FALLING WALLS LAB
BRAZIL

The organisers are independent partners of the Falling Walls Foundation.

Tuesday, September 12th
10 a.m. (BRT)

DWIH São Paulo
Land of Ideas

DAAD
Brasil

Federal Foreign Office

agits
Unifesp

UNIFESP
UNIVERSIDADE FEDERAL
DE SÃO PAULO

CONCEPT

The Falling Walls Foundation founded Falling Walls Lab in 2011 to:

CONNECT aspiring innovators
DISCOVER and develop talents
SUPPORT interdisciplinary dialogue and international cooperation
DEVELOP new ways of scientific communication
BUILD new and strong networks

TIMELINE

10:00 am	Welcome and introductory remarks
10:25 am	Pitches (1 – 7)
11:00 am	Break
11:10 am	Pitches (8 – 15)
12:00 pm	Networking break / Jury session
12:30 pm	Awards ceremony / Group picture
12:45 pm	Farewell reception / Lunch

PRE-JURY

Profa. Dra. Andrea de Camargo

Ambassador of the Alexander von Humboldt Foundation in Brazil

Profa. Dra. Carla Duarte

Vice-director of the of Technology and Social at UNIFESP (agits/Unifesp)

Sören Metz

Liaison Officer at TUM Sao Paulo

Johannes Wahner

Consul of Culture and Sciences at the General Consulate of Germany in São Paulo

Profa. Dra. Karen Valverde Pontes

Head of the Department of Chemical Engineering at UFBA

Marcio Weichert

Head of Programme at DWIH São Paulo

Fabíola Gerbase
DAAD Brazil Deputy Director and Communications Manager

Graduated in Social Communication at the Federal University of Rio de Janeiro (ECO-UFRJ) and in Design at the State University of Rio de Janeiro (Esdi-Uerj), Fabíola Gerbase is Communications coordinator and deputy director of DAAD Brazil. Her professional work combines experience in journalistic writing and editing, with passages through "O Globo" and "G1", institutional communication, content management in social media and photography, in addition to the design of cultural and academic events. Design training included a year as a scholarship holder at the German institution Hochschule für Gestaltung Schwäbisch-Gmünd. She is a master's student at the Graduate Program in Creative Media at ECO-UFRJ.

Barbara Konner
Executive Vice-President at the German-Brazilian Chamber of Commerce and Industry in São Paulo

Former Executive Vice President of the German Chamber in Argentina, Uruguay and Paraguay, responsible for North and South America at the International Division of the DIHK in Berlin. Graduated in Economics and Political Science from the University of Cologne in Germany, completed her studies in Spain as a DAAD-fellow.

Prof. Dr. Elbert Macau
Full Professor at Institute of Science and Technology (ICT) - Universidade Federal de Sâo Paulo (UNIFESP)

Prof. Elbert Macau has experience in Electric Engineering, focusing on control of electronic processes, feedback, acting on the following subjects: chaos, nonlinear dynamics, control and synchronization. He worked as postdoc at the University of Maryland Chaos Group. He is also editor of several international publications.

Prof. Dr. André Luiz Brandão
Professor and Director of Jecripe-UFABC

PhD in Computing at the Fluminense Federal University (UFF). Master's Degree in Informatics at the Federal University of Paraná in 2006 and Bachelor's Degree in Computer Science at the Federal University of Santa Maria. Since 2009, he has coordinated the Jecripe initiative, whose objective is to develop games for people with special needs. He is currently professor at the Federal University of ABC (UFABC).

Vanessa Sensato
Director of operations at Agência Sabiá

Vanessa Sensato is currently director of operations at Agência Sabiá and director of innovation and technology Sao Paulo for the National Association of the Digital Market and Industry (AnaMid). She is experienced in promoting and managing international partnerships, involving the private and public sectors. She holds a Master degree in Science and Technology Policy from the University of Campinas and is a PhD Candidate at the same institution. Vanessa is an alumni of the University of Hamburg, in Germany, and has also completed her studies of management at Fundação Dom Cabral and entrepreneurship in Babson College, in the United States.

Prof. Dr. Helena Nader
Professor Emeritus at Escola Paulista de Medicina (Unifesp) and President of the Brazilian Academy of Sciences (ABC)

Helena B. Nader is Professor Emeritus at the Federal University of São Paulo (Unifesp). She obtained her PhD at Unifesp and post-doctoral training as a Fogarty (NIH) fellow at the University of Southern California. Her research field is molecular and cell biology of glycoconjugates. President of the Brazilian Academy of Sciences (ABC), co-chair of the Inter-American Network of Academies of Sciences (IANAS), vice-president for the Latin America and the Caribbean of The World Academy of Sciences (TWAS), and Governing Board member of the International Science Council (ISC). Former president of the Brazilian Society of Biochemistry and Molecular Biology (SBBq, 2007-2008) and honorary president of the Brazilian Society for the Advancement of Science (SBPC).

Prof. Dr. Sabine Righetti
Researcher at Labjor-Unicamp & Agencia Bori co-founder

PhD researcher at Unicamp with interest in science communication, science journalism, public perception of science and technology, evaluation and indicators of science and higher education. She has a master's degree in science and technology policy at the Unicamp. She teaches and supervises research in the Specialization in Science Journalism at Labjor-Unicamp and in the Master's Program in Scientific and Cultural Dissemination at Unicamp. Since January 2019 she is a grantee of the Serrapilheira Institute.

1- Breaking the Wall of Recycling Toxic Waste from Pulp & Paper Ind.
Roberto Camargo Portes, ITA

Problem: In the pulp and paper industry, the Kraft process is the most used method to extract wood's natural contents. Though, the process discards black liquor, a toxic byproduct of around 1.3 billion tons per year worldwide that is currently destined as combustion fuel/biofuel, and cooking chemicals.

Solution: Rather than just incinerating the black liquor to generate electricity, there are other possibilities to reuse the chemical compounds in their composition. Accordingly, we developed a new sustainable carbon material overcoming the challenges of providing a value-added destination for the byproduct.

Project: A straightforward method of chemical treatment using environmentally friendly reagents to polymerize black liquor and obtain a phenolic-like resin. Subsequently, a thermal treatment is carried out for the carbonization process yielding porous carbon powders with turbostratic graphitic-like structure

2- Breaking the Wall of Oncological Logistics
Victor Dubeux, University of Pennsylvania

Problem: Although immunotherapies against cancer boosted cancer survival rates, the access to these therapies are scarce and costly to the Global South. Also, determining prognosis and drug availability can be time-consuming to oncologists and, therefore, life-threatening to patients.

Solution: By gathering information on monoclonal antibodies(mAbs) and deploying data-science tools to scan clinical databases, mAbs specifications can be matched to a patient's tumors in seconds.This saves time for both the oncologist and the patient, ultimately making precision therapy for cancer accessible.

Project: Our project is an immunotechnology startup, named Ambulis, that deploys high-end software to make monoclonal antibodies commerce, and deployment more cost-effective to make cancer precision therapy accessible to healthcare agents. We intend to save lives by revolutionizing mAb healthcare businesses

3- Breaking the Wall of Sign Language in Brazil
Bruna Enne, USP

Problem: In Brazil, around 10 million people are deaf, which means 5% of the population. However, only a few have access to quality education throughout school years. This language barrier reduces their chance to enter higher education by 57 times, if compared to hearing people.

Solution: "Sinaliza Enem" is the first and only online prep school exclusively committed to tutor deaf candidates to enter higher education in Brazil. Following our methodology, grades have risen by 250% and admission rates have exceeded 80%.

Project: Sinaliza is an edtech company that aims to promote quality education in Brazilian Sign Language (Libras), tutoring deaf and hearing students in their career path. Our mission is to empower people by removing language barriers, ensuring accessibility and inclusion in the learning environment.

4- Breaking the wall of hard to treat diseases
Gustavo Ferrari, UFSC

Problem: Overactive bladder is a clinical condition where the detrusor muscle doesn't relax adequately during the phase of bladder filling. This causes a high periodicity of urinary events with small volumes of urine. Also, a high rate of side effects is noticed with the commercially available treatments.

Solution: Drug Delivery Devices (DDDs) have been developed as potential dispositives to overcome the limitations faced on the traditional approaches to drug administration. For this reason, we developed an intravesical implant to be used as an alternative treatment for overactive bladder.

Project: The overactive bladder is clinically common and hard to treat, specially due to the available treatments, patient adherence and reported side-effects. We developed an implant to locally delivery amounts of a drug and aim to improve patient's quality of life worldwide.

5- Breaking the Wall of Water Analysis
Kauan Paz, UNIFESP

Problem: In the metropolitan region of São Paulo, the distribution and treatment of water are carried out by a basic sanitation company, the company is also responsible for monitoring water quality, using some physical-chemical measurement methods. A major problem is that the analytical method is expensive.

Solution: Using Arduino, in addition to making the water monitoring process easier, it is possible to perform the measurements in the field, since with the Arduino platform this possibility exists. For readings of pH, conductivity and Ttoal dissolved solids.

Project: Construction of an equipment using Arduino , it will be possible to carry out the measurements in loco, since the platform, in addition to making the cost of analysis cheaper and more effective, allows the measurement of the sample directly in its common environment. Low coast water analysis.

6- Breaking the Wall of Plant Protein Ingredients
Gabrielle Gautério, FURG

Problem: The Brazilian plant-based food market lacks national protein ingredients that mimic technological and sensory properties in plant-analog products. Moreover, the country itself discards million tons per year of plant agricultural by-products that could be reused industrially as valuable ingredients.

Solution: Development of national and low-cost protein ingredients from hard, dark, cracked, and uneven common beans with the nutritional, sensory, and technological properties of bean proteins, contributing to the circular bean production processing and to launched new plant-based products on the market.

Project: Development of national, sustainable, and low-cost protein ingredients from by-products of common bean processing (e.g., hard, dark, cracked, and uneven beans). These ingredients could be applied industrially into plant-based products, mainly in meat and dairy analogs, snacks, and supplements.

7- Breaking the Wall of Alzheimer's Detection
Wesley Rodrigo de Souza, FATEC Ourinhos

Problem: A challenge in Alzheimer's detection is accessibility, as many diagnostic approaches are expensive and inaccessible to individuals with low income or limited resources. This creates a significant barrier to early detection and intervention, which are crucial for effective disease management.

Solution: We have developed a tool that utilizes voice tests for Alzheimer's detection with artificial intelligence. The procedure involves presenting the patient with a sequence of images that tell a story, allowing analysis of memory and reasoning—cognitive functions strongly affected by this disease.

Project: This project believes that artificial intelligence should be used for the social good by democratizing access to quality healthcare. Furthermore, our goal is to ensure transparency in the process by providing clear and comprehensive information about how the algorithm generates its results.

8- Breaking the Wall of Fake News.
Denis Tavares da Silva, FATEC (IFSP)

Problem: The COVID-19 pandemic has highlighted the dangers of fake news, causing panic and hindering access to reliable information. This global phenomenon poses a significant threat to various sectors, including politics, education, the environment, health, and science.

Solution: Our project aims to comprehend the intricate nature of fake news and empower non-experts to utilize ML techniques for the detection and control of fake news. By leveraging advanced ML techniques, we can foster a more informed society and promote the availability of accurate information.

Project: A web application meticulously designed to classify news inputs as true or fake. In our initial implementation, we achieved impressive metrics, with approximately 94% accuracy. Our objective is not to determine truth, but to assist individuals in selecting the most reliable sources.

9- Breaking the Wall of Biopesticides
Juliana Ferreira, UFG

Problem: Invasive pests, as insects and nematodes, cause losses of billions of dollars annually. To control them, the excessive and unplanned use of chemical products has generated several negative impacts on human, animal, and plant health. Thus, alternative measures to control these pests are urgent.

Solution: The use of enzymes has been shown to be capable of causing the death of certain pests, therefore, its use in the formulation of bioproducts presents promising results. It is a green technology, without waste generating, which in the future may improve biological control.

Project: To control invasive pests, the excessive and unplanned use of chemical products has generated several negative impacts on human, animal, and plant health. To control them, the use of enzymes in the formulation of biopesticides will improve the pest control by offering efficient bioproducts.

10- Breaking the Wall of mobility for the blind
Caio Henrique Marques Texeira, UNIFESP

Problem: The long cane, largely used for mobility of blind people, has limitations: short-range detection of obstacles and the inability to protect against head level obstacles – affecting the mobility, consequently, the autonomy, daily life activities, leisure and access to education and work.

Solution: A wearable haptic interface system that notifies the presence and direction of ground and air obstacles and can be attached to a conventional long cane. This system is composed of three hook and loop wristbands with three vibration motors each, three ultrasonic sensors and an microcontroller.

Project: This wearable haptic system notifies the presence and direction of obstacles for mobility improvement of the blind people. Because it can be attached to a long cane, it can be cheaper than currently sold electronic canes, and more comfortable to the user since they are used to the long cane.

11- Breaking the Wall of Neglected Regeneration
Elias Barbosa, UFPE

Problem: Neglected tropical diseases group of more than 20 chronic conditions and diseases that affect about 1 billion people, and can leave chronic sequelae in patients, and, when chemotherapy is available, it is often toxic to the patients and does not address the chronic sequelae left by the diseases.

Solution: The development of experimental models for neglected tropical diseases, based on induced pluripotent stem cells (iPSCs), to accelerate the development of regenerative therapies that can solve both the diseases and the chronic sequelae left by these diseases.

Project: The project intends to develop experimental models for leishmaniasis and Hansen's disease based on patient-derived induced pluripotent stem cells. The skin organoids developed from iPSCs will serve as a platform to test potential drugs and as a tool to boost regeneration in the patient's skin.

12- Breaking the Wall of Early Visual Stimulation
Caroline dos Santos Corrêa, UNIFESP

Problem: There is currently no resource available in the market specifically targeted for early childhood visual rehabilitation that can be programmed by professionals and allows for offering specific visual stimuli according to each individual case's needs.

Solution: Sensory module with a light stimulus for use in early visual stimulation. A casing with a circular simple geometry and suitable dimensions for a child's handling was developed, using a 3D printer and transparent PETG. RGB LED Lights were used as a light source and Arduino for programming.

Project: Currently, there is no device available in the market for early visual stimulation that occupational therapists can program according to the patient's needs. A sensory module using 3D printing and arduino is a cheap and functional solution to this problem.

13- Breaking the wall of polymers in bioeconomy!
Giovani Almeida Camargo, UEPG

Problem: The accumulation of conventional plastic waste combined with losses of produce during the post-harvest underlines an alarming issue: There is a lack of ecological packaging alternatives displaying practical advantages while having an end-of-life compatible with a circular economy.

Solution: By analysing environmentally friendly alternatives able to enhance the storage of fruits and vegetables, the project aimed towards applying new renewable biopolymers in active packages with sustainable disposal, where the resulting waste transforms into compost for soil amendments.

Project: The fruit of the labor between two research groups from different countries tested four possible techniques for the preservation of fruits and vegetables during the post-harvest. The result was an active biopolymer package made with cassava starch and brewer's spent grain.

14- Breaking the Wall of sustainable bioproduction
Almiro Neto, UFBA

Problem: The deleterious impact of current industrial production processes poses an imminent threat to our planet's climate, unleashing an alarming surge of greenhouse gases. With the goal of carbon neutrality until 2050, a pressing imperative arises for the pursuit of pioneering and sustainable production.

Solution: Through genetic engineering tools we will engineer microorganisms to harness C02 and H2 from the environment and convert them into value-added products. Our bioproduction platform offers a sustainable alternative, enabling emission-free manufacturing of industry-relevant products.

Project: Through the introduction of novel metabolic pathways, we will enhance heterologous product synthesis in a microorganism proficient in utilizing CO2 and H2 as a feedstock. It will serve as a versatile chassis, enabling the production of a diverse range of value-added products.

15- Breaking the Wall of Edible Packaging
Mayara Moura, UERJ

Problem: Currently, some studies are demostrating that the World's generation of waste could reach 3 billion tons/year until 2050. Food packagings are among them, and it pollutes the environment especially if it is discarded in inappropriated places, contributing to gas emission, floods and global warming.

Solution: To reduce the amount of waste generated by food packaging, a solution would be the development of edible packaging. These could be produced from Pearl Millet flour, as this grain is highly resistant to drought, adapts well to soils with low fertility, has good nutricional content and is gluten-free.
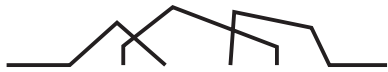
Project: Edible food packaging could be produced to reduce the amount of waste generated that pollutes the environment. They could be made from Pearl Millet flour, which is a grain capable of withstanding climate changes, has good nutritional properties and if gluten-free.

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