor and ecologist **Danilo Neves**. In September, he published an article in the Proceedings of the National Academy of Sciences (PNAS) journal where he showed the strong influence of drought in the evolution of biodiversity: more than extreme temperatures, drought is responsible for creating unique and evolutionarily rare patterns of biodiversity, which enhance the protection of plants that have developed drought tolerance.

Danilo Neves,
Ecologist and professor at the Federal University of Minas Gerais

Grant:
R$ 100,000

Science Support Program

Coming Soon: A new cohort of scientists

In November, we closed the application for the 5th Open Call for Proposals, which will award ten new scientists with Grants ranging from R$200,000 to R$700,000. We received 260 proposals from 23 states and the Federal District. Below are some data about the candidates, such as a breakdown by field of science and their racial and ethnic profiles.

The applicant pool was smaller than in previous calls—in 2020, we received 505 proposals. This drop is due in part to the call's more stringent requirements. Now applicants may submit no more than two proposals during their eligibility period, which encourages them to work harder on their pre-projects before submitting them to our calls.

Additionally, we believe that the consequences of the pandemic, closed (or limited running of) laboratories, and restricted funding opportunities also contributed to the significant decrease in the applicant pool size.

Science Support Program

5th Open Call for the Science Support Program

Field of Science

proposals received (% and total number)

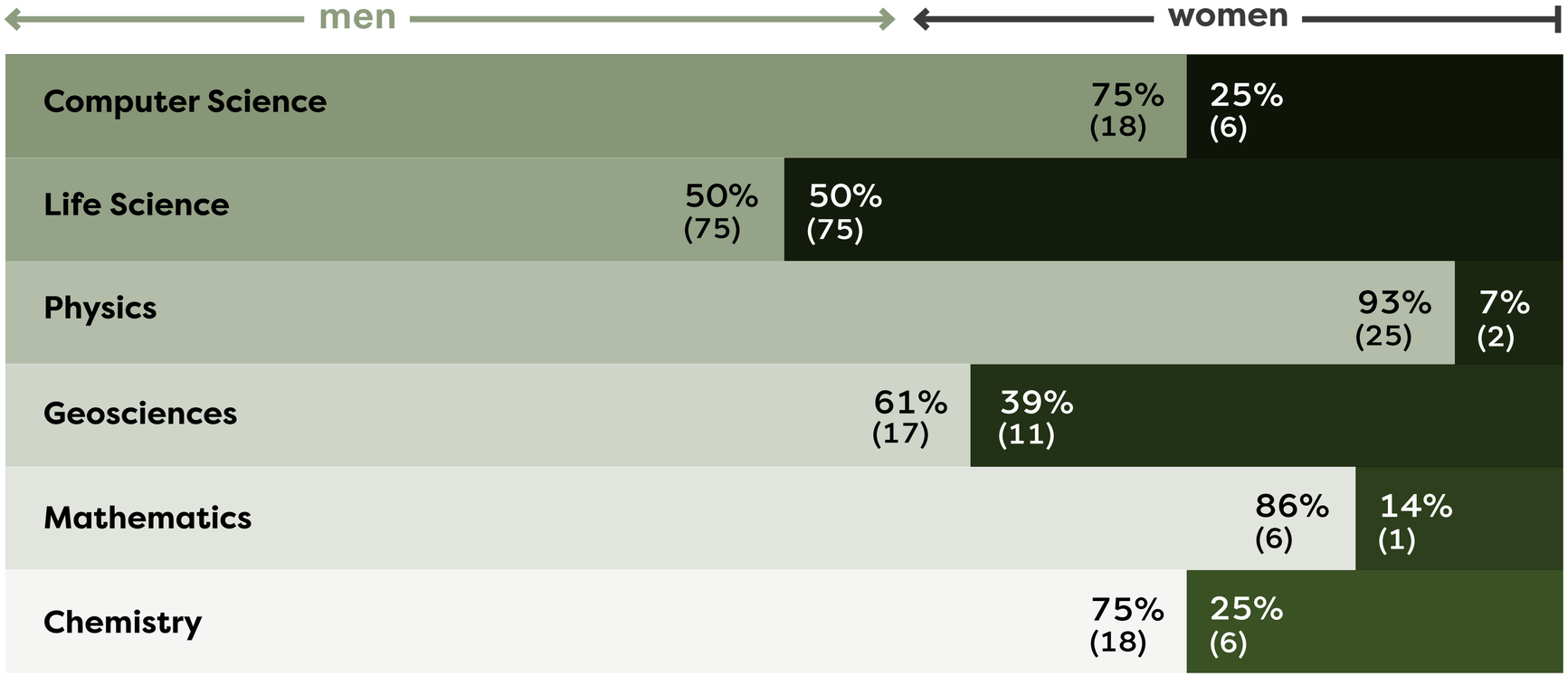
Total proposals received: 260

5th Open Call for the Science Support Program

Gender and Field

of applicants
(% and total number)

total:
101 women (39%)
159 men (61%)

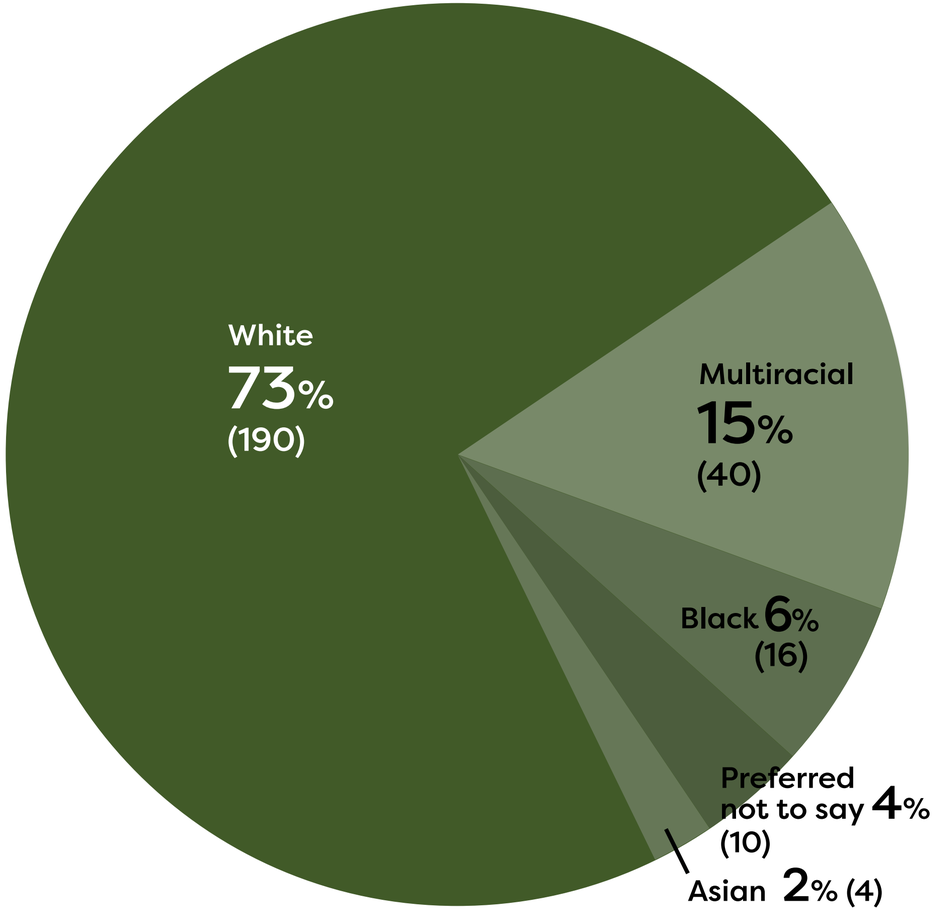


Total proposals received: 260

5th Open Call for the Science Support Program

Race and Ethnicity

of applicants (% and total)



Total proposals received: 260

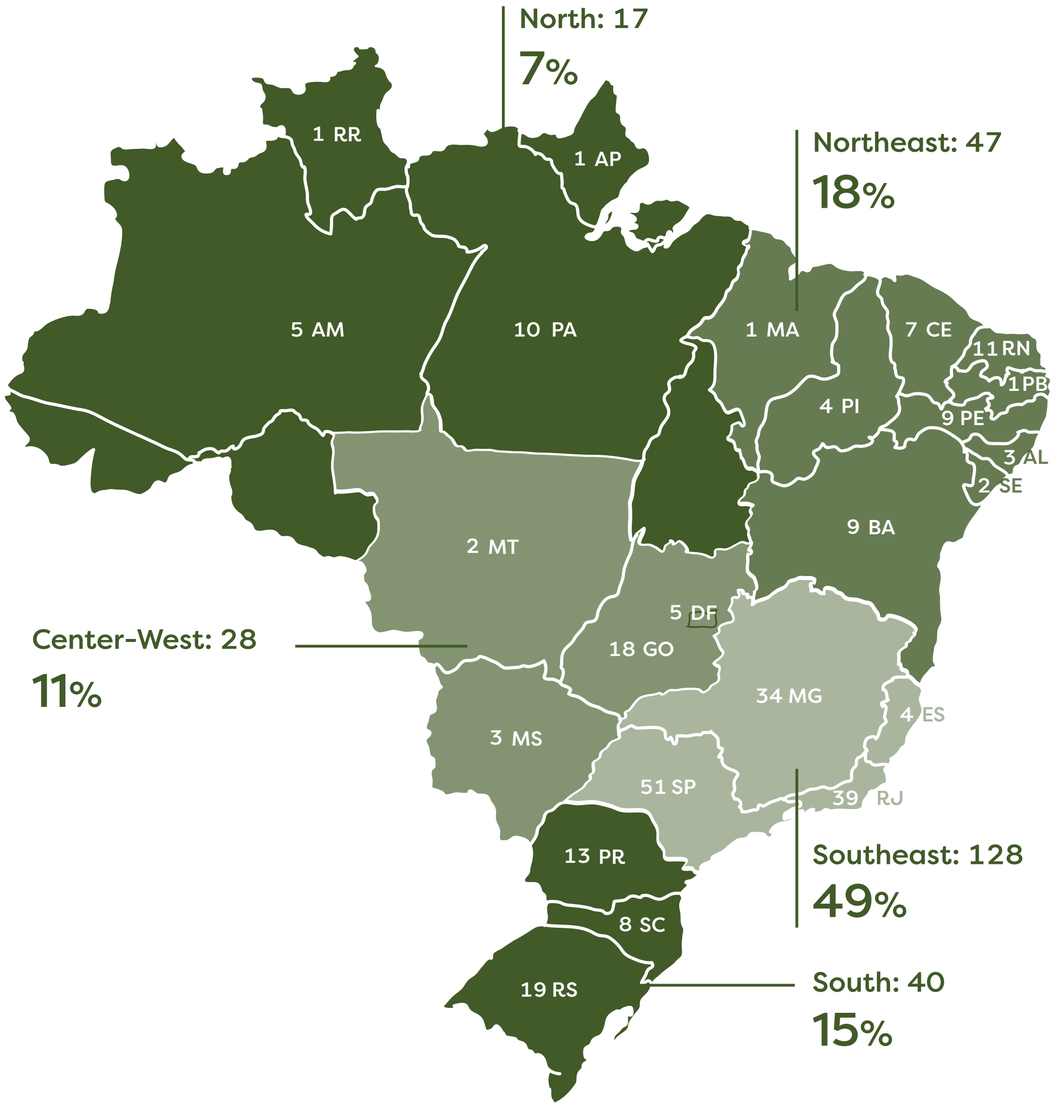
Science Support Program

5th Open Call for the Science Support Program

Proposals received by

Region(%) and State

(total numbers)
from the 23 states and
Federal District of Brazil



Total proposals received: 260

Science Outreach Program

Science Outreach Program

Focusing on Journalism and Media

In 2021, we started a new stage in our Science Outreach Program. It now focuses its support on professional media and journalism initiatives that provide an unexpected and thought-provoking vantage point on science and contribute to increasing the quality and rigor of public debate in this area.

Consequently, the outreach program has changed the frequency of its calls for proposals from annually to occasionally and welcomes proposals on a rolling basis. Additionally, the program has started to actively seek out projects aligned with its new objectives. Our activities include training in science journalism, environmental journalism projects and digital media initiatives that promote fact-checked information about COVID-19 and other scientific topics. Get to know some of the initiatives we support (or see the full list **here**):

Science Outreach Program

Training and Fostering Science Journalism Program

Gabo Foundation

This program aimed to improve critical coverage of science through rigorous, evidence-based approaches, context analysis, and collaboration. Aimed at Latin American journalists with experience in the field, the initiative included a workshop with Colombian journalist Pablo Correa Torres and provided journalistic production grants of up to USD 2,500 to the 16 finalists.

Grant:

USD 104,000

Journalist **Pablo Correa Torres**, science, health and environment editor at El Espectador de Colombia (2010 - 2021), who led the Gabo Foundation workshop

Science Journalism from the Pandemic to the Climate Crisis: How to improve science coverage

Knight Center for Journalism in the Americas – University of Texas

Unlike the Gabo Foundation program, the open online course offered by the Knight Center focused on people with no experience in covering science who were looking for theoretical training to get started in this field. Conducted by journalist Thiago Medaglia, the training took place between October and November and covered topics such as misinformation in pandemics, climate change and the Amazon.

Grant:

USD 25,000

Science journalist **Thiago Medaglia** coordinated the course at the Knight Center for Journalism in the Americas

Science Outreach Program

Training in Science and Health Journalism

Folha de S.Paulo

Grant:

R$ 200,000

The course offered by *Folha de S.Paulo* was aimed at those who wanted to learn about covering science and health in a newsroom. After all, of the 50,000 journalists working in Brazil, only 250 write about science, and even fewer have it as their primary beat . The three-month course offered 15 participants lectures with scientists working in Brazil and abroad, physicians and public health specialists, and *Folha*'s reporters and editors. It also included exercises focused on choosing reporting topics from scientific papers, developing an effective infographic, and selecting reliable sources, among other topics. A stipend was also available for students with limited resources.

Journalist **Vera Guimarães Martins**, coordinator of *Folha de S.Paulo*'s training program

Science Outreach Program

Atlantic Rainforest: New stories

((o))eco

Throughout the history of the occupation of Brazil, almost 90% of the Atlantic Forest has been devastated. Environmental restoration initiatives—reforestation, fauna reintroduction, and ecological corridors—seek to write the next chapters of this biome that stretches along the Brazilian coast and is home to 72% of the country's population. Environmental journalism website ((o))eco tracked down these stories and produced **this special** report, in addition to holding a seminar and developing a best practices guide for communicating biodiversity.

Grant:

R$ 131,500

Picture taken by the project's coordinator, **Marcio Isensee e Sá**

Aquazônia, the Water-Forest

Ambiental Media

Which locations in the Amazon Basin has human activity hit the hardest? Through geospatial data analysis, a team of journalists, computer programmers and scientists endeavor to answer this question. The results of this analysis will be plotted on original maps and combined with journalistic investigation and field work, culminating in the publication of a special multimedia platform. The project is led by journalist Thiago Medaglia and developed by Ambiental Media, a Brazilian startup focused on scientific journalism.

Grant:

R$ 138,910

Laura Kurtzberg, designer who signs "Aquazônia"'s data visualizations

Science Outreach Program

COVID-19 Analysis Network

Mellanie Fontes-Dutra

According to a 2020 survey conducted by MindMiners and Avaaaz, 70% of Brazilians search for information about the coronavirus at least once per day. But how do people tell what is true or not? Focused on tackling COVID-19, this network of 84 Brazilian volunteer researchers from different fields seeks to expand and foster the dissemination of scientific studies about the disease and combat the spread of fake news.

Grant:

R$ 30,000

COVID-19 Analysis Network coordinator **Mellanie Fontes-Dutra**

Science Pulse e Polígono

Núcleo Jornalismo

Who are the scientists setting the agenda on social networks? Science Pulse is a social listening tool focused on science outreach. The curator relies on the profiles of over 1,500 scientists, experts and institutions in Brazil and around the world. The project also issues the weekly newsletter *Polígono*, which focuses on exploring and analyzing the scientific debate on the networks, curated by journalist Luiza Caires.

Grant:

R$ 71,000

Journalist **Luiza Caires**, curator the newsletter *Polígono*

Science Outreach Program

New podcasts

The eight podcasts selected in the 2020 Camp Serrapilheira call for proposals were launched in 2021. The programs tell different stories from a scientific perspective, covering topics such as food, major extinctions and sanitation. Additionally, there were premieres for the podcast *Cientistas na Linha de Frente* (scientists on the front line), produced by Agência Pública, and the new seasons of *37 Graus* (37 degrees) and *Vinte Mil Léguas* (Twenty Thousand Leagues), finalists from previous calls.

Check out all the Serrapilheira-sponsored podcasts **here**. Below, we list some of the new ones developed in 2021.

Ciência Suja

Ciência Suja (Dirty Science) is a podcast that chronicles cases of scientific fraud that harmed society, such as the phosphoethanolamine hoax (sold as the “cancer pill”), and shows how science itself solved these crimes. The project is the result of a partnership between NAV Reportagens, an audiovisual production company, and Theo Ruprecht and Thaís Manarini, journalists whose reporting focuses on health and science.

The *Ciência Suja* production team, **Theo Ruprecht**, **Pedro Belo**, **Felipe Barbosa** and **Thaís Marinari** (left to right)

Grant:
R$ 50,000

Science Outreach Program

New podcasts

Prato Cheio

Prato Cheio (Full Plate) is a podcast on the *O Joio e o Trigo* website that looks at food from a systemic and political angle. Hosted by Victor Matioli and Marina Yamaoka, the program offers a informal democratic debate with personal touches and a sense of humor to address what is a fundamental issue in the 21st century.

Grant:
R$ 50,000

Mariana Yamaoka, presenter of *Prato Cheio*

37 Graus

In “Around the corner from reality,” the fifth season of ***37 Graus***, things are not quite what they seem. The episodes address our perception of true and false, and how this discernment can be influenced. This science-based narrative podcast hosted by Bia Guimarães and Sarah Azoubel has been supported since its inception in 2018 by Serrapilheira.

The hosts of the 37 *Degrees* podcast, **Bia Guimarães** and **Sarah Azoubel**

2018 Grant:
R$ 100,000
2021 Grant:
R$ 200,000

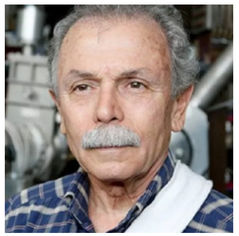
Science Outreach Program

New podcasts

Cientistas na linha de frente

Intimidation, dismissals and death threats: the podcast ***Cientistas na linha da frente*** **(Scientists on the frontlines)**, produced by Agência Pública, investigates the stories of Brazilian researchers who have been targeted by the spate of “anti-science” in the Brazil. Narrated by journalist Mariana Simões, the series debuted with the case of Fiocruz infectologist Marcus Lacerda, who was compelled to hire an armed bodyguard after being threatened for demonstrating that (hydroxy)chloroquine is ineffective against COVID-19.

2019 Grant:
R$ 100,000



The former director of INPE, **Ricardo Galvão**, is a character on the podcast

Vinte Mil Léguas

The *Vinte Mil Léguas* (Twenty Thousand Leagues) podcasts invites us to read science as literature. Leda Cartum and Sofia Nestrovski build bridges between the literary universe and science, going back in time to trace the paths of scientists from the past and uncover the relationships between their thinking and current science. Hosted by the Megafauna bookstore, the second season delves into travel reports of German explorer Alexander von Humboldt (1769-1859), whose experiments were the precursors of many of today’s sciences, such as geography, geology, zoology, botany, meteorology, and anthropology.

Vinte Mil Léguas podcast hosts **Leda Cartum** and **Sofia Nestrovski**

2018 Grant:
R$ 100,000

2021 Grant:
R$ 100,000

Science Outreach Program

Fundamental Science - What do young scientists think?

In its second year in circulation, **Ciência Fundamental**—Serrapilheira's blog on the *Folha de S.Paulo* website—welcomed new authors and illustrators in 2021. The articles published explored fundamental questions of science, mostly from the scientists' own perspectives. By the end of 2021, we published more than 120 articles covering mathematics, physics, geosciences, biology, diversity, meta-science, amongst others.

Between March and November, the blog also produced the monthly series, "Kids Ask, Science Answers." The idea was simple: children often raise the best fundamental questions, which really anyone could have. Therefore, we decided to use these questions as inspiration and invite scientists to answer them for the blog's adult audience. We reproduced the series on **Serrapilheira's Instagram** channel by featuring videos of some of the children asking their questions, available in the "Highlights" section.

You can read the texts **here**, and below is a list of just a few.

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Science Outreach Program

Fundamental Science - What do young scientists think?

How Many Galaxies Are There in the Universe?

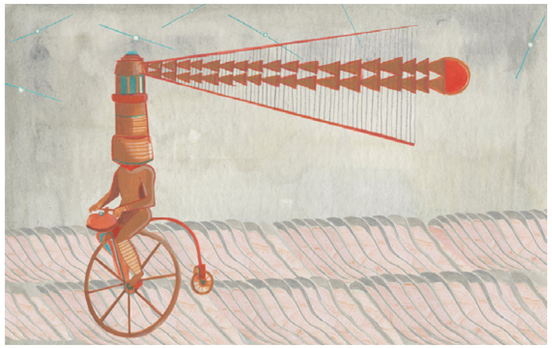
Astronomer Thiago Gonçalves answers a question from Penélope Alves, a 6-year-old girl from Bahia, who also wants to be an astronomer.

Why Does the Heart Beat?

Rossana Soletti, PhD in morphological sciences, answers a question from Pedro Henrique Nagai.

Where in the Brain is Memory Located?

Neuroscientist Eduardo Zimmer answers a question from Violeta Reys, a 7-year-old girl from Rio de Janeiro.

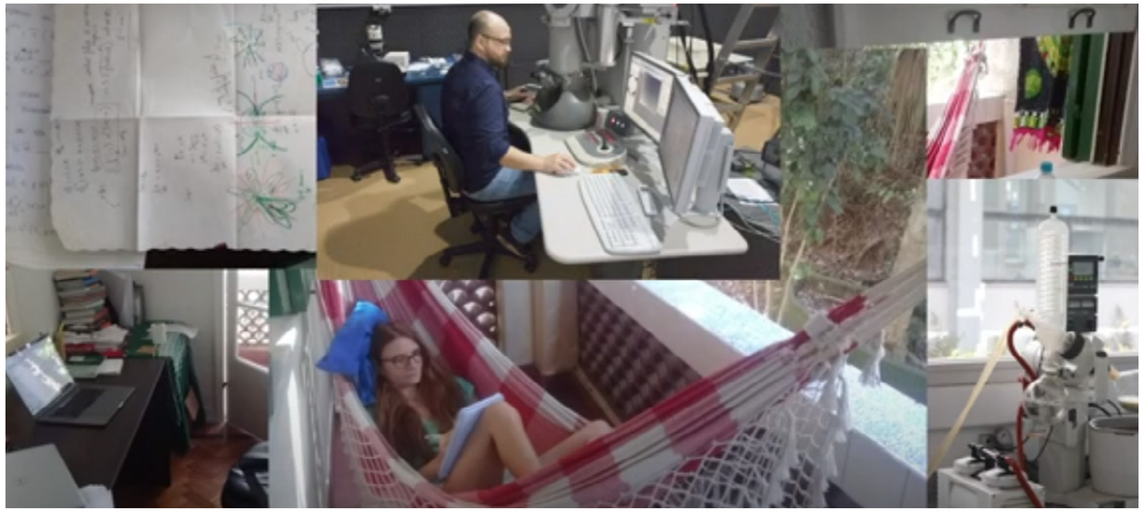


Science Outreach Program

Modos de Ver

How do you connect 12 scientists in different places to talk about ways of researching the world in the middle of a pandemic? The ***Modos de Ver*** (ways of seeing) video series, launched in 2021, provides a glimpse of these researchers' processes, methods, and work and observes how they share concepts, hypotheses, and questions.

Produced by Instituto Comum, the six videos were recorded remotely. Interviews conducted via video calls share space with footage recorded by the researchers themselves of notes, scientific articles, personal records, and field research. Everything is permeated by artist Maria Palmeiro's illustrations and Luiza Baldan's photographs, produced especially for this series. The series is available on YouTube. We also offer some behind-the-scenes stories in **this text**.



The mathematician
Luna Lomonaco
and the chemist
Marco Aurélio Liutheviciene
in the series *Modos de Ver*

Training Program in Quantitative Biology and Ecology

Training Program in Quantitative Biology and Ecology

After a few years developing the idea of an initiative dedicated to transdisciplinary biology and ecology, Serrapilheira finally launched its third program in 2021: the Training Program in Quantitative Biology and Ecology. This is our first program aimed at scientists who have yet to complete their PhD.

Launched in March in partnership with the South American Institute for Fundamental Research (ICTP-SAIFR), the new program's mission is to prepare future scientists for research in life sciences with a focus on using mathematics, physics and computer science. The idea is to leverage the potential of Brazil—home to the planet's greatest biodiversity—and, in the long term, create a generation of highly skilled young people to tackle its challenges.

Due to the pandemic, the program's first edition (online) brought together professors—global leaders in their research areas—who addressed topics ranging from modern genetics to behavioral ecology. Throughout July, the 30 participants, selected from a pool of 360 applicants, learned about quantitative methods to solve questions at the forefront of biology and ecology. To be eligible, students had to have completed an undergraduate degree in any field or be expected to complete one by the end of 2021, and have knowledge of differential and integral calculus and proficiency in English.

The program is coordinated by Serrapilheira's Training Manager, Camila Teicher, (overseeing the administration) and by ICTP-SAIFR professor and Grantee Ricardo Martinez-García (overseeing the curriculum), under the direction of Serrapilheira's CEO, Hugo Aguilaniu, and ICTP-SAIFR's director, Nathan Berkovitz. The next edition, scheduled to start in July 2022 and last five months, will be held in person in São Paulo.

Training Program in Quantitative Biology and Ecology

Meet the instructors of the Training Program in Quantitative Biology and Ecology:

Antonio Coutinho
Gulbenkian Science Institute
Area: History of Biological Concepts

Ingrid Lohmann
University of Heidelberg
Area: Developmental Biology

Oded Rechavi
Tel Aviv University
Area: Genetics, Epigenetics and Large Data Sets

Priyamvada Rajasethupathy
Rockefeller University
Area: Neurobiology

Hanna Kokko
University of Zurich
Area: Evolutionary Biology

William Bialek
Princeton University
Area: Biophysics

Eva Nogales
Howard Hughes Medical Institute/University of California, Berkeley
Area: Molecular, Structural and Cellular Biology

Daniel Mucida
Rockefeller University
Area: Host-Pathogen Interactions, Infectious Disease Ecology and Epidemiology

Training Program in Quantitative Biology and Ecology

Meet the instructors of the Training Program in Quantitative Biology and Ecology (cont.):

Silvia De Monte
Max Planck Institute
for Evolutionary Biology
Area: Microbial Ecology

Carla Staver
Yale University
Area: Ecology
and introduction
to ecological theory

Corina E. Tarnita
Princeton University
Area: Game Theory
in Ecology
and Evolution

Jordi Bascompte
University of Zurich
Area: Biodiversity,
Community Ecology
and Ecological
Networks

Iain Couzin
Max Planck Institute
for Animal Behavior
Area: Behavioral
Ecology

Max Rietkerk
University of Utrecht
Area: Spatial Ecology

Malin Pinsky
Rutgers University
Area: Climate Change
Impacts on Biodiversity
+ Conservation,
Management, and
Decision-Making

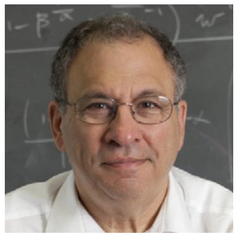
Training Program in Quantitative Biology and Ecology

Webinars with Akiko Iwasaki and Simon Levin

The launch of the Training Program in Quantitative Biology and Ecology featured two preeminent scientists: Akiko Iwasaki, immunologist and professor at Yale University (USA), a global leader in studies of the novel coronavirus, and Simon Levin, one of the world's top ecologists and professor at Princeton University (USA).

In two webinars held in early March, they stressed the importance of a transdisciplinary approach to science and explained that advances in either biology or ecology today depend on mathematical and computational tools. Levin and Iwasaki are members of the program's Advisory Committee and helped to define its concepts.

Immunologist **Akiko Iwasaki**, professor at Yale University (USA)



Simon Levin, professor at Princeton University (USA)

"We need to teach scientists to work together and trust each other's expertise. You can't be an expert in everything."

Simon Levin
ecologist and professor at Princeton University, in the webinar launch of the Training Program in Quantitative Biology and Ecology.

Institutional

New Members of the Board of Trustees

Computer scientist Francilene Procópio Garcia, an associate professor at the Federal University of Campina Grande (UFCG), joined the Board of Trustees (BT) in 2021, replacing engineer Pedro Wongtschowski. According to the BT regulations, each member serves a three-year minimum term and each year a member who has met this criterion is replaced by luck of the draw.

The next member to leave the BT will be biologist Fernando Reinach. In 2022, he will be replaced by biologist and University of Brasília (UnB) Professor Mercedes Bustamante.

In Memoriam to Two Major Scientists

In July, we lost one of the biggest names in Brazilian inorganic chemistry, Professor Oswaldo Luiz Alves, member of the first Scientific Advisory Board (2016 – 2019). Alves was fundamental to the development of the Institute and the ramp-up of its activities, advising the Executive Team and the Board of Directors.

Oswaldo Luiz Alves was full professor at the Institute of Chemistry at the University of Campinas (Unicamp), where he forged an outstanding academic career. He founded the Solid State Chemistry Laboratory, where he oversaw the training of more than 50 graduate students. His research was focused on developing nanomaterials and the interaction of nanostructures with biological systems.

Alves was also president of the Brazilian Chemical Society, vice president of the São Paulo Region of the Brazilian Academy of Sciences, fellow of the Royal Society of Chemistry and of The World Academy of Sciences (TWAS). As a scientist, he was part of the history of science in Brazil and at Serrapilheira.

Oswaldo Luiz Alves, member of the institute's Scientific Advisory Board from 2016 to 2019, photo taken during the first Serrapilheira Scientific Retreat, in 2018

In Memoriam to Two Major Scientists

In December, the international scientific community also lost one of its most prominent names, biologist Thomas Lovejoy, a member of the Serrapilheira Scientific Advisory Board (SAB) since 2020. Lovejoy advised the Executive Team and the Board of Trustees on life science issues.

Professor at the School of Environmental Science and Policy at George Mason University (USA), he had been researching the Amazon for over 50 years and was one of the world's top specialists on the subject. A graduate of Yale University (USA), he arrived in the Amazon rainforest in 1965 and soon became enchanted. Together with Brazil's National Institute for Amazon Research (INPA), he helped create a large-scale experiment to investigate how forest fragments function and the effects of deforestation on animal and plant species diversity.

Lovejoy was one of the first researchers to study the impact of climate change on biodiversity and became a tireless defender of the Amazon rainforest. His legacy will be an inspiration to Serrapilheira and future generations of scientists.

Thomas Lovejoy, American environmentalist and biologist

In Memoriam to Two Major Scientists

“Anyone who knows anything about the ecological systems of the planet, and how they’re interacting with climate change, also knows that the socioeconomic impacts are very real. And I think it’s critical that the future scientific leaders that you’re training have that kind of commitment and the ability to think in that integrated way from the beginning.”

Thomas Lovejoy
at the annual meeting of the SAB, August 2020.

Institutional partnerships

In December, Serrapilheira and CONFAP (National Council of State Research Foundations), which oversees all the state research foundations in Brazil, signed a **new partnership** for joint support to science projects.

The partnership involves two channels of action. One is through co-financing, whereby each of the institutions grants a portion of its funds to selected projects. The other channel is through state research foundations, which can take advantage of the selection processes in Serrapilheira's open calls for proposals to finance finalists who were not selected by Serrapilheira due to a limits in the Institute's resources.

This cooperation agreement began to bear fruit in early 2022 when two projects from the state of Santa Catarina that reached the final stages of Serrapilheira's 4th open call for the Science Support Program started to get funding from FAPESC (Santa Catarina Research Foundation).

Serrapilheira in the Media

Approximately 1,300 articles in the press mentioned the Serrapilheira Institute in 2021. One of the most common themes of the year was Brazil's **brain drain**, which garnered headlines again due to the successive budget cuts in science and the poor working conditions, which complicate the situation for young researchers (learn more on page 5).

In May, ***Folha de S.Paulo*** published an **article** about some of our grantees who decided to leave Brazil in spite of the funding they had secured, which only underscored the fact that Serrapilheira plays a supporting, not a main role in funding science. We delved deeper into the subject in an **article** in ***Estadão*** written by our executive director, Hugo Aguilaniu, and our science director, Cristina Caldas, who also spoke about the subject on the **Entrevozes** podcast hosted by ***CNN Brasil***.


FOLHA DE S.PAULO

ciência

Jovens cientistas deixam o Brasil mesmo com financiamento garantido

Pesquisadores citam cortes de orçamento e estrutura precária como razões para sair do país

Reinaldo José Lopes

SÃO CARLOS A única instituição privada cujo objetivo é financiar pesquisas de ponta no Brasil está enfrentando os maiores sobressaltos de sua curta história. O problema, porém, não é a falta de dinheiro, mas o fato de que alguns dos jovens talentos da ciência nos quais ela investe estão deixando o país, mesmo com financiamento garantido.

"É assustador. Para mim, é um grito de socorro", resume o geneticista Hugo Aguilaniu, diretor-presidente do Instituto Serrapilheira, sediado no Rio de Janeiro, cujos recursos vêm de um fundo patrimonial de R$ 350 milhões.

"Desde 2017, quando cogente tinha a ilusão de que R$ 1 milhão segurava as pessoas. A falta de perspectiva derreteu isso. Para um cientista, a instabilidade é fatal."

"O que me motiva a sair é a falta de estabilidade de alguns processos da esfera científica", diz Edgard Pimentel, 38, que trabalhava no Departamento de Matemática da PUC-Rio e foi contemplado com financiamento do instituto em 2019.

"Isso fica evidente nos sucessivos cortes e contingenciamentos que afetam o sistema de ciência e tecnologia no país. Recentemente, falou-se em uma chamada de bolsas do CNPq [principal órgão federal de fomento à pesquisa] que atendia apenas a 13% da demanda qualificada. Es-

"Falta estabilidade. Isso fica evidente nos sucessivos cortes e contingenciamentos que afetam o sistema de ciência e tecnologia no país"

Edgard Pimentel matemático da PUC-Rio que vai para Portugal

Fotos: El Tigre Duarte


Artigo

Nem um cientista a menos

CRISTINA CALDAS e HUGO AGUILANIU

ção, a desatualização dos valores de bolsas de estudo e o descasc com o desenvolvimento de pesqui-

Brain Drain in Folha de S.Paulo, in May, and in Estadão, in June

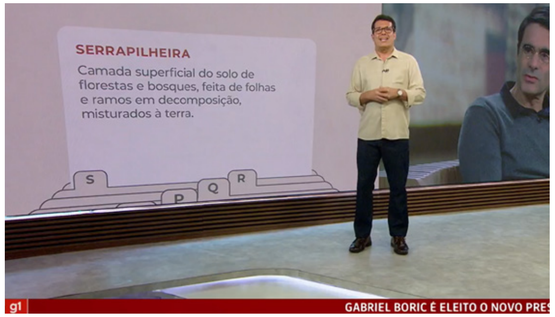
Serrapilheira na mídia

The **Training Program in Quantitative Biology and Ecology** also caught the media's attention. ***Folha de S.Paulo*** carried a **story** about one of the workshop's instructors, Israeli neuroscientist Oded Rechavi, and ***Estadão*** **interviewed** Akiko Iwasaki, a US immunologist and member of the program's Advisory Committee, who gave one of the program's inaugural webinars. ***Galileu*** magazine wrote an **profile** of some of the students who participated in the training program, and the ***Página 22*** website published an **article** by Hugo Aguilaniu where he emphasized the importance of investing in training young people for transdisciplinary research in ecology (read more on page 45).

Another theme we explored in the press was **maternity in science**. ***Estadão*** published an **article** that addressed the hardships researchers who are mothers face and talked to Cristina Caldas, in addition to citing our exemplary **Best Practices Guide to Diversity** in Science and listing some of its guidelines (learn more on page 8).

The **Cidades e Soluções (Cities and Solutions)** program produced by **Globonews**, also talked about Serrapilheira in an episode on philanthropy. The host, André Trigueiro, showed data about the Institute's support and interviewed Guilherme Longo, professor at the Federal University of Rio Grande do Norte who studies the effects of climate change on coral reefs.

Training Program in Quantitative Biology and Ecology in Galileu in July



Philanthropy in the Cidades e Soluções program, by Globonews, in December

Outlook for 2022

Serrapilheira will turn five in 2022. Over these past years, we have invested upwards of R$ 50 million in 140 research projects and 58 science outreach projects, putting our wager on building up science centered on big ideas, originality and diversity. If you can already see an inkling of the results of our actions, it is because the scientific community has our back. We are happy to see the emergence of new calls for proposals aimed at young scientists with bold projects and that take into consideration the parental status of candidates in their curricula).

Once again, we thank all our partners who have helped us chart this course. With the presidential elections in sight, 2022 will be a crucial year for us to inject science into the political debate and effectively make it a project of the State, not of a particular government, and bring urgent issues to the fore such as preserving the Amazon rainforest, tackling climate change, and combatting disinformation. We want to be a part of this movement.

2021 Timeline

mar

Launch of the Training Program in Quantitative Biology and Ecology

Science Outreach Program starts to focus on journalism and media and begins accepting proposals on a rolling basis

may

Training Program in Quantitative Biology and Ecology received 360 applications

jun

Acceptance letters sent to finalists for the Training Program in Quantitative Biology and Ecology

“Not A Scientist Less,” an article about Brazil’s brain drain published in *Estadão*

jul

Results of the 4th open call for the Science Support Program

Classes begin for the Training Program in Quantitative Biology and Ecology

Announcement of the joint support with the Ibirapitanga Institute for the Oguntec program

Launch of the 6th Science and Health Journalism Training Program with *Folha de S.Paulo*

aug

Launch of the Training and Fostering Science Journalism Program with the Gabo Foundation

sep

Launch of the *Modos de ver* video series

Launch of the course “From Pandemic to the Climate Crisis: How to improve science coverage,” in collaboration with the Knight Center for Journalism in the Americas

oct

Registration begins for the 5th open call for the Science Support Program

nov

5th open call for Science Support Program receives 260 applications

Independent auditors' report about the financial statements

To the Executive Team
and Members of the Board
Instituto Serrapilheira

(A free translation of the original in Portuguese)

Opinion

We have audited the financial statements of INSTITUTO SERRAPILHEIRA (the “Institute”), which comprise the statement of financial position as at December 31, 2021, and the related statements of surplus or deficit, comprehensive income, changes in net assets, and statement of cash flows for the year then ended, as well as the notes to the financial statements, including the summary of significant accounting policies.

In our opinion, the financial statements mentioned above present fairly, in all material respects, the financial position of INSTITUTO SERRAPILHEIRA as at December 31, 2021, its financial performance and its cash flows for the year then ended, in accordance with the accounting practices adopted in Brazil for small and medium-sized entities.

Basis of opinion

We conducted our audit in accordance with Brazilian and International Standards on Auditing (ISAs). Our responsibilities under those standards are described in the following section entitled “Auditor’s Responsibilities for the audit of the financial statements”. We are independent of the Institute in accordance with the ethical principles established in the Code of Professional Ethics and Professional Standards issued by the Brazilian Federal Accounting Council, and we have fulfilled our other ethical responsibilities in accordance with these standards. We believe that the audit evidence we obtained is sufficient and appropriate to provide a basis for our opinion.

Responsibilities of directors and those charged with governance of the financial statements

The Institute's directors are responsible for the preparation and proper financial reporting in accordance with accounting practices adopted in Brazil for small and medium-sized entities (Technical Pronouncement issued by the Accounting Pronouncement Committee (CPC) for Small and Medium- sized Entities (SMEs), Revision 1 (R1)) and for the internal controls that the directors deem necessary for preparing financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the directors are responsible for evaluating the Institute's ability to continue as a going concern when preparing financial statements, and, when applicable, must disclose issues related to its going concern and using the going concern basis of accounting for preparing financial statements unless the directors either intend to liquidate the Institute or to cease operations or have no realistic alternative but to do so.

Those charged with the governance of the Institute are responsible for overseeing Instituto Serrapilheira's financial reporting process.

Auditor's responsibilities for the audit of the financial statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance but is not a guarantee that an audit conducted in accordance with Brazilian and International Standards on Auditing will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit conducted in conformity with Brazilian and International Standards on Auditing, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material distortion of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain appropriate and sufficient audit evidence to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to our audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Institute's internal control.

- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the directors.

- Conclude on the appropriateness of the directors' use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Institute's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our report. However, future events or conditions may cause the Institute to cease to continue as a going concern.

- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

We communicate with those charged with governance regarding, among other things, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal controls that we identify during our work.

Ribeirão Preto (SP), April 14, 2022

ValorUp Auditores Independentes
CRC 2SP028585/O-0 “S” RJ

André Luiz Corrêa
Accountant CRC 1SP198337/O-2 “S” RJ

Financial statements as at December 31, 2021

(A free translation of the original in Portuguese)

Contents

(A free translation of the original in Portuguese)

Statement of financial position as at 31 December

In Brazilian reals

(A free translation of the original in Portuguese)

Assets	Note	2021	2020
Current assets			
Cash and cash equivalents	5	15.396.748	7.305.689
Advance to suppliers			1.265
Other Assets		16.800	63.929
		15.413.548	7.370.883
Non-current assets			
Long-term assets			
Security deposit		39.000	39.000
Trading securities	6	523.511.366	611.448.551
		523.550.366	611.487.551
Property, Plant and Equipment	7	182.220	220.286
Intangible assets	8	33.462	68.892
		523.766.048	611.776.729
Total assets		539.179.596	619.147.612

Liabilities and net assets	Note	2021	2020
Current liabilities			
Trade payables		1.553	780
Employee benefits	9	235.381	86.781
Tax payables	10	15.765	15.249
Total liabilities		252.699	102.810
Net assets			
Net assets	11	619.044.802	630.160.918
Accumulated surplus (deficit)		(80.117.905)	(11.116.116)
Total equity		538.926.897	619.044.802
Total liabilities and net assets		539.179.596	619.147.612

The accompanying notes form an integral part of the financial statements.

Statement of surplus or deficit
Year ended at 31 December
In Brazilian reals

(A free translation of the original in Portuguese)

	Nota	2021	2020
Revenues from volunteer work	22	663.177	656.402
Revenues from services rendered	12		4.198
Total surplus		663.177	660.600
Operating Expenses			
Donations	13	(9.982.772)	(15.444.247)
General and administrative expenses	14	(2.365.019)	(3.519.380)
Personnel expenditure	15	(3.359.579)	(2.711.650)
Depreciation and amortization	7 e 8	(75.921)	(72.016)
Tax expenditure	16	(20.224)	(19.533)
Expenses from volunteer work	22	(663.177)	(656.402)
Operating losses		(15.803.515)	(21.762.628)
Financial Revenues	17	909.957	10.647.528
Financial Expenses	17	(65.224.347)	(1.016)
Financial income		(64.314.390)	10.646.512
Deficit for the year		(80.117.905)	(11.116.116)

The accompanying notes form an integral part of the financial statements.

Statement of comprehensive income Years ended at 31 December

In Brazilian reals

(A free translation of the original in Portuguese)

	2021	2020
Deficit for the year	(80.117.905)	(11.116.116)
Other components of comprehensive income	-	-
Total comprehensive income for the year	(80.117.905)	(11.116.116)

The accompanying notes are an integral part of the financial statements.

Statement of changes in net assets

In Brazilian reals

	Note	Net Assets			
		Donations from founding members	Earning from previous years	Accumulated surplus (deficit)	Total
As of December 31, 2019 - restated		340.800.000	149.161.548	140.199.370	630.160.918
Transfer to net assets	11		140.199.370	(140.199.370)	
Deficit for the year				(11.116.116)	(11.116.116)
As at December 31, 2020		340.800.000	289.360.918	(11.116.116)	619.044.802
Transfer to net assets	11		(11.116.116)	11.116.116	
Deficit for the year				(80.117.905)	(80.117.905)
As at December 31, 2021		340.800.000	278.244.802	(80.117.905)	538.926.897

The accompanying notes are an integral part of the financial statements.

(A free translation of the original in Portuguese)

Statement of cash flows Years ended at 31 December

In Brazilian reals

(A free translation of the original in Portuguese)

	Note	2021	2020
Cash flow from operating activities			
Deficit for the year		(80.117.905)	(11.116.116)
Adjustments to reconcile non-cash revenues and expenses:			
Depreciation and amortization	7 e 8	75.921	72.016
		(80.041.984)	(11.044.100)
Changes in assets and liabilities			
Advance to suppliers		1.265	190
Other assets		47.129	(56.971)
Trade payables		773	(18.418)
Employee benefits		148.600	(100.957)
Tax liabilities		516	13.603
Other Liabilities			(14.607)
Net cash used in operating activities		(79.843.701)	(11.221.260)
Cash flow from investing activities			
Proceeds from sale of trading securities	6	22.715.000	17.900.000
Gains (losses) from trading securities	6	65.222.185	(10.384.753)
Acquisition of property, plant and equipment	7	(2.425)	(36.546)
Net cash provided by investment activities		87.934.760	7.478.701
Increase (decrease) in cash and cash equivalents		8.091.059	(3.742.559)
Cash and cash equivalents beginning of period	5	7.305.689	11.048.248
Cash and cash equivalents end of period	5	15.396.748	7.305.689

The accompanying notes are an integral part of the financial statements.

Notes
to the Financial Statements
as at 31 December 2021

In Brazilian reals

(A free translation of the original in Portuguese)

1 General Information

1.1 Organization

(A free translation of the original in Portuguese)

INSTITUTO SERRAPILHEIRA ("the Institute") is a private non-profit organization established on November 9, 2015, for an indefinite term and based in Rio de Janeiro, Rio de Janeiro.

The goal of the Institute is to identify and provide support to projects that aim to encourage scientific production and outreach in the exact and natural sciences. The Institute may engage in the following activities so long as they are in line with the pursuit of the Institute's stated goals:

(i) Developing, fostering and supporting programs, projects and scientific research related to the stated goals even through financial support;

(ii) Promoting and sponsoring research, courses, lectures, symposia and conferences;

(iii) Entering into agreements, contracts, and partnerships with schools, associations, companies, agencies, entities, or any other institutions, public or private, Brazilian or international;

(iv) Raising, managing and donating resources (financial, technical, and material);

(v) Developing and publishing materials by any means, including electronic and virtual channels, for guiding, supporting or overseeing activities to promote, foster and advance science;

(vi) Granting awards and other incentives in the Institute's areas of activity, and

(vii) Carrying out any other lawful activities related to the Institute's goals.

As at December 31, 2021, the Institute has 3 founding members, namely:

- João Moreira Salles;
- Branca Maria Vianna Moreira Salles; and
- Brasil Warrant Administração de Bens e Empresas S.A.

The initial capital investment made by the founding members in March 2016 established the Institute's endowment, which is entirely made up of financial resources and will remain heavily invested in trading securities; the yield on the financial investments is to be the Institute's main source of funding for the pursuit of its goals.

The Board of Trustees approved the issue of the Institute's financial statements on April 14, 2022.

1 General Information

1.2 Administration

The Institute's administration is overseen by the following bodies:

(a) General Assembly

The General Assembly, the Institute's sovereign body, will be made up of members in full enjoyment of their statutory rights. The Assembly will be held, ordinarily, once a year to:

(i) Assess the Directors' Annual Report;

(ii) Approve the financial statements, after approval by the Board of Trustees and Financial Advisory Board (when established), and

(iii) Elect and discharge members of the Board of Trustees and the Fiscal Council.

(b) Board of Trustees

The Board of Trustees is made up of no less than three (3) and no more than fifteen (15) members appointed by the General Assembly from a pool of members and non-members, alike, who will perform their duties in a collegial manner for a four-year term, at the end of which members may seek re-election or be substituted by luck of the draw. The Board of Trustees meets regularly every four months and extraordinarily at the discretion of the Chair, if and when necessary. The Board of Trustees is responsible for:

(i) Electing the members of the Financial Advisory Board, the Scientific Advisory Board and the Executive Team, assigning them their respective roles, responsibilities and remuneration, where applicable;

(ii) Approving, at the Board of Trustees' prompting, the provisions in the by-laws; the Internal Regulations of the Institute; and the Institute's Code of Conduct;

(iii) Defining the Institute's action strategy, reviewing and approving the annual sponsorship plan, including the respective selection process, among other duties.

(c) Scientific Advisory Board

An Advisory Board made up of three (3) to fifteen (15) members appointed by the Board of Trustees from a pool of members and non-members, alike, who are to perform their duties

1
General Information

during staggered three-year terms and can seek re-election. The Scientific Advisory Board is responsible for:

(i) Issuing opinions on the Institute's specific areas of activity, as well as on the guidelines for action in their respective areas.

(ii) Advising the Board of Trustees and the Executive Team in matters related to the Institute's goals and activities, including the evaluation of the annual sponsorship plan proposal and the carrying out of the respective selection processes, among other duties.

(d) Executive Team

The Institute's Executive Team will consist of an (1) Executive Director and up to three (3) Directors, to be designated according to the definitions set out by the Board of Trustees upon their respective appointments. Members of the Executive Team will serve a term of three years, may seek re-election. The Institute's Executive Team is responsible for the executive administration of the Institute's overall activities, as laid out in the by-laws.

1 General Information

1.3 Taxes and benefits

Currently, the Institute is subject to the payment of contributions to: (i) Social Integration Program (PIS) - a payment of 1% levied on payroll totals; and (ii) National Institute of Social Security (INSS) - payment of contributions due on payroll.

Since the Institute is a private non-profit organization, it is exempt from paying Corporate Income Tax (IRPJ) and Social Contribution on Net Income (CSLL) relating to its ordinary operations. Additionally, it is also not subject to the Contribution for the Financing of Social Security (COFINS) and PIS on its revenues from its core activity.

The Institute is also subject to Withholding Income Tax (IRRF) on redemptions of financial investments.

1.4 Impacts of COVID-19

In March 2020 the World Health Organization (WHO) declared COVID-19 as a pandemic, and since then the Institute has been taking all the necessary measures to prevent it, trying to meet requests from the health agencies of the State and Federal governments, thinking about the welfare of its employees.

The public calamity moment notably affected the world and national financial markets, which resulted in significant impacts with the drop in prices of the financial assets invested by the Institute, through its investments in Securities (Note 6).

2 Summary of significant accounting policies

The significant accounting policies used in preparing these financial statements are set out below. These policies have been applied consistently in all fiscal years, unless otherwise stated.

2.1 Basis of preparation

The financial statements were prepared and are being presented in accordance with the Technical Pronouncement issued by Revision 1 of the Accounting Pronouncements Committee for Small and Medium-Sized Companies (CPC PME (R1)). The financial statements have been prepared considering the historical cost-based valuation and certain financial instruments at their fair value.

The preparation of financial statements in accordance with APC SME (R1) requires that certain critical accounting estimates be used and that the Institute's administration exercise sound judgment in applying accounting policies. The areas that involve a higher degree of sound judgment or complexity, as well as those whose assumptions and estimates are significant for the financial statements are disclosed in Note 3.

2.2 Presentation of the financial statements

The Institute's financial statements were prepared in accordance with the accounting practices adopted in Brazil issued by the Accounting Pronouncements Committee (CPC), considering the Brazilian Accounting Standards, specifically those applicable to small and medium-sized companies and non-profit entities - ITG 2002 (R1).

Items included in the financial statements are measured using the currency of the primary economic environment in which the Institute operates ("functional currency"). The financial statements are presented in the Brazilian real, which is the Institute's functional and presentation currency.

2 Summary of significant accounting policies

2.3 Cash and cash equivalents

Cash and cash equivalents include cash on hand, bank deposits, other short-term highly liquid investments with original maturities of three months or less and with insignificant risk of changes in value, and balances in escrow accounts, where applicable.

2.4 Financial Assets

2.4.1 Classification

The Institute classifies its financial assets under the following measurement categories:

- Measured at fair value (either through other comprehensive income or through profit or loss).
- Measured at amortized cost.

(a) Financial assets at fair value through profit or loss

Os ativos que não atendem os critérios de classificação de custo amortizado ou de valor Assets that do not meet the criteria for classification as either amortized cost or fair value through other comprehensive income are measured at fair value through profit or loss. Any gain or loss on a debt instrument that is subsequently measured at fair value through profit or loss is recognized in the income (surplus or deficit) statement and presented at net value in other gains/(losses) in the period in which it occurs.

(b) Amortized cost

Assets, held to collect contractual cash flows when such cash flows represent only payments of principal and interest, are measured at amortized cost. Interest income from these financial assets is recorded in financial income using the effective interest rate method. Any gains (loss) from derecognition of assets is recognized directly in the statement of surplus or deficit and presented under other gains/(losses). Impairment losses are presented in a separate account in the statement of surplus or deficit.

2 Summary of significant accounting policies

2.4.2 Recognition, derecognition and measurement

Regular way purchases and sales of financial assets are recognized on the trade date, the date on which the Institute commits to purchase or sell the asset. Financial assets are derecognized when the rights to receive cash flows have expired or have been transferred and the Institute has transferred substantially all risks and rewards of ownership.

At initial recognition, the Institute measures a financial asset at fair value plus or minus, in the case of a financial asset not measured at fair value through profit or loss, transaction costs directly attributable to the acquisition of the financial asset. Transaction costs of financial assets at fair value through profit or loss are recorded as expenses on the statement of surplus or deficit.

2.4.3 Offsetting financial instruments

Financial assets and liabilities are offset, and the net amount is presented in the statement of financial position when the Institute has a legal right to offset the recognized amounts and there is an intention to settle them on a net basis, or to realize the asset and settle the liability simultaneously. The legal right of offset shall not be contingent on future events and must apply in the normal course of business and in the event of default, insolvency or bankruptcy of the entity or any counterparty.

2.4.4 Impairment of financial assets

The Institute makes an assessment at each reporting date whether there is objective evidence that a financial asset or a group of financial assets is impaired. Impairment losses are recognized only if there is objective evidence of impairment as a result of a loss event or events that occurred after the initial recognition of the asset and that the loss event or events had an impact on the estimated future cash flows of the financial asset or group of financial assets and a reliable estimate of the loss amount can be made.

The criteria the Institute uses to determine whether there is objective evidence of impairment loss boil down to identifying significant difficulty of the obligor, a breach of contract or default.

2 Summary of significant accounting policies

If in a subsequent period the amount of an impairment loss decreases and the decrease can be related objectively to an event occurring after the impairment was recognized (such as an improvement in the debtor's credit rating), the Institute shall reverse the previously recognized impairment loss on the profit or loss statement.

2.5 Financial Assets

The Institute does not have any derivative financial instruments.

2.6 Property, plant and equipment

Items of property, plant and equipment are stated at historical cost less depreciation and any accumulated impairment loss. Historical cost includes any necessary expenditures directly attributable to prepare the asset for its intended use by the directors.

Depreciation is calculated using the straight-line method to allocate its costs less the residual value over the useful life of the asset, which is estimated as disclosed in Note 7.

The assets' residual values, useful lives, and depreciation methods of assets are reviewed and adjusted as needed when there is an indication of significant change since the last reporting date.

Gains and losses arising from the derecognition of an item of property, plant and equipment shall be determined by comparing the sales value with the book value and are recognized under "Other income (expenses), net" in the statement of comprehensive income.

2 Summary of significant accounting policies

2.7 Intangible Assets

Software licenses are capitalized based on the costs incurred to acquire and bring to use the specific software. These costs are amortized over the software's estimated useful life, between three (3) to five (5) years.

2.8 Impairment of non-financial assets

Non-financial assets are tested for impairment whenever events and circumstances indicate that the carrying amount may not be recoverable. An impairment loss is the amount by which the carrying amount of an asset exceeds its recoverable amount. The recoverable amount is the higher of the asset's fair value less costs of disposal and its value in use. For the purpose of assessing impairment, assets are grouped at the lowest levels of separately identifiable cash flows (cash-generating units (CGU)). Non-financial assets that have been impaired are subsequently reviewed for possible reversal of the impairment on each reporting date.

2.9 Trade payables

Trade payables are debt obligations to be paid to suppliers for goods or services acquired from them in the normal course of business, and are classified as current liabilities if payment is due within one year. Otherwise, the accounts payable are presented as non-current liabilities.

2 Summary of significant accounting policies

2.10 Other current and non-current liabilities

These are stated at known or estimated amounts, including, where applicable, related charges and and adjustments for inflation.

2.11 Revenue recognition and income measurement Financial revenue

Interest revenue is recognized on the time proportion basis after taking into account the outstanding principal and the effective interest rate to maturity, when it is determined that the revenue will be paid to the Institute, in addition to possible market value adjustments.

2.12 Other income and expenses

The other revenues and expenses are also recognized on an accrual basis.

3 Critical accounting estimates and assumptions

Accounting estimates and judgments are continually evaluated and are based on historical experience and other factors, including expectations of future events.

During fiscal years 2021 and 2020, no events or assumptions were identified that could present significant risks of causing adjustments to the Institute’s financial statements.

4
Financial instruments by category

Assets per the statement of financial position	Classification	2021	2020
Cash and cash equivalents - Cash and banks	(i)	47.094	90.963
Cash and cash equivalents - Financial investments	(ii)	15.349.654	7.214.726
Trading securities - Investment Fund	(ii)	523.511.366	611.448.551
Advance to suppliers	(i)		1.265
Other Assets	(i)	16.800	63.929
Security deposit	(i)	39.000	39.000
		538.963.914	618.858.434

Liabilities per the statement of financial position	Classification	2021	2020
Trade payables	(iii)	1553	780

Classification

(i) Assets at amortized cost
(ii) Assets at fair value through profit or loss
(iii) Liabilities at amortized cost

5
Cash and cash equivalents

	2021	2020
Financial investments (i)	15.349.654	7.214.726
Cash and Banks	47.094	90.963
	15.396.748	7.305.689

(i) In 2021 and 2020, the financial investments are represented by fixed-income investment funds, whose index is the CDI (interbank deposit certificate) rate through investments in shares of other funds that hold at least 95% of their funds in securities or operations linked to this indicator.

6
Trading securities

Represented by a financial investment in an exclusive investment fund named Amarante II Fundo de Investimento Multimercado Crédito Privado Investimento no Exterior (“the Fund”).

The Fund was organized as a closed-end fund with a 20-year term, and that distributed its first shares in July 2013. However, the fund began its activities in March 2016 and its objective is to invest its funds in financial assets of different types, risks, and characteristics, without committing to concentration on any particular asset or special risk factor. The strategy adopted derives from and reflects the Fund’s investment policy, as described in its regulations. Furthermore, the shares will be redeemed in full only at the Fund’s maturity; however, the shares may be amortized in part, with a single amortization permitted every 12-months.

On December 31, 2021 and 2020, the Fund’s asset portfolio was substantially made up of fixed-income “NTN-B” (inflation-linked) government bonds and shares in investment funds quotas, with maturities exceeding 365 days from the balance sheet date.

Investments in funds are not guaranteed by the administrator or by any insurance mechanism, or even by the Brazilian Credit Guarantee Fund (FGC). Notwithstanding the administrator’s diligence in managing the Fund’s resources, the investment policy puts the Fund’s assets at risk due to the characteristics of its securities, which are subject to market fluctuations and to the credit risks inherent in such investments, with the possibility of losing the capital invested.

During the year ended December 31, 2021, the Fund’s net equity suffered a significant devaluation, around -15%, since its investments are tied to market values.

6
Trading securities

The breakdown of the Fund's financial assets is as follows:

	2021	2020
Opening Balance	611.448.551	618.963.798
Earnings/income (loss) from trading securities (i)	(65.222.185)	10.384.753
Amortization of shares	(12.068.752)	(11.471.484)
Amortization of income	(10.646.248)	(6.428.516)
Closing Balance	523.511.366	611.448.551

(i) Financial income is recognized net of estimated withholding tax. Although this tax is effectively due upon redemptions, the amount can be estimated by competence and, thus, it is accounted for in the annual income, deducting the corresponding financial income since there is no chance of recovering this tax given the Institute's legal nature and activity.

7
Property, plant and equipment

(a) Change in balances

	Computer equipament	Comm-unication & network equipament	Furniture & Fixtures	Leasehold improvement	Total
At January 1, 2020	36.276	8.020	176.032		220.328
Acquisitions	12.822		23.724		36.546
Depreciation	(12.033)	(944)	(23.611)		(36.588)
At December 31, 2020	37.065	7.076	176.145		220.286
Total cost	70.675	9.448	253.207	1.621.975	1.955.305
Accumulated depreciation	(33.610)	(2.372)	(77.062)	(1.621.975)	(1.735.019)
Net book value	37.065	7.076	176.145		220.286
At January 1, 2021	37.065	7.076	176.145		220.286
Acquisitions			2.425		2.425
Depreciation	(14.135)	(945)	(25.411)		(40.491)
At December 31, 2021	22.930	6.131	153.159		182.220
Total Cost	70.675	9.448	255.632	1.621.975	1.957.730
Accumulated depreciation	(47.745)	(3.317)	(102.473)	(1.621.975)	(1.775.510)
Residual Value	22.930	6.131	153.159		182.220
Average annual depreciation rates - %	20%	20%	10%	33%	

8 Intangible assets

(a) Change in balances

	Software
At January 1, 2020	104.320
Amortization	(35.428)
At December 31, 2020	68.892
Total cost	177.145
Accumulated amortization	(108.253)
Net book value	68.892
At January 1, 2021	68.892
Amortization	(35.430)
At December 31, 2021	33.462
Total cost	177.145
Accumulated amortization	(143.683)
Net book value	33.462
Annual amortization rate - %	20%

9 Employee benefits

	2021	2020
Provision for short-term employee benefits	127.080	59.535
Withholding Income Tax (IRRF) payable	50.450	13.693
Social Security (INSS) payable	44.499	1.499
Guarantee Fund for Length of Service (FGTS) payable	11.684	10.475
Social integration (PIS) payable	1.668	1.579
	235.381	86.781

10 Tax payables

	2021	2020
Third-party withholding income tax (IRRF) payable	9.578	2.822
Contribution for the Financing is Social Security (COFINS) payable	5.463	5.910
Municipal service tax (ISS) payable	724	6.517
	15.765	15.249

11 Net assets

The net assets consist of: (i) donations received from the founding members (endowment), which are recorded directly as net assets, and (ii) the income earned by the entity (surplus or deficit), through the transfer of the Accumulated Surplus (deficit) account. This transfer occurs after the accounts for the year are approved by the administrative bodies in charge in the following year.

12 Net revenue

	2021	2020
Services rendered		5.000
Gross revenue		5.000
(-) Deductions		
Contribution for the Financing of Social Security (COFINS)		(380)
Municipal Service Tax (ISS)		(422)
		(802)
Net revenue		4.198

13
Donations and sponsorships

A substantial portion of donations are the funds made provided to Fundação Arthur Bernardes (FUNARBE), among other disbursements and donations, which are shown below:

	2021	2020
Support for Scientific Research Projects (FUNARBE)	(6.488.384)	(10.266.147)
Fundácion Gabo	(640.964)	
Instituto Questão de Ciência	(500.000)	
Maranta Consultoria Ltda.	(336.000)	
Letras e Lucros Editora Ltda.	(275.000)	
Instituto Cultural e Beneficiente Steve Biko	(250.000)	(50.000)
Azmina - Corpo Especulado Podcast Project	(220.162)	
Empresa Folha da Manhã S.A.	(200.000)	(50.000)
Voltdata Agenciamento de Noticias Ltda.	(141.000)	
Ambiental Media Ltda.	(139.000)	
Associação Eco	(131.500)	
Megafauna Livraria Ltda.	(100.000)	
UNESP Development Foundation – FUNDUNESP	(86.700)	(70.000)
Scibr Foundation	(67.198)	
Grupo de Institutos, Fundações e Empresa - GIFE	(60.000)	
Ana Carolina de Almeida	(30.000)	(30.000)
Bernardo Esteves Gonçalves da Costa	(30.000)	
Companhia e Editora Pernambuco - CEPE	(30.000)	
Mellanie Fontes Dutra da Silva	(30.000)	
Selvagem Ciclo de Estudos Ltda.	(30.000)	
Fundação Educacional Ciência e Desenvolvimento - FECD	(24.211)	(1.091.000)
Associação Quatro Cinco Um	(16.160)	
Taicia Pacheco Fill	(10.000)	
Fernanda Gervasoni	(10.000)	
Fundação de Apoio a Serviços Técnicos, Ensino e Fomento a Pesquisa - Fundação ASTEF		(1.040.040)
Associação Brasileira de Saúde Coletiva		(1.000.000)
Iamarino e Sato Serviços de Informação na Internet Ltda.		(360.000)
Bionica Cinema e TV Ltda.		(220.000)
Laboratório 37 Comunicação e Produções em Áudio Ltda.		(200.000)
Fundação de Apoio da Universidade Federal do Rio Grande do Sul - FAURGS		(200.000)
N Participações Ltda.		(130.444)
UNICAMP Development Foundation		(105.195)
Silo Arte e Latitude Rural		(100.000)
Centro de Jornalismo Investigativo		(100.000)
Manifesta Arte e Cultura		(100.000)
Agência de Jornalismo e Checagem Lupa S.A.		(89.020)
Instituto Joio e Trigo		(50.000)
Associação Data Labe		(50.000)
Other projects	(136.493)	(142.401)
	(9.982.772)	(15.444.247)

14
General and administrative expenses

The breakdown of general and administrative expenses is shown as follows:

	2021	2020
Services rendered by legal entities	(893.877)	(1.919.756)
Maintenance and repairs	(540.711)	(342.318)
Property Leases	(212.044)	(180.847)
Visual communication	(200.453)	(313.995)
Services rendered by individuals	(89.632)	(210.813)
Internet	(86.908)	(84.760)
Air tickets	(67.728)	(37.722)
Translation	(65.790)	(41.625)
Miscellaneous Transportation	(51.531)	(14.951)
Kitchen and pantry	(32.800)	(13.098)
Contribution to trade associations	(26.299)	(24.471)
Social security (INSS) on services	(17.944)	(20.010)
Condo fees	(16.651)	(17.485)
Telephone	(11.502)	(8.095)
Shipping	(9.779)	(7.694)
Electricity	(7.769)	(7.298)
Office materials	(7.335)	(8.621)
Travel and lodging	(6.503)	(6.578)
Projects and events	(6.239)	(6.408)
Notary fees	(2.983)	(3.201)
Training events		(226.168)
Other general and administrative expenses	(10.541)	(23.466)
	(2.365.019)	(3.519.380)

15 Personnel Expenditure

The composition of personnel expenses is shown as follows:

	2021	2020
Wages and salaries	(1.105.051)	(889.790)
Compensation	(849.146)	(784.423)
Social security (INSS) contributions	(519.347)	(447.391)
Healthcare	(296.200)	(160.982)
Workers' Food Program (PAT)	(181.511)	(131.735)
Holidays	(156.893)	(86.291)
Guarantee Fund for Length of Service (FGTS)	(102.558)	(82.704)
13th salary	(97.364)	(81.419)
Social Integration Program (PIS) payroll contribution	(12.765)	(10.806)
Training	(26.403)	(10.457)
Termination benefits expense		(9.677)
Other personnel expenditure	(12.341)	(15.975)
	(3.359.579)	(2.711.650)

16 Tax expenses

The composition of tax expenses is shown as follows:

	2021	2020
Urban real estate tax (IPTU)	(13.909)	(14.215)
Tax on financial transaction (IOF)	(6.315)	(4.726)
Other		(592)
	(20.224)	(19.533)

17
Profit or loss from financial assets

	2021	2020
Financial revenues arising from:		
Gains/earnings from trading securities (Note 6)		10.384.753
Revenue from financial investments	909.240	256.577
Positive effects of changes in foreign exchange	717	6.198
	909.957	10.647.528
Financial expenses arising from:		
Losses from trading securities (Note 6)	(65.222.185)	
Bank expenses	(2.122)	(980)
Interest expense	(40)	(36)
	(65.224.347)	(1.016)
Financial income (expense)	(64.314.390)	10.646.512

18
Related Parties

The parties related to the Institute are represented by the founding members, trustees and directors. With the exception of the Executive Team, which is made up of professionals who are remunerated for their service, the Institute's other related parties act on a volunteer basis (see Note 22).

Key directors include the members of the Executive Team. In 2021, the total compensation paid or payable for the services of these professionals, including pertinent charges, represented R$ 849,146 (2020, R$ 784,423).

19 Contingency fund

The Institute is not aware of any contingent assets or liabilities to be recorded as at December 31, 2021 and 2020.

20 Insurance Coverage

As a policy the Institute insures its assets against risks for amounts considered sufficient to cover possible claims considering the nature of the Institute's activities. The risk assumptions adopted, given their nature, are not part of the scope of the audit of financial statements; consequently, they have not been reviewed by our independent auditors.

Insurance policies were purchased to cover rental property and the Institute's property, plant and equipment.

21 Future commitments

The Institute has property lease agreements with varying renewable terms. As at December 31, 2021, the annual commitments for future payments related to these contracts amount to approximately R$ 261,142 per year.

22
Volunteer work

Volunteer work must be recognized at the fair value of the service rendered for the Institute in accordance with CFC Resolution No. 1409 dated September 21, 2012, which approved the NBC ITG 2002 (R1) for non-profit entities.

The volunteer work provided to the Institute was measured on an estimated market value basis, as shown below:

	2021	2020
Volunteer work by:		
Individuals	25.805	28.095
Legal entities	637.372	628.307
	663.177	656.402

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