



# Programa de Internacionalização CAPES/PrInt

Program for Institutional Internationalization of the Higher Education Institutions  
and Research Institutions of Brazil

**Office of Graduate Studies  
Federal University of ABC (UFABC)**

Prof. Dr. Charles Morphy D. Santos  
Prof. Dr. João Paulo Gois



**Universidade Federal do ABC**  
MINISTÉRIO DA EDUCAÇÃO

# Federal University of ABC (UFABC)



## Population

Brazil: 210 million

São Paulo: 12.2 million

ABC region: 2.8 million

Santo **A**ndré

São **B**ernardo do Campo

São **C**aetano do Sul

# Federal University of ABC (UFABC)

- Founded in 2006
  - 2 Campi
  - 100% of the Faculty Holds PhD
  - Public University
  - Tuition Free
- 
- 14.848 Undergraduate Students
  - 1.517 Graduate Students
  - 686 PhD Professors (~15% Foreign)
  - 746 Administrative Staff

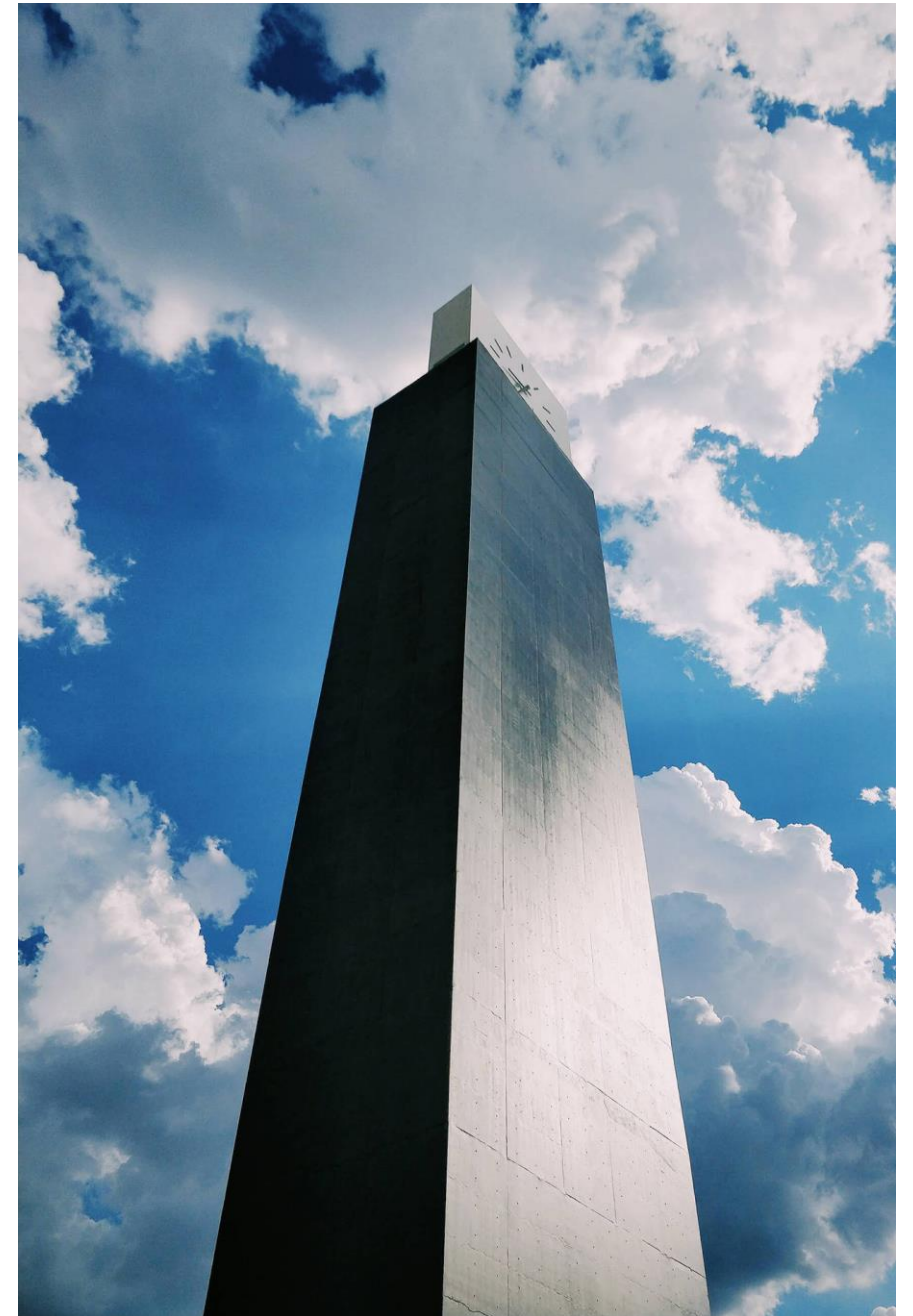
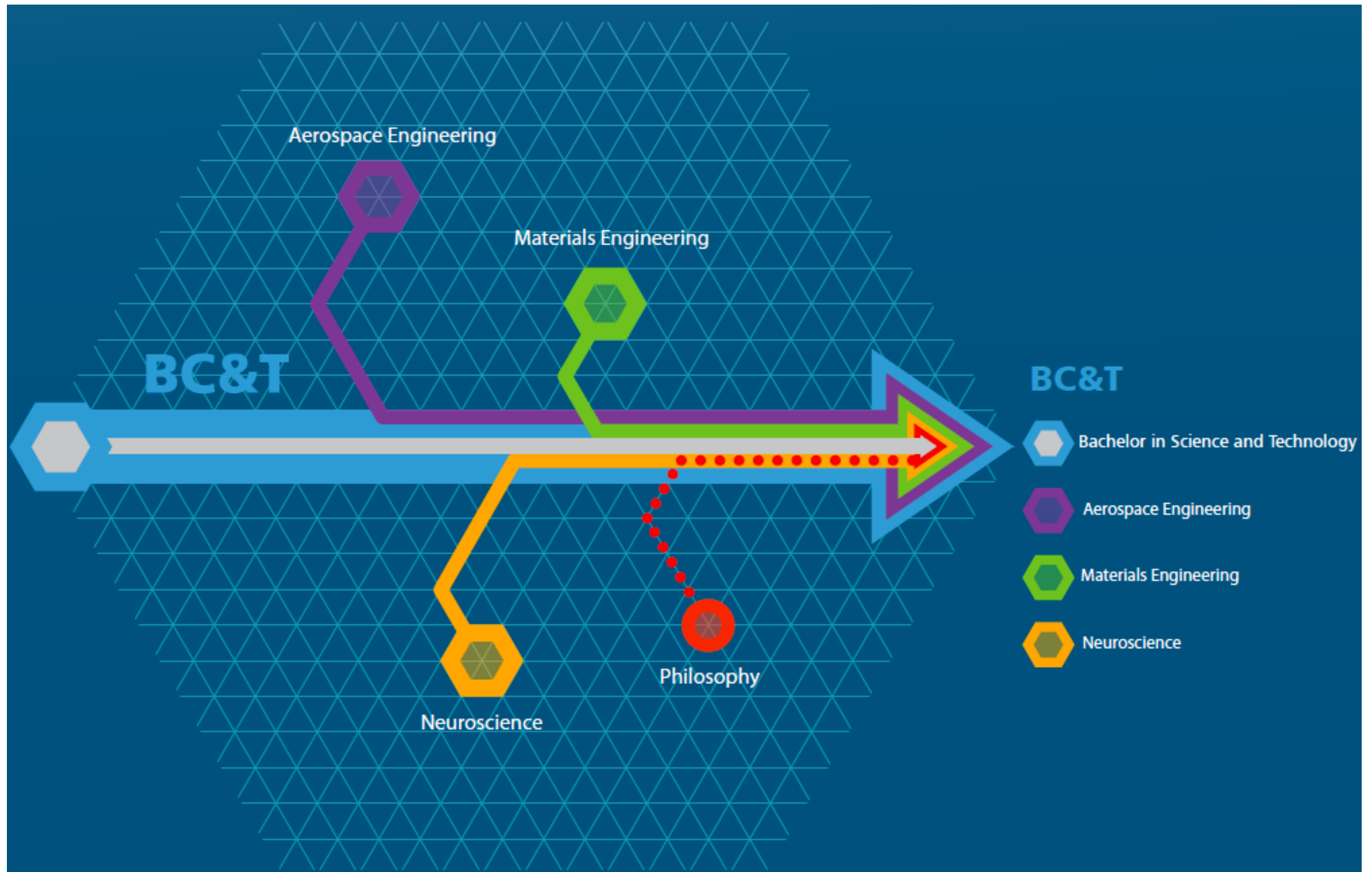


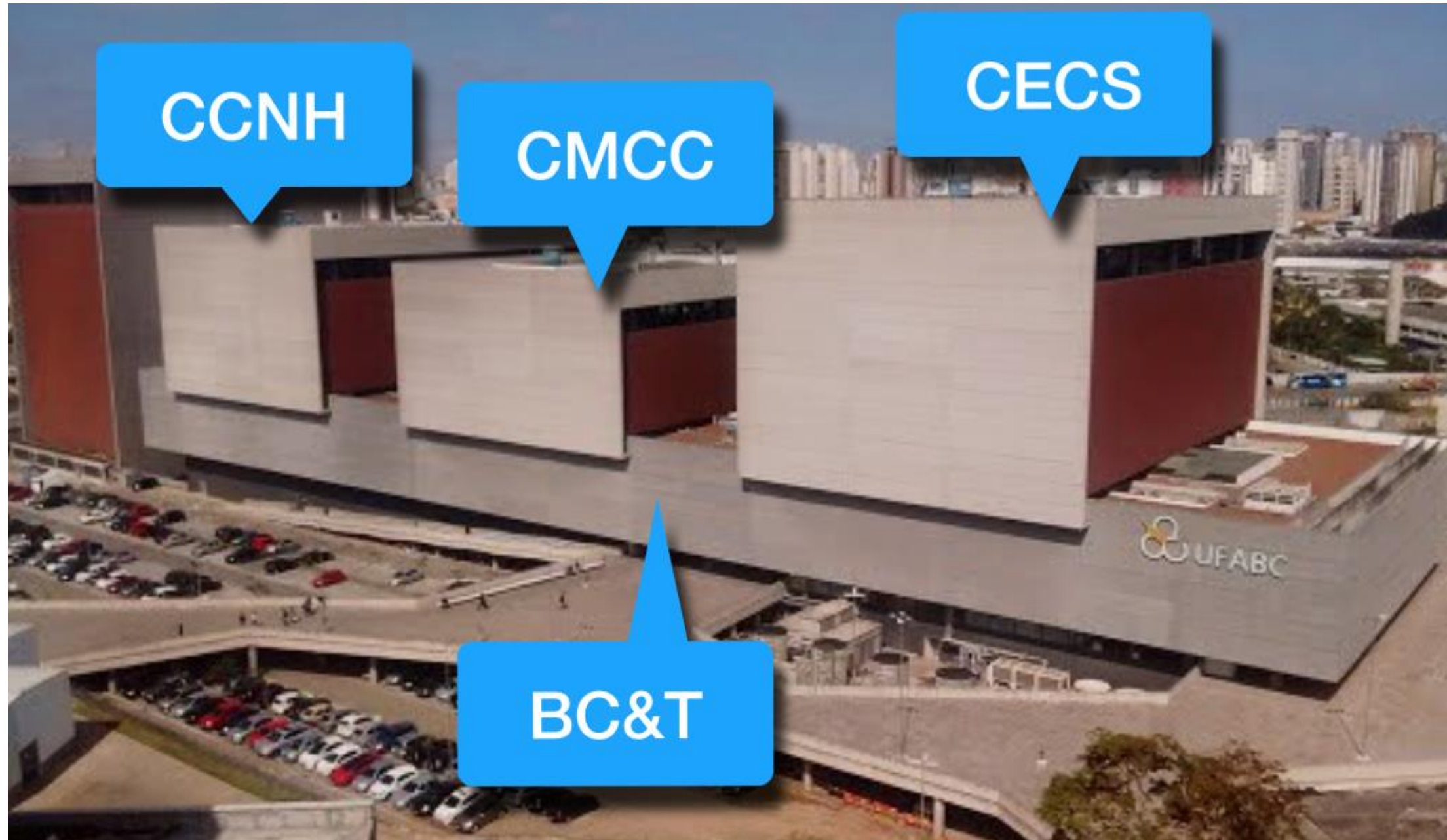
Photo: Caio Guimarães

# Bachelor in Science & Technology

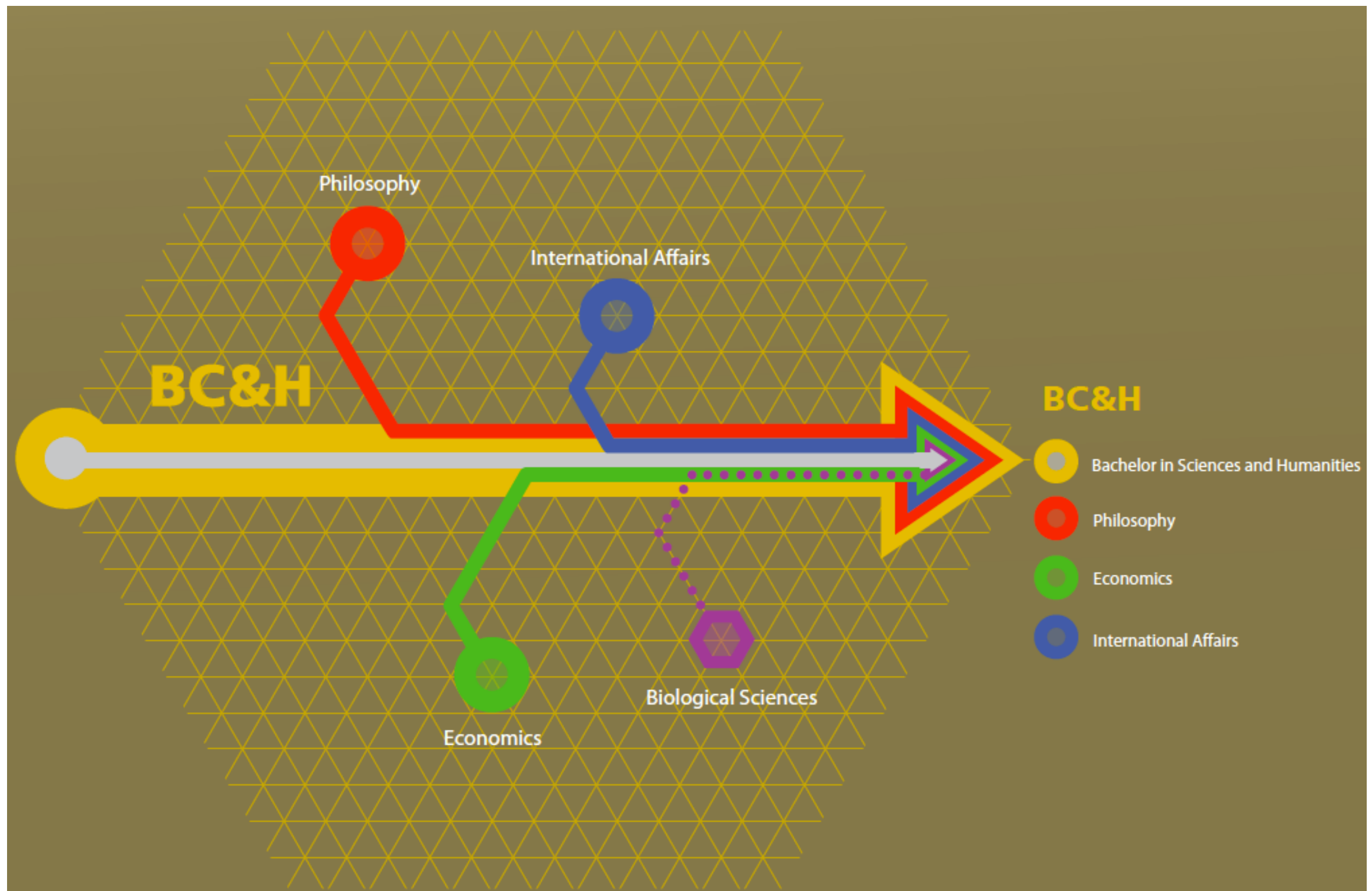




# Bachelor in Science & Technology



# Bachelor in Science & Humanities



# Undergraduate Courses

Engineering	Bachelor degree	Teaching degree
Environmental and Urban E.	Biology	Biology
Aeroespacial E.	Computer Science	Physics
Biomedical E.	Physics	Mathematics
Energy E.	Mathematics	Chemistry
Management E.	Chemistry	Philosophy
Materials E.	Neurosciences	
Information E.	Economics	
Instrumentation, Automation and Robotics E.	Public Policies	
	Phylosophy	
	International Relations	
	Territorial Planning	

# Graduate Courses

## **MSc. and PhD.**

**Biosystems**

**Biotechnoscience**

**Computer Science**

**Chemistry**

**Human and Social Sciences**

**Energy**

**Information Engineering**

**Evolution and Diversity**

**Physics**

**Mathematics**

**Nanosciences and Advanced Materials**

**Neuroscience and Cognition**

**Territorial Planning and Management**

**Education and History of Sciences and Mathematics**

**Industrial Academic PhD.**

## **MSc.**

**Environmental Science and Technology**

**Biomedical Engineering**

**Electrical Engineering**

**Innovation Engineering and Management**

**Mechanical Engineering**

**Production Engineering**

**International Affairs**

**Philosophy**

**Public Policies**

**Materials Science and Engineering**

**Professional Master's Program in Mathematics (National Network)**

**Professional Master's Program in Physics (National Network)**



# CAPES-PrInt: Original timetable

- November, 2017: Public Call Capes-PrInt
- January-February, 2018: Internal call for research projects
- February-April, 2018: Proposal writing (Office of Graduate Studies)
- Until April 18th, 2018: Submission of proposals
- Until May 30th, 2018: Evaluation of the proposals
- Starting from June 1st, 2018: Announcement of preliminary results
- Up to July 30th, 2018: Analyses of the appeals and announcement of the final results
- Starting from August 2018: Implementation of the Institutional Internationalization Project (delayed)
- Starting from January, 2019: Implementation of the Institutional Internationalization Project

# CAPES-PrInt: Objectives

- Foster the construction, implementation and consolidation of strategic plans for internationalization of the institutions contemplated in the areas of knowledge they prioritize;
- Stimulate the formation of international research networks with a view to improving the quality of academic production;
- Expand the actions to support internationalization in graduate courses;
- Promote the mobility of lecturers and students, with emphasis on doctoral students, postdoctoral students, Brazilian lecturers abroad and foreign lecturers in Brazil;
- Foster the transformation of participating institutions into an international environment.

# CAPES-PrInt: Funding available

- Allowance for overseas work missions, in the context of international cooperation research projects or individual missions;
- Funding for project maintenance for specific actions of research projects;
- **Scholarships abroad**
  - Sandwich Doctorate
  - Senior Visiting Professor
  - Junior Visiting Professor
  - Training in short courses or summer/winter schools
- **Scholarships in Brazil**
  - Visiting professor (applicant must be living and working abroad)
  - Young talent with experience abroad (applicant must be living abroad)
  - Postdoctoral researcher with experience abroad (applicant must be living abroad)

# UFABC: Management Group

**Manager:** Provost for Graduate Studies: Charles Morphy D. Santos

## **Brazilian Management group (UFABC)**

- Prof. Dr. Dalmo Mandelli
- Profa. Dra. Daniele Ribeiro de Araujo
- Prof. Dr. Fernando Carlos Giacomelli
- Prof. Dr. Guilherme Oliveira Mota
- Profa. Dra. Iseli Lourenço Nantes
- Prof. Dr. Jeroen Johannes Klink
- Prof. Dr. Roberto Menezes Serra
- Prof. Dr. Wagner Alves Carvalho



Photo: Marcos Araújo



# UFABC: Management Group

## Foreign members

Prof. Dr. Carsten Sievers

Area of Knowledge: **Chemistry**

Georgia Institute of Technology – USA

Prof. Dr. Stephan Hollensteiner

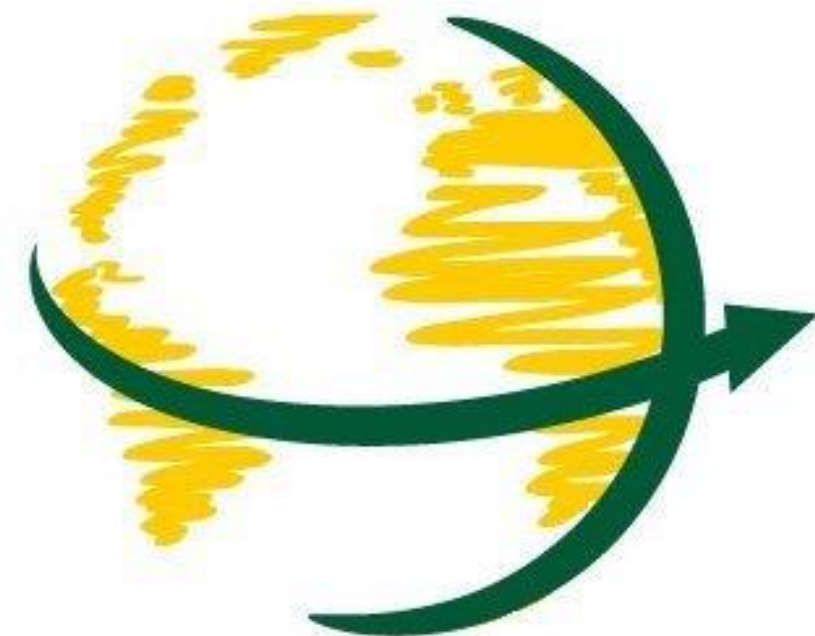
Area of Knowledge: **Social Sciences and Humanities**

Instituição: Universität Duisburg-Essen, Duisburg – Germany

Prof. Dr. Xiaoyi Jiang

Area of Knowledge: **Computer Science**

Westfälische Wilhelms – Universität Münster – Germany





# UFABC: Strengths

Federal University of ABC (UFABC) was created to contribute to the education of Brazilian people, to advance knowledge in engineering, mathematics, computing, natural and human sciences; and to meet the demands for regional industrial activity and public administration.



Photo: Paula Barreira



Photo: Juliana Claro



# UFABC: Strengths

## Concerning Internationalization

- Existence of the International Affairs Office;
- Faculty composed by professors with doctor degree;
- Institutional Plan of Internationalization (2018-2023);
- Interdisciplinarity as the basis for research, teaching, outreach, and management.

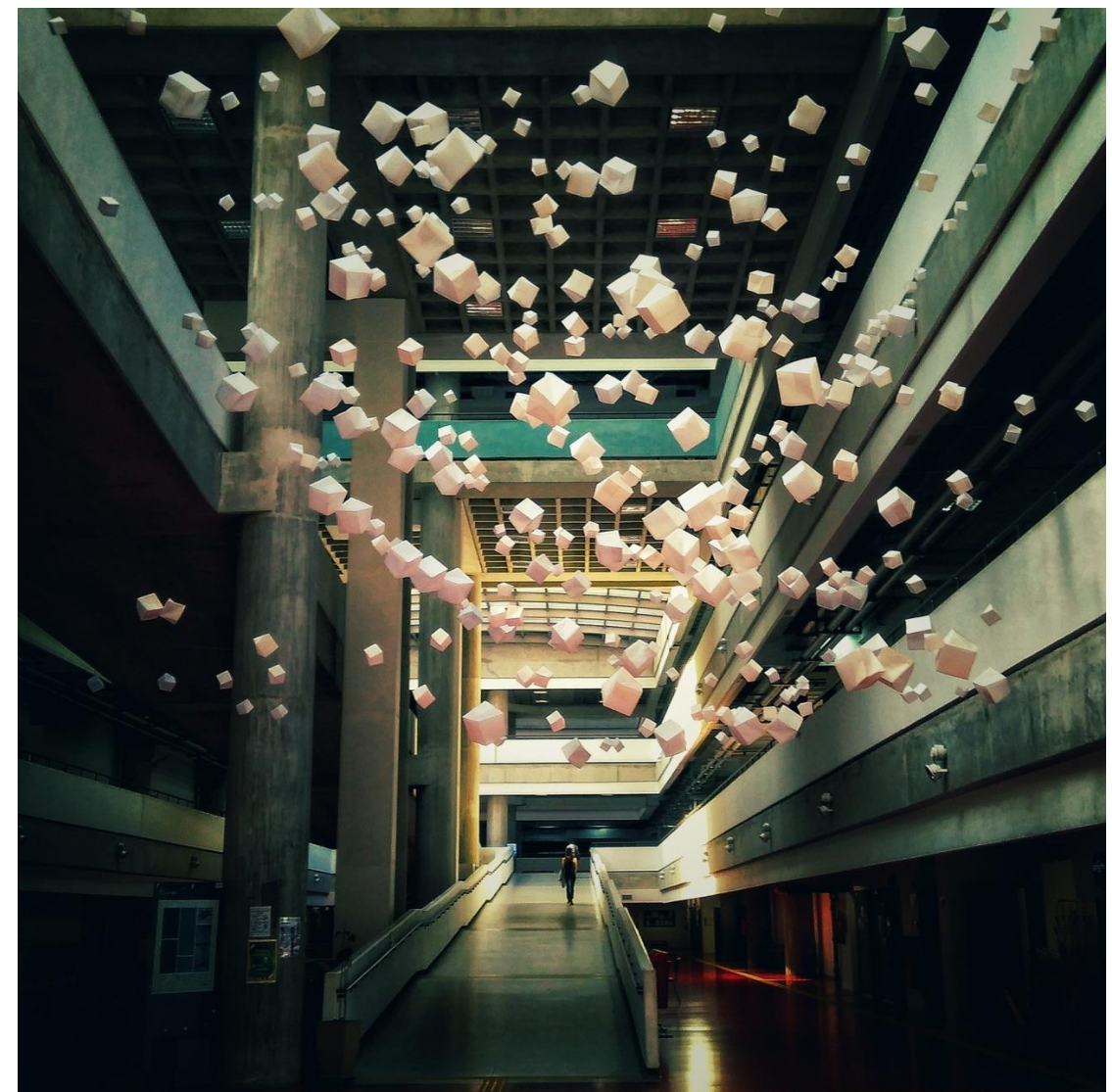


Photo: Roseli Sato

# Challenges

- Limited number of graduate scholarship offered by funding agencies;
- Limitations and barriers to alternative funding sources for research and graduate studies;
- Lack of exclusive physical infrastructure to allocate foreign students and researchers in housings and offices for certain periods;
- Language barriers – English as second language still not widespread among students;
- Brain drain due to research funding restrictions.



# Research Themes

1. Biosystems and biotechnology tools
2. Advances in nanosciences, structure of matter, quantum physics and advanced materials
3. Challenges of sustainability for the 21st century: energy, technology, development and fight against inequality
4. Information and communication technologies, complex systems and smart applications

# Theme 1: Biosystems and biotechnology tools

## Graduate Programs

- Biotechnosciences
- Biosystems
- Chemistry
- Information engineering
- Nanosciences and advanced materials



# Theme 1: Biosystems and biotechnology tools

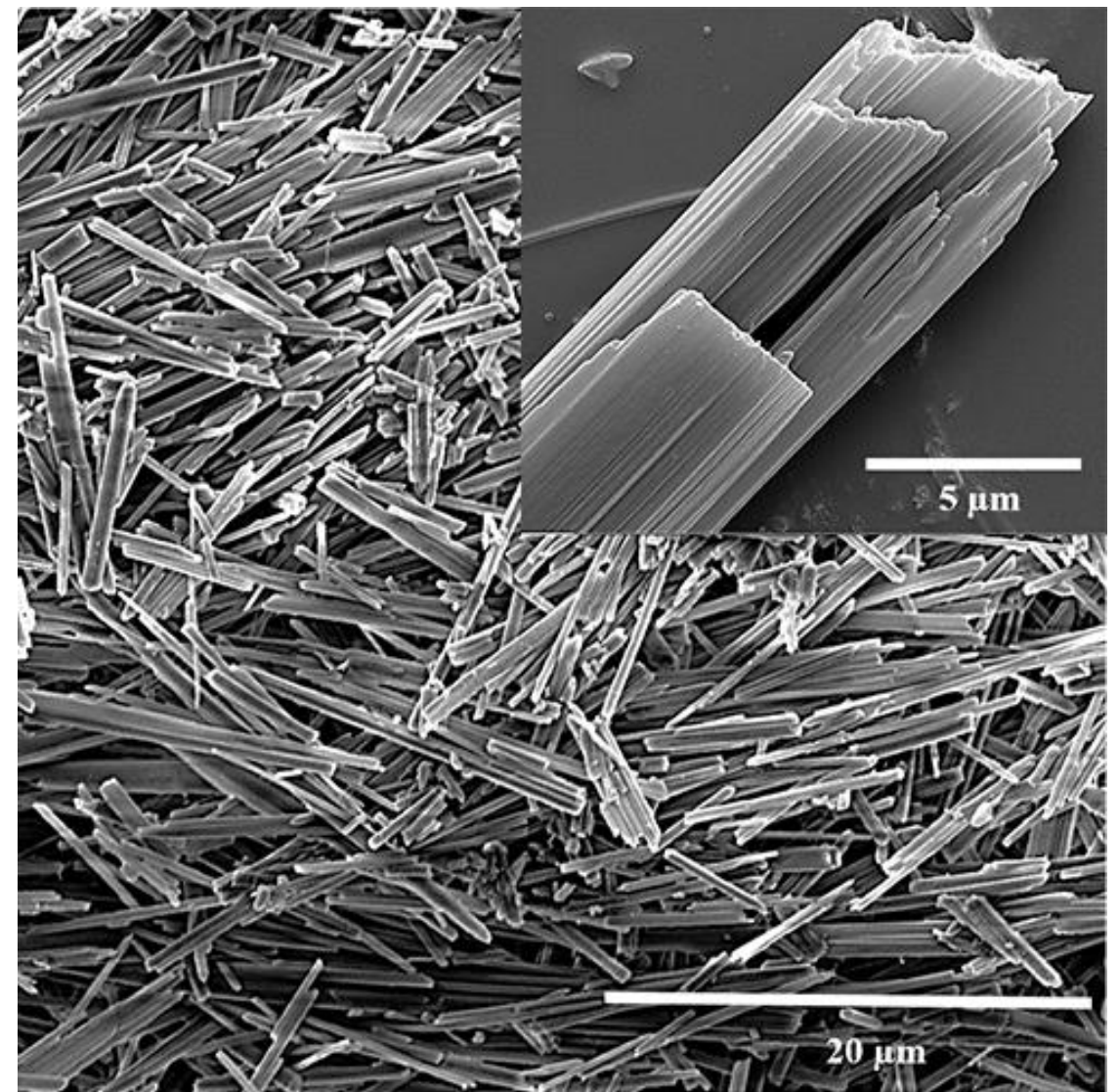
## Research projects

- Biotechnology Research as a Powerful Tool for the Brazilian Health Service
- Bioactive compounds and their technological applications in biological systems
- Development of tools for the improvement of biotechnological processes applied to the medical field and agroindustry
- Development of New Drugs and New Pharmacotherapeutic approaches for the Treatment of Human and Animal Pathologies
- Development and Characterization of High Value Biotechnological Products
- Study of cellular and molecular mechanisms involved in the progression and treatment of pathologies of Public Health interest
- New scientific and technological developments in biotechnology

# Theme 2: Advances in nanosciences, structure of matter, quantum physics and advanced materials

## Graduate Programs

- Chemistry
- Physics
- Mathematics
- Nanosciences and advanced materials





# Theme 2: Advances in nanosciences, structure of matter, quantum physics and advanced materials

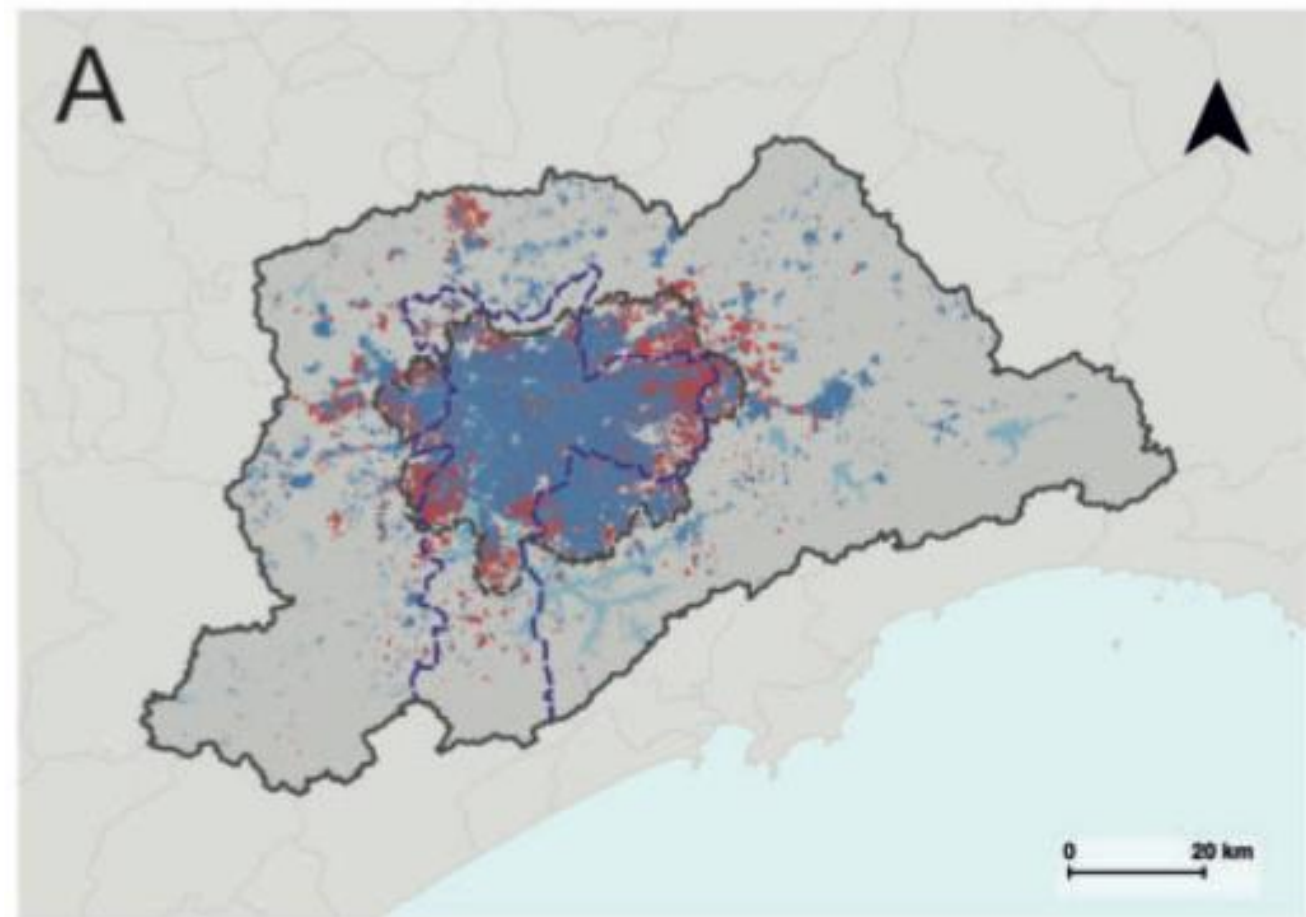
## Research projects

- Disruptive Advances in Quantum Technology: Technological Development and Strategic Innovation for the 21st Century
- Challenges of Astrophysics, Cosmology and Gravitation for the 21st Century
- Spectroscopy, Spectrometry and Computational Simulation Applied to the Study of Biomolecules and their Interaction with the Environment
- Fields and Particle Physics: discoveries and innovations for a new millennium
- Advanced Materials for Structural and Functional Applications
- Advanced Materials: Fundamental and Applied Studies
- Synthesis, characterization and simulation of advanced materials

# Theme 3: Challenges of sustainability for the 21st century: energy, technology, development and fight against inequality

## Graduate Programs

- Chemistry
- Human and social sciences
- Nanosciences and advanced materials
- Territory management and planning



Prof. Flávia Feitosa

# Theme 3: Challenges of sustainability for the 21st century: energy, technology, development and fight against inequality

## Research projects

- Sustainable Energy Storage and Production
- Human Rights: from theoretical foundations to contemporary trends at the local level (cities)
- Nanoscience for Environmental Preservation and Recovery
- Optimization of transformation processes aiming technological advances in analytical methodologies and preparation of nanoparticles and electrocatalysts
- Planning and Governance for sustainable metropolitan Regions in Latin America and Europe in the context of climate changes
- Catalytic and electrocatalytic transformations to obtain energy and higher added value products from biofuel and oil derivatives



# Theme 4: Information and communication technologies, complex systems and smart applications

## Graduate Program:

- Biosystems
- Chemistry
- Computer sciences
- Human and social sciences
- Information engineering
- Mathematics
- Territory management and planning



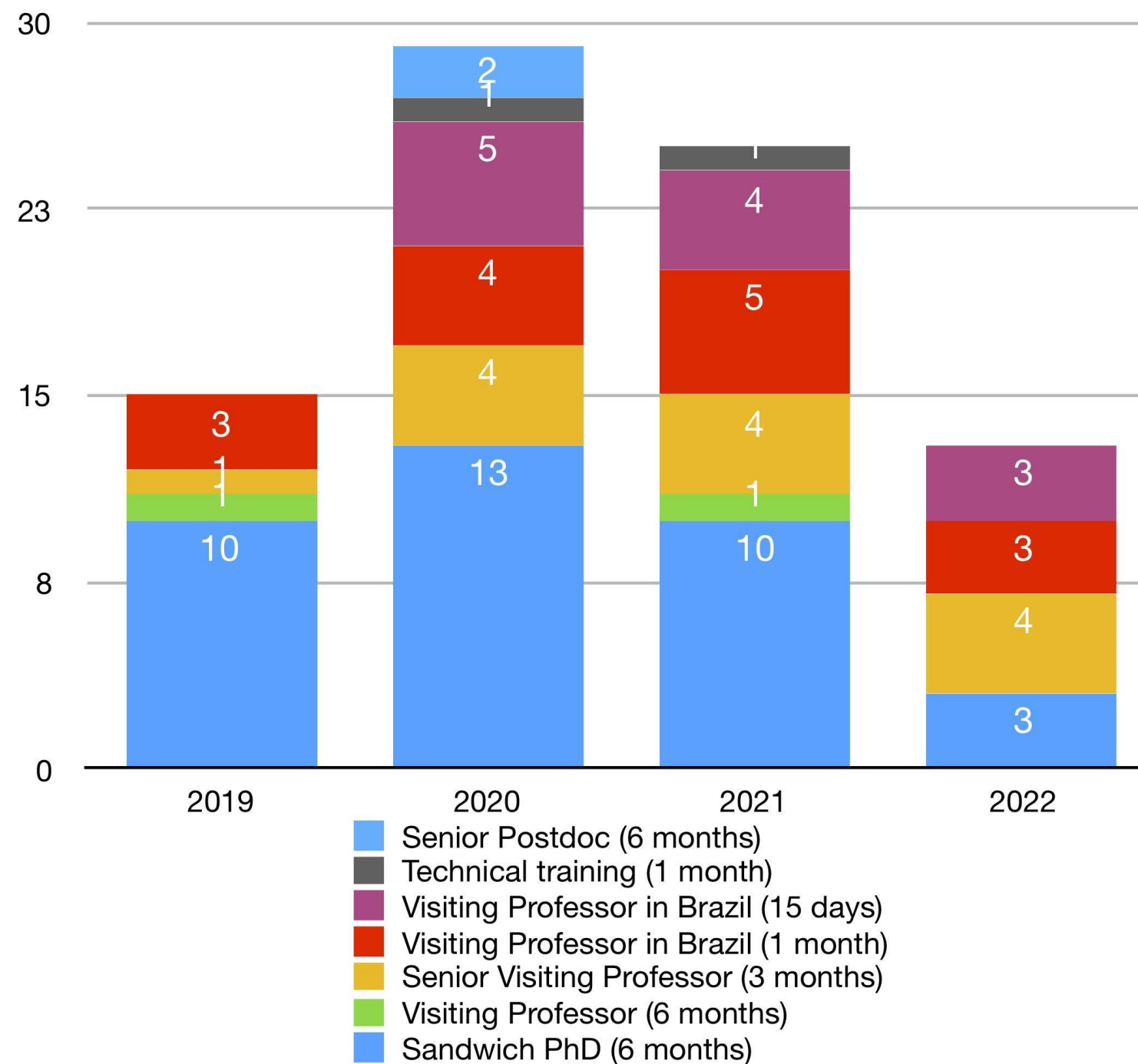
Photo: João Paulo Gois

# Theme 4: Information and communication technologies, complex systems and smart applications

## Research projects

- Optical Networks for the Future Internet and Advanced Applications
- Data Science
- Combinatorics and applications in Bioinformatics, Scientometrics, and Computer Graphics
- Non-linear phenomena in analysis, physics and biology
- IoT-based Applications for Smart Cities and Smart Farming
- Development and Evaluation of Innovative Technologies to Mediate Learning

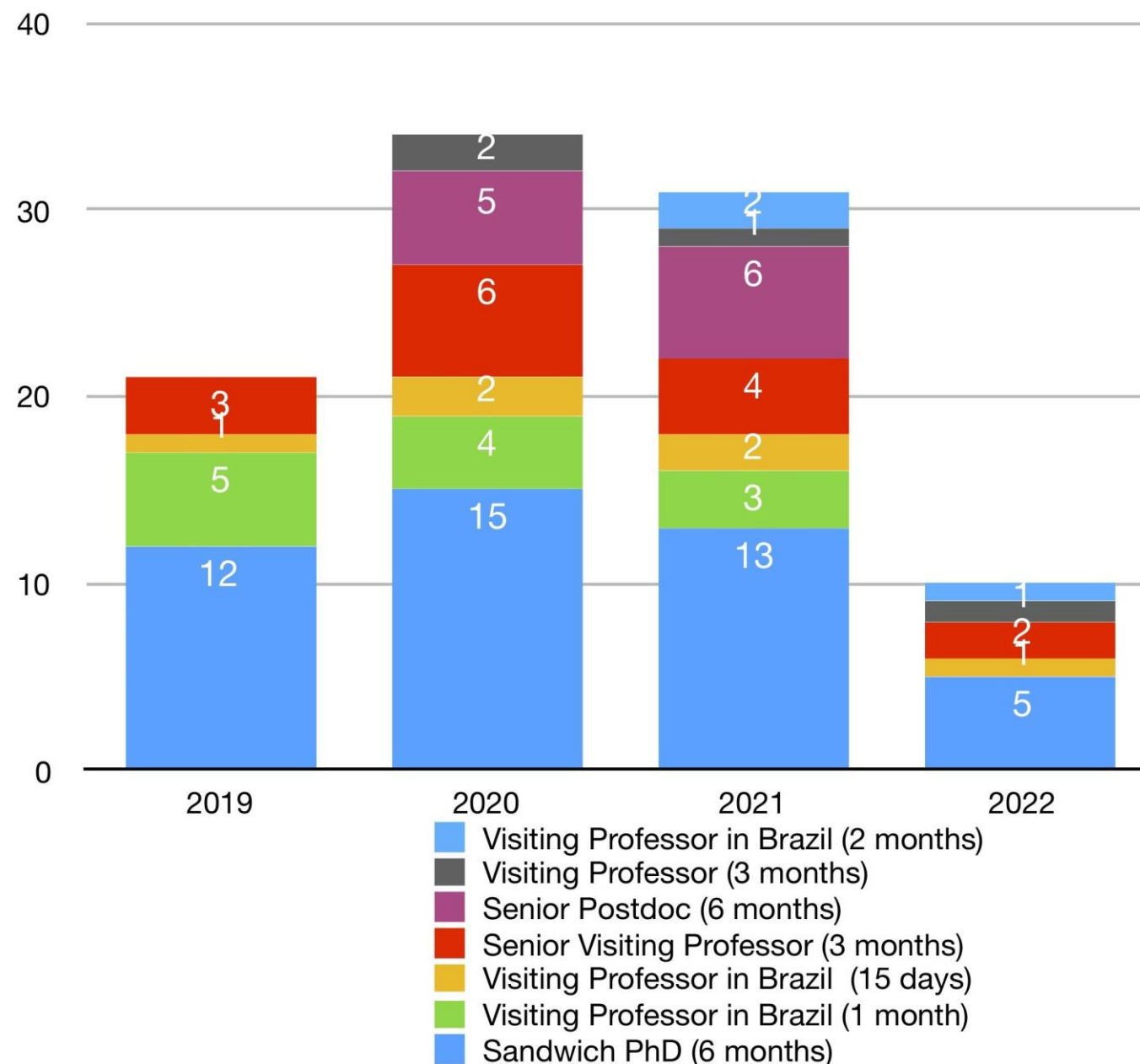
# Theme 1: Biosystems and biotechnology tools



**815,178.00 US\$**

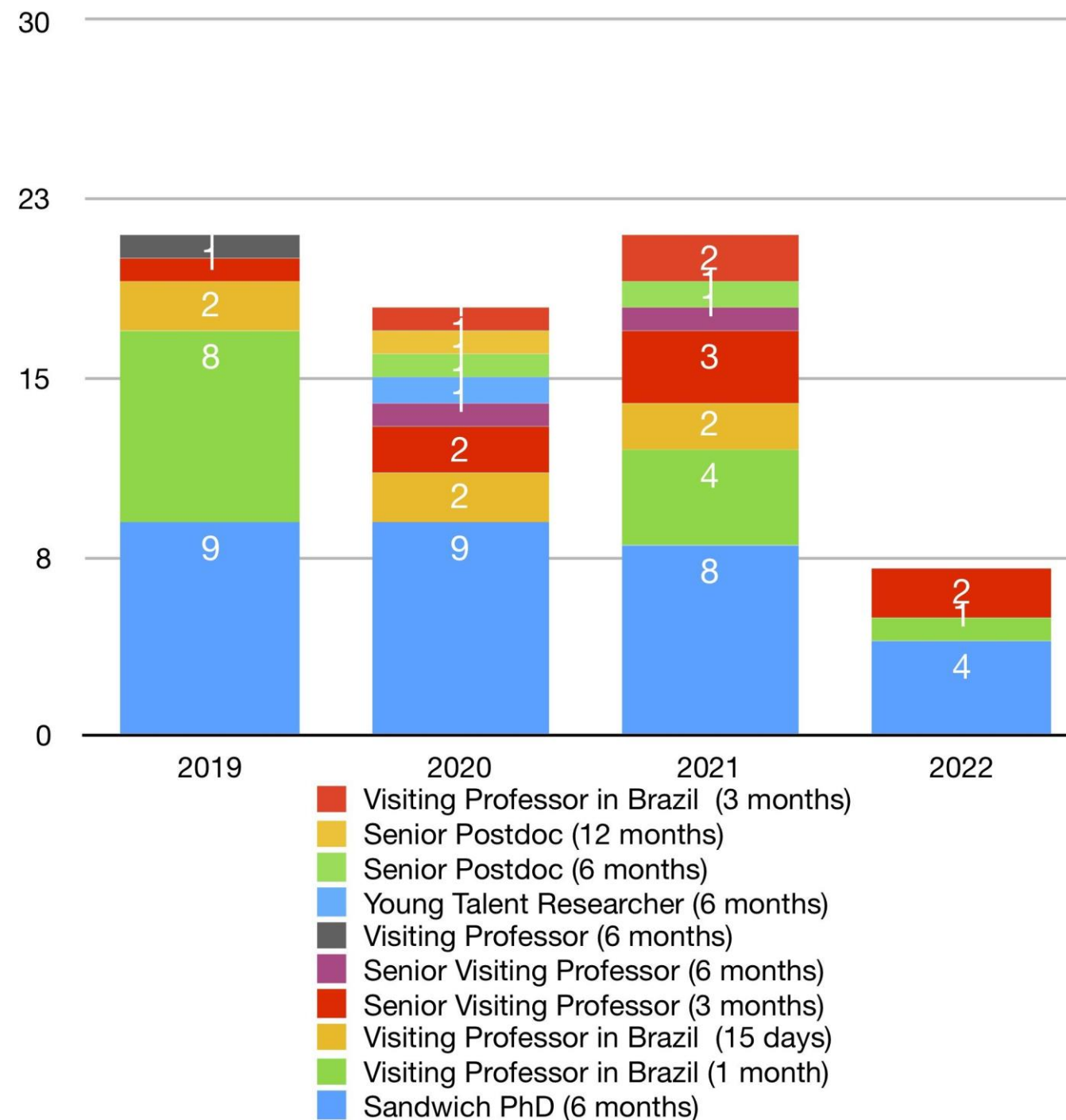


## Theme 2: Advances in nanosciences, structure of matter, quantum physics and advanced materials



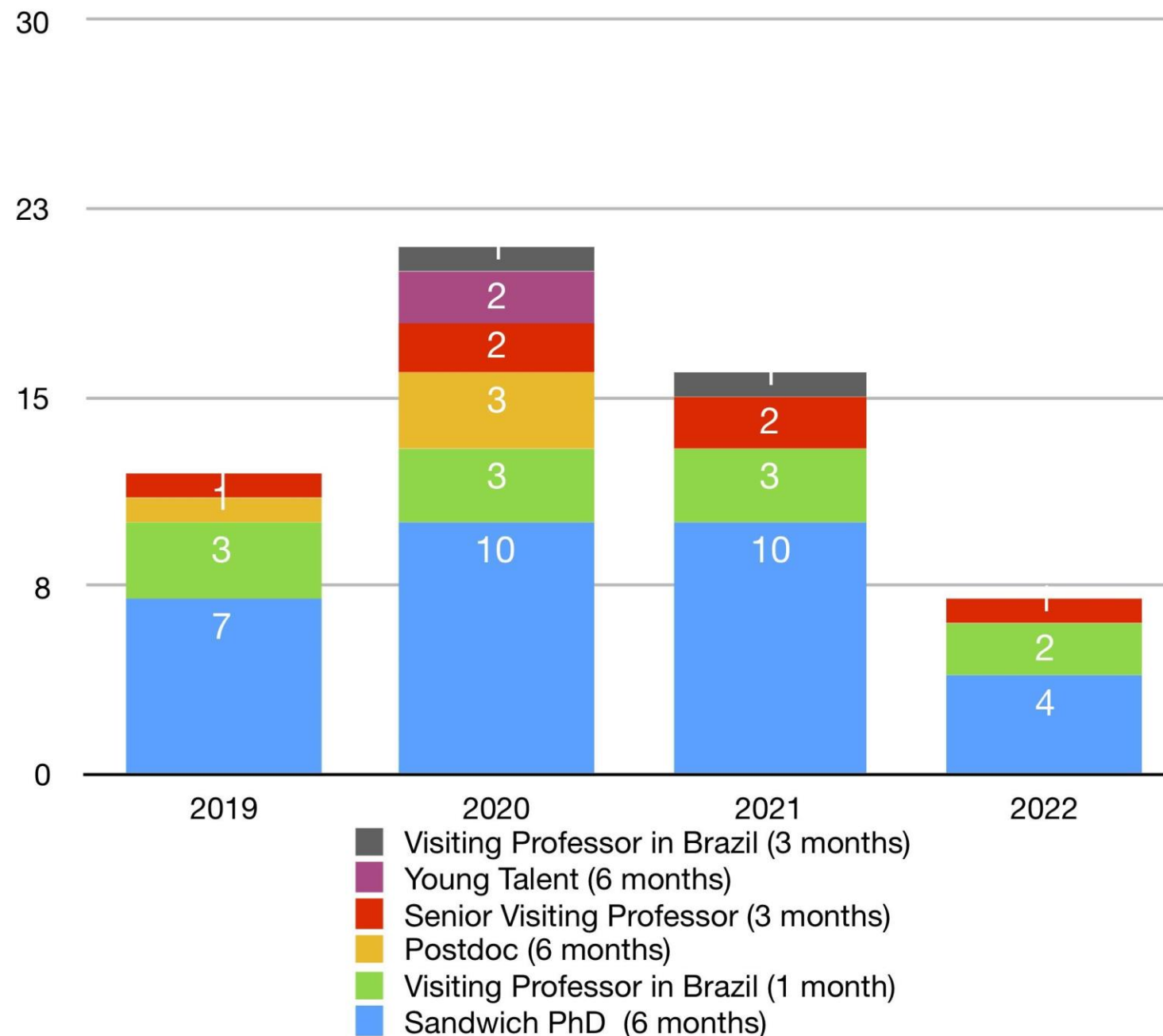
**1,023,553.00 US\$**

# Theme 3: Challenges of sustainability for the 21st century: energy, technology, development and fight against inequality



**819,251.00 US\$**

# Theme 4: Information and communication technologies, complex systems and smart applications



**670,135.00 US\$**



# Financial Resources

- Cooperation projects (2019-2022): R\$ 12,952,903.68 (~3,500,000.00 US\$)
- Work missions related to the cooperation project: R\$ 63,000.00 (~17,500.00 US\$)
- Scholarships unrelated to the cooperation project : R\$ 688,132.80 (~190,000.00 US\$)
- Other Program Actions: R\$ 248,000.00 (~68,000.00 US\$)
- **Total: R\$ 13.952.036,48 (~3,875,000.00 US\$)**

# Implementation

## Current status

- 25 research projects coordinators defined and registered in Capes;
- Projects detailed and registered in Capes.

## Next steps

- Releasing funds by Capes;
- Coordinators receipting research credit cards ;
- Prospecting potential international collaborators;
- Internal calls to define students and professors that will be contemplated with research scholarships.

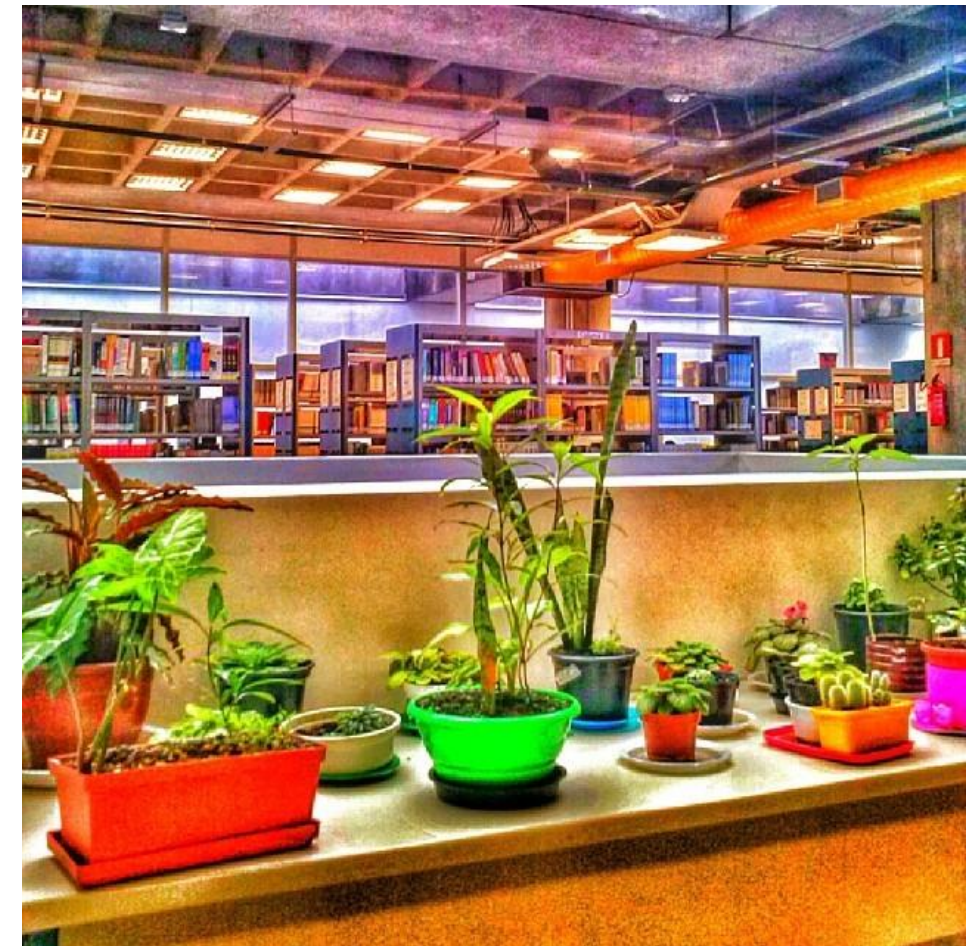


Photo: Hugo Carlos

## Further information

<http://propg.ufabc.edu.br/capesprint>

## Contact

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Photo: Rafael Correia



Programa de Internacionalização  
CAPES/PrInt



**Universidade Federal do ABC**  
MINISTÉRIO DA EDUCAÇÃO

# Resultados

## Planejamento Estratégico da ProPG

(1) Fomentar o fortalecimento e expansão dos Programas de Pós-Graduação *stricto sensu* e *lato sensu* e atrair estudantes brasileiros e estrangeiros

### **(2) Internacionalizar os Programas de Pós-Graduação**

(3) Aumentar o impacto do conhecimento produzido e estimular práticas acadêmicas voltadas para a integridade, o alto desempenho e a melhora na qualidade de vida.



# Resultados

Monday, December 17 (University Duisburg-Essen)

*9:30: Talks about projects in Medicine/Biotechnology: Campus Essen, V15 S01 C97 (Innovationsfabrik)*

Prof. Dr. Michael Ehrmann (Director Center for Medical Biotechnology), Prof. Dr. Markus Kaiser (Dean UDE Faculty of Biology), Dr. Maike Müller (Executive Director Center for Medical Biotechnology), Dr. Oliver Locker-Grütjen, Head Science Support Center

**Follow-up:** Conversa do Diretor (Dr. Locker-Grütjen) com a reitoria de Duisburg-Essen sobre a possibilidade de financiamento do material de consumo para cada bolsista de doutorado da UFABC que for para Duisburg-Essen desenvolver parte da sua pesquisa nas áreas de Biotecnologia e Química da Água.

# Resultados

*13:00 Talks about projects in Information Technology: Campus Duisburg, Dep. of Computer & Applied Cognitive Science, LF 226*

Prof. Dr. Ulrich Hoppe, Jun.-Prof. Dr. Mohamed Amine Chatti (Collide-Project)

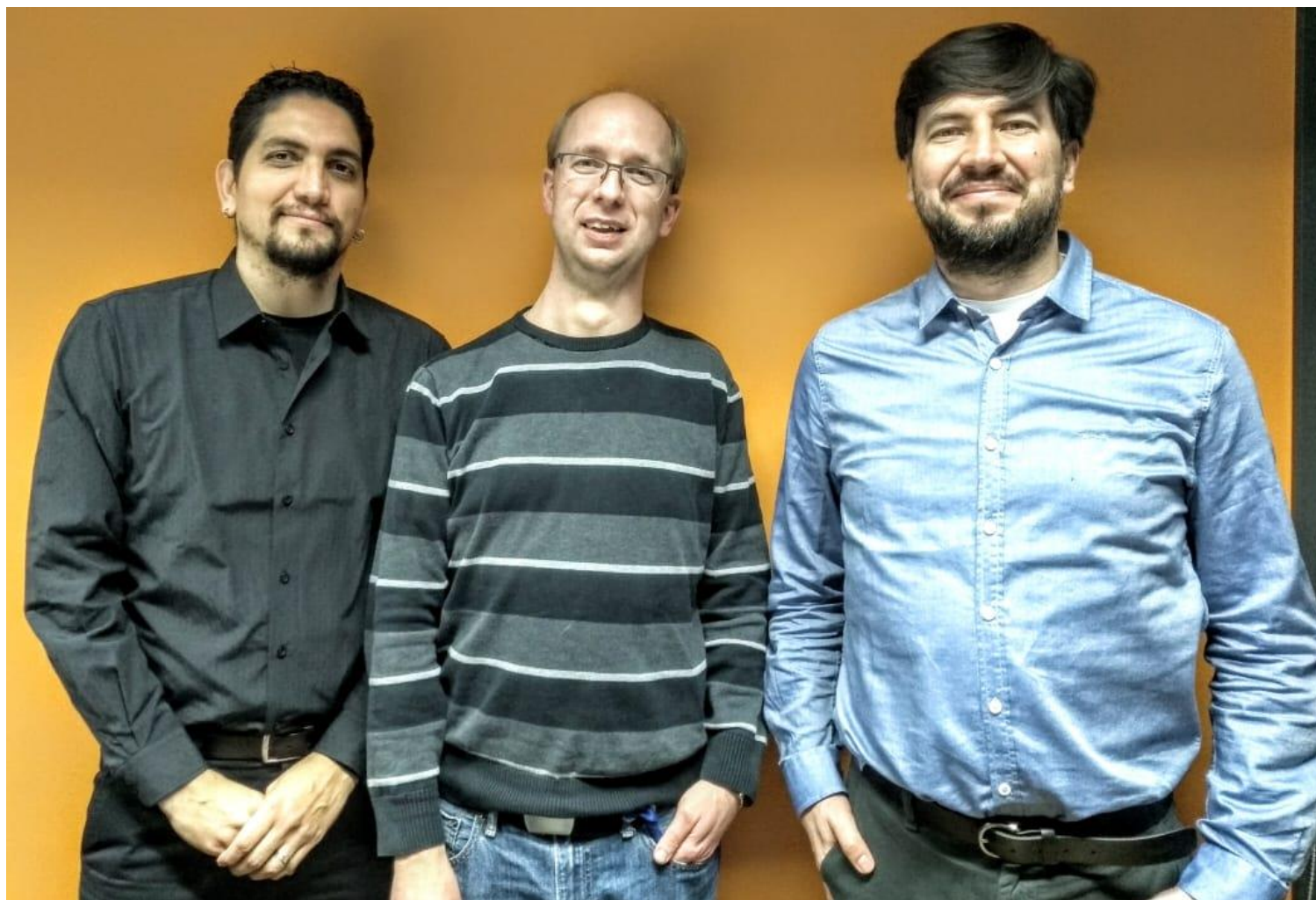
**Follow-up:** Início das tratativas entre o grupo de pesquisa voltado à ciência de dados e social media e o grupo de Duisburg. Trocas de e-mails e estabelecimento das principais linhas de colaboração. Reunião marcada para o dia 23/01 com a equipe brasileira.



# Resultados

*15:00 Talks about collaboration in Material Sciences/Nanotechnology: NETZ (Nano Energie Technik Zentrum), Carl-Benz-Sr. 199, 47057 Duisburg*

Dr. Tobias Teckentrup, Managing Director CENIDE (Centre for Nano-Integration Duisburg-Essen)





# Resultados

Tuesday, December 18 (U Duisburg-Essen / Ruhr-University Bochum): Campus Essen, Rectorate's Building, T01 S06 B37 (Essen)

9:30 Talk with Prof. Dr. Barbara Buchenau, UDE Vice-Rector for Societal Responsibility, Diversity and Internationalisation (tbc)



**Follow-up:** Posicionamento da Dra. Buchenau junto à reitoria de Duisburg-Essen favorável ao financiamento de consumíveis para cada bolsista de doutorado da UFABC que for para Duisburg-Essen e comprometimento na divulgação das iniciativas de colaboração internacional entre as universidades.



# Resultados

*12:30 Lunch and talks about collaboration in biology: RUB, Universitätsstraße 150, 44801 Bochum, University Restaurant*

Prof. Thomas Stützel (also Director Botanical Garden), Prof. Dominik Bergerow (Geobotanics), M.Sc. cand. doc. Kristina Klaus (Evolutionary Biology)



# Resultados

*15:00 Talks about collaboration in Material Sciences/Nanotechnology: ICAMS – Interdisciplinary Centre for Advanced Material Simulation, Universitätsstr. 150, 44801 Bochum, IC building – room 02-574.508*

Prof. Rolf Drautz (Director ICAMS), Dr. Suzana Fries (Senior Researcher ICAMS), Dr. Manuel Piacenza (Executive Manager ICAMS)



# Resultados

Wednesday, December 19 (Ruhr-Universität Bochum): RUB, Universitätsstraße 150, 44801 Bochum, Faculty for Biology and Bio-technology, Seminar Room PURE (Protein Research Unit Ruhr in Europe, ND 04/172

8:30 *Talks about collaboration in Biotechnology: Prof. Axel Mosig (Bioinformatics)*

**Follow-up:** Discussão de projeto conjunto para a utilização de Machine Learning e métodos de visualização para a identificação de tecidos cancerígenos em amostras vivas e fósseis (com professores do CCNH).

11:00 *Talks about collaboration in Information Technology: CAIS – Centre for Advanced Internet Studies, Universitätsstraße 104, 44799 Bo.*

Prof. Dr. Michael Baurmann, Academic Director CAIS, Prof. Christoph Bieber, Academic Coordinator CAIS

**Follow-up:** Início das tratativas entre o grupo de pesquisa voltado à ciência de dados e social media e o grupo de Bochum. Trocas de e-mails e estabelecimento das principais linhas de colaboração. Reunião marcada para o dia 23/01.

# Resultados

## University of Münster (WWU)

Thursday, 20 December 2018

09:30 – 10:00 **Meeting with Prof. Dr. Xiaoyi Jiang and Prof. Dr.-Ing. Bernd Hellingrath:** *WWU Graduate Centre, Meeting Room, Seminar room, Schlossplatz 6*

10:15 – 11:30 **Info-Session on the PrInt-Institutional Internationalization Project**  
- Presentation of the PrInt programme, the UFABC-PrInt project and collaboration possibilities with WWU Münster, UFABC representatives

## Bilateral discussions

Prof. Dr. Joachim Kurtz: Evolutionary Biology  
**Follow-up:** Troca de e-mails e envio de material.

Prof. Dr. Norbert Kersting  
**Follow-up:** Troca de e-mails sobre a possibilidade de colaboração no tema “Smart cities” e participação cidadã (Graduate School of Politics)

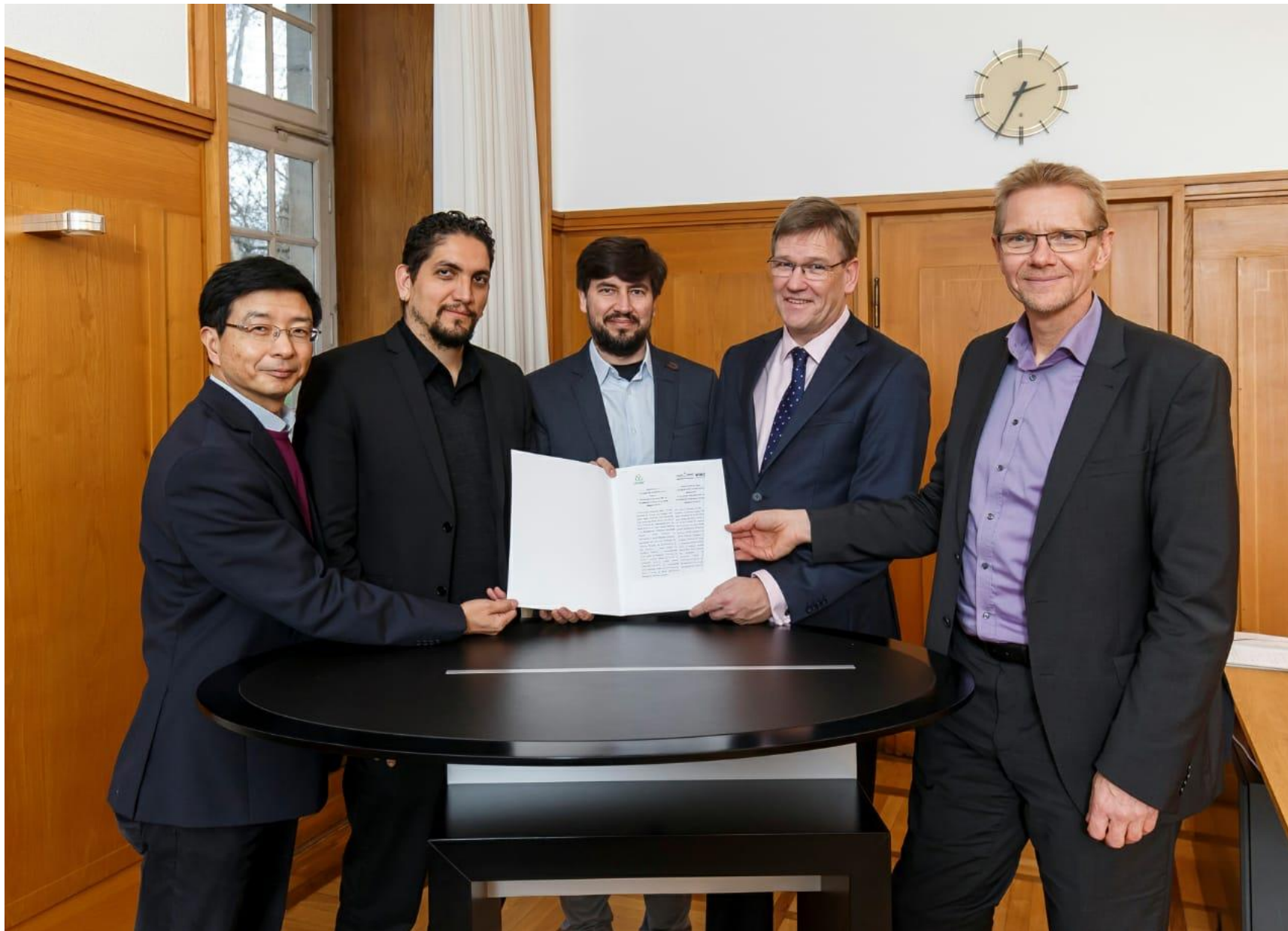


# Resultados



# Resultados

**14:30 – 14:45 Meeting in the Rectorate & Handover of signed WWU-UFABC-Agreement**



# Resultados

15:00 – 17:00 **Time for bilateral discussions in the respective institutes**

Prof. Dr. Xiaoyi Jiang (Institut für Informatik)

**Follow-up:** Troca de e-mails e de material de pesquisa sobre modelagem tridimensional de organismos, visualização e uso de Machine Learning para estudos de biodiversidade.

Prof. Dr. Lars Linsen (Institute of Computer Science)

**Follow-up:** Troca de e-mails e discussão sobre possibilidade de colaboração com bolsista de doutorado em análise de grafos e visualização. Possibilidade de vinda para o Brasil para missão curta.

Prof. Dr. Andreas Püschel (Institute of Molecular Cell Biology)

**Follow-up:** Troca de e-mails sobre possibilidade de colaborações em Neurociências, Genética e Biotecnologia. Possibilidade de vinda para o Brasil para missão curta.



# Resultados

No Brasil (26-28/12)

Atualização e complementação do site do Capes-PrInt: <http://propg.ufabc.edu.br/capesprint>

## CAPES PrInt: Program for Institutional Internationalization

Since its creation in 2006, UFABC has invested in research and graduate studies based on the spirit of knowledge construction beyond Brazilian borders. Numerous research groups have gained international projection, reflected in high-impact academic-scientific production and the establishment of UFABC as a target for foreign partners.

The Institutional Internationalization Project will allow UFABC to expand its network of international contacts and partnerships. We expect to establish a culture of internationalization at UFABC, which will make the faculty and students converge towards the goal of making our university a global leader in the construction and dissemination of cutting-edge knowledge in the following priority research themes:

- (1) Biosystems and Biotechnology Tools;
- (2) Advances in Nanosciences, Structure of Matter, Quantum Physics and Advanced Materials;
- (3) Challenges of sustainability for the 21st century: energy, technology, development and fight against inequality;
- (4) Information and Communication Technologies, Complex Systems and Smart Applications.

The full version of the original public call (in Portuguese) is available at the [Capes-Print webpage](#).



**Objectives and Funding Available**

**Management Group**

**Contact**



# Resultados

## **Theme 1: Biosystems and biotechnology tools**

Biological systems or biosystems are complex groups of elements that include living organisms. They are structured in different levels of organization: biomolecules, metabolic pathways, organelles, cells, tissues, organs and complex organisms. Biological systems are thermodynamically open, maintained in a dynamic equilibrium. They uptake, transform and store compounds (matter), energy and information.

This theme will deal with (1) the study of the molecular characteristics of several biosystems formed by their basic structural components, acquiring hierarchical levels of organization. Those features result in structural relationships and interactions at the same or between different levels of organization, and (2) multiparametric analyses using computational and experimental models in order to simulate molecular structures and intermolecular interactions; the development, characterization and evaluation of new technologies and their therapeutic applicability for the treatment and diagnosis of human and/or veterinary pathologies.

This topic will also present highlights in bioinformatic, tissue engineering, nanomedicine, biophotonics, plant and reproduction biotechnology, medical physics and industrial enzymes. The generation of innovative biotechnological products is dependent on basic research being necessary financial support for all processes involved in technological innovation. Thus, studies related to the identification and characterization of biomolecules and biological systems, by different methodologies, can contribute to the generation of new strategies for the diagnosis and therapeutic interventions, producing specialized human resources with interdisciplinary performance to attend the claims of the productive sector and contribute to the generation of knowledge related to biosystems and biotechnology.

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### **Research projects**

**Biotechnology research as a powerful tool for the Brazilian health service**

**Bioactive compounds and their technological applications in biological systems**

**Development of tools for the improvement of biotechnological processes applied to the medical field and agroindustry**

**Development of new drugs and new pharmacotherapeutic approaches for the treatment of human and animal pathologies**

**Development and characterization of high value biotechnological products**

**Study of cellular and molecular mechanisms involved in the progression and treatment of pathologies of public health interest**

**New scientific and technological developments in biotechnology**

# Resultados

## **Development of tools for the improvement of biotechnological processes applied to the medical field and agroindustry**

Modern biotechnology is an area that has grown dramatically in recent decades. In response to demands required by growing population growth rates and in consumption patterns changes, areas such as agriculture and medicine have become increasingly dependent on the generation and improvement of biotechnological processes. Thus, studies related to the identification and characterization of biomolecules and biological systems of commercial interest have become fundamental. However, the enhancement of this research area is still hampered due to instrumental limitations.

The present project aims to find new technological solutions that allow explaining the complexity of biological systems with higher sensitivity, accuracy and in a minimally invasive manner. Such technological solutions will involve: (1) the development of tools related to the generation of nanoparticulate systems of biotechnological interest, with particular interest in the delivery of drugs and nucleic acids; (2) development of instrumentation based on the interaction of light with biological systems, especially in the generation of medical and dental equipment for diagnosis and treatment of injuries; (3) generation of genetically modified organisms with agroindustrial application, emphasizing studies involving the improvement of energy generation processes from renewable and medical resources, generation of recombinant proteins and drugs; (4) development of tools and analysis involving “omics” technologies, with interest in the characterization and selection of animals and plants of commercial interest.

We expect that the research may contribute to generate new strategies for diagnostic and therapeutic intervention of human and veterinary dysfunctions, as well as to provide new agroindustrial technologies.

**Coordinator:** Prof. Dr. Danilo da Cruz Centeno

**E-mail:** [danilo.centeno@ufabc.edu.br](mailto:danilo.centeno@ufabc.edu.br)

**[Coordinator's Curriculum Lattes \(research projects, publications and academic info\)](#)**

**[Coordinator's research grants, scholarships and main publications \(FAPESP\)](#)**