



UNIVERSITY OF  
BIRMINGHAM

# BIRMINGHAM-BRAZIL

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Celebrating a decade of collaboration

# Celebrating a decade of Birmingham's commitment to Brazil





10 years ago, we made the decision to make Brazil a focal point of the University of Birmingham's global engagement. There were and remain compelling reasons for engagement with Brazil: the strategic importance of Brazil; the quality and ambition of Brazilian universities and partners; the political and societal importance attached to education and research; and the economic strength of the country.

Over the last decade, we have been delighted that leading higher education institutions, research foundations, government agencies and industry partners across Brazil have made the University of Birmingham a partner of choice. We believe that this is in large part down to our deliberate approach to global engagement, which can be characterised by four words: purposeful, committed, comprehensive and sustained.

Through purposeful investment in Brazil, we have grown mutually-beneficial partnerships that operate at scale and with ambition. We are collaborating with Brazilian research partners in health, nanotechnology, environmental science, transport and energy (among other areas) to address the key challenges that impact not only Brazil and the UK, but all of humanity. Combining distinctive areas of expertise and state-of-the-art facilities, the opportunities our partnerships have created for reciprocal learning and collaborative knowledge production are vast and more crucial than ever.

Our strongest partnerships are comprehensive, and cover not only research but many other activities, including student mobility, collaborative teaching and learning activities, summer schools, workshops and dual-degrees. They are supported by close professional connections and underpinned by significant institution-level commitment to ensure their effectiveness and durability.

Our initiatives have been enhanced from the beginning by the UK Government's strong diplomatic relationships with Brazil. In recent years, Brazil has become one of the UK's most important collaborators in education and research, and Birmingham has been a key player. We have wide-ranging research collaborations with over 90 institutions in Brazil from almost all states, with a particular concentration in São Paulo. Since 2011, we have published over 2600 joint publications with Brazilian collaborators. Our co-publications are of the highest quality: cited six times the average of UK only or Brazil only outputs. These purposeful relationships have generated significant external funding to sustain our commitment, and provide a strong grounding to deepen our engagement in Brazil over the coming years.

**Professor Adam Tickell, Vice Chancellor**



**90<sup>+</sup>**

Brazilian institutions  
in collaboration

**2619**

joint publications

**6.6**

Field Weighted Citation Index

**£8.4m**

in research awards

**200**

Brazilian-government funded  
Science without Borders  
students at UoB between  
2012 and 2016

## PURPOSEFUL BEGINNINGS:

2011–2014

From the outset, our overarching objective in Brazil has been to work purposefully with partners to deliver social and economic impact: a hallmark of our approach to global engagement.

Birmingham's success in Brazil stems from the supportive infrastructure we established early on to foster purposeful relationships with Brazilian scholars and students at all academic levels. Between 2011-2014, we launched our signature Brazil Visiting Fellows scheme; a joint pump-priming programme with the São Paulo funding agency FAPESP; a PhD scholarship agreement with the government agency CAPES; and we were significant partners in Brazil's 'Science without Borders' outward student mobility initiative. Over time, this multi-tiered approach to collaboration has sustained an extensive Birmingham-Brazil community of interest, with mutually-beneficial relationships supported by strong partnerships with state and national funding agencies.

We made the first of many executive-led delegations to Brazil in 2011. This established key relationships with partners in government agencies, funding bodies and higher education institutes that were cemented over the subsequent decade as the building blocks of our strategic engagement.

22

incoming Birmingham  
Brazil Visiting Fellows

12

jointly-funded FAPESP projects

65

incoming Science without  
Borders students

2

student exchange  
agreements established

10

PhD scholarships per annum  
launched with CAPES

Co-funding secured for high-  
profile academic workshops:

**'LEGACIES OF MEGA  
SPORTING EVENTS'**

with the British Council;  
Oil and Gas with UKTI  
and the BG Group

559

academic publications



*Science without Borders students at Birmingham 2012/13*



## STUDENT CASE STUDY:

## Dr Mariana T. Cardoso

Regional Health Care Engineering Project Manager,  
Proctor and Gamble, Brussels

"My experience in Birmingham started in 2013, when I came to the University for an undergraduate exchange year through the Science without Borders programme as part of my USP degree. I immediately fell in love with the city and the University. Birmingham is a vibrant city where you can find almost anything that you might be looking for, from great restaurants, to shopping areas and bars. It also has excellent transport connections, which for me was essential, as our lives are becoming more international everyday.

The University of Birmingham provided us with orientation and support throughout the whole year, which made us feel at home and comfortable despite the fact that we were in a different country, experiencing a new culture and studying in a different language. Through the year I was there, I had the chance to not just study in a world-renowned university but also experience a professional working environment via a summer internship with P&G. This experience was invaluable for my career.

While in Birmingham I also had the opportunity to meet many academics and professors. In one of those meetings I showed interest in extending my studies in Birmingham and in 2015 I was accepted for the Chemistry PhD programme at Birmingham through the Science without Borders programme."



# Spotlight on:

## Student mobility

A timely development during our initial engagement was the launch of the Brazilian Government's Ciência sem Fronteiras (Science without Borders) programme.

This enabled us to welcome greater numbers of students from Brazil to our Birmingham campus, increasing from 4 students in 2010, to 25 in 2013–14. In total, between 2012 and 2014, 65 undergraduates studied science subjects at Birmingham as part of their Brazilian degree programmes.

Our long-standing student exchange partnerships with Brazilian partners enable Birmingham students to benefit, both academically and culturally, from studying and living in Brazil. Partnerships with the University of São Paulo (USP), Federal University of Santa Catarina (UFSC) and Pontifical Catholic University of Rio de Janeiro (PUC Rio), support regular and reciprocal student mobility.

Scholarship agreements with the Brazilian funding councils, CAPES (Coordination for the Improvement of Higher Education Personnel) and CNPq (Brazilian National Council for Scientific and Technological Development), have brought more than 25 PhD students to our campus.

*"I had a wonderful time as a Masters student at the University of Birmingham. My year on campus was filled with exciting lectures, seminars and social activities where I got to connect with people from all over the world. As a Brazilian student, I felt especially privileged for being able to take part in several events within the Birmingham Brazil Forum, the UoB hub for cooperation with Brazil. It was such an amazing experience to be around outstanding Brazilian and UK scientists and to get a closer look into the results of their academic collaboration."*

**Marina Diniz Véo Brini**, Technical Advisor at the Coordination of Policies for Women, Minas Gerais State Secretary of Social Development. MSc Development Policy and Politics 2019–20.

*"I had the time of my life studying at the University of Birmingham. This experience helped me to expand my professional and global horizons. My professors were great to me, so helpful and patient and I learnt so much from them! Now that I'm back in Brazil I can say that this experience was not only beneficial for me, but for the people and students I am working with now. I was able to bring with me all the knowledge and experiences back to my country. I will always be grateful and proud to be part of the University of Birmingham."*

**Dr Carla Román**, PhD in Dentistry from Universidade de São Paulo (USP). Sandwich year (2013) at the University of Birmingham.





# A unique and foundational Brazil Visiting Fellows scheme

Now in its 10th year, our signature Brazil Visiting Fellows scheme distinguishes the University of Birmingham's engagement in Brazil.

Every year we support talented early career researchers from Brazil to spend up to three months at Birmingham collaborating with our academics. The scheme provides professional development opportunities and supports broader institutional partnerships. Since 2011, we have welcomed 80 academic colleagues across all

disciplines to Birmingham, creating a network of Brazilian alumni that stretches from Pernambuco to Rio Grande do Sul. Through our Visiting Fellows, we have built broad-based and long-term relationships with colleagues from Brazil.

## The arc of a fellow's success

**Dr Tatiana Rosenstock**, formerly Associate Professor at Santa Casa Medical School. Currently Collaborator Professor at University of São Paulo.

Thanks to Birmingham's Brazil Visiting Fellows scheme, Dr Rosenstock has developed a long and productive research relationship with Dr Sovan Sarkar in Birmingham's Institute of Cancer and Genomic Sciences.

Their research seeks to understand how brain cells die in neurodegenerative diseases due to improper functioning of autophagy and mitochondria. Autophagy is a cell survival process which eliminates unwanted cellular materials like aggregated proteins and damaged mitochondria, whereas malfunction of this process causes death of brain cells, termed neurodegeneration.

The collaboration began through a British Council-Newton Fund Researcher Links workshop in Brazil in 2015. Dr Rosenstock then

visited Dr Sarkar's lab via the Brazil Visiting Fellowship scheme in 2017 and 2018, and thereafter via the Rutherford Fellowship scheme in 2019. Together, they developed five joint publications and an ongoing project via the FAPESP-Birmingham Pump-Priming scheme. Additionally, their collaboration paved the way for a broader memorandum of understanding between the University of Birmingham and Santa Casa Medical School. Their partnership has featured in high-profile events such as the University of Birmingham-Brazil research showcase event at the British Consulate São Paulo in 2018 and 'FAPESP Week' London at the Royal Society in 2019.

Currently, Dr Rosenstock is a Research Fellow in Dr Sarkar's lab, where she is working on a large-scale LifeArc (MRC)-funded project. This builds on their previous Newton and FAPESP funding successes to investigate the role of autophagy and mitochondrial dysfunction in rare neurodegenerative disorders utilizing human pluripotent stem cell models.



# Meet our Birmingham Brazil Fellows

## **2013: Dr Flavia Rodrigues, Universidade Paulista (UNIP)** University of Birmingham In-country Representative

"As a Visiting Fellow, I undertook a research project in Biomaterials looking at the impact of inert gases on the properties of dental restorative materials such as adhesives, which are responsible for the bonding between the restorative material and the teeth. Our results attracted interest from industry, helped to develop new partnerships, and led to my Honourary Degree as Assistant Professor from the University of Hong Kong, with whom I have published a trilateral paper (UNIP-UoB-UHK).

The Brazil Visiting Fellow scheme was a life-changing experience for me. From only 3-months of experience at Birmingham in my first visit, I was able to improve my research skills and interact with other cultures on campus. Thanks to this experience, I began teaching in English at my home University, my research visibility and reputation increased, and I was able to open my own consultancy business for improving academic skills. At the end of my journey at the University of Birmingham, I was invited to act as a research collaboration representative to strengthen the links between Brazilian and Birmingham researchers, which has helped to develop my professional skills even further."

## **2015: Camila Azevedo Antunes de Oliveira,** Universidade do Estado do Rio de Janeiro (UERJ)

"Whilst doing my Post-doc at the State University of Rio de Janeiro (UERJ), I had the opportunity to spend time in Birmingham working with Professor Ian Henderson as a Brazil Visiting Fellow. The research of Professor Henderson focuses on the philosophy that the bacterial cell surface offers a rich source of molecules, which can be utilized and adapted to treat or prevent infections. This project and the multidisciplinary partnership contributed to the academic, scientific and technical knowledge in the area of microbiology, virulence and pathogenicity of corynebacteria. It provided contributions that may help to elucidate the molecular mechanisms and the genetic basis of virulence of these medically important microorganisms. Moreover, my visit helped to create innovative approaches and ideas for new publications, supporting partnership development and collaboration between the University of Birmingham and UERJ."

## **2019: Dr Mariana Boroni, The Brazilian National Cancer Institute (INCA),** Rio de Janeiro

"I am a Biochemist with a PhD in Bioinformatics and am currently Head of the Bioinformatics and Computational Biology Lab at the Brazilian National Cancer Institute. My research focuses on the comprehensive characterization of molecular events in cancers through omics data analysis, as well as identification of new molecular markers that may impact the outcome of the disease. Through the Brazil Visiting Fellows scheme, I had the opportunity to start collaborating with Professor Jean-Baptiste Cazier, Director of the Centre for Computational Biology at the University of Birmingham. During the three months, we investigated potential pathogenic variants in exome data of discordant monozygotic twins for acute myeloid leukaemia. In addition to bringing innovative ideas to this work, this opportunity broadened my knowledge in variant analysis and other bioinformatics skills that will be passed on to my students. The fellowship also opened up possibilities for longer-term collaboration between Birmingham and INCA."





## A RENEWED COMMITMENT TO COLLABORATIVE ACTIVITY:

# 2014—16

With synergies and complementary research strengths now established, we consolidated activity by identifying new external sources of funding to progress our engagement.

Partnerships take time and energy to build; there is no question that nurturing talent and investing in relationships and expertise with Brazilian partners paid dividends. Our maturing research collaborations held considerable appeal for Brazilian state and federal funding bodies, and UK research councils, alike.

In 2014, we took the opportunity to diversify our research collaborations and partnerships, becoming the first university to establish a joint pump-priming fund with FAPERJ, Rio de Janeiro's state research funding agency. Together, we supported 5 research projects with the Federal University of Rio de Janeiro (UFRJ), Rio de Janeiro State University (UERJ) and Pontifical Catholic University of Rio de Janeiro (PUC-Rio). At the same time, we made a strong commitment to supporting the development of academic relationships across Brazil through the establishment of an in-country representative based in São Paulo.

Our commitment to long-term engagement with Brazil gained external recognition when Birmingham's Brazil strategy was awarded the 2014 *Times Higher Leadership and Management Award for Internationalisation*. This acknowledged our dedication to developing mutually-beneficial partnerships in the region for the long term, and affirmed our position as a key UK partner of choice for Brazilian colleagues.

# 21

Brazil Visiting Fellows

# 5

jointly-funded FAPERJ awards

# 130

incoming Science without Borders students at UoB

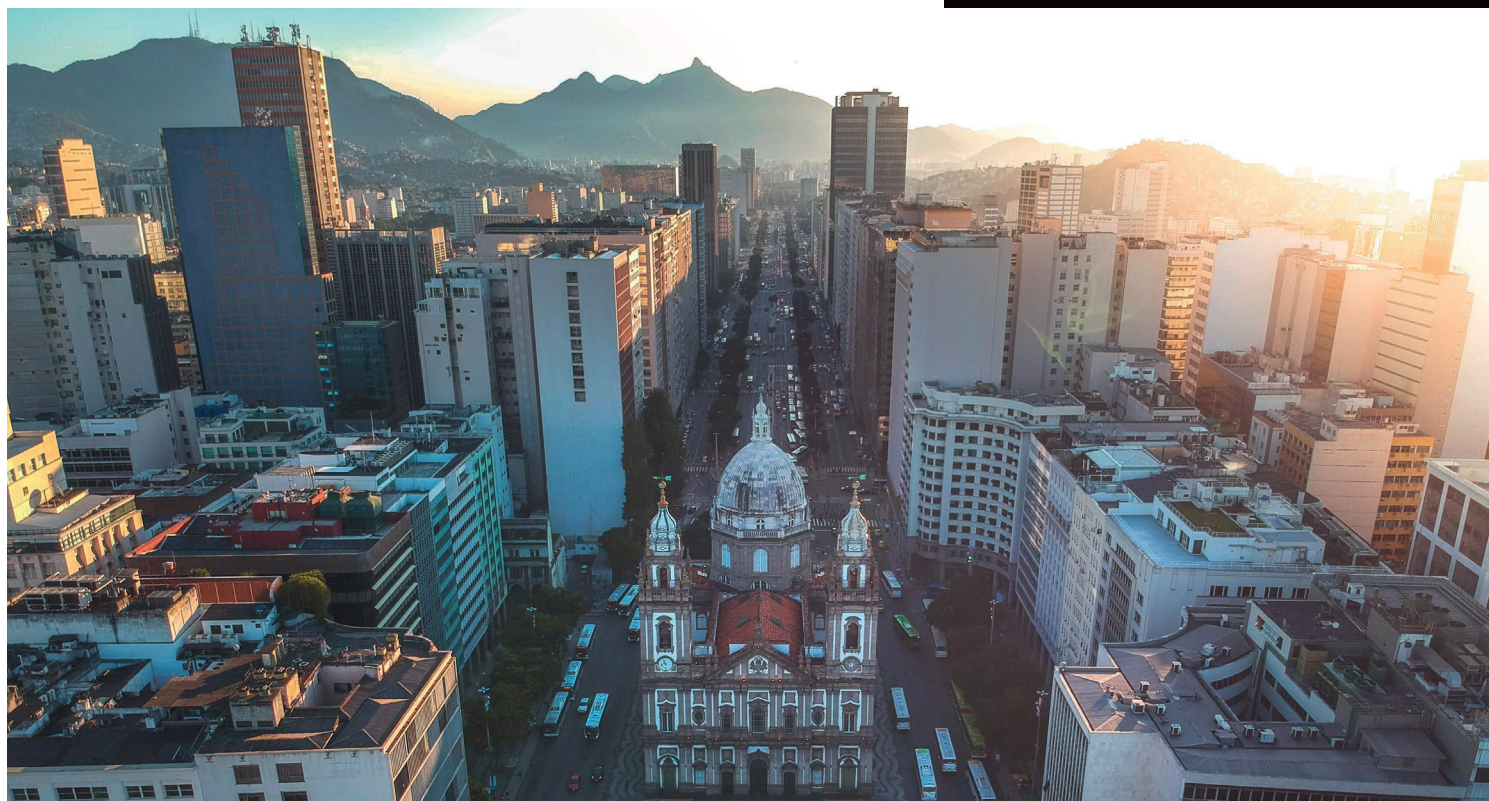
Enhanced grant capture with

# £700k

of external research grants

# 536

joint publications







## PRIORITY PARTNER PROFILE:

# UNESP

Our long-standing, comprehensive partnership with São Paulo State University (UNESP) is not confined only to research and education, but spans all areas, covering academic, student, senior management and professional services engagement.

Since 2013, we have developed wide-ranging links in dentistry and biomaterials, engineering, business, environmental sciences and sustainable cities. Our bespoke Birmingham-UNESP Visiting Fellows exchange kick-started our academic collaboration, providing 14 early career researchers with reciprocal opportunities to collaborate with academic counterparts between 2014–18.

Through joint academic workshops hosted at UNESP in sport, bio-energy, energy storage and sustainable cities, we have built strong academic connections, with support from FAPESP and the UK's Global Challenges Research Fund. Regular senior level

delegations to UNESP have formed a key part of our strategic international engagement and we have cultivated close working relationships between international offices through a staff fellowship initiative.

In 2017, Birmingham hosted a British Council-funded visit from UNESP's executive leadership team to support the re-development of their internationalisation strategy in line with the Brazilian Ministry of Education's 'PrInt' HE internationalization programme. As a result of the strong relationships formed, Birmingham was subsequently identified as a core strategic partner in UNESP's 'Global Research Alliances (GRA)' PrInt initiative. Birmingham has joined UNESP's 'Agri4.0' and 'Plural Societies' GRAs, which bring together leading academic institutions from around the world to work on a dynamic, four-year research and education programme linked to UN Sustainable Development Goals, supported by CAPES.

*“UNESP is proud to have been working closely with the University of Birmingham for several years. Our strong relationship has created opportunities to foster collaboration and support a variety of exciting research initiatives. UNESP and the University of Birmingham have several strong and active links across a range of significant academic areas. We have been working closely together on broader internationalisation projects to support academic, student mobility, and research activities. We look forward to deepening our collaborations and our institutional relationship into the future.”*

**Professor Jose Celso Freire,**  
Associate Provost for International Affairs, UNESP



## Research Spotlight: Sustainable cities

Built on long-standing academic links, joint research between Birmingham and UNESP has investigated poverty levels amongst Brazilian children by examining young people's understanding, experience and unequal participation in the food-water-energy nexus in Brazil. Our ESRC and FAPESP funded research project '(Re) Connect the Nexus' addressed childhood resilience to the threats posed by persistent poverty and examined the role of education in shaping a better future. This project not only strengthened academic relationships, but also helped to build wider institutional links between our universities.





# Focus on FAPESP

Since 2011, the University of Birmingham's partnership with FAPESP, São Paulo's state funding agency, has played a fundamental role in our successful engagement with Brazil.

Both FAPESP and Birmingham share a strong commitment to international scientific co-operation, and we have worked together over the last decade to support joint research projects and the exchange of researchers and postgraduate students.

Through our dedicated joint pump-priming fund, established in 2012, we have supported 20 projects encompassing a range of academic disciplines, including infectious diseases, sustainable cities, railways and infrastructure, rare diseases and brain imaging.

Working collaboratively and strategically with FAPESP in this way has strengthened Birmingham's ties with key institutions across the state of São Paulo and created an important pipeline for external grants. For example, our jointly-funded projects laid the groundwork for a large-scale Life Arc (MRC) award and MRC-Newton-FAPESP support for the UK-Brazil Joint Centre for Arbovirus Discovery, Diagnosis, Genomics and Epidemiology with USP.

Our strategic collaboration has also allowed for the delivery of new educational opportunities via externally-funded postgraduate awards, collaborative teaching initiatives and doctoral training partnerships.

Responding proactively to the economic downturn in Brazil, and the pivotal role FAPESP now plays in supporting research activity, we relaunched our joint scheme as an annual call in 2019. That same year, we co-hosted a senior-led workshop at FAPESP headquarters in São Paulo to solidify relationships and explore opportunities to deliver long-term research partnerships with Brazilian colleagues.

In nurturing talent and investing in Brazilian expertise, we have become one of FAPESP's priority UK partners. Our partnership has shaped Birmingham's influence and profile in Brazil, leading to invited engagement in international workshops and conferences within and beyond Brazil. Through close co-operation with this key regional stakeholder, we are jointly supporting the creation of world-leading knowledge and impact.



# FAPESP Research Spotlights:

## Regulating the toxic potential of nanomaterials

Dr Diego Stéfani Teodoro Martinez from Brazil's National Nanotechnology Laboratory (LNNano) and Iseult Lynch, Birmingham Professor of Environmental Science, are investigating nanomaterials toxicity in the environment. Their FAPESP project examines the use of nano-informatics approaches, such as artificial intelligence and machine learning, to predict toxicity for materials for which there is limited experimental data available. By jointly building a community framework, used by both LNNano and Birmingham, the goal is to promote Brazil-UK co-operation in developing internationally-recognised methodologies which will inform regulatory decisions. The teams have recently been awarded funding via the European Union Horizon 2020 programme to continue their computational ecotoxicity research, via the CompSafeNano project, which will support additional exchange of personnel between LNNano, Birmingham and the network of European and international partners.

## Strategies to combat Muscular Aging

Professor Carolyn Greig from the School of Sport, Exercise and Rehabilitation Sciences has a long-standing link with Professor Eduardo Ferriolli from USP. FAPESP funding has helped to support their collaborative work on 'Strategies to combat Sarcopenia' which aims to broadly support collaboration between the School of Sport, Exercise and Rehabilitation Sciences and the MRC-Versus Arthritis Centre for Musculoskeletal Ageing Research at the University of Birmingham, and the Medical School at the University of São Paulo, Ribeirão Preto. The research aims to address questions in relation to the adaptive response of muscle in sarcopenic older adults and has also paved the way for a range of reciprocal academic visits and short taught courses and workshops covering sarcopenia, physical frailty, and musculoskeletal ageing methodologies. The team have also successfully launched a Massive Open Online Course (MOOC), hosted by Future Learn, a respected British digital education platform. Moreover, this project will help to establish a longer-term collaborative programme of research and academic initiatives.

## Gravitational Waves

Ground-breaking research on gravity and gravitational waveforms is led by Dr Riccardo Sturani from UNESP and Professor Alberto Vecchio, Director of Birmingham's Institute of Gravitational Wave Astronomy. This FAPESP project investigates how the discrepancy between the available analytic waveforms describing the binary system coalescence affect the detection, the parameter estimation and the confidence with which detection and parameter estimation can be achieved. The knowledge acquired with this investigation will develop methods to correct for the observed discrepancies and yield new information on astrophysics, fundamental gravity and cosmology.



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*The University of Birmingham and the São Paulo Research Foundation (FAPESP) have been working to promote international scientific cooperation in all areas of knowledge for more than 10 years. The joint effort by both institutions aims to develop cooperative research projects including the exchange of researchers and postgraduate students. 20 grants and scholarships have been co-funded in this collaboration in fields as diverse as modeling railway networks, nuclear instrumentation and accounting quality and investment decisions. FAPESP look forward to the next decade of fruitful joint work.*

**Roberto M. Cesar Jr, Coordinator, FAPESP**

# SUSTAINED ENGAGEMENT FOR THE LONG TERM: 2016–21

Sustainability has been the cornerstone of Birmingham's strategic engagement in Brazil since its inception.

Our most successful partnerships have endured because academic appetite is backed up with strong institutional commitment. Our distinctive collaboration mechanisms have gone from strength to strength in the third phase of our in-country engagement.

The growing number of large-scale funding calls prioritising Brazilian partners has rewarded Birmingham's long-term commitment. Increasingly defined by its place-based relevance, and supported by significant external funding, our joint research tackles global challenges related to infectious diseases, deforestation, dentistry, nanotechnology, railways and sustainable cities. Our sustained engagement paid off when, in 2017, we were awarded funding through the UK Government's Rutherford Fund to extend the reach of our distinctive Brazil Fellows programme by hosting 8 year-long fellowships at Birmingham. Our strong track record also made us a preferred partner in the British Council Brazil's (BC) 'Universities for the World' programme, a capacity-building initiative that aims to develop capabilities to internationalise Brazilian universities, drawing on UK HEIs' expertise and experience.



Successful applications to all four rounds of the BC scheme between 2017–19 have supported our more deliberate approach to institutional partnership development with São Paulo's leading universities—USP, UNICAMP and UNESP—and, more broadly, with the University of Minas Gerais and the University of Brasília. Our joint projects have advanced academic collaboration within the context of sharing best practice in the formulation and implementation of internationalisation strategies. They have helped to enhance our Brazilian partners engagement with the CAPES PrInt initiative, deepened and broadened Birmingham's engagement in Brazil, and sustained collaboration for the long term.

During the Covid-19 pandemic, in 2020/21 we jointly delivered a series of highly-successful virtual events, workshops and lectures with our Brazilian partners. The 2019 launch of the Birmingham Brazil Forum as a new virtual hub to maintain the profile of collaborative activity has proven to be an excellent platform to sustain relationships while physical mobility is restricted.

# 36

Brazil Visiting Fellows

# 8

UK Government funded  
Birmingham-Brazil  
Rutherford Fellows

# £1.8m

in external research  
funding awards

# 8

jointly-funded FAPESP projects

# 4

successful projects via the  
British Council 'Capacity for  
Internationalisation in HE' fund

# 1,524

joint publications



*Emeritus Professor Marilyn Martin Jones, Dr Elizabeth Chilton and Dr Eleni Mariou, School of Education, with colleagues from the University of Brasília and the Federal University of Minas Gerais.*





## PRIORITY PARTNER PROFILE:

# USP

The University of São Paulo (USP) is one of the largest and most important research, technological and Higher Education institutions in Brazil and Latin America.

Birmingham is USP's fourth largest UK collaborator in terms of joint publications, with an impressive joint field-weighted citation index of 7.88. Together, we co-authored 1496 publications from 2011–2020. Academics across our institutions have developed close working relationships through our signature partnership schemes, with 9 early career researchers from USP participating in our Brazil Visiting Fellows programme, and through 12 FAPESP-funded joint research projects.

These foundational links have placed Birmingham and USP collaborators in a strong position to capitalise on wide-ranging large-scale funding to build global expertise in key healthcare challenges. With funding from the UK's National Institute for Health Research, Birmingham is working with USP to advance research into chronic pulmonary disease,

and progress comparative studies into a common heart condition across disadvantaged populations in China, Brazil and Sri Lanka. Supported by an MRC-Newton-FAPESP award, we have jointly set up the UK-Brazil Joint Centre for Arbovirus Discovery, Diagnosis, Genomics and Epidemiology with Oxford to advance research in tropical diseases.

In 2018, we strengthened and consolidated these relationships through a British Council-funded partnership focussed on international digital education delivery. In Dentistry and Biomaterials, we explored how digital technology can help universities achieve their global ambitions within the changing higher education landscape by enhancing virtual learning opportunities for students. The project created strong connections across senior leadership teams responsible for international and digital education strategies, providing an important supportive framework for the ongoing development of academic and administrative relationships.

*“The University of São Paulo has a solid tradition of working with international universities, especially in the UK, and we are very pleased to be collaborating with the University of Birmingham across a range of areas. Important joint research that will have long-lasting positive impacts for people across the world is taking place within Applied Health, Infectious Diseases and Medical and Dental Sciences, and we are proud to be working together with the University of Birmingham on the facilitation of such international partnerships.”*

**Professor Valmor Tricoli**, Provost for International Cooperation, USP

## Research Spotlight: BReaTHE Well: Building REsearch across THE WorLd in Lung disease

Working with colleagues across the globe, Breathe Well aims to foster research in primary care and the community to improve the diagnosis, management and prognosis of chronic obstructive pulmonary disease (COPD). The Birmingham research team is working with primary care respiratory research teams in Brazil, with USP's FMABC Medical School providing the lead investigators. The team aims to co-develop the capability, networks and platform to deliver targeted and effective research and healthcare outcomes for people suffering from the disease across Brazil, and the globe. Additionally, this work will help to develop and consolidate a sustainable collaboration and shared vision, co-create a local plan for evaluating approaches for identifying undiagnosed COPD in the community, and build a robust platform for future collaborative research with Brazil.







# Comprehensive place-based research excellence

In collaborating with Brazilian universities and research centres over the last decade, the University of Birmingham has gained access to facilities, expertise and opportunities simply unavailable elsewhere.

We now have a cluster of high-profile, high-value research areas that are distinctive because of the place-based nature of engagement – in terms of the specific academic focus, or the Brazilian partner we are working with. Across microbiology, oceanography, linguistics, forestry and railways, our comprehensive research projects have in common the measurable impact they are delivering at a local level.



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*Our partnership aims to do much more than just reveal the mechanisms underlying complex biological processes: we hope this initiative will foster a radical shift in our ability to find and plan novel and efficient strategies to treat conditions such as cancer and cardiovascular diseases.*

**Professor Kleber Franchini**, Director of the Brazilian National Biosciences Laboratory at CNPEM



## From a ‘zika lab in a caravan’ to a state of the art sequencing facility

Supported by the Brazilian Ministry of Health, and in collaboration with FioCruz Bahia and the University of São Paulo (USP), Birmingham expertise in portable genome sequencing has provided a new understanding of the genetics of the Zika virus and its rapid spread in Brazil and beyond. This research, described by Birmingham’s Professor Nick Loman, as a ‘zika lab in a caravan’ paved the way for the ‘UK-Brazil Joint Centre for Arbovirus Discovery, Diagnosis, Genomics and Epidemiology’ (CADDE), supported by national and state funding bodies in the UK and Brazil.

A partnership between Oxford, USP and Birmingham, CADDE will develop novel sequencing and bioinformatics methods to aid the interpretation of genome and metagenome scale data generated in clinical and public health microbiology. CADDE aims to become a strategic centre of excellence for research in South America. It will focus on providing timely analysis, based on genomic, epidemiological and geographic evidence, to anticipate and control transmission of arboviruses, today and in the future. CADDE will strengthen the evidence base for public health actions, and strengthen the capacity of the Brazilian health system to respond to emerging arboviral diseases. It will transform local capacity by training research scientists and public health personnel in epidemiology, laboratory testing, the use of portable genomic technologies, and computational and statistical methods.

## Combating cardiovascular disease and cancer with Brazil’s National Centre for Research in Energy and Materials

In 2018, we established the first UK on-site presence at Brazil’s premier research facility in Campinas, the Centre for Research in Energy and Materials (CNPEM). In doing so, Brazil has become the key international partner country for the University of Birmingham’s joint Centre of Membrane Proteins and Receptors (COMPARE) with the University of Nottingham. This flagship initiative brings scientists together to develop the next generation of drugs to tackle cardiovascular disease and cancer, and provides unique access to the world’s only 4th-generation light source synchrotron based at CNPEM. CNPEM’s expertise and world-class facilities have added a vital new dimension to the successful COMPARE partnership, allowing us to create research opportunities that will deliver potentially life-saving benefits for patients around the globe.

“Our partnership aims to do much more than just reveal the mechanisms underlying complex biological processes: we hope this initiative will foster a radical shift in our ability to find and plan novel and efficient strategies to treat conditions such as cancer and cardiovascular diseases”.

**Professor Kleber Franchini**, Director of the Brazilian National Biosciences Laboratory at CNPEM

## Re-drawing Brazil's linguistic and literacy landscapes

Birmingham's MOSAIC Group for Research on Multilingualism and researchers in Applied Linguistics at UNICAMP have together pioneered a new approach to the socio-linguistics of multilingualism in Brazil.

Their research challenges long-held perceptions about a monolingual Brazil by exploring the different policies, language resources, ideologies and social identities that have emerged in the country's contemporary plurilingual landscape. This is evident in the cultural and linguistic practices of youth on the margins, the educational challenges of socially-marginalised groups, and minority groups' efforts to strengthen languages of identity and belonging. Bringing interdisciplinary theoretical frameworks together, the researchers have provided a comprehensive picture of the social, political, and cultural dynamics at play in the country's linguistic evolution in their signature volume: *Multilingual Brazil: Language Resources, Identities and Ideologies in a Globalized World* (Routledge 2018).

In partnership with the Federal University of Minas Gerais and the University of Brasilia, MOSAIC is helping to enhance the internationalisation and English language policy strategies of Brazilian Universities. Funded by the British Council, the team have forged a robust qualitative, ethnographic approach to the processes already at work in the development of the Brazilian policy of 'internationalisation at home'. Their close examination of specific English policy initiatives and practices is reshaping strategic thinking about capacity building with regard to English medium instruction in Brazilian universities, and supporting the sustainable development of appropriate pedagogies and resources. Research findings will provide clear pointers and online guidelines for future language policy-making, taking account of institutional conditions and priorities.



## Experimenting to discover how forests respond to rising levels of atmospheric CO<sub>2</sub>

Deep in the rainforest north of Manaus, the capital of Amazonas State, six clusters of towers will provide around-the-clock monitoring of atmospheric and soil conditions in the world's largest tropical forest.

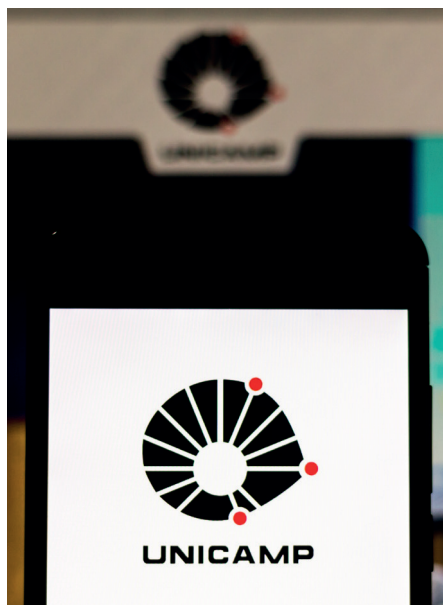
8,000 kilometres away, in the Birmingham Institute of Forest Research's (BIFoR) new experimental facility, very similar towers are already making similar measurements in a mature oak forest in central England. Together, the forest Free-Air Carbon Dioxide Enrichment (FACE) facilities constitute by far the world's largest experiment to study the effect of our changing atmosphere on nature. The aim of the parallel experiments is to predict how tropical and temperate forests would respond if the level of carbon dioxide (CO<sub>2</sub>) in the atmosphere was 50% higher than its current level.

AmazonFACE, led by the Center for Meteorological and Climate Research Applied to Agriculture at UNICAMP, will have the same layout as the existing FACE project run by BIFoR. In both facilities, tens of tonnes of CO<sub>2</sub> (en route to the atmosphere anyway) are diverted and mixed with air to bathe large patches of mature forest in air with the chemical composition that will prevail around the planet in the middle of the century. Dozens of sensors measure the response of the whole forest ecosystem to the changed atmosphere.

BIFoR FACE is supported by extraordinary philanthropic giving and by the University of Birmingham. Funding to build the first element of Amazon FACE is provided by the UK government Foreign, Commonwealth & Development Office, complementing Brazilian funding to support the science of Amazon FACE. Collaboration between the facilities is supported by the large-scale, multi-national QUINTUS project, led by BIFoR, and funded by the UK's Natural Environment Research Council. The scientists hope the data collected will support decisions on ways of mitigating or even preventing the impacts of rising atmospheric CO<sub>2</sub> levels. This new experimental understanding will be used to develop and test the next generation of computer models, and predict future rates of climate change.







## PRIORITY PARTNER PROFILE:

# UNICAMP

Wide-ranging, organic academic relationships have grown up between Birmingham and the University of Campinas (UNICAMP) in post-colonial studies, dentistry, psychology, nanoparticles, metabolism and climate change.

Strong cross-departmental links have translated into external funding success through FAPESP and the Newton Fund and Birmingham is now UNICAMP's seventh largest UK collaborator in terms of joint publications. Together, we co-authored 299 publications from 2016–2021, with a joint field-weighted citation index of 5.7.

A British Council Capacity-Building Fund grant in 2019 enabled us to build on the strong potential that has developed organically over the last decade. Through reciprocal academic delegations, our British Council collaboration

allows UNICAMP and Birmingham to exchange knowledge, share best practice and develop capacity-building plans to internationalise research engagement at the level of institutional strategy and disciplinary field excellence. The project supports the implementation of UNICAMP's PrInt programme and will strengthen international research infrastructure and profile across a number of designated joint priority areas, including forestry, water science and chemistry.

*"With the renewal of our Memorandum of Understanding, we look forward to working closely with the University of Birmingham in the future to build upon strong existing links, which have already proven to be very fruitful. We have ongoing academic collaboration across humanities and social sciences, medicine and health, linguistics and environmental sciences, as well as active cross-institutional initiatives to support wider internationalisation. We are eager to expand these collaborations even further. As both of our institutions have a strong focus on research and innovation around relevant contemporary challenges, we see an array of possibilities for future collaboration with this important UK partner."*

**Professor Osvaldir Taranto**, Director of International Relations, UNICAMP

## Research Spotlight: Newton-funded research advances in medical and dental science

Thanks to the Newton Fund, UNICAMP and Birmingham researchers are developing skills and knowledge that will lead to changes in the well-being of Brazilian society and increased economic benefits. The Newton Fund Brazil is supporting a collaboration between fellow dentists Dr Josette Camilleri (Birmingham) and Professor Marina Marciano (UNICAMP) investigating the mechanism of radiopacifier migration into host tissues, thus explaining why teeth discolour. Awarded a prestigious Newton International Fellowship from the Academy of Medical Sciences, early career researcher Amanda Sardeli is working with Professor Janet Lord, Director of the MRC-Arthritis Research UK Centre for Musculoskeletal Ageing Research, to understand the influence of physical activity on ageing processes.







# BUILDING INFLUENTIAL DIPLOMATIC ENGAGEMENT In Brazil

Over the last decade, we have established the University of Birmingham's reputation as one of the most engaged UK institutions in Brazil, cultivating close ties with key diplomatic agencies to support academic engagement.

This has included regular delegation visits to Brazil and high-profile events, which have been keenly supported by the UK Embassy in Brasilia and the British Consulate in São Paulo to help solidify our commitment to Brazil for the long term.

In October 2018, former British Ambassador to Brazil, His Excellency Vijay Rangarajan, hosted a Birmingham-Brazil engagement showcase highlighting the range of strong academic collaboration supported via our Brazil Visiting Fellows Scheme. More recently, in December 2019, His Excellency welcomed the Birmingham Centre for Railway Research and Education and the Brazilian Ministry of Infrastructure (MINFRA) to his residence in Brasilia to celebrate an MoU marking a deepening partnership.

A range of jointly-organised incoming visits have also taken place over the last ten years, including Department for International Trade visits to develop industry relationships and collaboration across energy research and infrastructure. We were delighted to host Simon Wood, British Consul General Rio de Janeiro, at Birmingham in February 2020 to explore collaboration across biosciences, infrastructure and nanotechnology.

The University of Birmingham also sits on the Brazil-UK Education Working Group, an initiative set up by the British Embassy in Brazil to help support Anglo-Brazilian collaboration across higher education. This has provided us with ongoing opportunities to showcase our existing work with Brazilian partners and offers a platform to explore new collaborative relationships.

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*The UK has state-of-the-art universities and an education system recognized for its high quality and standards, and Brazil is a strategic partner in Latin America for academic cooperation. I am delighted that our team in Brazil was able to support the University of Birmingham through several workshops and high-level engagement with critical local education institutions. I am pleased to see these engagements bearing fruits as we celebrate 10 years of Brazil – University of Birmingham collaboration.*

**HM Ambassador to Brazil, Peter Wilson**







## Brazilian government-sponsored research showcase:

### Accelerating Brazilian transport improvements

The Birmingham Centre for Railway Research and Education (BCRRE) is the largest university-based centre for railway research and education in Europe. Working with over 50 companies in 20 countries, BCRRE is delivering research that is changing the way that railways operate.

In Brazil, BCRRE experts are working with Brazil's Ministry of Infrastructure (MINFRA) to develop and deliver cutting-edge research and education programmes to improve rail passenger transport. Brazil is investing more than \$15 billion in its railways across 11 major projects. In December 2019, BCRRE and MINFRA signed a Memorandum of Understanding to take forward a collaborative programme to support Brazil's drive to overhaul its rail network and improve journeys for Brazilian people.

In recent years, BCRRE's links with Brazilian institutions have accelerated via Birmingham's Visiting Fellowship and FAPESP pump-priming schemes. Dr Cassiano Isler, Research Fellow in Transport Engineering at the University of São Paulo, came to Birmingham as a Visiting Fellow to work with BCRRE Director, Professor Clive Roberts, and Dr Marcelo Blumenfeld in 2018. Their joint work on upgrading Brazil's railway infrastructure, focusing on energy consumption and greenhouse gas emissions reduction, is now progressing through a successful FAPESP award, and paved the way for the broader work programme with government agencies in Brazil to upgrade transport infrastructure.

*"Brazil has one of the world's largest transportation infrastructure asset concession programs in the world. In the rail sector, we are promoting a revolution. The Ministry of Infrastructure has a clear strategy. We want to balance our cargo transportation matrix by expanding railways and*

*cabotage participation. Celebrating a partnership between the Ministry and the University of Birmingham, one of the world's major research and developing solutions centers for the rail sector, is aligned to our plan of providing the country with quality infrastructure in tune to the most updated solutions in the world."*

**Rodrigo Cruz, Deputy Executive Secretary,  
Ministry of Infrastructure**

### Voyage of ocean discovery

The International Ocean Discovery Program (IODP) is a long-standing international science partnership involving more than 20 nations, undertaking fundamental research into marine geology, natural hazards and oceanography. Funded by the Brazilian Ministry of Education agency, CAPES, IODP has been a highly-successful programme for Brazilian scientists to engage with the global community of earth scientists, for the training and development of early career researchers and for the internationalisation of research.

Consolidating five years of collaborative working, Dr Tom Dunkley Jones (Birmingham) and Dr Gerson Fauth (UNISINOS) have been appointed to lead IODP Expedition 388 to the Pernambuco Plateau, offshore Recife NE Brazil. The expedition aims to drill 1000 metres into the sea floor across the Brazilian continental margin to recover extensive sediment records of the long-term history of the Equatorial Atlantic environments, back to the times of first rifting of South America and Africa in the Cretaceous. Their exploration of the Equatorial Atlantic Gateway region will advance understanding of the long-term interactions between tectonics, oceanography, ocean biogeochemistry, and climate, and the functioning of tropical ecosystems and climate during intervals of extreme warmth.






# BUILDING INFLUENTIAL DIPLOMATIC ENGAGEMENT In the UK

Alongside our diplomatic work in Brazil, we have played a leading role in the intellectual, cultural and political relationship between the UK and Brazil, developing close and trusted links with the Brazilian Embassy in the UK.

The University of Birmingham featured prominently in the 2017–18 UK-Brazil Year of Science and Innovation, with former Brazilian Ambassador to the UK, His Excellency Eduardo dos Santos, hosting the COMPARE-CNPEN signing ceremony at the Embassy in London.

This signature initiative brings together academic experts from the Universities of Birmingham and Nottingham with counterparts from Brazil's National Center for Research in Energy and Materials (CNPEN) to develop the next generation of drugs to tackle cardiovascular disease and cancer.

In July 2019, His Excellency Fred Arruda, Brazilian Ambassador to the UK, hosted the launch of the Birmingham Brazil Forum at the Embassy of Brazil in London with dedicated funding from the Brazilian Ministry of Foreign Affairs in recognition of Birmingham's commitment to Brazil. He also co-hosted our on-campus Forum launch in October 2019, delivering the keynote speech, and attending dinner with the Vice-Chancellor and Birmingham's leading Brazil-engaged academics.



We are delighted to be working closely with the Embassy of Brazil in London on the 'Leitorado' initiative. Jointly funded with the Brazilian Ministry of Foreign Affairs, this scheme provides funding for a leading academic from Brazil to spend two years teaching at the University of Birmingham within the Department of Modern Languages. Dr Gisele Tyba Mayrink Orgado from the Federal University of Santa Catarina has been appointed to this post, and is currently working closely with Dr Emanuelle Santos, coordinator of the Portuguese Studies programme and the Instituto Camões' Cátedra Gil Vicente. Dr Orgado will play a pivotal role in helping to develop Portuguese Studies at the University of Birmingham, using her expertise in the intersection of language, translation, and culture.

**Dr Gisele Orgado, Brazilian Leitora**



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*The ‘Birmingham Brazil Forum’ is an extremely welcome initiative. It will enable more people to engage and learn about Birmingham’s collaborations with Brazilian counterparts and about Brazil itself. It is yet another good reason for us to celebrate our special partnership with the University of Birmingham and, in a broader sense, bilateral academic cooperation between Brazil and the UK.*

**His Excellency Fred Arruda, Brazilian Ambassador the UK**

## LOOKING AHEAD TO THE NEXT DECADE OF ENGAGEMENT:

# 2021–30

As the University of Birmingham aspires to be established in the top 50 of the world’s leading universities by 2030, the importance of continued engagement in Brazil—a country with whom our combined research impact registers six times the world average—cannot be underestimated.



At the same time, with the Brazilian research context becoming increasingly open to international activity, there are clear and compelling benefits to sustaining strategic engagement on both sides.

2020 marked the tenth anniversary of the University of Birmingham’s extensive academic engagement in Brazil. To mark a decade of activity in Brazil, the Birmingham Brazil Forum hosted a year-long event programme, designed to promote key strategic partnerships and distinctive joint research through online panel discussions. Highlights included the ‘Industry 4.0’ webinar series co-hosted between Birmingham and UNESP, with leading external speakers from IBM and the IndustriALL Global Union, and a Microbiology and Immunology Symposium with the Federal University of Rio de Janeiro.

As a global civic university, Birmingham embraces a responsibility to enrich the lives of people in our home city and the wider world. ‘Going virtual’ has allowed us to extend the reach of collaborative activity and showcase our commitment and continued engagement to partners and publics across Brazil and the UK. Whether it be energy storage, sustainable cities or immunology and infection, our Forum events have provided us with an opportunity to promote our combined research strengths and share the work we are doing with Brazilian partners to answer some of the most challenging questions of the 21st Century.

As we look to the next decade of collaboration, we will continue with our distinctive approach to engagement in and with Brazil: purposeful, committed, comprehensive and sustained.





# A long-lasting approach to partnership







We hope that we have given you a flavour of our global engagement and our purposeful, committed, comprehensive and sustained approach to partnerships in Brazil. We have a number of signature Brazilian partnerships, which operate at scale, with breadth and depth, and over a sustained period. But, of course, as a global university, our academics work with numerous other partners across the whole of Brazil.

Strategic networks and partnerships have increasing prominence in our internationalisation strategies. For both the UK and Brazil, growing economic and political uncertainty has added to the importance of long-term engagement between our universities. Since we began our strategic engagement in 2011, our partnerships have delivered considerable benefits in research outcomes and international profile. Collaborating with Brazilian universities has given Birmingham preferential access to expertise, facilities and opportunities simply unavailable elsewhere.

Birmingham's unique Fellowship programme, dedicated in-country support, and joint pump-priming funds with Brazil's research funding councils together create a comprehensive support framework that enables outstanding research. But our partnership activities span all aspects of university life: research, education, administration, civic engagement. Our Brazilian partnerships are multi-faceted: broad as well as deep.

Our relations endure and prosper through the careful stewardship, consistent attention and strong institutional commitment on both sides. Our Birmingham-Brazil engagement is built to last and we look forward to our wide-ranging partnerships maturing and continuing to grow over the coming decade.

We look forward to partnering with you.

**Professor Robin Mason, Pro-Vice-Chancellor and Vice-President (International) Order of Rio Branco, Officer Class**

**For more information about our Brazil funding schemes, please visit:  
[www.birmingham.ac.uk/ge-brazil](http://www.birmingham.ac.uk/ge-brazil)**





UNIVERSITY OF  
BIRMINGHAM

Edgbaston, Birmingham,  
B15 2TT, United Kingdom  
[www.birmingham.ac.uk](http://www.birmingham.ac.uk)

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