





Master's Degree Student in extension activity at the Capoeiras Quilombola Community during demonstration of a virtual reality experience (2018)

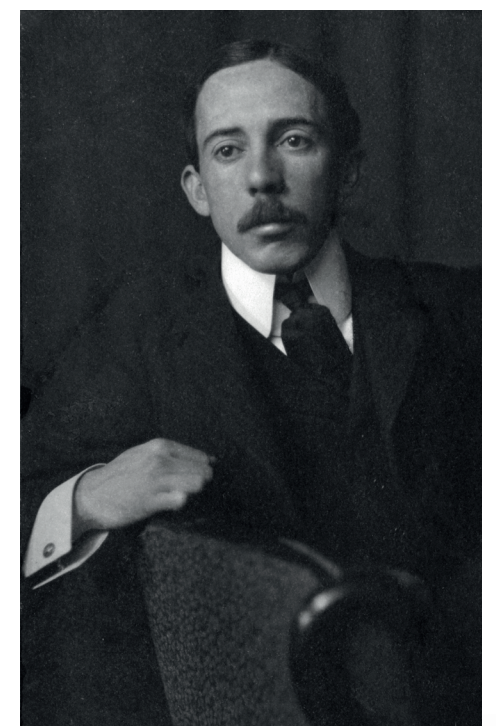
SCIENCE AND EDUCATION SANTOS DUMONT INSTITUTE

Ideated by the neuroscientist Miguel Nicolelis, the Santos Dumont Institute (Instituto Santos Dumont - ISD) seeks inspiration in the iconic and innovative figure of Santos Dumont, father of aviation and one of the greatest Brazilian scientists of all times. The Northeast of Brazil was intentionally chosen for ISD acting to foster human, social and financial development of such region. The Institution considers social responsibility and innovation as motors for all actions of teaching, research and extension developed in areas of Education, Neurosciences, Neuroengineering, Maternal and Child Health as well as in Rehabilitation.

The Executive Order of February 27, 2014 qualified The Santos Dumont Institute as Social Organization, a partnership format between public and private sectors that make possible to a non-profit institution to obtain resources from the Federal Government to perform public-interest services. Currently, the ISD carries out its activities through a Management Contract with the Ministry of Education (Ministério da Educação - MEC).

The Institute maintains an Agreement Contract with the Federal University of Rio Grande do Norte (Universidade Federal do Rio Grande do Norte - UFRN) in several of its projects and is also partner of other Brazilian entities, and in addition, collaborate with institutions of the United States, Scotland, Japan, France, Mexico, Portugal, Sweden and Switzerland.

Alberto Santos Dumont in 1902



Santos Dumont

mission

To promote education for life, forming citizens through integrated teaching, research and extension actions, and to contribute to a fairer and more humanized shift in the Brazilian social reality.

To be internationally recognized as a hub of Education, Science, and Technology in the fields of Maternal and Child Health, Rehabilitation, Neurosciences and Neuroengineering.

vision

An aerial view of Edmond and Lily Safra
International Institute of Neurosciences
in Macaíba (2019)

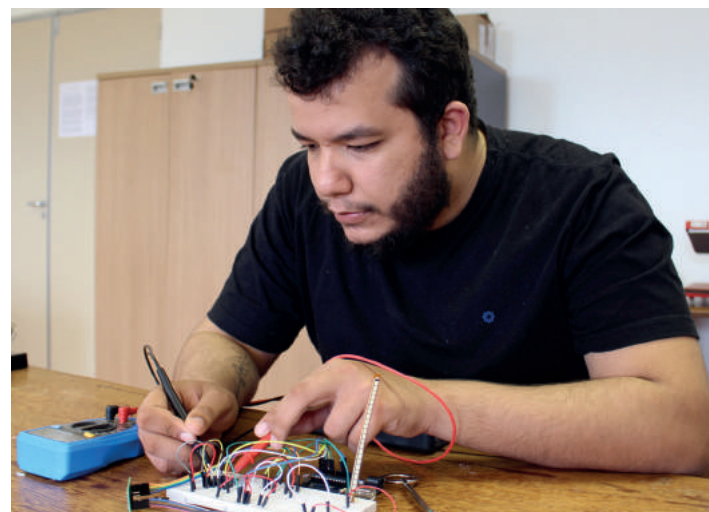


Located in Macaíba, it develops innovative scientific researches in two main lines: Brain-Machine Interface and Neuromodulation. Since 2013, it offers the first Master's Degree in Neuroengineering in Brazil, authorized by CAPES - Coordination for the Improvement of Higher Education Personnel (CAPES).

Facade of Anita Garibaldi Center for
Education and Research in Health



Also located in Macaíba, is dedicated to the formation, development and permanent education of healthcare professionals. It integrates the Unified Health System (Brazilian National Health System - SUS) as referral service in the State of Rio Grande do Norte to maternal and child health as well as in rehabilitation.



Master's degree student during prototyping applied in neuroengineering (2019)



ISD's laboratory of neurorehabilitation with the use of virtual reality technology and equipment simulating zero gravity (2018)



Residents of Pharmacy in activity of health education with users of CEPS (2018)



The user Ismael and his mother, Maria Isabel, in the day of delivery of hearing aids by the team of CEPS (2019)

more than
50
 thousand
 benefited people
 per year



Pioneering of
graduation studies
in Neuroengineering
in Brazil



Scientific production
in partnership
with researchers
and international
institutions



Translational
research: from
bench to bedside



Practice scenario for
undergraduate and
residency students in
partnership with UFRN



Pioneer
multiprofessional
residency in health
care of people with
disabilities



Permanent
education of health
professionals



Maternal and
Child Health and
Rehabilitation



13+ years

Building a history of achievements

2006

Opening of
IIN-ELS
Natal

2007

Opening of the
Scientific Education
Centers (CECs)
Natal and
Macaíba

2008

Opening of
Anita Garibaldi
Center
Macaíba

2010

Opening of CEC
Serrinha

2013

Postgraduate
Program
in Neuroengineering

2014

Qualification as
Social Organization
and address
change of IIN-ELS
from Natal to
Macaíba

2015

Restructuring of the
Administrative Council

Work group
(Ministry of Education,
UFRN and ISD)

Adequation of the
Management Contract

2016

License for CEPS
to be a Specialized
Center on Rehabilitation

Elaboration of interunit
action strategies

Institutional Cooperation
with UFRN

2017

Multiprofessional
Residency in the
Health Care of People
with Disabilities

More places offered
for the Master in
Neuroengineering

Running of the
Campus of the Brain

Enlargement of CEPS

Suspension of the
CECs' activities

2018

Opening of the
Campus of the Brain

Record number of submissions
for the Master in Neuroengineering

First edition of the
Neuroengineering Symposium
held in the new headquarters
of IIN-ELS

Record of
medical/multiprofessional
assistance in CEPS



Award Event of
Barriguda's Project
held in Ireland (2018)



The Art of being born project
(CEPS)

The Projects That Work competition is sponsored by FAIMER (Foundation for Advancement of International Medical Education and Research) to recognize excellent projects that have succeeded beyond initial implementation and have had a significant impact on health, the community, or the school over three or more years.



Exhibition of the Santos
Dumont Institute work in the
event by invitation of the
Science, Technology and
Innovation Office of the
Brazilian General Consulate.



Recognition of IIN-ELS
for the promotion and
disclosure of the area



Barriguda Project (CEPS)

One of the six winners in
the awards promoted by
the PAHO/WHO and the
National Health Council



Barriguda Project
(CEPS)

Awarded project in the
competition promoted
by Faimer



Barriguda Project
(CEPS)

Award as best
scientific poster

teaching & research

1

**in
neurosciences and
neuroengineering**



One of the main goals of the Edmond and Lily Safra International Institute of Neurosciences (IIN-ELS) is to foster an ecosystem of innovation and production of scientific knowledge in the region and train highly qualified professionals in the fields of Neurosciences and Neuroengineering who learn and work in line with science and social responsibility. And that is why it offers, since 2013, the Postgraduate Program in Neuroengineering (Programa de Pós-Graduação em Neuroengenharia -PPGN), accounting for the first Brazilian Master's degree course in the field accredited by the Coordination of Improvement of Higher Education Personnel (CAPES).

PPGN is a multidisciplinary program inserted in the field of Biomedicine Engineering having two research lines: Brain-Machine Interface and Neuro-modulation. Through engineering we

aim at understanding the Central Nervous System (CNS) and developing treatments and technologies still unexplored for neurological disorders, such as restoration of sensory, motor and cognitive functions.

Master's degree students that are or already completed the Master's Degree in Neuroengineering have graduated in different courses, such as: Biomedicine, Biotechnology, Computing Science, Science & Technology, Nursing, Biomedical Engineering, Civil Engineering, Mechanical Engineering, Control and Automation Engineering, Physiotherapy, Speech Therapy, Medicine and Psychology. The gathering of so many different professional trainings in the same environment of study, work and research favors the resolution of challenges of knowledge boundary, in addition to stimulate inter- and trans-disciplinary performance.

“The person who have started the IIN-ELS Master's degree two years ago wanted to learn neuroscience. Who is completing the course today has a much larger systemic vision, not only about the brain, but about the human being as well.”

Lorena Andreoli
Master of Neuroengineering, presently PhD student at the Okinawa Institute of Science and Technology Graduate University - OIST (Japan) (Class of 2016.1)



Between 2014 and 2018,
69 students
all over Brazil
have started the
Master's Degree in
Neuroengineering
of IIN-ELS.

04
2014

07
2015

16
2016

21
2017

21
2018

Students of Master's Degree in Neuroengineering at the laboratory of cryopreservation and preparation of slides (2018)



**research in
neuroscience and
neuroengineering**

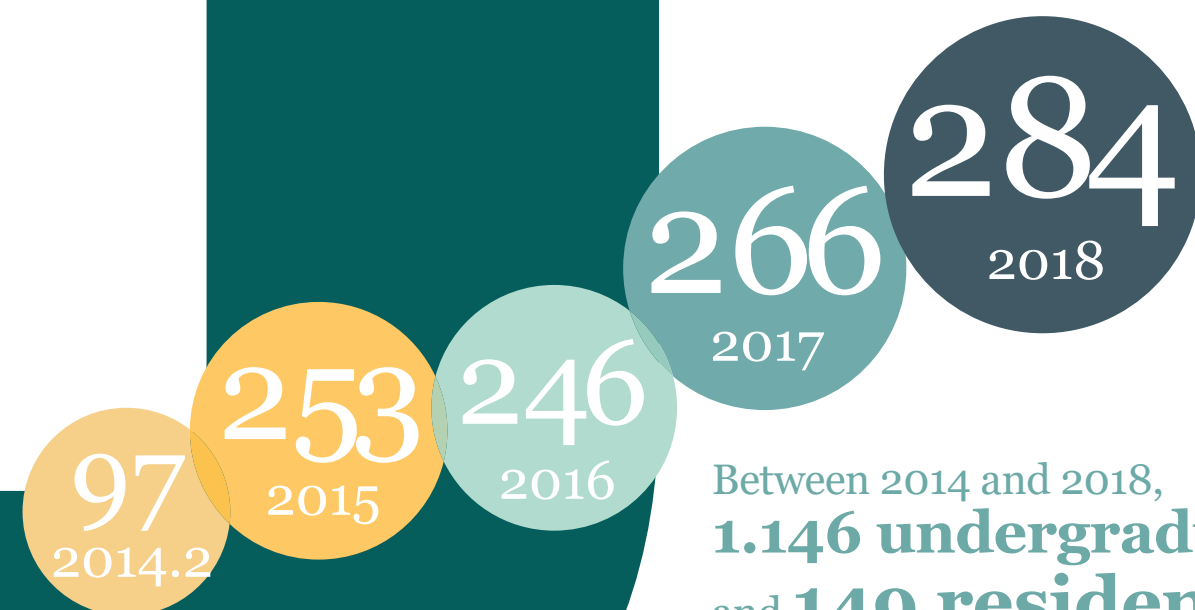
One of the greatest differentials of IIN-ELS is translational research, which starts at the bench (basic research) and runs through several steps until arrive at the final beneficiary (clinical research). Additionally, the advanced laboratory infrastructure based on the Brazilian Northeast is capable of enhance scientific development in regional and national levels. This academic excellence open doors to virtuous collaborations and exchange with research institutions in Brazil and abroad.

education & interprofessional work



in
health

Undergraduates developing activities in CEPS between 2014 and 2018



Between 2014 and 2018, **1.146 undergraduate** and **149 residents** had trainings in CEPS.

The Anita Garibaldi Center for Education and Research in Health (CEPS), founded in 2008, is a school for students of undergraduate studies, medical and multiprofessional residents, researchers and professionals of health science and related areas.

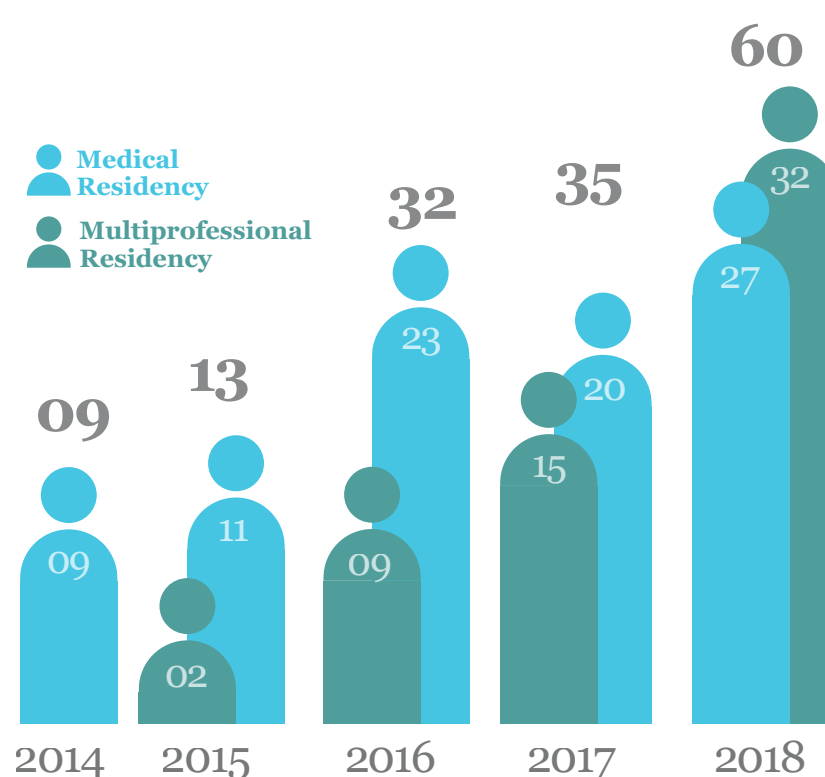
Acting to strengthen the Brazilian National Health System (SUS), CEPS offers transforming experiences in health education to generate scientific evidence, develop collaborative strategies and promote partnerships capable of assist SUS in its role of health profession formation authority in Brazil. ISD keeps partnerships with all federal university hospitals in Rio Grande do Norte as a strengthening strategy of education and training in service at SUS for programs in the fields of maternal and child health as well as in rehabilitation.

The cooperation agreement with the Federal University of Rio Grande do Norte (UFRN) confirms CEPS as an important space of teaching, service, and community integration for development of academic activities and mandatory curricular internships for undergraduate and graduate students from this University.

Undergraduate students during practical class of physical therapy for patients with spinal cord injury and Parkinson's Disease (2018)



Medical and multiprofessional residents who developed activities in CEPS



One of CEPS quality indicators is related to education of healthcare professionals, aiming to promote integration between production of knowledge, work and health training. In the first cycle of the Management Contract, in response to the regional demands, ISD focused such actions in three thematic areas of priority:

- *QualiAIDS in Macaíba: strenghtening of the health attention network for people living with HIV/AIDS;*
- *Tracking of the early signs of Autism Spectrum Disorder (ASD);*
- *Total Attention to the Health of People with Disabilities (included in 2017).*

From 2014 to 2018, CEPS reached 1,486 healthcare professionals through its health education actions. CEPS also has specific projectsonintegratedactionimplementations among ISD units, also observing the needs of the communities involved to meet its specific demands, in the view of social responsibility, favoring the exchange of knowledge and experience. In 2018, the integrated actions reached 7,875 beneficiaries and found a record number in the tenth anniversary of CEPS Anita Garibaldi: 45,490 assistances.

CEPS performed 108.112 assistances in maternal and child health as well in rehabilitation between 2014 and 2018.

Patients of the clinic for children with spinal cord injury during complementary activity of parasport in rehabilitation (2019)



Patient during a Session of Equitherapy as complementary therapy for Autism Spectrum Disorder - Equitherapy Project of Rio Grande do Norte (Projeto Equoterapia Potiguar), an ISD partnership with the Agriculture School of Jundiai / UFRN (2018)



Rehabilitation

The Ordinance nº 1,430/SAS/MS, of October 17, 2016, qualified CEPS as a Specialized Center on Rehabilitation (Centro Especializado em Reabilitação - CER III) in the areas of hearing, physical and intellectual disabilities. The CER managed by ISD is the first of the Northeast region to take care of the health of people with disabilities integrated to a research and innovation system, through the work developed together with the Edmond and Lily Safra International Institute of Neurosciences (IIN-ELS).

The actions of CER III are offered to patients from the cities of Macaíba, Natal, Parnamirim, Extremoz and São Gonçalo do Amarante, being organized in clinics:

Epilepsy child and adult

Parkinson Disease

Autism Spectrum Disorder

Spinal Cord Injury child and adult

Microcephaly

Hearing Loss child and adult

Prematurity

Neurogenic Bladder and Bowel

“According to the philosopher José Saramago, (...) there are things that could never be explained with words. That shows how much challenging is our responsibility in this short space to express our gratitude for the days of experience here in CEPS Anita Garibaldi. We thank our preceptors, who during these days have follow us transmitting much more than contents specific to our profession, but preparing us for life! Dear preceptors, I compare the mission trusted to you to the work of a sculptor, who looking at a shapeless, non-shining stone, stone it hardly and transforms it in a piece of art. You are co-responsible for our professional growth.”

Excerpt of an open letter to CEPS team left by a class of Multiprofessional Residents (photo below) of Multicampi School of Medical Sciences Caicó Campus - EMCM / UFRN (2019)



Practical class of the Multiprofessional Residency in Health Care of People with Disabilities during assistance of the clinic for adults with spinal cord injury (2018)



Multiprofessional Residency in the Health Care of People with Disabilities

Since 2018 ISD offers the Multiprofessional Residency in the Health Care of People with Disabilities, pioneer in Brazil, directed to professionals in the fields of physiotherapy, speech therapy, psychology and social service, adding to the scopes of teaching, research and extension and strengthening both the regional Network of Care to People with Disabilities in the context of SUS and the National Plan of Rights of People with Disabilities – Living without Boundaries Plan. In addition, the Program includes the acting interface together with the Postgraduate

Program of Neuroengineering offered by the Edmond and Lily Safrá International Institute of Neurosciences (IIN-ELS).

This innovative and pioneering action of qualification in health in Brazil can contribute to strengthen the Priority Network of Attention to the Health of People with Disabilities in Rio Grande do Norte. This is the Brazilian State with the greatest index of people with disabilities of the Northeast region (882,022 people - 27.8% of the population, according to Census 2010 - IBGE).

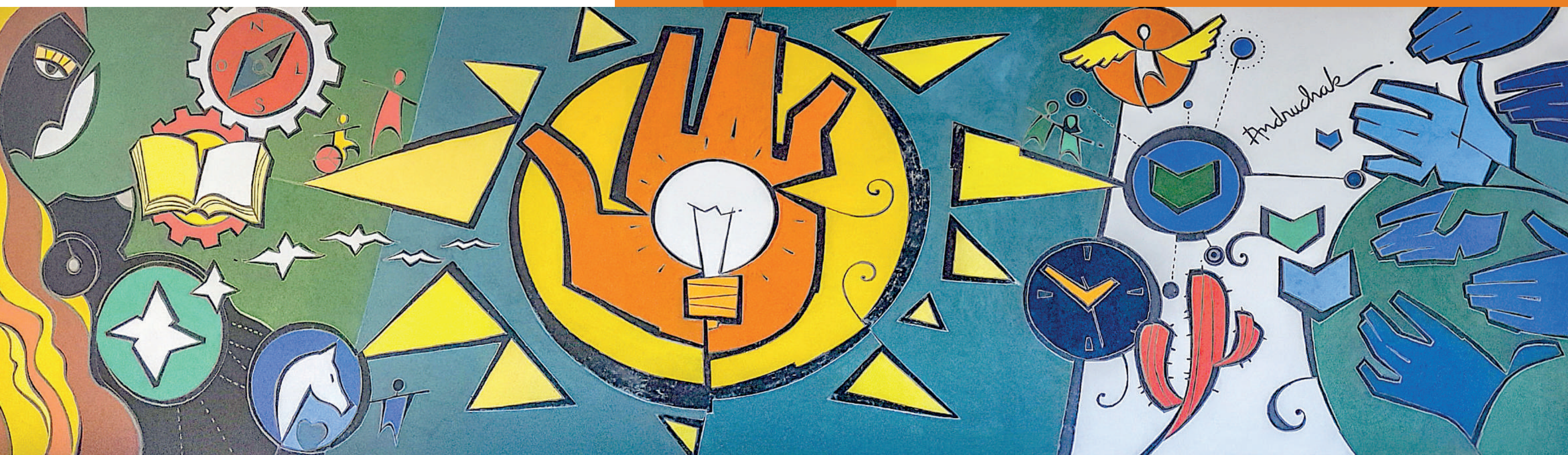
ISD understands that facing this challenge is to comply with the mandate of social responsibility assuming it as its mission.



On the right, a statement of Manoela Vale (light blue jeans), student of medicine at the Multicampi School of Medical Sciences of UFRN in her private Instagram, published on March 31, 2019

“All words are still little to speak about this rotation in #cepsanitaribaldi. Everything in this place is a proof that it is possible to leave the paper for reality, from raw knowledge to a transforming application, from the conditioning technique to the care. I’m very thankful and wishing to come back as soon as possible. #OSUSqueFunciona” (SUS that works)

A panel designed by Marcos Andruchak, visual artist and Professor of UFRN, especially for the anniversary of 10 years of CEPS and that was painted together with professionals, students, residents, users and collaborators (2018)



Edmond and Lily Safr
International
Institute of
Neurosciences
(IIN-ELS)



In its new headquarters since 2018, Edmond and Lily Safrá International Institute of Neurosciences (IIN-ELS) has implemented a wide range of structure of laboratories, animal facilities, gymnasiums and rooms for scientific meetings and exhibitions. IIN-ELS offers laboratories of: Neurorehabilitation, Rodent electrophysiology, Primates electrophysiology, Cryopreservation and slide preparation, Neuroprosthetics, Molecular neurobiology, Conventional and confocal microscopy, Neuroengineering, Human Machine

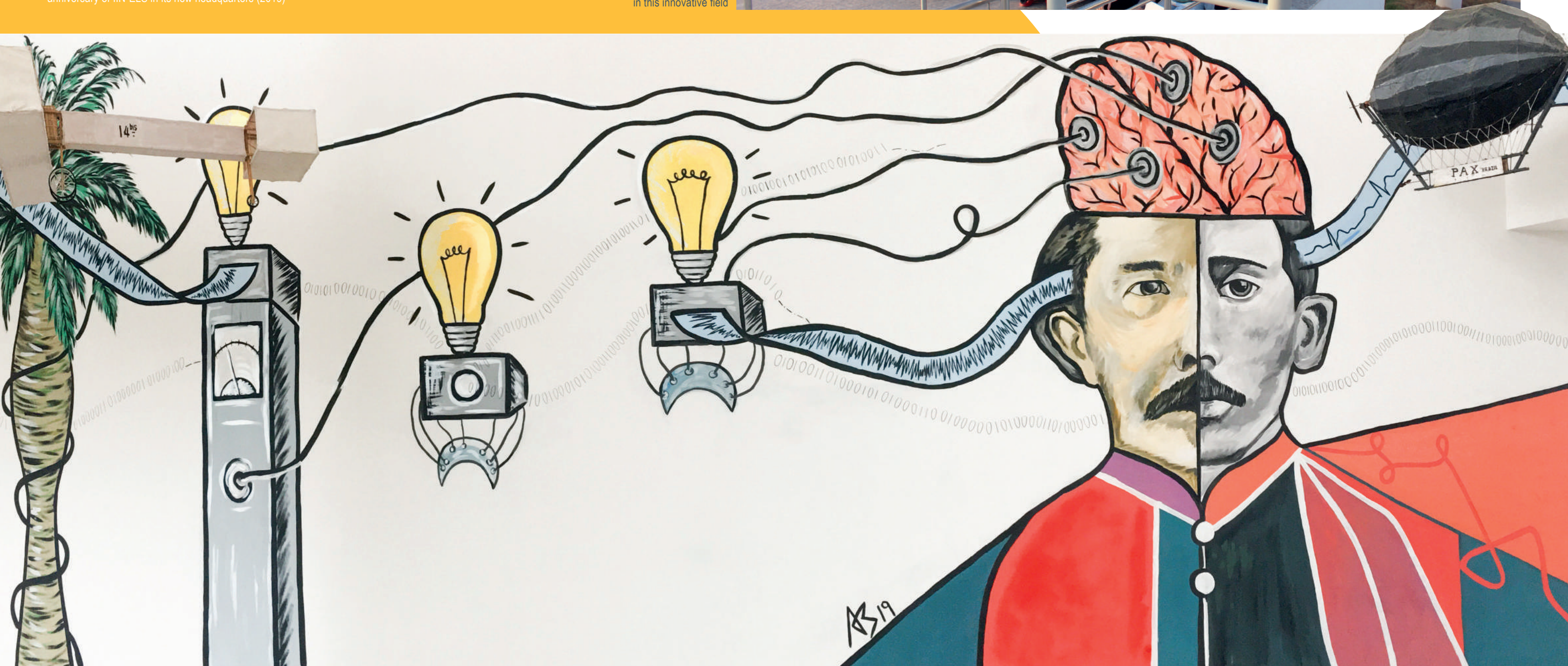
Interface. There are also animal facilities and surgery centers for rodents and primates.

The area has a great potential for teaching activities and those related to innovation, considering that the municipality of Macaíba intends to establish as technology center of the State. Therefore, ISD glimpses possibilities to transform IIN-ELS into a hub of education, science and technology, contributing for the regional development and establishing as an open national laboratory in the fields of neurosciences and neuroengineering.

The Symposium of Neuroengineering promoted by IIN-ELS has been attracting more and more young researchers and undergraduates of engineerings, biological and health sciences interested in gain knowledge in this innovative field



Work designed by the artist Anna Benigna and portrays Augusto Severo (on the left) beside Santos Dumont (on the right) and that was delivered on the first year's anniversary of IIN-ELS in its new headquarters (2019)



Masters and master's degree students of neuroengineering from different times:
the strength of knowledge exchange and transdisciplinary collaborations (2019)



“To stimulate the students that come here to visit the Institute is very good, to see their eyes shining, to hear some of them say ‘I want to do that in the future’, ‘I want to become a scientist’. So, in some ways, this encouraged me a lot to carry on my Master’s degree.”



João Rodrigo Oliveira
Master of Neuroengineering (Class of
2017.1) on a confocal microscope

scientific
divulgation



& media

ISD has been strengthening the diffusion of its activities and researches in the fields of neurosciences, neuroengineering and health education. Professionals of the Institute usually participate in events and other initiatives in several regions and institutions of Brazil and also abroad, with the aim of presenting it to different audiences, the works developed in IIN-ELS and CEPS and how important education and research is for social development and transformation in the country.



Presentation on neurosciences by IIN-ELS professionals and students of the master's degree in neuroengineering during a science fair of an elementary school in Natal (2018)

Team of Rede Globo's affiliate in RN records a special report about IIN-ELS and the impacts of scientific education in the region (2018)



A medical preceptor of CEPS Anita Garibaldi speaks about the "The art of being born" project during the lecture TEDx Talks held in Natal (2017)



The Folha de São Paulo newspaper highlights IIN-ELS in a special article on graduate studies in the field of neurosciences (2017)



Lecture of ISD's Research Coordinator in an event of Oracle, São Paulo (2018)



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This material was produced in June 2019.



Patient with spinal cord injury assisted by multiprofessional preceptor and resident of CEPS, as well as an undergraduate student of UFRN, during assisted walking training by a robotic orthosis in Lokomat (2019)



Edmond and Lily Safrá
INTERNATIONAL INSTITUTE OF NEUROSCIENCES



Anita Garibaldi
CENTER FOR EDUCATION AND RESEARCH IN HEALTH

The Santos Dumont Institute (ISD) is a private and non-profit organization that operates units in the Brazilian Northeast region in the areas of education, maternal and child health, rehabilitation, neurosciences, and neuroengineering. ISD develops its activities in the city of Macaíba with resources from the Brazilian Ministry of Education.



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MINISTRY OF
EDUCATION



**PÁTRIA AMADA
BRASIL**
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