



# ICGEB

International Centre for Genetic  
Engineering and Biotechnology



## My SMART Experience

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Scientific Mobility for Advanced Research Training (SMART)

The Scientific Mobility for Advanced Research Training (**SMART**) Fellowships Programme was launched in 2014 as an additional training opportunity for young scientists, specifically tailor-made to promote the mobility of researchers amongst ICGEB Member States and to promote South-South cooperation. Over the years this programme has proven to be particularly beneficial for both fellows and host supervisors/Institutes.

Through this short-term training programme fellowships are awarded to promising young researchers from ICGEB Member States, holding at least an MSc or equivalent degree and working in any area of research having a potential translational benefit for their home laboratory.

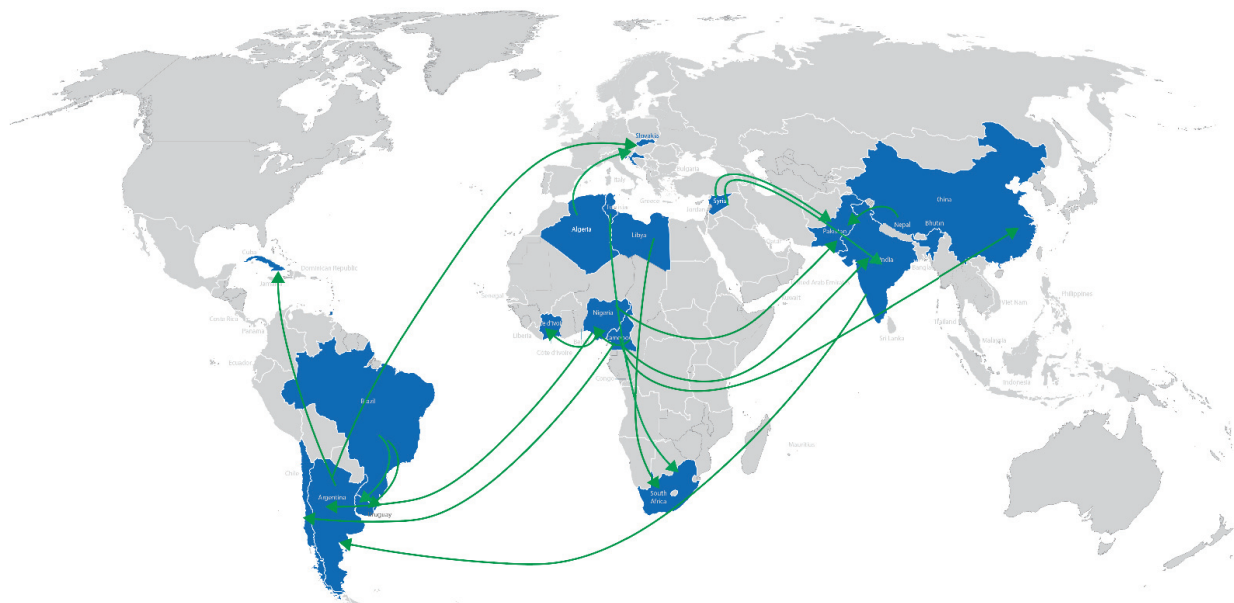
Participants have the possibility to spend between three and nine months at a research institution in a different ICGEB Member State (i.e., not their own), enhancing their capacities and helping them to acquire specific hands-on research skills in new technologies, which are available from the host laboratory.

In addition to providing the fellows with international return travel, health insurance plus subsistence, a monthly bench fee allowance is foreseen for the receiving laboratory.

The programme is open to all topics relevant to basic biological sciences, biomedicine, industrial and agricultural biotechnology and environmental bioremediation.

The SMART Programme is a concrete tool for boosting direct collaboration among ICGEB Member States and for increasing co-operation in science and technology. At the same time it provides talented young researchers a unique opportunity to acquire important skills and expertise, enriching the quality of their educational experience and career opportunities.

Since the programme's inception, a total of 136 SMART applications have been evaluated and 28 fellowships awarded (17 at pre-doctoral level and 11 at postdoctoral level) to young researchers from all continents, thus promoting South-South cooperation and a variegated cultural mix, as can be seen from the graphs below.





**Débora MARTINS MARTINEZ** (Lab. de Síntese Orgânica Limpa-LASOL, Univ. Federal de Pelotas, Pelotas/RS, Brazil) - SMART Post-doc level

Mobility: **Brazil to Uruguay**

Host Institute: Centro de Investigaciones Biomédicas (CEINBIO), Montevideo

Host Supervisor: Prof. Rafael Radi

**Project title:** Oxidative process neutralization in membrane model systems: development and evaluation of lipophilic antioxidant analogues



*Fellow's comments:* The development of a research project at one of the most important research groups in Biochemistry and Redox Process of South of America (i.e., CEINBIO, Montevideo), was an amazing experience. The period of my training abroad was important to consolidate a strong collaboration and an improvement of my scientific skills, especially in biochemistry fields. The mobility from Brazil to Uruguay for a year (2016/17) was an "opening doors process". Both countries have a great potential to be explored for collaboration among researchers. Prof. Radi is an incredible supervisor, who, together with his colleagues, supported me on the development of my project. We have shared knowledge and common experiences, essential for improving professional and personal growth. Being part of CEINBIO research group, through ICGEB, was fundamental to my career. Collaboration programmes like this are key for human and scientific development, and are instrumental for a positive change in our society.



**Abraham AJAYI** (Molecular Biology and Biotechnology Division, Nigerian Institute of Medical Research (NIMR), Yaba-Lagos, Nigeria) - SMART PhD level

Mobility: **Nigeria to Cote d'Ivoire**

Host Institute: Pasteur Institute Cote d'Ivoire, Abidjan

Host Supervisor: Dr. Kalpy Julien Coulibaly

**Project title:** Virulotyping and antimicrobial analysis of *Salmonella enterica* isolated from humans and animals in Nigeria: Improvement of diagnosis and treatment



*Fellow's comments:* The fellowship has an overwhelming impact in developing and networking opportunities and gives to young researchers like me, who ordinarily would not have had this chance because of limited resources in our home countries, the privilege of exposure to different realities. This fellowship availed me the opportunity of doing part of my PhD research work, which entailed molecular studies of antimicrobial resistance and virulence of non-typhoidal *Salmonella* serovars isolated from humans and food animals in Lagos, in a different Institute. My host laboratory at the Institut Pasteur Côte d'Ivoire allowed me to learn new techniques and to create a network with experienced researchers from different

nationalities, background and culture. It is a noble gesture that is well appreciated and cherished.

*Host supervisor's comments:* During 2017 Pasteur Institute of Cote d'Ivoire received a student supported by ICGEB in the framework of his PhD thesis research. Mr. Ajayi from Lagos, used our facilities for the molecular characterization of his *salmonella's* strains. Additionally, we realized together serotyping and PFGE and we hope to run sequencing if we get another further support. Mr. Ajayi's visit to Pasteur Institute gave us the opportunity to mix and interact with a researcher from a different background, most especially from an Anglophone country. In addition to learn new ideas about some laboratory procedures, our research students had the benefit of organizing and reviewing research papers for publication. This opportunity was valuable to us and we look forward to hosting other fellows and to collaborate with this organisation in the future. This is a successful story of a South-South collaboration with the support of ICGEB.





**Temitope Ojuolape SALAAM** (Federal Institute of Industrial Research (FIRO), Oshodi, Lagos State, Nigeria) - SMART Postdoc level

Mobility: **Nigeria to Pakistan**

Host Institute: Department of Microbiology and Molecular Genetics, University of Punjab

Host Supervisor: Dr. Nazia Jamil

**Project title:** Bacterial production of polyhydroxyalkanoates using sustainable raw materials for biodegradable plastics

*Fellow's comments:* My six-month post-doctoral training in the laboratory of Dr. Nazia Jamil was very insightful and refreshing. During my training I developed expertise in working with bacteria as research organisms and received qualitative laboratory microbiology skills. I was also thoroughly exposed to the world of polyhydroxyalkanoate (PHA) research. The time spent in Dr. Jamil's lab provided me the opportunity to harness my molecular biology technical expertise in research, thus sharpening my skills. I enjoyed the best possible supervision and technical assistance from Dr. Nazia Jamil and her laboratory staff whenever needed. The methods and techniques in PHA research have been adapted to the prevailing conditions in my home laboratory in Nigeria and I have now transferred the techniques and skills learnt to two people in the PHA research team in my Institute.

I must reiterate that this SMART fellowship expanded my view of scientific research. It was a germane opportunity to experience and learn new things, especially on the project for which the fellowship was awarded. I do hope that such opportunities will remain open and available to young scientist striving to achieve excellence irrespective of limitation prevailing in their home countries. Dr. Nazia Jamil, the Department of Microbiology and Molecular Genetics and the University of the Punjab were wonderful in their reception and support. Lastly, I remain eternally grateful to the ICGEB for the opportunity, which is forever imprinted in gold.

*Host supervisor's comments:* The University of the Punjab, Pakistan, hosted Dr. Salaam, who was supported by an ICGEB SMART Fellowship. Her post-doctoral research work was carried out at the Department of Microbiology and Molecular Genetics (MMG). During her stay, Dr. Salaam did her microbial optimization experiment for bioplastic production. She also performed molecular genetics PCR experiments for genetic diversity of *pha synthase* genes and presented her research work in an international conference. Dr. Salaam's visit to our MMG Department provided an opportunity for local researchers with different cultural and educational backgrounds to interact with each other. This opportunity is precious to us and we welcome other fellows for collaboration under the umbrella of ICGEB.





**Nicolás Ernesto BLANCO** (CEFOBI-UNR/CONICET, Faculty of Biochemical Science and Pharmacy, Rosario National Univ., Argentina) - SMART Post-doc level

Mobility: **Argentina to Slovakia**

Host Institute: Department of Plant Physiology, Institute of Botany, Plant Science and Biodiversity Center, Slovak Academy of Sciences, Bratislava

Host Supervisor: Prof. Ján Jásik

**Project title:** Study of the dynamic behaviour of SnRK1.1 by advanced fluorescence microscopy techniques *in planta*



*Fellow's comments:* My name is Nico Blanco (from CEFOBI/UNR-CONICET, Rosario, Argentina) and I am interested in how plants adapt their metabolism using as information the photosynthetic efficiency at different environmental conditions, which are currently highly changeable due to climate change aftermath. The ICGEB Fellowship gave me the chance to gain expertise in cutting-edge technologies in fluorescence microscopy at J. Jásik's lab at the Institute of Botany (SAV, Bratislava, Slovakia). During this stay, I can put into practice my ideas in a fruitful and exciting scientific exchange at the host laboratory. I participated in workshops and seminars that helped me to visualize my research and make new collaborations. I greatly

recommend to young researchers that want to expand and shape their professional profile to seize this opportunity to develop their ideas and projects with a group abroad. This opportunity is certainly the kick-off to improve your own career as well as the perspective of your home institute.



**Faten RMIDA** (Lab. of Molecular and Cell Screening Process, Biotechnology Center of Sfax, University of Sfax, Tunisia) - SMART Post-doc level

Mobility: **Tunisia to South Africa**

Host Institute: University of the Western Cape, Bellville

Host Supervisor: Prof. Maria Eugenia D'Amato

**Project title:** Evaluation of a novel Y-chromosome Short Tandem Repeats (Y-STRs) panel for forensic investigations in Tunisia

*Fellow's comments:* It was the greatest experience I ever had up to this moment. My research project focused on the "Evaluation of a novel Y-chromosome Short Tandem Repeats (Y-STRs) panel for forensic investigations in Tunisia" and the

investigation of the Y chromosome was to make a bridge between the extreme parts of Africa (North and South), cross Africa. The University of West Cape UWC was impressive and of high standards. I was really pleased to be a member of the Forensic DNA Laboratory, where my integration has been easy. I was included in the laboratory workflow from the very first day of my arrival. I attended every Monday meeting, up the day



of my leaving, when I was able to make a summary presentation to the laboratory team about my three-month training period. That was challenging and impressive. I even participated in the first international workshop on Y-Chromosome using their own produced markers kit on my saliva specimens brought directly from Tunisia! A publication from this training is being prepared and further collaboration was recommended from both sides.

*Host supervisor's comments:* The Forensic DNA lab at the UWC had the pleasure of receiving the visit of Rmida in 2018 thanks to ICGEB. The exchange of experience and knowledge was highly valuable to all of us. Faten shared her knowledge with our students and she received training on our own developed forensic DNA profiling system. However, the enjoyment wasn't limited to laboratory life: above is our outing to strawberry picking in the scenic cape winelands. *(from left to right, Dr. Rmida and Prof. D'Amato are third and fifth respectively)*



**Noelia Ayelen BOCCARDO** (Laboratorio de Biotecnología Vegetal, INGEBI-CONICET, Buenos Aires, Argentina) - SMART PhD level

Mobility: **Argentina to Cuba**

Host Institute: Centro de Ingeniería Genética y Biotecnología (CIGB), Havana  
Host Supervisor: Dr. Meilyn Rodríguez Hernández

**Project title:** Development of disease resistant crops by genetic engineering

*Fellow's comments:* The SMART Fellowship was great for my career because it gave me the possibility to interact with many important scientists in the field of plant-microbe interactions and it was my first opportunity to participate in a research internship outside of my country,

Argentina. I was able to join in high-level research that is carried out by the Centro de Ingeniería Genética y Biotecnología (CIGB) in Havana, Cuba. This opportunity contributed not only to my scientific training but was beneficial also to my group and my Institute in Buenos Aires, where there are several research groups dedicated to the study of plant-pathogen interactions. I will be able to transmit to my colleagues the knowledge acquired during these 3 months, in particular the methodologies to conduct infection assays with pathogens under controlled conditions and in the use of qPCR for gene expression analysis, and to promote future collaborations between research groups of both centers. This Fellowship helped me to gain the necessary experience in the field of plant-pathogen interactions, and after this internship, I feel confident that I can set up the conditions to perform infection assays once back at INGEBI in Buenos



Aires. Moreover, I will extend the molecular studies (particularly characterization of pathogenesis related gene expression) to different transgenic lines that are being developed at INGEBI. All this is possible thanks to my experience at CIGB as well as to the equipment and facilities available at INGEBI. I'm thankful for the great opportunity ICGB gave me and my group through this Fellowship and I hope there will be many fruitful outcomes as result of this experience.

*Host supervisor's comments:* We would like to thank this programme for the possibility of continuing the scientific exchange between the research groups from Argentina and Cuba, which are collaborating since 2012. The opportunity of Ms. Boccardo's exchange visit to our group allowed us to develop the methodologies for conducting infection tests with pathogens under controlled conditions and at the same time to study and deepen new defense mechanisms in plants. For the CIGB and in particular for the Plant Functional Genomics group currently led by Dr. M. Rodríguez Hernández, Miss Boccardo's visit was very appreciated. During her stay she has become familiar with the methodologies related to inoculation assays with different pathogens under controlled conditions and also learned techniques to evaluate expression of plant immunity related genes in transgenic tobacco plants expressing pathogenesis related proteins. We began to study of the resistance of plants expressing pathogenesis related proteins (PR) for the first time. The continuity of this exchange between our groups will deepen new defense mechanisms that constitute an important tool for plant breeding. Dr. Noelia's interpersonal and communication skills were a real advantage for the department; she was able to forge relationships and develop cooperative projects with other CIGB laboratories and her positive attitude and confidence allowed her to interact with other researchers, professors, students and administrators of the CIGB. Finally, some of the results were published in a scientific article: (Boccardo N.,A., et al. Expression of pathogenesis-related proteins in transplastomic tobacco plants confers resistance to filamentous pathogens under field trials. Sci Rep. 2019 Feb 26;9(1):2791. doi: 10.1038/s41598-019-39568-6). We therefore consider that this opportunity for scientific exchange with the Plant Biotechnology Group of INGEBI has been very successful and hope that future exchanges will be organised. *(In the picture: From left to right, Dr. Rodríguez and Dr. Boccardo are the first and fifth respectively in the Plant Functional Genomics group)*





**For further information:**

<https://www.icgeb.org/activities/fellowship/>

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