



November 11 –13, 2013

North Carolina State University, the University of North Carolina at Chapel Hill,
and the University of North Carolina at Charlotte

Summary of Reports on FAPESP Week North Carolina 2013



Introduction

Starting in October 2011, the Brazil Institute established a partnership with the São Paulo Research Foundation (FAPESP) to promote and highlight the expanded cooperation on science and innovation between the United States and Brazil. A public taxpayer-funded institution, FAPESP supports research in all fields of knowledge within the State of São Paulo. Its activities are guided by the belief that in order to advance knowledge and innovation, researchers need to work internationally. In the past decade, FAPESP has established partnerships with top higher education and research organizations around the world.

In October 2011, FAPESP partnered with the Wilson Center's Brazil Institute to organize the first FAPESP Week in celebration of its fiftieth anniversary. The event, co-sponsored by the United States National Science Foundation and Ohio University Medical Center, gathered sixty Brazilian and American scientists and scholars. It included the "Brazilian Nature, Mystery and Destiny" exhibit, based on drawings by the scientific expedition led by Austrian botanist Carl Friedrich Philipp von Martius (1817-1820). A follow up symposium titled "Brazilian Nature and Our Scientific Partnerships" took place in February 2012 at Ohio State University, in Columbus. In light of the success of the first symposium at the Wilson Center in 2011, FAPESP and the Brazil Institute organized FAPESP Week 2012 in October. Seminars on specific fields of scientific cooperation were held at the University of Toronto, the Massachusetts Institute of Technology, in Cambridge, and the University of West Virginia, in Morgantown.

FAPESP Week 2013 was held in November in three of North Carolina's leading public research universities: UNC Chapel Hill, UNC Charlotte, and NC State Raleigh. As the leader of global science and technology in Brazil, the state of São Paul has continued advance scientific research and cooperation in the fields of health, education, bioenergy, biodiversity, physics, among others. The "Brazilian Nature, Mystery and Destiny" exhibit was featured in all FAPESP weeks, which have also taken place in London, Madrid, Salamanca, and Tokyo.

The present publication, edited by Anna Carolina Cardenas, staff intern for the Brazil Institute, brings together a summary of reports of panels that took place during FAPESP Week North Carolina. It was prepared by the team of journalists from Agência FAPESP.

FAPESP Week highlights scientific cooperation between North Carolina and São Paulo

Agencia FAPESP, 11/06/2012

Some of the most recent advances in science and the development of new technology obtained by researchers in São Paulo and in North Carolina will be the topics of debates during **FAPESP Week North Carolina**, to be held in November 11th in Charlotte and November 12th in Raleigh.

Organized by the São Paulo Research Foundation (FAPESP), the University of North Carolina at Chapel Hill, UNC Charlotte, NC State University and the Wilson Center, the symposium will help to broaden the already significant existing bilateral partnerships in science among North Carolina and the State of São Paulo.

FAPESP Week North Carolina will open in Charlotte on November 11th, when researchers will discuss possibilities of partnership in several areas. Larry Mays, Jessica Schlueter, Regina Guyer, Ronald Clouse, David Young and Daniel Janies (UNC-Charlotte), Mauro Galetti (São Paulo State University), Carlos Eduardo Ambrosio, Lidia Aparecida Rossi and Inge Elly Kiemle Trindade, and Maritta Koch-Weser (University of São Paulo) will be among the scientists.

On November 12th, FAPESP Week will move to North Carolina State University where topics as health sciences, bioenergy, biodiversity and agenda-setting in the Brazilian-U.S. strategic partnership will be discussed.

Richard D. Mahoney, Bailian Li, Mark Nance, Paul Lunn, Anita Brown-Graham, Greg Parsons, Jeffery P. Braden and Chris Frey (NC State), Kia Caldwell, Luiz Diaz, Luiz Pimenta, Marcia Van Riper, Pranab Sen, Ron Strauss and Thomas Meyer (UNC-Chapel Hill), Amancio Jorge Nunes de Oliveira, Neyde Murakami Iha and Valeria Aoki (University of São Paulo) are among the researchers confirmed at the thematic panels.

FAPESP Week North Carolina is happening at a moment in which Brazilian research has reached its highest international projection, with indices that denote its greater participation in the global science and technology system.

“The work at FAPESP to prioritize the intensification of international relations for researchers and higher education and research institutions in the State of São Paulo generates and broadens knowledge in all areas in which it occurs. In the contemporary world, science is an activity that depends more and more on the international cooperation efforts, particularly because many of the most important phenomena facing science do not occur only nationally”, says Celso Lafer, President of FAPESP.

[FAPESP opens symposium in North Carolina](#)

Karina Toledo – Agência FAPESP, 11/13/2013

Tasked with the mission of promoting collaboration between Brazilian and U.S. scientists, the [sixth edition](#) of the FAPESP Week international symposium began Monday morning (11/11) in Charlotte, North Carolina.

The ceremony was held in the auditorium of the Harris Alumni Center on the campus of the University of North Carolina (UNC), in Charlotte, and included FAPESP Scientific Director Carlos Henrique de Brito Cruz, Director of the Brazil Institute of the Woodrow Wilson International Center for Scholars, Paulo Sotero, and Professor of the Department of Bioinformatics and Genomics, Daniel Janies. Also in attendance was the Dean of the Graduate School at UNC-Charlotte, Tom Reynolds.

“I’ve been involved with organizing FAPESP Week since it began in 2011, and the event has been held all over the world,” said Janies, one of the facilitators of the symposium’s first edition held in Washington, DC, while still a professor at Ohio State University’s College of Medicine.

Janies went on to say, “We’re going to gather together the information collected here today about possibilities for collaboration, distribute it among the leaders from UNC-Charlotte and work on establishing joint proposals. I already had this experience when I was in Ohio and it was very successful. The world of science is universal-it transcends culture. We’re all interested in the same problems around the world and working together can be very important in solving them.”

Sotero, who as head of the Brazil Institute of the Woodrow Wilson International Center for Scholars took part in organizing the three FAPESP Week editions held in the United States, underscored how important it is for people involved in education and the production of knowledge to take part in “building bridges across democratic societies” such as Brazil and the United States. “I believe initiatives like FAPESP Week are even more important now and I’m happy to be a part of it,” he said.

Brito Cruz then presented an [overview of science and technology](#) in the state of São Paulo and in Brazil as a whole. He also talked about the mechanisms offered by FAPESP that enable researcher exchanges with other countries, through postdoctoral fellowships, Visiting Researcher grants, Young Investigator’s grants, the São Paulo School of Advanced Science program (ESPCA) and the São Paulo Excellence Chairs program (SPEC).

“FAPESP has worked hard to expand international collaboration. We have agreements with funding agencies, universities, research institutes and corporations. In the United States, we have agreements with the [National Science Foundation](#) (NSF), the [National Institutes of Health](#) (NIH) and the [Department of Energy](#),” he noted.

Brito Cruz also emphasized the various agreements with U.S. universities such as [North Carolina State University](#). “The number of articles published by researchers from the state of São Paulo and North Carolina as co-authors has increased significantly since 2000, with most in

the area of health, followed by the natural sciences, biology, agronomy and veterinary science, engineering, and a few in the humanities and the social sciences. We're trying to increase this number even more through the new agreements we have signed," he said.

According to information provided by Brito Cruz, FAPESP has funded 303 joint research proposals involving researchers from Brazil and other countries between 2005 and 2010, 115 of these with U.S. institutions.

Brazilian Nature

Shortly after the opening ceremony, Mauro Galetti, a professor at the São Paulo State University (Unesp) in Rio Claro, made brief remarks about the art exhibit *Brazilian Nature – Mystery and Destiny* slated to officially open to the public in Charlotte November 13, 2013.

Galetti pointed out that the exhibit depicts work that began nearly 200 years ago, with the expedition by German naturalist Carl Friedrich Philipp von Martius (1794-1868). "Between 1817 and 1821, he collected and described over 10,000 species of plants. It is the largest collection ever made for a single country and the work is still underway with the Flora Brasiliensis," he said.

The first volume of the Flora Brasiliensis was published 171 years ago. In 2006, the project Flora Brasiliensis On-line ad Revised began, and it includes updates to the nomenclature used in the original and species discovered after its publication, along with new information and recent illustrations. The 37 panels of Brazilian Nature – Mystery and Destiny contain information and illustrations about Flora Brasiliensis On-line and Revised and allow a comparison between images produced in the 19th century and current photographs of plants and biomes. They also describe some of the findings from studies conducted under the scope of the project Phanerogamic Flora of the State of São Paulo and the Research Program on the Characterization, Conservation, Recovery and Use of Biodiversity in the state of São Paulo (BIOTA-FAPESP).

The exhibit is the result of a partnership between FAPESP and the Berlin Botanical Museum. The digitized panels of the exhibit may be viewed with captions in Portuguese, English, Spanish, Japanese and German at: www.fapesp.br/publicacoes/braziannature.

The exhibit has already visited several German cities such as Berlin, Bremen, Leipzig, Heidelberg, Erlangen and Eichstätt, and has been displayed in Toronto (Canada), Washington, DC, Boston and Morgantown (United States), Salamanca and Madrid (Spain) and Tokyo (Japan). The activities surrounding FAPESP Week North Carolina in Charlotte ended after several discussion sessions, which brought together researchers from various areas with common interests related to the topics of health, the social sciences, biodiversity, energy and environmental sciences, physics and education.

Scheduled activities continued Tuesday (11/12) on the campus of North Carolina State University, in Raleigh. The [results](#) of the joint call for proposals between FAPESP and NC State University were also announced.

FAPESP and NC State announce result of call for proposals

FAPESP News, 11/12/2013

The São Paulo Research Foundation (FAPESP) and North Carolina State University (NC State), make public the result of a call for proposals for the exchange of researchers, post-doctoral and PhD fellows issued under the scientific cooperation agreement between the institutions.

The call was open to principal and co-principal investigators of ongoing research projects funded by FAPESP as well associated researchers from higher education and research institutions in the State of São Paulo directly involved in the ongoing research project.

FAPESP will provide funding of up to US\$10,000 per selected proposal per year and NC State will each provide funding of up to US\$10,000 per proposal per year, for the duration of the grant to cover mobility expenses.

Opportunities in collaborative and international research

Heitor Shimizu – Agencia FAPESP

“This is an historic conference, which should have taken place long ago,” said Richard D. Mahoney, Director of the School of Public and International Affairs of North Carolina State University (NC State), in Raleigh, North Carolina, on the second day of FAPESP Week North Carolina.

“While we were organizing this conference, we determined that FAPESP has been present at NC State for 17 years, through the financing of grants and research studies involving scientists from the state of São Paulo and North Carolina,” he said.

Organized by FAPESP, the University of North Carolina at Chapel Hill, UNC Charlotte, NC State and the Brazil Institute of the Woodrow Wilson International Center for Scholars, the symposium aims at broadening exchanges between researchers from the state of São Paulo and North Carolina.

“Today (11/12), we’re able to appreciate this joint work by presenting some of the projects at the FAPESP Week symposium, in a variety of fields. And we’re also looking to the future, with the announcement of the results of a call for proposals NC State issued together with FAPESP in August,” said Mahoney.

“We have developed several strategic partnerships with Brazil and I would like to emphasize that this scientific cooperation agreement with FAPESP is very important for NC State. And when we see the projects funded during this first call, we expect it to be an agreement with significant impact,” said Bailian Li, Vice-Provost for International Affairs at NC State.

FAPESP Scientific Director Carlos Henrique de Brito Cruz also highlighted the importance of strengthening the partnership with NC State in order to establish opportunities for researchers from the state of São Paulo to work together with colleagues in North Carolina.

He went on to present an overview of São Paulo research and development to a packed audience at the modern facilities of the James B. Hunt Jr. Library on the campus of NC State.

Brito Cruz emphasized that 45% of Brazil’s doctoral candidates every year are in the state of São Paulo and that the universities in São Paulo are “very efficient at starting new businesses. One example is the more than 206 start-ups established at the University of Campinas (Unicamp).”

“In 2011, 61% of investments in research and development in São Paulo came from companies, 23% from state sources, 13% from federal sources, and the rest from private sources. In the state of São Paulo, state participation in public investment in research and development at 63% is much larger than federal participation at 37%. In the rest of Brazil, it is more along the lines of 20% state participation compared with 80% federal,” said Brito Cruz.

The scientific director explained that FAPESP's mission is to support research development in all fields and that in 2012, the Foundation received nearly 21,400 proposals, and had an average decision time of 65 days.

Brito Cruz went on to describe some of the main research funding mechanisms offered by FAPESP, which include new engineering research centers established in partnership with Peugeot Citröen, GSK and BG.

“Another very important line is the FAPESP Innovative Research in Small Businesses Program (PIPE), which finances research in over 1,200 small businesses. Some of the companies supported by the program saw their annual earnings increase from around \$200,000 per year to over \$10 million per year after some of their projects received funding,” he said. FAPESP approves an average of more than two PIPE projects every week.

Partnership improves the treatment of patients with cleft palate

Karina Toledo – Agencia FAPESP

With the help of techniques that enable measurement of the quality of speech, breathing and sleep, a group of researchers at the Hospital for Rehabilitation of Craniofacial Anomalies at the University of São Paulo (HRAC/USP) in Bauru, have contributed to improving the treatment of patients with cleft palate – a malformation in the area of the lip and palate, commonly known as harelip.

“The results of our studies have contributed to the team’s search for alternatives to a surgical technique that we have found to cause breathing problems, as well as the opening of a Sleep Studies Unit in the hospital,” reports Inge Elly Kiemle Trindade, coordinator of the Physiology Laboratory at the HRAC/USP.

According to Trindade, the work of the physiology team at the Center – as the HRAC is called – gained visibility and importance starting in the mid-1990s, when it began a partnership with the University of North Carolina (UNC). Some of the findings of the collaboration effort that is still in place today were presented this Tuesday (11/12/13) in the U.S. city of Raleigh during FAPESP Week North Carolina.

“The first two pieces of equipment used in the laboratory were donated by Donald Warren, Director of the UNC Craniofacial Center at that time. The nasometer measures the degree of nasality in speech production and the rhinometer allows measurement of the degree of closure of the velopharyngeal sphincter, which separates the nasal cavity from the oral cavity,” explained Trindade.

The tools helped researchers study the physiological repercussions of a surgical technique known as pharyngeal flap, designed to prevent air from escaping through the nose during speech, which is what causes the “twangy” or hypernasal sound that characterizes patients with cleft palate.

“We showed that the technique was effective in eliminating speech problems, but at the same time, it caused significant breathing problems. We began to suspect that the airway obstruction might explain the higher than average incidence of sleep apnea in these patients,” Trindade explained.

Based on the results of these studies, alternative and less obstructive methods were used, such as prolongation of the palate (roof of the mouth). In addition, the sleep apnea problem among patients received greater attention with the opening of the Sleep Studies Unit.

As the years passed, and with funding from entities like FAPESP, CNPq and CAPES, the laboratory received new equipment, including the acoustic rhinometry system that allows measurement of the nasal airways, purchased through a Regular Line of Research Award.

The equipment was used by Andressa Sharllene Carneiro da Silva to evaluate speech problems in patients with cleft palates during her master's degree studies carried out with a grant from FAPESP. In order to do this, the team at UNC modified the standard technique.

The purchase of a polysomnography machine, which is used to measure sleep quality, contributed to the work of doutoral candidate Leticia Dominguez Campos, who also received a grant from FAPESP. The study showed that the pharyngeal flap was not in fact the most significant obstructive factor among middle-aged patients who develop sleep apnea, middle age being the phase in which there is a higher incidence of the disorder.

“We are now studying the morphology of the airways to find out if there is excessive narrowing of the pharynx due to the cleft that could be causing the sleep disturbance. This would apply to the elderly as well as to children and young adults,” said Trindade.

The work is being done with the help of a software that enables use of digital tomography images to perform 3-D reconstruction of the airways. It also includes the partnership with Brazilian Luiz André Freire Pimenta, who currently serves as Dental Director of the UNC Craniofacial Center, located in the city of Chapel Hill.

“Today there are several different types of software that can do a volumetric (3D) reconstruction of the airways. In the joint project we are starting, we will compare the results of the method used at the Bauru Center with the system adopted by the UNC Craniofacial Center to see which performs better,” said Pimenta, in attendance on the second day of FAPESP Week North Carolina.

According to him, the equipment for 3-D analysis has allowed the establishment of a new classification for cases involving cleft palate, as well as facilitated communication among specialists. “It has created new ways to evaluate patients. We can send images anywhere in the world in a matter of seconds so we no longer need to have the patient in the hospital for an initial evaluation. With the proposed new classification, which will be submitted for publication soon, physicians and dentists will be able to communicate more easily and plan treatment,” said Pimenta, former professor at the University of Campinas (Unicamp).

In his presentation, Pimenta — former professor at the University of Campinas (Unicamp) — highlighted FAPESP's contribution to his academic career. “I was working as a professor in Brazil between 1992 and 2006 when I received an invitation to come to North Carolina. During this period, FAPESP has financed 13 of my research projects, which have resulted in 18 master's theses, 11 doctoral dissertations and 54 published articles,” he explained.

International projects

The visibility achieved by the physiology team at the Center – due in part to its collaboration with North Carolina – has also earned it an invitation to take part in three large international projects, two of which are financed by the U.S. National Institutes of Health (NIH).

One of these projects entitled, “Timing of primary surgery for isolated cleft palate (TOPS)” is designed to study the best time for surgically correcting children with isolated cleft palate (at 6 months or at 12 months) in terms of the outcome for speech, hearing and craniofacial growth. In addition to the Center, the study is also taking place at institutions in six European countries: Denmark, Norway, Finland, Sweden, England and Ireland.

Regarded as a leading center for the treatment of craniofacial anomalies, the Bauru Center today cares for more than 60,000 patients from all over Brazil. Treatment includes oral and cosmetic surgery in addition to dental, speech therapy and psychological monitoring and follow-up. It begins during the early years and, if the patient wishes, continues into adulthood.

Cleft palate is a malformation that occurs during pregnancy and affects one out of every 650 live births. Some risk factors are known, such as exposure to radiation or certain medications taken during pregnancy, and family history, but science is still studying possible genetic mutations behind the problem.

[Educational intervention improves quality of life for patients with chronic conditions](#)

Karina Toledo – Agencia FAPESP

Thanks to an educational intervention model that includes orientation through educational materials, face-to-face care and telephone follow-up, a group of researchers from the Ribeirão Preto School of Nursing at the University of São Paulo (USP) have been able to improve the health of patients with chronic conditions.

The results of the study, which received a [Thematic Project](#) grant from FAPESP, coordinated by Professor Lidia Aparecida Rossi, were presented this past Tuesday (11/12) in Raleigh, North Carolina during FAPESP Week North Carolina.

“As the population ages, the number of people with chronic conditions – caused by disease or physical trauma that requires constant care over long periods of time – is on the increase. That is why adequate follow-up of these individuals has been a growing concern in the field of nursing all over the world,” explained Rossi.

Several diseases may be categorized as chronic conditions, including Parkinson’s disease, Alzheimer’s disease, diabetes and cardiovascular disease. In Ribeirão Preto, individuals with heart disease and victims of severe burns are being monitored by the Rehabilitation Investigation and Quality of Life Group, coordinated by Rossi and Professor Rosana Spadoti Dantas. Also involved in the study is a team from the School of Nursing at the University of Campinas (Unicamp), led by Professor Roberta Cunha Matheus Rodrigues, as well as researchers Marcia Ciol and Jeanne Hoffman, both from the University of Washington.

“Studies by our group that have already been completed showed that certain chronic conditions present quite similar responses such as fear, anxiety, depression, low self-esteem, loss of independence, treatment adherence problems and diminished quality of life,” explained Rossi.

Some of these findings were published in the journals *Disability and Rehabilitation* (“[The life impact of burns: the perspective from burn persons in Brazil during their rehabilitation phase](#)” and “[Cultural meaning of quality of life: perspectives of Brazilian burn patients](#)”) and in *Revista Brasileira de Saúde Pública* (“[Heart disease experience of adults undergoing coronary artery bypass grafting surgery](#)”).

Under an already completed FAPESP [Thematic Project](#) grant, the researchers adapted and modified several scales – originally proposed for use in other countries – to the Brazilian culture to enable assessment of subjective aspects of individuals with chronic conditions, such as level of anxiety related to pain, body image and quality of life.

“At present, these instruments are being used in our studies as well as by other researchers to measure the results of interventions that seek to increase the level of treatment adherence and patient self-sufficiency which, in this case, represents the ability to perform actions to improve one’s own health,” explained Rossi.

Motivation

The educational intervention model adopted by Rossi's group includes frequent encouragement for self-care made by telephone as well as through face-to-face nursing appointments, at which time teaching materials are distributed. These materials contain a simple explanation of the disease or condition as well as the care to be taken by the patient and his or her family.

The impact of the initiative is being assessed in several theses currently underway. The doctoral studies of Flavia Martinelli Pelegrino, whose advisor is Professor Dantas, monitored patients with heart disease who are undergoing treatment with oral anticoagulants.

Compared with the control group, which received standard care from the health institution, the intervention group exhibited a higher degree of satisfaction with the treatment, better quality of life, and fewer symptoms of depression and anxiety.

In the doctoral studies of Laura Bacelar de Araújo Lourenço, whose advisor was Professor Rodrigues, the effect of the educational intervention was tested on a group of patients suffering from coronary artery disease. The results indicate a significant increase – from 32% to 72% – in treatment adherence among those who received encouragement for self-care.

In another project in which Rossi served as advisor, the strategy was tested on patients undergoing angioplasty for insertion of a stent (steel spring used to unclog an artery and allow blood to flow). In the group that received the intervention, there was a significant reduction in the symptoms of anxiety compared with the control group in assessments made six months after the procedure. The study is still underway and patients continue to be monitored.

“The data related to interventions conducted on burn patients are still being analyzed. In this case, in addition to the scales, we utilized instruments to measure skin elasticity and viscosity, which enabled indirect measurement of treatment adherence,” said Rossi.

She went on to say that the group's next goal is to identify which aspects of the intervention model most contribute towards improving the health of people with chronic conditions as well as providing the best cost-benefit to the health system.

Down syndrome

On the same panel devoted to health sciences held during the second day of FAPESP Week, Professor Marcia Van Riper of the School of Nursing at the University of North Carolina in Chapel Hill, presented the findings of a multi-centric study whose objective is to understand how culture, interaction with the health system, and family factors contribute to the resilience and ability to adapt on the part of families whose members include individuals with Down syndrome.

The study is being conducted in collaboration with researchers from the USP São Paulo School of Nursing as well as the USP Ribeirão Preto School of Nursing along with scientists from the United Kingdom, Ireland, Portugal and Japan.

Specialists discuss relations between Brazil and the United States

Heitor Shimizu – AGENCIA FAPESP

The importance of collaboration between Brazil and the United States in various fields was the subject of a panel of specialists this past Tuesday (11/12), second day of FAPESP Week North Carolina, in Raleigh, North Carolina.

The panel was chaired by Anthony Harrington, Chair of the Advisory Council of the Brazil Institute of the Woodrow Wilson International Center for Scholars and former U.S. Ambassador to Brazil, who began the discussions by emphasizing that Brazil had long been considered “the black hole of U.S. diplomacy,” but that relations between the two countries “have definitely improved since the first presidential term of Fernando Henrique Cardoso.”

Carlos Eduardo Lins da Silva, editor of *Política Externa* magazine and FAPESP Communication Advisor, was the first speaker. He provided a brief overview of political relations between the United States and Brazil. “Historically, it has been a good although not always strong relationship, but it became much more important during the Second World War when Brazil was the only Latin American country to send troops to Europe,” he said.

“After that, there were times when relations cooled, like in the 1970s, when Brazil signed a nuclear energy agreement with Germany and when the U.S. government, particularly during the Carter administration, helped Brazilians who were against the military government then in power in Brazil,” he said.

The scenario changed in the last two decades with the improvement in relations between the two countries, says Lins da Silva. However, there was another critical time that tested relations in 2010 when Iran signed a nuclear agreement proposed by Brazil and Turkey to send uranium to Turkey for enrichment.

“Barack Obama and Dilma Rousseff were working to improve relations when the NSA [National Security Agency] matter occurred. Rousseff called off her visit, which was scheduled for December and which would have been the first for a Brazilian president to the U.S. since the administration of Fernando Henrique Cardoso,” he said.

“Regardless of the political issues, Brazil and the United States have maintained a good relationship for two centuries, highlighted by the strong exchange of artists, athletes, scientists and citizens of both countries. And holding FAPESP Week North Carolina is an important example of this relationship,” said Lins da Silva.

Richard Mahoney, Director of the School of Public and International Affairs at North Carolina State University, then spoke about the research project entitled, “Trade Liberalization, and Energy Joint-Venturing between Brazil and the United States,” which he coordinates.

“Clark Kerr [1911-2003], the great U.S. scholar and president of the University of California, put forward the Convergence Theory in the 1960s, which identified the reasons why industrial societies integrate or disintegrate. Kerr’s ideas advanced the revolution in convergence that occurred later and was given the name ‘European Union’,” he said.

The Convergence Theory holds that industrial systems would converge in their social, political and economic systems because of the determinant effects of technological development.

“According to the Convergence Theory, we can take Brazil and the United States, and say that there are many things we do not know about relations between the two countries. We tend to consider mainly the official political details, ranking the times as positive or negative, but there are many other forces in action, including several that we are not aware of,” said Mahoney.

“In relations between the U.S. and Brazil, we can separate the convergence into three aspects. The first is institutionalization of communication and collaboration. The second is the definition of an agenda, in other words, the formalization of objectives through bilateral agreements to institutionalize the sharing of market power, rules and laws, and open trade flows,” he said.

“The third aspect is the paradigm shift, which involves integrating societies through a far-reaching flow of culture, education, business and other areas,” said Mahoney.

Public opinion

Amancio Nunes de Oliveira, professor in the Department of Political Science at the School of Philosophy, Literature and Human Sciences (FFLCH) of the University of São Paulo (USP) and Mark Nance, professor in the School of Public and International Affairs at NC State, talked about public opinion in relations between the United States and Brazil.

Oliveira and Nance coordinated a study entitled, “Americas and the World,” in which researchers interviewed 2,000 people in Brazil in 2011. An additional 200 people were also interviewed in a group called “the international relations community,” made up of politicians, business people, academics, journalists, union members and others.

One of the indicators obtained by the study was about “strategic importance and international role.” Among those interviewed, the country mentioned most often was the United States (93% of mentions) followed by China (91%), Argentina (90%), India (79%), Japan (77%) and Germany (75%).

“But when asked if they thought global strategic importance would increase or decrease among the countries ten years hence, only 14.5% of those interviewed said that the importance of the United States would increase,” said Oliveira. In contrast, China was mentioned most often, by 95.5% of those interviewed, as the country that would have increased strategic importance.

Another question in the study was about how political orientation influenced opinion with regard to bilateral agreements. When asked if they considered it more important to have agreements

with the United States or with other Latin American countries, 23% of those interviewed whose political orientation leaned to the left said the United States, compared with 77% who thought priority should be given to relations between Brazil and other Latin American countries.

Among those interviewed whose political orientation leaned to the right, the opposite was observed: 43% selected Latin American countries compared to 57% who thought that it was more important for Brazil to have agreements with the United States.

Social and racial disparities

In concluding the panel discussion, Kia Caldwell, professor in the Department of African, African American, and Diaspora Studies at University of North Carolina in Chapel Hill, spoke about the study entitled, “The Alyne Case: Gender, Race, and the Human Right to Health in Brazil,” conducted in collaboration with Edna Maria de Araújo from the State University of Feira de Santana.

Using the case of Alyne da Silva Pimentel – who died in November 2002 at the age of 28, in her sixth month of pregnancy, five days after being admitted to a public hospital in the city of Rio de Janeiro and not receiving proper care –, the study researched the question of racial disparity in maternal mortality.

The Alyne case, said Caldwell, had tremendous repercussions and led to Brazil’s being condemned under the United Nations Convention on the Elimination of All Forms of Discrimination against Women for violating the human rights of pregnant women.

The decision established that the Brazilian government had to compensate the family of Alyne da Silva Pimentel, guarantee the right to emergency obstetric care and offer appropriate professional training to public health providers.

“The circumstances that led to the death of Alyne highlight the severe disparities and defects in the quality of emergency obstetric care offered in Brazil to low income individuals,” said Caldwell.

According to the research Caldwell and Araújo conducted in the southern, southeastern and central-western regions of Brazil, the rates of maternal mortality were – in 2010 data – two to three times higher for black women than for white.

“Another study conducted earlier in the decade found that the maternal mortality rate for black women or mulattas was 11.28% for every 100,000 live births while that for white women was 5.42%,” Caldwell said. “Maternal mortality was the second leading cause of death among black women in the state of São Paulo.”

“With regard to maternal mortality in Brazil, we can say that there is no such thing as rights for half, negligence for half or death for half,” said Caldwell. The NC State researcher writes about issues of race and gender, including *Negras in Brazil: Re-envisioning Black Women, Citizenship, and the Politics of Identity*, published in 2007.

In search of partnerships and applicability of results

Samuel Antenor – Agencia FAPESP

Since first taking part in FAPESP Week in Washington, DC in 2011, Professor Daniel Janies of the Department of Bioinformatics and Genomics at the University of North Carolina at Charlotte (UNCC) has sought to strengthen research partnerships between universities in Brazil and the United States.

Janies was one of the organizers of FAPESP Week North Carolina, held November 11-13, 2013, which brought Brazilian and U.S. researchers together at the University of North Carolina at Charlotte, the University of North Carolina at Chapel Hill, and North Carolina State University in Raleigh.

With extensive experience in genomics and bioinformatics, Janies taught at Ohio State University's College of Medicine at the School of Biomedical Sciences between 2003 and 2012, and he is currently a professor at UNCC, where he moved in August 2012. He is also a researcher in the *Assembling the Tree of Life* ([AToL](#)) program sponsored by the National Science Foundation (NSF), which brings together researchers from various countries and different fields to reconstruct the evolutionary connections of all living things.

In an interview with **Agência FAPESP** during FAPESP Week North Carolina, Janies talked about the importance of joint research in various countries, of the efforts to bring together researchers from universities in the U.S. and Brazil, and about the results achieved through partnerships and joint strategies between institutions from both countries.

He also commented on advances in bioinformatics, whose studies can be related to problems in various areas in order to obtain common results to seemingly distinct questions, such as the evolution of species, the discovery and conservation of biodiversity, and protection of human health.

Agência FAPESP – What is your opinion, in general, about the agreements signed between universities from various countries and their results in terms of joint proposals and study visibility?

Daniel Janies – Scientific problems are universal and interest in solving them exists at various universities in different countries. People think in a variety of ways. The cultural differences are fascinating, and if you can draw on complementary strengths, these collaborations lead to positive results. Today, scientists are able to work together and exchange ideas more quickly, whether in person or by using the Internet. Research cooperation is very common in our fields – genomics and bioinformatics. That's how it was when I was at Ohio State University and that's how it is here at UNC Charlotte, where partnership will be started and strengthened as a result of FAPESP Week.

Agência FAPESP – What results have been achieved since you first participated in this type of conference in 2011?

Janies – After the first FAPESP Week in the U.S., in Washington, DC, Ohio State University, which already has offices in Shanghai [China] and Mumbai [India], turned to Brazil and may ultimately open an office São Paulo. Specifically with FAPESP Ohio State entered [an agreement](#) worth 1.4 M USD and has thus far funded [24 joint awards](#). As the relationship between the United States and Brazil contains so much potential there needs to be more U.S. federal support for our joint efforts. We have a good start. For example the U.S. government supported our initiative by providing NSF funding to bring U.S. based researchers to the 2011 edition of FAPESP Week in Washington, DC. Similarly, we've been able to obtain funding from a variety of sources, U.S. and international, to participate in and organize symposia and short courses in Brazil. This week I was happy to hear that FAPESP has entered agreements with the DOE and NIH.

Agência FAPESP – Do you think, then, the relationship between U.S. researchers and FAPESP is significant?

Janies – It certainly is. We have an excellent relationship with FAPESP, which I got to know as a researcher while doing my postdoc at the American Museum of Natural History in New York when I had colleagues who were Brazilian fellows from the Foundation, although I didn't know exactly how FAPESP worked. Since then, the relationship has gotten better, culminating in the 2012 signing of a memorandum to initiate a joint call for proposals in 2013 between FAPESP and the Ohio State University, where I worked as an associate professor.

We are working hard to illustrate how mutually beneficial the relationship can be. For example working with Brazil provides tremendous opportunities in biodiversity and natural products chemistry. Cooperation is also important in areas of research such as neglected tropical diseases and global diseases because pathogens can quickly move throughout the world. In infectious disease research, we have research partnerships in Asia, Africa and Europe. I also work with researchers across Brazil, for example in Rio de Janeiro and Recife. It is now a very good time to begin new research partnerships with Brazil.

Agência FAPESP – Do administrators in the institutions view this relationship more as a curiosity or are they purposely acting to build specific partnerships?

Janies – There is a spectrum of interest. For some the relationship is a curiosity, while others are acting purposely. Part of my mission in North Carolina is to continue open the doors to joint research with São Paulo-based scientists. Some administrators are working with us, but others need further clarification. Fortunately the U.S. federal government recognizes the importance of partnerships with Brazil in areas such as chemistry and biodiversity. Joint FAPESP-U.S. research projects are being funded by the NSF in the United States, because the topic is important and joint work improves our diplomatic relationship.

Agência FAPESP – How is the mood for support to joint research with foreign universities at this time, in the U.S., especially in countries that today represent a new frontier in scientific research, like China, India and Brazil?

Janies – The federal government is willing to support joint research because it knows that this is important. Some U.S. states know it as well, but there are others where work needs to be done to explain why international research agreements are needed because not all of them share the federal government's position with regard to this. There have historically been partnerships with Japan and several European countries. There are also partnerships with China and India, and only recently with Brazil, although the relationship with Brazil is extremely important for us. I also foresee improved relationships based on scientific cooperation with countries in Africa, especially South Africa.

Agência FAPESP – Are there specific cases that could lead to partnerships with Brazilian universities in bioinformatics or other fields more directly related to industry?

Janies – In my view, and with specific regard to São Paulo, we have had numerous independent conversations about joint research in bioinformatics. Something that we're doing here, for example, is to study the use of lower cost platforms for genomic sequencing, which means applying the technologies to diagnostics and work in the field of biodiversity. However, low cost sequencing is only part of the solution. It's relatively easy to obtain raw data on a sequencing platform, but the bigger challenge is to have people trained to be able to analyze data and produce actionable results. That's exactly what we do here in the Department of Bioinformatics at UNCC. We train people to work on important problems that can be addressed with genomics and bioinformatics. Substantial investments in bioinformatics are being made in São Paulo like with the [Lactad](#) [*the Central Laboratory for High-Performance Technologies at the University of Campinas*], and I think it's important for us to have a partnership in this area because we have excellent curricula here and could have student exchanges and doctoral programs specifically designed for this area. We can also exchange professors between laboratories in São Paulo and Charlotte. As long as we have funding opportunities from each side, and a mutual understanding of expectations, the sharing of equipment, knowledge and people is a good strategy for investing in research.

Agência FAPESP – Does this type of agreement also interest companies that would like to develop technologies related to these research partnerships?

Janies – Absolutely. Bioinformatics is a very interesting field because, for example, when the first human genomes were sequenced between the late 1990s and the early 2000s, the expectation was that research would change very quickly. We used to think that it would be possible to conduct experiments to discover and confirm everything we needed for developing therapies just by using computers. However, today we know that the best research is done when empirical work is designed in close association with computing. With this strategy, bioinformatics is the glue that holds together the experimentalists and analysts in a research team. In other words, bioinformatics is not an Internet bubble – it is something that's become pervasive across the sciences. Many scientists use bioinformatics in their research, for example in fields such as personalized medicine, agriculture, bioenergy, the natural sciences, infectious diseases and so on. There are examples of the growing use of genomic information to improve the quality of work done in all biomedical fields.

Agência FAPESP – What expectations do you have regarding the use of bioinformatics over the next few years, including possible partnerships with researchers in Brazil?

Janies – Bioinformatics is already being used, and should be used even more, in biodiversity studies, leading to a better understanding of environmental issues. Two specific examples are joint research in biodiversity of the Atlantic Forest, in São Paulo, and of the genomics of sugarcane. In the sugarcane example, genomics and bioinformatics can be used to improve the production of ethanol. The choice of sugarcane in Brazil is science based – unlike the ethanol produced from corn in the United States for reasons more political than scientific. The entire process of genomic sequencing of plants is extremely difficult, but we can advance even more quickly with joint research. We are looking for possible intersections between studies conducted at our universities and those conducted in São Paulo. Bioinformatics and genomics are great starting points because these fields touch on many other important areas.

Agência FAPESP – In the research you presented during FAPESP Week North Carolina you mentioned the evolutionary tree of life. From the multidisciplinary standpoint, what specifically would its dimensions and applications be?

Janies – It essentially involves finding similarities and differences in the anatomy and genetics of groups of organisms and using this information to discover their relationships on this phylogenetic tree. Animals can be organized into nested groups whether they be mammals, fish, birds or invertebrates. When these groups and other life forms such as plants and microorganisms are all connected via anatomical and genomic data this constitutes the tree of life.

Many researchers at universities in the U.S., Brazil and elsewhere share the use of phylogenetics. Phylogenetics is a central organizing structure for organismal groups joined by genomic and anatomical data. Therefore, phylogenies can also be called trees of life, which are branching diagrams, representing a hypothesis for relationship of organisms and changes that occur along the branches. Changes include mutations and alterations in anatomy and behavior. Although phylogenetics was conceived for taxonomy, this technique has been recently and widely applied in biomedicine.

Agência FAPESP – Why is this type of research important for use in biology and health?

Janies – Phylogenetic analysis became essential to biomedicine because, for example, the approach tells us which microorganisms are more closely related and therefore share important characteristics. Thus, the information obtained through limited experimentation about one strain may be useful in predicting the properties of another strain. This transitive property of phylogenetic inference helps biomedical scientists predict which strains are pathogenic or susceptible to drugs. The nature of phylogenetic analysis makes it valuable for human health because it allows us to make decisions about where and how to allocate resources for the prevention of emerging diseases. Projects like I describe here, that combine empirical and analytical research, with education in bioinformatics and genomics are what we emphasize at UNCC.

Read article in Portuguese [here](#).

[IEA research group participates in the FAPESP Week North Carolina](#)

Richard Meckien – 10/23/2013, Institute of Advanced Studies of the University of São Paulo

Maritta Koch-Weser, coordinator of IEA's '[Amazon Transformation: History and Perspectives](#)' research group, will attend the symposium [FAPESP Week North Carolina](#) from November 10 to 12, where she will present the project Rainforest Continent Business School, a pioneering initiative aimed at the training of human resources and sustainable business in tropical forests.

The symposium will address health sciences, biodiversity and environmental sciences, physical sciences and educational opportunities, with the participation of researchers from institutions of São Paulo and the USA. The purpose of the meeting is to strengthen the relationship between Brazilian and American researchers, encouraging and valuing studies and research in various areas of knowledge.

The symposium is a partnership between [FAPESP](#), the University of North Carolina at [Charlotte](#) and [Chapel Hill](#), the [North Carolina State University](#) and the Woodrow Wilson Center's [Brazil Institute](#). The event includes a celebrating programme for the Golden Jubilee of FAPESP, comprising symposia from 2011 to 2013 in Washington, Cambridge and Morgantown (USA), Toronto (Canada), London (UK), Madrid and Salamanca (Spain), and Tokyo (Japan).

ARTICLES IN PORTUGUESE:

Internationalization: Researcher from Centrinho-USP is invited to “FAPESP Week North Carolina”/ Internacionalização: Pesquisadora do Centrinho-USP é convidada para a “FAPESP Week North Carolina”

Centrinho USP, 11/07/2013

Read [here](#)