science by women

Programme For Women, Science, Technology and Innovation in Africa

6th Edition

FUNDACIÓN MUJERES POR ÁFRICA

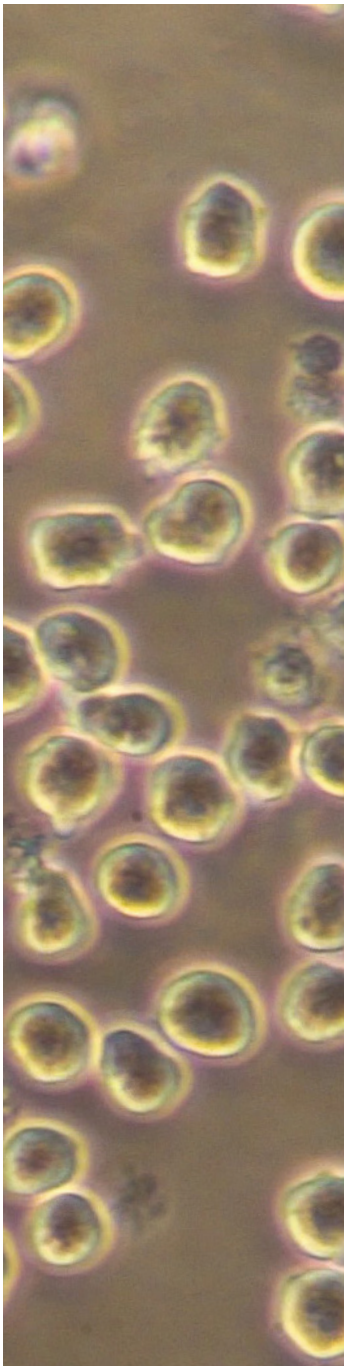
Overview

The Women for Africa Foundation (FMxA), in line with its mission of contributing to the development of Africa through the drive of its women, launched the SCIENCE BY WOMEN program to promote African women's leadership in scientific research and technology transfer. The main goal is to enable women scientists to tackle the great challenges faced by Africa through research in health, agriculture and food security, water, energy and climate change, which can be transferred into products and technologies of great impact on people's lives.

The program's ultimate goal is to enable women to play a leading role in the transition of Africa to a knowledge-based and innovation-led economy.

To achieve this ambitious goal, FMxA collaborates with the Spanish 'Severo Ochoa' and other Centers of Excellence, whose prestige are unanimously recognized throughout Spain and internationally, thereby ensuring the excellence of scientific research in various fields. For the 1st Edition, the associated funding centers were the Spanish National Cancer Research Center, the Institute of Photonic Sciences, the Spanish National Center for Biotechnology, the Carlos III Health Institute, and the Institute of Mathematical Sciences.

After the success of the 1st Edition, a total of 28 centers of excellence from different regions of Spain have joined the program in the following six editions, more than 100 African researchers have benefitted from it.



The programme

Justification

The growth of African economy has been proved to be constant, and has not collapsed despite the fall in the prices of cherished commodities. Indeed, the 2021 African Economic Outlook from the African Development Bank shows that the continent's general economic performance remains resilient . Gross domestic product is projected to grow by 3.4% in 2021, after contracting by 2.1% in 2020 due to the global pandemic. What is more, according to a 2021 report of the NASQAD, 3 countries of the 5 fastest growing economies in the world are African countries.

This vitality is not going to fade, since the group of 15-29-year-olds, which accounts for 60% of the population, needs consumer goods, lodging, financial services, technology and telecommunications. This population includes superb women and men, engineers, scientists, biotechnologists, with the ability to produce those goods and to play an active role in an industrial revolution.

Moreover, Africa's alleged shortages are also opportunities: the use of chirurgical robotics are developing very fast, telemedicine is proving to be an optimal solution in isolated places, and the use of renewable energies is already benefiting the rural communities of the Sahel region. Therefore, the investors that are waging on these opportunities and on the vitality of the markets will largely benefit from their investment in the long term.

Nevertheless, young African scientists still face persistent barriers which cause them to leave their own countries, and even academia. This means that the continent loses a highly trained workforce which is crucial for scientific and technological progress, as well as for economic development.

In 2015, 86% of all African-educated physicians working in the US were trained in Egypt, Ghana, Nigeria and South Africa. This means that Africa loses billions of dollars in the cost of training these people who then migrate to seek better opportunities elsewhere.

Many factors contribute to this trend. Some extreme factors include war and political instability. However, while both men and women mention the lack of mentoring, resources and funding as key issues, women mostly mention gender inequality and the lack of role models, managerial support and job rationalization.

The Science by Women program is built around the ability of African women scientists to create innovation.

In this model, science, research and innovation must play a key role in accordance with the standards of the globalized world. This should be done so that, firstly, African people may be able to live a better life, but also to achieve the transition of Africa from a receiver to a generator of development. Here African women wish to be and should be involved since they are the first victims of uncontrolled development. Thus, they have a strong desire and full right to be part of the solution based on human welfare, social inclusion and environmental sustainability.

Although in Africa the gender gap in the technological and scientific field is still wide, the latest UIS (UNESCO Institute for Statistics) data on research and experimental development (R&D) available as of June 2020 is encouraging. It shows a percentage of women researchers of over 56.1% in Tunisia, 44.9% in South Africa and 45.6% Egypt against a world average of 30%. However, other countries like Chad, Congo or Guinea do not even reach 10%. The percentage of women compared to the total number of researchers is an important indicator of progress and development.

General Purpose

The Science by Women program aims at empowering African women researchers in STEM (Science, Technology, Engineering and Mathematics) and enabling them to play a leading role in the transition of Africa to a knowledge-based and innovation-led economy, especially in the following areas which respond to the priorities of Africa.

Health and Bio-medicine

Energy, Water and Climate Change

Agriculture and Food Security

Final beneficiaries of the 6-month fellowships in associated Spanish centers are selected from among senior women researchers from Africa with at least 3 years of postdoctoral experience, in order to:

— Ensure the knowledge-transfer from senior fellows to their junior teams and doctoral student

— Minimize the risks of brain-leaking, which could reduce the impact of the program.

Specific objectives are

1. To strengthen the skills and capabilities of the selected African scientists.
2. To make the African researchers and their findings visible in the international scientific community.
3. To empower African scientists so that they can be role-models for other young girls and encourage them to get into STEM careers.
4. To enhance scientific cooperation between Spanish and African centres and promote exchange programs in order to foster a better mutual knowledge.
5. To build a network of African women researchers who both exhibit and provide professional development, mentorship and support to new participants.

In order to achieve the above-mentioned objectives, FMxA carries on different activities, such as:

— Drafting Rules and Guidelines and publishing the call for fellowships for each edition after approval of the Governing Board.

— Short-listing candidates.

— Supporting selected fellows with their visa applications and liaising with Spanish consulates and embassies.

— Supporting the participation of fellows in international conferences as well as the publications of their findings in scientific reviews.

— Supporting and following-up on the social integration of fellows.

— Enhancing the visibility of fellows, associated centers and sponsors in social networks and media.

Methodology

The Women for Africa Foundation organises and manages the Science by Women programme in close collaboration with the associated research centres.

The **Governing Board**, formed by the representatives of the Spanish centres, overviews the technical and operational aspects of the fellowship programme. It is headed by María Blasco, Director of the Spanish National Cancer Research Centre.

A **Scientific Committee** was established in Madrid on 1 December 2014 chaired by María Teresa Fernández de la Vega, President of FMxA. Its members are prestigious Spanish, African and American luminaries from the research field:

MARGARITA DEL VAL
Virologist, Severo Ochoa Centre for Molecular Biology

LONDA SCHIENBERGER
Director of the European Union and United States' Project on Gender in Science, Medicine, Engineering and Innovation at Stanford University, USA.

CRISTINA GARMENDIA
President of Cotec Foundation and a member of FMxA's Advisory Board, Spain

INÉS SÁNCHEZ DE MADARIAGA
UNESCO Chair of Gender Equality Policies in Science, Technology and Innovation, Spain

MARIA BLASCO
Director of the Spanish National Cancer Research Center, Spain

RAJAÂ CHERKAOUI EL MORSLI
Professor at University Mohamed v, Agdal, Morocco

SILVIA CARRASCO
Director of Transference of Knowledge and Technology at the Institute of Photonic Sciences, Spain

JOSÉ LUIS RIECHMANN
Director, Center for Research in Agricultural Genomic (CRAG), Spain

ANA CUENDA
Researcher at the National Biotechnology Center, Spain

JUAN LERMA
Professor of Research in the Institute of Neurosciences (IN)

RAQUEL YOTTI
Director of Carlos III Health Institute, Spain

JOAN COMELLA
Director of Vall d'Hebron Institut de Recerca (VHIR)

ANA BRAVO
Chair of the Equality Commission at Institute of Mathematical Science, Spain

ESTEBAN DE MANUEL
Director of Kronikgune, Research Center in Chronicity

SONIA ABDELAK
Director of the Biomedical, Genomic and Ontogenetic Research Laboratory at the Institut Pasteur in Tunisia.

LUIS CASTAÑO
Scientific Director of Biocruces

IÑAKI VAZQUEZ
Director, DeustoTech

FATIMATA DIA SOW
Former ECOWAS Commissioner of Social Affairs and Gender, Nigeria.

JAIME MARTÍN
Head of Technology and Corporate Venturing at Repsol

SALIMATA WADE
Former Director of the Human Nutrition Research Laboratory at Anta Diop University, Senegal.

DEBORAH BURKS
Director of Príncipe Felipe Research Center

GLENDA GRAY
President of the Medical Research Council, South Africa.

RICARDO DIEZ
Director of Donostia International Physics Center

DANIEL SANCHEZ PORTAL
Director of Materials Physics Center

FRANCISCA NNEKA OKEKE
Director of the Department of Physics and Astronomy at the University of Nigeria.

ISABELLE VERNOS
Group Leader of the Center for Genomic Regulation

PEDRO ALONSO
Director of the World Health Organization's Malaria Program, Geneva.

TERESA GARCÍA-MILA
Director Barcelona Graduate School of Economics

HELENA ASTERIA GOMEZ MACPHERSON
Deputy-director Institute for Sustainable Agriculture

JOSÉ CARLOS GÓMEZ VILLAMANDOS
President Campus of International Excellence in Agrifood

JOSE ANTONIO LOZANO
Director Basque Center for Applied Mathematics

JOSÉ M. ASUA GONZÁLEZ
Basque Center for Macromolecular Design and Engineering, POLYMAT

JOAQUÍN BRITO
Director, Oceanic Platform of the Canary Islands, PLOCAN

RAFAEL REBOLO
Director, Institute of Astrophysics of the Canary Islands IAC

JUAN RUIZ ALZOLA
Director, Biomedical and Health Research Institute

Associated Research
Centres

Spanish National Cancer Research Centre (CNIO) www.cnio.es

Institute of Photonic Sciences (ICFO) www.icfo.eu

Spanish National Centre for Biotechn**ology** (CNB) www.cnb.csic.es

Carlos III Health Institute (ISCIII) www.isciii.es

Center for Research in Agricultural Genomics www.cragenomica.es

Institute of Mathematical Sciences (ICMAT) www.icmat.es

Centre for Genomic Regulation (CRG) www.crg.eu

Barcelona Graduate School of Economics (GSE) www.barcelonagse.eu

Vall d´Hebron Institut de Recerca (VHIR) en.vhir.org

Institute for Neuroscience (IN) in.umh.es

Kronikgune Research Center www.kronikgune.org/en/

Biocruces (bc) www.biocruces.com

DeustoTech deustotech.deusto.es

Donostia International Physics Center (DIPC) dipc.ehu.es

Material Physics Center (CFM) cfm.ehu.es

Prince Felipe Research Center (CIPF) cipf.es/en

Repsol Technology Center www.repsol.com/en/index.cshtml

Institute for Sustainable Agriculture (IAS) www.ias.csic.es/en/

Campus of International Excellence in Agrifood www.ceia3.es/en/

Basque Center for Applied Mathematics (BCAM) www.bcamath.org/en/

Basque Center for Macromolecular Design and Engineering www.polymat.eu

Institute of Astrophysics of the Canary Islands (IAC) www.iac.es/en/

Oceanic Platform of the Canary Islands (PLOCAN) www.plocan.eu/en/

Biomedical and Health Research Institute (IUIBS) www.iuibs.ulpgc.es

Institute of Materials Science of Barcelona (ICMAB-CSIC) icmab.es

INCLIVA www.incliva.es

Biodonostia Health Research Institute www.biodonostia.org

Direct and indirect **beneficiaries**

The final beneficiaries of the program are the fellows selected by the host centers.

The indirect beneficiaries are the students, doctoral researchers and junior members in the fellows' teams.

So far, the impact is highly significant. Most fellows have published their findings in or submitted them to international scientific journals (Elzevier, Royal Statics Society, NOVA Publishers...), participated in prestigious conferences (Academy of Science of France, American Society of Tropical Medicine and Hygiene, Baltimore) and Massive Open On-line Courses (SDG Academy...). They have acquired leadership skills, enabling them to be promoted to decision-making positions on their return to their centers or universities of origin.

Funding

Science by Women is the flagship program of FMxA. It has grown in a spectacular fashion, from 5 associated centers to more than 28 expected in the 7th edition, from 9 beneficiaries up to 110, from 6 African countries up to 20, and from 30 applications to more than 200.

The program has also widened its geographical outreach. In fact, only centers in Barcelona and Madrid were included in the consortium the first year, while currently most of the Spanish regions are represented in the consortium.

Beneficiaries

in Health and Biomedicine

South Africa

ANN LOUW

Dr. Louw is a Professor in the Department of Biochemistry at the University of Stellenbosch (South Africa). She holds a PhD from that University as well as an MSc in Biochemistry (cum laude) and a BSc (Hon). Mrs. Louw's research focused on phytoestrogenic compounds found in extracts of Cyclopia, a plant indigenous to South Africa that is used to prepare an herbal tea. One specific extract, SM6 Met, holds potential for the prevention and/or treatment of breast cancer since it displays several desirable estrogenic traits. At the Spanish National Cancer Research Center (CNIO), she confirmed, after many experiments, that the SM6Met can inhibit the growth of breast cancer.

Ghana

DORCAS OSEI-SAFO

Dr. Osei-Safo is a Ghanaian, Senior Lecturer in the Department of Chemistry at the University of Ghana. Her area of specialization is Natural Product Chemistry. Her research interest is isolation and characterization of bioactive compounds from medicinal plants and application of quality assurance methods to antimalarial drugs. The goal of her work is to develop a polyherbal anticonvulsant product as an example of utilization of natural resources for quality health. Dr. Osei- Safo carried on her research at CNIO. "On my return home, the insight and experience I gained during my six-month fellowship have positively impacted my research team and I am pleased to report that the research findings have culminated in an article recently published in Elsevier Fitoterapia www.dz.doi.org/101016/jfitote.2017.09.001.

Sudan

NAHLA OSMAN MOHAMED ALI

Dr. Ali was born in Atbara, Sudan. She holds a PhD by the University of Glasgow and the University of Khartoum. Dr. Ali argues "mosquitoes have a significant role as vectors of many serious human and animal diseases such as malaria, yellow fever, encephalitis, lymphatic filariasis and Rift Valley fever. Three genera of medically important mosquitoes are found in Sudan." Therefore, mosquito-borne diseases are a very important health problem in the country and the study of its infectivity dynamics is central in setting up control programs". Dr. Ali has focused her research on finding means to better understand these dynamics and contribute to solving the health problems in Sudan that affect the country's manpower and development. She conducted her research at the Carlos III Health Institute.

Nigeria

IFEOMA ENWEANI

Doctor Enweani, who obtained her PhD in Medical Microbiology in 1998, has been teaching Microbiology in Nigeria in recent years. She is currently Director of International Collaboration and Linkages in Nnamdi Azikiwe University, Awka. Nigeria. At the moment she is working on the potential use of soursop and sweetsop fruit juices with supplements in the management of diarrhea and malnutrition in children, with the clear objectives of reaching a drastic reduction of mortality and morbidity in children due to diarrhea. As an outcome of her fellowship at the Carlos III Health Institute, on her return to Nigeria, she was appointed member of the National Expert Committee on Adverse Event Following Immunization (AEFI), the highest body deciding and reviewing vaccination campaigns.

Nigeria

YEMISI ADESIJI

Dr. Yemisi Adesiji is a Nigerian senior lecturer in the Department of Medical Microbiology and Parasitology of the Ladoke Akintola University of Technology, Osogbo. After completing her fellowship at the Carlos III Health Institute, she was promoted to head of department of Veterinary Microbiology at the University of Ilorin. With over 10 years of teaching experience, she has contributed to knowledge of Epidemiology of food-borne pathogen of zoonotic importance in Nigeria, as her various publications show. Her research interest lies mainly in genomic studies and especially in developing vaccination against TB infection in cattle and humans in developing countries.

Nigeria

CHIAKA ANUMUDU

Dr. Chiaka Anumudi is a Nigerian senior lecturer, who obtained her PhD in Zoology (Cellular Parasitology) at the University of Ibadan. During more than 13 years her research activities have been in the area of the immunopathogenesis and molecular epidemiology of simple and severe malaria in Nigerian endemic country settings. Dr. Anumudu undertook her research in the Spanish National Cancer Research Center (CNIO) and, along with her peers, she published the article Bladder Cancer Genetic Susceptibility. A systematic Review https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5929300. She has also given an oral presentation of her work "The microbiome in the course of urinary schistosomiasis" in the 66 Annual Meeting of the American Society of Tropical Medicine and Hygiene, Baltimore (USA), as well as at the University of Valencia.

Uganda

ELIZABETH KAASE-BWANGA

Dr Elizabeth Kaase-Bwanga holds a PhD in Economics - Rural Economy and Policy analysis, from the Makerere University of Kampala, Uganda, where she is a senior lecturer specializing in Gender and Development Strategies, Feminist Economics and Gender Planning and Monitoring & Evaluation in Local Development. At the Barcelona Graduate School of Economics, she conducted a research study on the "Gender and Privatization of Health Care Systems in Uganda and its Implications for Health Care Enhancement", whose outcome could enable the government and the health practitioners to improve the Uganda health system. On her return to Makerere University, Dr. Kaase-Bwanga submitted two articles about her research at BGSE as contribution towards a book under the SIDA Program. She facilitated the signature of a MOU between her University and FMxA aimed at extending the collaboration to other public institutions in Uganda.

Nigeria

ATINUKE ADEBANJI

Dr. Atinuke Adebanji is a Nigerian senior lecturer who works at the Kwame Nkrumah University of Science and Technology of Kumasi, Ghana. Since 2012 she has been a member of the West Africa Climate Change and Land Use (WASCAL) program. She has developed a strong understanding of statistical theory and methods with application in classification techniques and medical sciences, and she is currently developing a research study on predictive spatial analysis of maternal and neonatal mortality for public health intervention evaluation in Ghana. During and after her research at the Institute of Mathematical Sciences she presented a paper on Statistical Estimation of Maternal and Neonatal Mortality in Ghana at the Royal Academy of Sciences and at the Academy of Science of France. She has also co- supervised 4 students in the training program INVESTIGA.

Sudan

SAMIA EL HAJHI

Samia El Hajhi, from Sudan, got her PhD in Immunology from the Institute of Endemic Diseases of the University of Khartoum. She is currently Head of the Department of Immunology and Biotechnology in the Tropical Medicine Research Institute (TMRI) and an Associate Research Professor in the same institute. Her research at Vall d´Hebron Institute of Research focused on placental biomarkers, which are associated with placental malaria and preeclampsia. She hopes to optimize the prevention of the consequence of parasite placental sequestration, provide information about disease pathophysiology, and improve the detection of placental malaria which will have a great impact on women's and children´s lives. Oxford University Press has published in Journal of Tropical Pediatrics the article Congenital Malaria in Newborns Delivered to Mothers with Malaria-Infected Placenta in Blue Nile State, Sudan written by Dr. Hajhi with her host group https://academic.oup.com/tropej/advance-article/doi/10.1093/tropej/fmz083/5709145.

Benin

JUDITH GBENOUDON

Judith Gbenoudon, from Benin, obtained her PhD in Immunology at the Institute for Tropical Medicine in Hamburg, Germany, and held postdoctoral positions in Hamburg, Bonn, and Gambia. She is the current Director of the Laboratory of Immunology, Infectious and Allergic Diseases at the Institute for Applied Biomedical Sciences in Cotonou. During her fellowship at the Spanish National Center for Biotechnology (CNB) she carried out her project Tumor Immunomarkers and the Development of Immunotherapy (TIDEI), with the aim of determining the specificities of immunotherapy in isolated cells from patients in infectious endemic areas, like Benin, as compared to cells from patients in clean areas like Spain. This research earned her the prestigious Abdool Karim Prize from The World Academy of Sciences (TWAS) in Trieste (Italy).

South Africa

RAQUEL DUARTE

Raquel Duarte, a molecular biologist from South Africa, is Senior Lecturer in the Department of Internal Medicine, University of the Witwatersrand, in Johannesburg, and Head of the Internal Medicine Research Laboratory in the same university. During her fellowship at the Center for Genomic Regulation she tried to evaluate the underlying genetic basis for Breast Cancer (BC) and the utility of current markers as predictors in African populations. She focuses her research on the mechanisms governing expression of a key gene in breast cancer susceptibility. She explored the regulatory mechanisms controlling transcription and alternative splicing of the Fibroblast Growth Factor Receptor 2 gene. The study is of the utmost importance, because breast cancer is the most common cancer among women and women from Sub-Saharan Africa have the highest BC incidence rates in Africa.

Tanzania

FLORA STEPHANO

Flora Stephano, from Tanzania, got her PhD in Zoophysiology from the University of Kiel, Germany, and is currently a Lecturer at the University of Dar es Salaam, Tanzania. During her fellowship at the Institute of Neurosciences, Dr. Stephano studied "The role of Wnt signaling pathway in the dopaminergic neurons in rotenone induced Drosophila model of Parkinson's Disease (PD)". She hopes that targeting this pathway will lead to future therapeutic and intervention measures for PD, which is the second most prevalent neurodegenerative disorder with an incidence of about 1% in people aged 65 or above. On her return to Tanzania, she joined the group DrosoAfrica, which got the grant within the International Centre for Genetic Engineering and Biotechnology (ICGEB) to study Drosophila fly as a model for Parkinson's desease in taking advantages of natural compounds extracted from plant materials.

Egypt

SALWA EL-SOBKEY

Salwa El-Sobkey, from Egypt, holds a PhD in Physical Therapy for Cardiopulmonary Disorders and Geriatrics from Cairo University, and is currently Acting Vice Dean for Research and Post Graduate Studies in Beni Suef University. In Kronikgune, her host center, she worked on building scientific background and databases regarding the healthcare services and Health-Related Quality of Life (HRQoL) of old Egyptian females, which are the segment of population who suffer the most from shortcomings in Egyptian healthcare services. This is partly because of the impact of aging and partly because of their limited access to education. On her return to Beni Suef University, she was appointed Vice Dean for Post-Graduate Studies and Research, Faculty of Physical Therapy. Her fellowship was sponsored by the Bizkaia Provincial Council.

Cameroon

LEONTINE NKAMBA

Leontine Nkamba, from Cameroon, holds a joint PhD in Applied Mathematics from the University of Lorraine (France) and the University of Gaston Berger (Senegal). She is currently a Senior Lecturer at the University of Yaoundé 1, Higher Teacher Training College, Department of Mathematics, and the Co-Chair of the Commission on African Women in Mathematics. In December 2017 she was appointed, by the President of the Republic of Cameroon, Deputy-Director of the National School of Posts, Telecommunications and Information Technologies. The research Dr. Nkamba works on at DeustoTech is titled "Mathematical modelling of the spatio-temporal spread of TB". This kind of models are not only relevant to the spread of infectious diseases, but also other socially important phenomena such as rumours, misinformation, contagious habits such as drug abuse, fashion trends, and many others. As an output of her fellowship, she published the article "Mathematical model to assess vaccination and effective contact rate impact in the spread of tuberculosis" in the Journal of Biological Dynamics https://www.tandfonline.com/doi/full/10.1080/17513758.2018.1563218.

Sudan

MONA ELLAITHI

Mona Ellaithi, from Sudan, holds a PhD in Human Genetics from Al-Neelain University/ Lübeck University-Sudan/Germany and is currently an Associate Professor in Human Genetics at Al-Neelain University, Khartoum. At her host center, BioCruces, she worked on her project "Detection of common variants associated with Sudanese patients diagnosed with disorders of sexual development (DSDs) using NGS sequencing." (Exome and Panel sequencing technology)". In this study Dr. Ellathi performed panel sequencing of almost 50 genes known to be associated with DSD using Sanger sequencing exome and technology).The findings will be tested on larger DSDs sample size. The most common variant will then be used as a biomarker for routine analysis. As an output of her research at Biocruces, with her host group she published in "The Open Pediatric Medicine Journal" the article Simple Virilizing Congenital Adrenal Hyperplasia: A case Report of Sudanese 46, XY DSD male with G293D variant in CYP21A2. Her fellowship was sponsored by the Bizkaia Provincial Council.

Algeria

HAYET RAFA

Hayet Rafa, from Algeria, is an Associate-Professor at the Department of Cell and Molecular Biology of the University of Sciences and Technology (Algiers, Algeria). She obtained her PhD from that university as well as a Master's Degree in Biochemistry-Immunology. She has large expertise in cell culture system (2D and 3D culture models) and immuno-oncology field. Hayet Rafa also has more recent, extensive experience with nanoantibodies production and the development of new tools for predictive diagnostic in cervical cancer. In the Spanish National Cancer Research Center (CNIO), she plans to develop a new pre-clinical tool to assess innovative treatments such as the evaluation of immune cell therapy efficacy and safety in colorectal cancer metastasis (Preclinical trial on chip). During her fellowship, she was granted the Roche-ATRSS Award for Cancer Research.

South Africa

CARMEN PHEIFFER

Carmen Pheiffer, from South Africa, holds a PhD in medical biochemistry from Stellenbosch University, Western Cape, South Africa. She is the current deputy director of the Biomedical Research and Innovation Platform at the South African Medical Research Council (SAMRC). In Vall d'Hebron Research Institute she worked on the use of indigenous resources to identify novel therapeutics for Obesity and Type 2 diabetes, two disorders that are rapidly becoming a significant cause of morbidity and mortality in Africa. This project aligns with the national objective to develop African medicines for African diseases. The research is innovative and has the potential to be patented and lead to product development. She is a committed mentor of young African black female scientists.

Egypt

MONA SAID MAHMOUD

Mona Said Mahmoud, from Cairo, Egypt, is a Professor of Parasitology in the faculty of Veterinary Medicine in Cairo University, where she obtained her PhD in Veterinary Medicine. In her host center, Carlos III Health Institute (ISCIII), she conducts research on cysticercosis and trichinellosis, two diseases which have been ranked as the most important food-borne parasites of humans in terms of public health, socioeconomic and trade impact. These are diseases that can lead to the death of the patient. She envisages to transfer the MBA (Multiplex Bead Assay) technology for its application to the diagnosis and control of helminth zoonoses, with special focus on zoonosis transmitted by pigs.

Nigeria

MANSURAH ABDULAZEEZ

Mansurah Abdulazeez, from Nigeria, got her PhD in Ahmadu Bello University and is currently a Senior Lecturer at the Center for Biotechnology Research, Bayero University. In the Institute of Neurosciences (CSIC-UMH) of Alicante she works on the project ''Molecular basis of therapy resistance in triple negative breast cancer', hoping to understand the epithelial-mesenchymal transition (EMT) in the progression to the metastatic state in cancer. Thus, to alleviate the unending tragedy brought about by this disease it is pertinent to understand the basis of drug resistance and consequent metastasis in this type of cancer. She is focusing on three TNBC cell lines: human breast adenocarcinomas (MDA-MB-231 and MX-1) and human breast medullary carcinoma (MDA-MB-157) to understand the principles of Epithelial to Mesenchymal Transition (EMT) at cellular and molecular levels and characterize multiple EMT programmes by analysing different EMT phenotypes.

Morocco

HANAA ZBAKH

Hanaa Zbakh, from Morocco, obtained her PhD in Biology, specialization in Phycology (Biology) and Biology from the University of Abdelmalek Essaadi, Tetouan, Morocco. She completed postdoctoral studies in Pharmaceutical Chemistry and Molecular Biology at the University of Graz, Austria. Today, she is a Researcher at the Biology Department of the University of Abdelmalek Essaadi. In 2017 she was awarded the L'Oréal-UNESCO award acknowledging Women in Science. At CIPF she investigated the anticancer effects of extracts of four brown seaweeds Sargassum polyceratium, Sargassum hystrix, Dictyota mertensii and Dictyopteris justii, and their underlying mechanisms of action using a panel of 5 human cancer cell lines. As results, she has demonstrated that all the tested algal extracts inhibited the growth of all the five, confirming that these marine algae could be a promising source of novel agents for the prevention and treatment of several types of cancer.

Uganda

AGNES NAKAKAWA

Agnes Nakakawa is a Ugandan information systems specialist, lecturer, and senior researcher at Makerere University in Kampala (Uganda). She has also been involved in consultancies associated with business-IT alignment in public and private enterprises. She holds a PhD in Computer Science from Radboud University Nijmegen (The Netherlands), an MSc. in Computer Science, and a degree in Statistics from Makerere University. In Kronikgune her research is aimed at providing a Scorecard for Continuous Assessment and improvement of programmes on Integrated Care for multimorbid patients (SAICO). The co-creation by validation involved using two rounds of expert reviews to engage 18 co-creators. The first round was conducted in Basque Country (Spain), and the second in Kampala (Uganda). The SAICO framework she developed at Kronikgune triggered off four new pilot research projects. Dr. Nakakawa's fellowship was sponsored by the Bizkaia Provincial Council.

Egypt

DALIA MEDHAT

Dalia Medhat, from Egypt, obtained her PhD in Biochemistry at the Faculty of Science, Tanta University, Egypt. She is an Associate Professor of Medical Biochemistry and a Principal Investigator at the National Research Center. Dr. Medhat wrote several books and articles about the molecular mechanisms of cancer, liver cirrhosis and diabetes, and has conducted research on the therapeutic effect of stem cells. In Stem Cells and Cell Therapy Laboratory at Biocruces Bizkaia, her research focused on Osteogenesis imperfect (OI), a rare genetic disease which seriously affects patients' quality of life. She has been studying the potential of human stem cells to elucidate the molecular mechanisms underlying OI. She published with her host group in The International Journal of Molecular Sciences the article "Immunomodulatory Effects of MSCs in Bone Healing" https://www.ncbi.nlm.nih.gov/pubmed/31684035. Dr. Medat's fellowship was sponsored by the Bizkaia Provincial Council.

Tunisia

ONS KAABIA

Ons Kaabia, from Tunisia, is an Assistant Professor in gynecology and obstetrics at the Faculty of Medicine of the University of Sousse in Tunisia, where she received her diploma in Medical Pedagogy and Master's Degree in Clinical Sexology in 2017. She is also a member of a research laboratory that is investigating the quality of maternal health management. Previously, she worked as a consultant in the Department of Obstetrics and Gynecology at Kerkennah's Regional Hospital. With a passion for gynecologic oncology, she is planning to conduct a research project at the Vall d´Hebron Research Institute in Barcelona to create a mobile application that will help patients with oncologic disease identify the correct fertility preservation strategy.

Egypt

RANA MAHMOUD

Dr. Rana Mahmoud is an Egyptian Lecturer of Pediatrics at the Children's Hospital at the Faculty of Medicine of Ain Shams University in Egypt. She completed her medical training at the General Hospital of Ain Shams University. She has been working in a pediatric endocrinology unit since 2013. She is passionate about the disorders of sex development, particularly because of the limited resources that are dedicated to such diseases in Egypt. At Biocruces Bizkaia Health Research Institute, she will study the application of new and advanced diagnostic and therapeutic methods in patients with disorders of sex differentiation. Her fellowship was sponsored by the Bizkaia Provincial Council.

Egypt

HODA ELKHENANY

A native of Egypt, Hoda Elkhenany graduated in 2008 from the Faculty of Veterinary Medicine of Alexandria University in Egypt, where she is currently a lecturer. She has been awarded numerous scholarships in regenerative medicine labs at the University of Tennessee, U.S., the Zewail City of Science and Technology, Egypt, and the University of Alberta, Canada. At the Prince Felipe Research Center in Valencia, she will use her passion for regenerative medicine to study cell transplantation for the treatment of patients with spinal cord disorders. She anticipates that her research will improve the recovery prognosis of those with either induced (by traumas) or acquired (degenerative) spinal cord disorders.

Egypt

MAI F. TOLBA

Mai F. Tolba, from Egypt, is an Associate Professor of Pharmacology and Toxicology, Faculty of Pharmacy, Ain Shams University, Cairo, Egypt. She received her PhD in Pharmacology and Toxicology in 2013 through a joint-supervision scholarship between The University of Texas Medical Branch at Galveston, and Ain Shams University, Cairo, Egypt. In 2015, she received a Fulbright Scholar Award to conduct postdoctoral research at the Chapman University School of Pharmacy and the University of California, Irvine. A year later, she received a second research grant from the L'Oreal-UNESCO. At the Spanish National Cancer Research Center in Madrid, she will focus her research on identifying novel therapeutic interventions for patients of triple negative breast cancer, which is one of the most aggressive forms of breast cancer. With the support of WxAF Dr. Tolba has co-authored the article "Novel Combinatorial strategies for boosting the efficacy of immune checkpoint inhibitors in advanced breast cancers".

Egypt

SARA ABDELSALAM

Sara Abdelsalam, from Egypt, is an associate professor in Applied Mathematics at The British University in Egypt. She received her PhD in Fluid Mechanics from Helwan University in Cairo. In 2014, she was awarded The Best PhD Thesis in Applied Mathematics from the Egyptian Mathematical Society and a Fulbright Scholar grant for a 9-month postdoctoral position at the University of California, Riverside. She was also selected as a fellow for the TWAS-UNESCO program in 2017 to conduct research at the Institute of Mathematics, UNAM, in Querétaro. At the Institute of Mathematical Sciences in Madrid, she will further explore her interest in solving various differential equations through biomedical applications of various fluids with nanoparticles that affect biological systems. She anticipates that this research will contribute to the development of drug permeation through human skin as well as in the hydraulics industry.

Tanzania

JOHN-MARY VIANNEY JOSEPH

John-Mary Vianney Joseph is a Tanzanian lecturer at the Nelson Mandela African Institution of Science and Technology in Arusha, Tanzania. She received her PhD in neurobiology from Western Michigan University. Her primary research interest is neurodegenerative diseases, specifically the factors that enhance neural regeneration. In fact, very few studies have been conducted on such diseases in Tanzania despite the fact that there are a large number of people suffering from them. Thus, while at the Institute of Neurosciences in Alicante, she plans to use specific nutrients found in Tanzania's diversity of plants to study the neurotransmitters acetylcholine and dopamine. She anticipates that her research will illuminate the potential benefits of medicinal plants in the treatment of Alzheimer's and Parkinson's disease.

Nigeria

ADEOLA OLUBOYO

Dr. Adeola Oluboyo is a Nigerian lecturer and researcher. With a PhD in Medical Laboratory Science, she is skilled in clinical chemistry, immunology, pharmacology and toxicology. She has more than 20 years of experience teaching in Nigeria and a proven track record of research in both communicable and non-communicable diseases, specifically HIV/AIDS, malaria, cancer, hypertension, and diabetes. At the Carlos III Health Institute, she will conduct a study to determine novel biomarkers for early detection of early onset breast cancer, which has become an increasingly important public health problem in developing countries, including those in Africa.

Uganda

FIONA TULINAYO

Dr. Tulinayo Fiona is a lecturer at the College of Computing and Information Science of Makerere University, Uganda. She received her PhD in Computer Science from Radboud University, Nijmegen in the Netherlands in 2014. She is an active researcher who specializes in conceptual and domain information modelling, system dynamics modelling and information communication technology for development (ICT4D). Her professional experiences have been applied to different domains including agriculture, health, education, environment and geography. While researching at the Kronikgune Research Center, she plans to use her specific interest in information modeling to develop a decision support model for implementing Collaborative Knowledge Management (CKM) in healthcare. Her fellowship was sponsored by the Bizkaia Provincial Council.

Senegal

MARIE NDAYE

Dr. Ndiaye, from Senegal, holds a PhD by the University François Rabelais of Tours (France) and University Gaston Berger of Saint-Louis. Her interest in Data Mining has pushed her to be currently the manager of the Laboratory of Computer Science and Engineering for Innovation at the University Assane Seck of Ziguinchor. Her research is focused on the exploration of large sets of patterns in computers. Her ambition is to explore mining opinions from the online press to detect the overall opinions of internet users' comments on hot topics. In the Biomedical Health and Research Institute she will apply Data Mining to healthcare research to provide solutions to improve the health-system in Africa, particularly in Senegal. Her fellowship is sponsored by Government of the Canary Islands.

Cote d'Ivoire

CAROLINE ADOMBI

Dr. Adombi, from Côte d'Ivoire, holds a PhD by the Université Félix Houphouet-Boigny, Abidjan-Cocody, Côte d'Ivoire. She is currently an assistant professor in Biochemistry and Molecular Biology and also a researcher at the Institut de Gestion Agropastorale (IGA) de l'Université Peleforeo GON COULIBALY, Korhogo. As for her research, she is focused on studying the variability of SARS-CoV-2 in COVID-19 patients to get more knowledge about the pathogens that threat animals and humans, adding value to the current efforts deployed to fight pathogens in Côte d'Ivoire. She aspires to give more autonomy to her country that is still highly dependent on European and American resources. She carries out her research at Vall d'Hebron Institut de Recerca (VHIR).

Nigeria

TEMITOPE FADIQUE

Dr. Fadipe, from Nigeria, holds a PhD by the University of Lagos, Cell Biology and Genetics (Nigeria) and she has worked there since 2014 as a Principal Research Officer at the Federal Institute of Industrial Research Oshodi. She has investigated the biochemical and molecular mechanisms of thiamine biosynthesis in maize, and wishes to study the sustainable production of Polyhydroxyalkanoates in Nigeria.In fact, the enormous amount of synthetic plastic waste in Lagos is a big problem that needs sustainable alternatives. In line with the UNSDGs (3,9,12), she aims to replace synthetic plastics with biodegradable ones in order to prevent further environmental (e.g. flooding) and health (e.g. cancer) problems. She carries out her research at Spanish National Center of Biotechnology (CNB) thanks to the funding of ENDESA.

Tunisia

FATMA KAREM

Dr Karem, from Tunisia, holds a PhD by the National Engineering School of Sfax (Tunisia) and works as a Computer Science teacher in the College of Sciences of Gafsa (Tunisia). She is a specialist in technological solutions for e-inclusion of disable people, ageing, accessibility for teleassistance, content adaptation for e-learning and algorithms in the context of biomedicine. She aspires to develop techniques for better diagnose and treat unresolved problems in medicine through artificial intelligence. She carries out her research with the eVida research group, at the Deusto Institute of Technology (DeustoTech) thanks to the funding of the Provincial Government of Bizkaia

Nigeria

AYOOLA I AIYEGBUSI

Dr. Aiyegbusi, from Nigeria, holds a PhD by the University of Lagos, Nigeria and is a Senior lecturer in Physiotherapy and visiting lecturer in Anatomy in the College of Medicine of Lagos. Her research is directed to study how genetic expressions in sportspersons are associated with tendinopathy and how these could manifest as variations in lower limb biomechanical parameters. Her main goal is to determine the predisposition of athletes to tendinopathy because of genetic variations in order to apply preventative interventions to individuals. Her research is carried out at BioCruces Bizkaia Health Research Institute thanks to the funding of the Provincial Government of Bizkaia.

Ghana

MARY ADJEPONG

Dr. Adjepong, from Ghana, holds a PhD from Michigan State University. Her interest in nutrition and health led her to be one of the founding members of the Ghana Academy of Nutrition and Dietetics. Moreover, she is a lecturer in the Kwame Nkrumah University of Science and Technology. At the Kronikgune Research Center in Bilbao, thanks to the funding of the Provincial Government of Bizkaia, she works on the development of mobile health technology in order to improve nutrition, lifestyle and health outcomes in Ghana. In fact, technology has a strong potential to sensibilize people to adopt healthier lifestyles and behavioural changes.

Tunisia

HEDIA TNANI

Dr. Tnani, from Tunisia, holds a PhD by the University of Barcelona (UB). She is currently a postdoctoral researcher at Pasteur Institute of Tunis (IPT) (Tunisia) and is interested in natural sciences, biotechnology, mathematics, as well as statistics. At the Centre for Genomics Regulation (CRG) her research is focused on the protozoan Leishmania donovani. Since this is a deadly human pathogen which does not have any proper treatment yet, she wants to identify novel drug targets to shed light to new therapeutic approaches. She aspires to change this dramatic scenario, mainly in developing countries. Her fellowship is sponsored by ENDESA.

Egypt

AMAL BARAKAT

Dr. Barakat, from Egypt, holds a PhD by the Göttingen University (Germany). She is an assistant Professor in Molecular Biology at the National Research Center in Egypt. At the Institute for Neuroscience in Alicante, her research is focused on the genes and signaling pathways triggered by Zic2 that lead the emergence of HPE (Holoprosencephaly). The HPE is the most common malformation of the human forebrain that results from failed or incomplete forebrain cleavage early in gestation. With her work, she aims to shed light on the aetiology of HPE in order to understand the regulatory mechanisms and risk factors that may palliate Zic2 malfunctioning during pregnancy.

Morocco

IMANE JROUNDI

Dr. Jroundi, from Morocco, holds a PhD by the Institute for Global Health (University of Barcelona, Spain), with fellowships of the Spanish Agency for International Cooperation (AECI). She is currently working at the University of Mohammed V in Rabat (Morocco) as associate professor of Public Health and was recently nominated as director of the Social Accountability unit at the School of Medicine and Pharmacy in Rabat. Her research at the Institute of Health Carlos III (ISCIII) aims to improve knowledge about COVID measures in schools. It will provide robust data that describe recent and past SARS-CoV-2 exposure and will permit to assess seroprevalence changes over time. Thus, it will help to tailor public health policies and to encourage a pleasant social and educational development of children. Her fellowship is sponsored by ENDESA.

Sudan

ASHWAG MUKHTAR

Dr. Mukhtar, from Sudan, holds a PhD from the Alneelain University (Khartoum, Sudan) where is an assistant professor at the Department of Histopathology and Cytology. At the Spanish National Cancer Research Centre and thanks to the funding of Exolum she intends to compare bladder cancer in Spain and north-African countries through a meta-analysis. She contrasts the causative environmental factors and genetic diversities in order to provide important findings and data regarding such type of cancer improving new skills and techniques in research which will benefit also other countries.

Beneficiaries

in Energy, Water and Climate Change

Egypt

JELAN MOFEED EL-SAYED

Dr. Mofeed El-Sayed is an Egyptian Associated Professor of Environmental Pollution (Microbiology) at the Faculty of Fish Resources, Suez University. She has large experience in identification of both marine and fresh water algae used as bioindicators for pollution, in biomarkers and innovative techniques in intensive aquaculture of marine algae in order to increase productivity in the field of aquaculture and energy production. Her research at the Spanish National Center for Biotechnology focused on the development of the necessary tools in algae molecular and synthetic biology for accumulation of desired products, production of algae biomass (including sequestration of CO_2 from flue gases) and use of cyanobacteria for the production of bio-photovoltaic panels.

Senegal

COUMBA NIANG

Dr. Niang is a Senegalese researcher in Laboratoire de Physique de l'Atmosphere et de l'Ocean Simeon-Fongang (LPAO-SF). In 2015 she completed her PhD in a program of the Federal University of Technology AKure (FUTA) in Nigeria and Laboratoire de Physique de l'Atmosphère et de l'Ocean Simeon Fongang LPAO-SF in Dakar in the Cheikh Anta Diop University. Her work at ICMAT was a first attempt to perform a comprehensive analysis of moisture sources that affect the major precipitation over West Africa during the boreal summer through a sophisticated mathematical method. This potential prediction is of vital importance for water resources and agriculture, which is mainly rain-fed and, therefore, highly dependent on rainfall. Her findings were so relevant, that Complutense University of Madrid offered her another fellowship to keep her working with its team on the same project.

South Africa

MANGAKA CLARA MATOETOE

Dr. Matoetoe was born in Lesotho and lives in South Africa. She received her PhD at the University of Pretoria. Currently she works as an Associate Professor of Chemistry at the Cape Peninsula University of Technology and she is head of the electrochemistry research group. In Spain, Dr. Matoetoe has been working at the Institute of Photonic Sciences (ICFO, www.icfo.eu) on remediation and detection of trace pollutant in the environment changing the mode of detection from electrochemical to plasmonic (Raman, fluorescence and UV visible). These involved spectral interrogation of the platforms before and after incorporating a bio molecule. Among these they assessed potential of bio metallic nanomaterials for detection of nevirapine.

South Africa

NOSIPHO MOLOTO

Dr. Moloto is a South African senior researcher at the University of Witwatersrand in South Africa, where she is currently a Professor and Senior Researcher. In 2011 she obtained her PhD at the University of Witwatersrand (South Africa). She was also a Professor at the University of Johannesburg. In the Institute of Photonic Sciences (ICFO, www.icfo.eu), Dr. Moloto´s research focused on the synthesis and characterization of metal chalcogenide nanocrystals for application in solar cells. Lerato Machogo, one of her doctoral students, got a Learn Africa postgraduate scholarship in the University of Málaga.

South Africa

NOBANATHI MAXACATO

Nobanathi Maxacato, a young South African doctor, obtained her PhD in Chemistry from the University of Pretoria in 2012. She is currently a lecturer and research fellow in the University of Johannesburg, where she teaches Chemistry for Somatology, for chemical engineering, for food and biotechnology and for environmental health. Her field of study is nanotechnology. Her research at the Institute of Photonic Sciences, Barcelona, aimed at finding new catalysts that are capable of solving the problem of surface poisoning at low potentials in Fuel Cells.

Algeria

LATIFA DEBBI

Latifa Debbi, from Algeria earned her PhD degree at the University Henri Poincaré, Nancy 1, (France). She is currently an Associate Professor at the National Polytechnic School of Algiers. Among other positions she has been an Associate Researcher in the Department of Mathematics at the University of York, UK, and a Humboldt Fellowship researcher in Bielefeld University, Germany. In her host research center, the Institute of Mathematical Sciences, she studied the properties of the fractional deterministic and stochastic partial differential equations. This is related to the study of the behavior of some natural phenomena as, for instance, how a fire spreads or the way semiconductor crystals grow in a laboratory.

Nigeria

ROSE ALANI

Rose Alani, from Nigeria, holds a PhD in Environmental/Analytical Chemistry and is a Senior Lecturer at the Chemistry Department in the University of Lagos. The title of the research she conducted in her host center, the Institute of Photonic Sciences (ICFO), is "Environmental Pollution Monitoring using Infra-red Spectroscopy and Complementary Metal-Oxide Semiconductor (CMOS) based Image Cytometer" which aims at developing new photonic technology platforms and assessing them for air pollution and water quality monitoring. Her research at ICFO was so relevant and innovative, that she presented it at the 6th Edition of the International Conference on Water Pollution & Sewage management" in Rome. With KOOM Consulting from Barcelona and New Life International (USA), Rose presented in Lagos a system to do water monitoring in a simple and affordable way even for local populations. She wrote with her host group the article "Mid-infrared gas sensing using graphene plasmons tuned by reversible chemical doping" currently under review with the American Chemical Society Journal

Cameroon

NJUKENG JETRO NKENGAFAC

Njukeng Jetro Nkengafac, from Cameroun, obtained her PhD in Chemistry, at the University of Buea-Camerun. She is Head of Research at the Institute of Agricultural Research for Development in Cameroon. At the Physical Materials Center, she studies the potential of environmentally friendly cellulose nanoparticles as reinforcement agents in the production of natural rubber compounds. The expected impact is of great value because it would allow the degradation of rubber-based materials, such as tires from all types of vehicles, among other applications. Dr. Nkengafac's fellowship was sponsored by the Provincial Guipuzcoa Government.

Tunisia

LATIFA GUESMI

Latifa Guesmi, from Tunisia, has a PhD in Information and Communications Technology (ICT) from the University of Carthage. She is currently a Permanent Assistant lecturer in Telecommunications at the Institut supérieur des Sciences Appliquées et de Technologie de Mateur (ISSATM). At ICFO, she focuses on the optical components of the internet which are very cost- effective and show low consumption and high-performance levels. This is a relevant objective in order to improve energy efficiency in the field of communications and to give internet access to remote areas of emerging economies. Dr.Guesmi's fellowship was sponsored by Exolum.

Algeria

FATIMA ZOHRA BENHAMIDA

Fatima Zohra Benhamida is assistant professor at the Higher National School of Computer Science Algiers, where she obtained her PhD in Computer Science. She is also a senior researcher at Laboratory of Methods of Conception of Systems (LMCS). She represents the Legal Entity Appointed Representative (LEAR) for Horizon 2020 Projects which give a unique opportunity to close the research gaps between Algeria and Europe. During her fellowship at Deustotech, Fatima has worked with "societal challenges" team to use technology for solving socio-economic challenges. Her collaboration included projects for smart city (working on smart bikes and urban traffic in Bilbao city), and smart workplaces (to reduce energy consumption by employees while offering them health assistance). She has supervised students' teams in their IoT projects to solve real-world challenges (mainly related to Bilbao city). Results of her fellowship were crowned by many scientific publications, conference communications, and future research projects. Her fellowship was sponsored by the Bizkaia Provincial Council.

Egypt

HANAN BASIONI AHMED

Hanan Basioni Ahmed, from Egypt, obtained her PhD in in Applied Organic Chemistry at Helwan University, with the Prize for the best Doctoral thesis. She was a Ph.D. Student at Institute of Textile Chemistry and Physics, in Dorinbirn, Innsbruck, Austria, and she is currently Lecturer of organic chemistry in Faculty of Science, Helwan University, where she is specialized in textile technology, nanoscience and polymers to be used in treatment of waste water, especially that released from textile industries. In fact, 10% of dyes are directly released into the ecosystem and water bodies from the textile industries acting as a carcinogenic and mutagenic to marine and human organisms. At Donostia International Physics Center, Dr. Ahmed worked on her project "Application of Nano-alloys in Photocatalytic Degradation of Different Organic dyes in Industrial Water". Her fellowship was sponsored by the Provincial Guipuzcoa Government.

South Africa

ERIKA KRAEMER-MBULA

Erika Kraemer-Mbula from South Africa was trained as an economist at the University of Cantabria and got her PhD in Development Studies from the University of Oxford. Currently, she works as an Associate Professor of Economics based at the University of Johannesburg, and as a researcher at the DST-NRF Center of Excellence in Scientometrics and Science, Technology and Innovation Policy (SciSTIP) in South Africa. At Barcelona Graduate School of Economics, her research focuses on Transformative innovation, the fourth industrial revolution and sustainable development in Africa. Dr. Kraemer has the ambition to develop a new theoretical framework to understand transformative innovation in the context of 4IR and from an African perspective. This is based on an interest to unpack the social and technological relationships that explain the rate, direction and patterns of (radical) innovation adoption, diffusion and use. She is a member of COTEC network of experts.

Nigeria

MARY B. OGUNDIRAN

Dr. Ogundiran, from Nigeria, holds a PhD by the University of Ibadan (Nigeria). She works as an associate Professor of Analytical and Environmental Chemistry at the University of Ibadan. Her project at Material Physics Center is focused on the assessment and remediation of heavy metals-contaminated soil. Studies are scarce on the effects of bio-alkali/ silicate ash on mitigation of high-water demand, efflorescence, and drying shrinkage. Therefore, the aim of her research is to investigate the use of waste palm oil fuel ash (silica source) and cashew nutshell ash (alkali source) in place of conventional commercial activators as a solution to the setbacks in geopolymer applications and to develop processes for structural and energy storage applications of geopolymers. Her fellowship is sponsored by the Provincial Government of Gipuzkoa.

Nigeria

ESTHER MAKINDE

A Nigerian national, Esther Oluwafunmilayo Makine is currently a Senior Lecturer in the Department of Surveying and Geoinformatics at the Faculty of Engineering of the University of Lagos, Nigeria. In 2013, she obtained a PhD in Ecology and Environmental Science with a concentration in Space Applications from Obafemi Awolowo University in Nigeria. In 2017, she was awarded a Commonwealth Postdoctoral Fellowship in the Department of Environment at the University of York, United Kingdom. At the Deusto Institute of Technology in Bilbao, she will conduct research aimed at optimizing the use of surface and subsurface water for sustainable agriculture in Nigeria using geographical information systems. Her fellowship was sponsored by the Bizkaia Provincial Council.

Egypt

LAILA SAAD HAMAM

Laila AbdelFattah Saad Hamam is an Egyptian Lecturer at the Renewable Energy Science and Engineering Department at Beni-Suef University in Egypt. She is also a researcher in a solar energy lab at Alexandria University, where she received her PhD in Materials Science in 2015. She has ample research experience, much of which has been focused on identifying materials for photovoltaic applications. At the Donostia International Physics Center in San Sebastian, she will build on that experience by researching Perovskite solar cells, which represent one of the most promising new generation photovoltaic technologies due to their strikingly high conversion efficiencies. Her hope is that her findings will promote the use of solar power to generate electricity in Egypt. Her fellowship was sponsored by the Provincial Guipuzcoa Government.

Egypt

SAMAR ATTAHER

Samar Mohamed Attaher is an Egyptian senior researcher at the Agricultural Engineering Research Institute (AEnRI) which is one of the main institutes of the Agriculture Research Center (ARC) of Egypt. She received her PhD in Agricultural Engineering at Ain Shams University in Egypt in 2009 and wrote her dissertation on the effect of climatic changes on Egyptian on-farm water productivity. She comes to the Spanish Institute of Sustainable Agriculture (ISA) with over ten years of postdoctoral professional experience using models and data analysis methods and tools to improve the management of irrigation water and increase water productivity. At ISA, she will collaborate with the agronomy team with the goal of using thermal imaging and machine learning to improve on-farm deficit irrigation.

Tunisia

ANISSA AOUNI

Dr. Anissa Aouni is a Tunisian associate professor at the Center for Water Research and Technology in Tunisia. She obtained a master's degree in Analytical Chemistry in 2008 and a PhD in Chemistry in 2012. During the course of her PhD and current position as an associate professor, she has gained more than 12 years of experience in numerous analytical processing laboratories in Europe (Spain) and Asia (China, Japan, Turkey). She has a specific interest in solving the global issue of fresh water shortage, which continues to be exacerbated by the rapid development of modern industry and population growth. At the Institute of Photonic Sciences in Barcelona, she will expand on this interest by working on an emerging electrochemical technology (Capacitive Deionisation (CDI) for desalination and water treatment.

Egypt

HEBA ABDELMAKSOUD

Heba Abdelmaksoud, from Cairo, Egypt, obtained her PhD in Physics at the Warsaw University of Technology, in Poland. She is currently a Physics Lecturer at the Ain Shams University, in Egypt. In her host center, The Institute of Photonic Sciences (ICFO), she focuses her research on semiconductors nanocomposites whose properties are very important and useful for high-speed communication networks, but also in many other fields such as solar energy, films, adhesives, paper coating and drug delivery. Her fellowship is funded by the Company CLH.

Zambia

BRENDA NAMUMBA

Dr. Namumba, from Zambia, holds a PhD by the University of Cape Town (South Africa) and was the first Astrophysicist from Zambia. Beyond being a tutor at the University of Cape Town, she is an expert in observational astronomy. In fact, Namumba's research focuses on using radio and optical data to ´explore the growth of galaxies. More concretely, she investigates how the HI kinematics and dynamics in dwarf galaxies link to star formation. As she mentions, her study would allow for the first time "a comprehensive understanding of how the disks of dwarf galaxies interact with their environment" and would provide optimal wide-ranging opportunities for training and transfer of knowledge. She carries out her research at Institute of Astrophysics of the Canary Islands thanks to the sponsorship of the Government of the Canary Islands.

Senegal

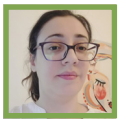
LALA KOUNTA

Dr. Kounta is from Senegal and holds a PhD by the Laboratoire de Physique de l'Océan Siméon Fongang (LPAO-SF/ESP), Dakar. She is currently an assistant lecturer and post doc researcher at Cheikh Anta Diop University, Dakar (Senegal).
She investigates the dynamical functioning of the West African upwelling system with a focus on the circulation in the eastern tropical north Atlantic off West Africa. Her research in the Oceanographic Platform of the Canary Islands combines climate change and physics with the aim to contribute to a better understanding of the influence of global warming in ocean circulation and marine ecosystems, especially to help policymaking in the West African coast. Her fellowship is sponsored by Government of the Canary Islands.

Algeria

KARIMA BENYAHIA

Dr. Karima, from Algeria, holds a PhD by the University of Djillali Liabes, Sidi Bel Abbes (Algeria) in collaboration with the University of Uppsala, Sweden. She is currently a researcher, member of Materials Science and Applications Laboratory at the University of Ain Temouchent (Algeria). She carries out her research at the Donostia International Physics Center thanks to the funding of the Provincial Government of Gipuzkoa with the objective to calculate the magneto-optical properties of different materials, specially of organic-perovskite materials.



Algeria

LYDIA BOUCHARA

Dr. Bouchara, from Algeria, holds a PhD by the Bejaia University (Algeria). At the Institute of Photonic Sciences (ICFO) her research is focused on non-linear photonics. The intention is to exploit the interaction of light with matter to elucidate new strategies for manipulating, controlling, shaping, and processing light beams and signals. Her project can lead to new perspectives by discovering the behaviours of light and the possibility of controlling it for useful purposes for industry, especially health.

Egypt

SEHAM KAMAL

Dr. Kamal, from Egypt, holds a PhD by the Cairo University (Egypt). She is currently a lecturer at the Physics Department, Faculty of Science, Cairo University. She carries out her research at the Institute of Photonic Sciences (ICFO) in order to develop an "Eco-friendly solar cell" using graphene nanocomposites and lead-free perovskites. She is convinced that her research will be fruitful in two senses: by matching the output of silicon cells at a lower price, and to offer an environmentally friendly alternative to hybrid perovskite solar cells.

Egypt

ABEER ADEL

Dr. Adel, from Egypt, holds a PhD by the University of Cairo (Egypt). She is a senior researcher in Sustainable and Biomaterials isolated from agricultural wastes, and is specialized in nanocrystalline cellulose extraction using chemical & physicochemical methods. She carries out her research at the Material Physics Center (MPC-CFM) thanks to the funding of the Provincial Government of Gipuzkoa and she hopes to come out with an eco-friendly method for purifying water by using agricultural waste. It consists of using simple and cheap membranes from agro-wastes to purify water from heavy metals, and it has the potential to decrease the environmental hazard. Hence, it will fill the gaps for sustainable development in terms of innovation, technology transfer and international leadership in science and technology using new advanced methods.

South Africa

SONALI DAS

Dr. Das, from South Africa, holds a PhD by the University of Connecticut, USA. She is passionate about statistics and works as a professor of Business Management at the University of Pretoria (South Africa). At the Basque Center for Applied Mathematics (BCAM), she focuses her research in analysing weather data from north-eastern South Africa. Due to the lack of data about weather dynamics in this region, she aims to introduce more appropriate and novel empirical tools to gain more insights into the urgent problem of temperature variations - that affect both agriculture and livelihood. Therefore, agricultural decisions could be better informed particularly in climatically sensitive areas like the north-eastern parts of South Africa.

Senegal

FAGUEYE NDIAYE

Dr. Ndiave, from Senegal, holds a PhD by the University of Cheikh Anta Diop of Dakar (Senegal). She specializes in Mathematical Analysis, Differential equations and Applications, and works as a professor and researcher at the Faculty of Sciences and Technologies of Education and Training at the University Cheikh Anta Diop of Dakar (Senegal). As a post-doc fellow at the Institute of Mathematical Sciences (ICMAT), she studies waver propagation, such as the propagation of greenhouse gases, with the aim of minimizing the impact of these gases in a given city aims and reduce contamination. The idea is to reduce the volume of the area occupied by these gases in cities in order to preserve the health of the population.

Beneficiaries

in Agriculture and Food Security

Tunisia

CHANTAL EBEL

Dr. Ebel is an Assistant Professor at the Institut Supérieur de Biotechnologie de Sfax since 2004. She teaches Molecular Biology and Genetic Engineering, Plant Biotechnology and Microbial Genetics. She works in a new project aiming to investigate the role of a gene in a durum wheat. This gene acts putatively at the interface of stress perception and cell cycle to maintain cell division in meristematic tissues despite adverse conditions. After her very productive research at the Spanish National Center for Biotechnology (CNB, www.cnb.csic.es), she published 3 articles, one of them in the scientific journal PLOS ONE "Characterization of wheat (Triticum aestivum) TIFY family and role of Triticum Durum TdTIFY11a in salt stress tolerance" https://doi.org/10.1371/journal. pone.0200566

Tunisia

SARRA ARBAOUI

Dr. Sarra Arbaoui, a Tunisian research assistant within the High Agronomic Institute of Chott Mariem, obtained her PhD in Agricultural Sciences. In 2014 she won the L'Oreal-UNESCO award for women in Science, and in May 2016 she was selected to follow leadership training Women for the future in Sciences Po Paris. In the Spanish National Center for Biotechnology (CNB), she has been working on biological ways to improve the crop and adapting it to climate change using microorganisms. After her fellowship, she provided a module titled "Sustainable food systems: a Mediterranean perspective" by SDSN Mediterranean (http://unsdsn.org/) for the MOOC Sustainable farming systems under environmental and climatic constraints for the SDG Academy (https://courses.sdgacademy.org/). She has written with her Spanish team the book chapter "Arsenic, the silent threat. New phytoremediation strategies for contaminated soils and waters". She is also a member of Cotec network of experts.

Uganda

ELIZABETH KIZITO

Dr. Elizabeth Kizito has a PhD in Plant breeding obtained from the Swedish University of Agricultural Sciences, Uppsala, and she is currently a senior lecturer and the head of the Department of Agricultural and Biological Sciences at the Uganda Christian University, Mukono. She is passionate about improving the plight of the indigenous African vegetables, especially the Solanaceae family, which have great potential in meeting the nutritional needs in Africa, and about improving the situation of many women farmers of a small scale involved in its production, in terms of income generation and food security in Uganda and the region. She undertook her research in the Center for Genomic Regulation, Barcelona.

Kenia

BEATRICE MURIITHI

Beatrice Muriithi, from Kenia, holds a PhD in Agricultural Economics from Bonn University, Germany, and is currently a Post-Doctoral Fellow at the Social Science and Impact Assessment Unit at the International Center for Insect Physiology and Ecology (ICIPE) in Nairobi, Kenya. At the Barcelona Graduate School of Economics, Dr. Murithi worked with the research Group on Applied Economics, Development and Political Economy on her project "Gender and impacts of Push-Pull Technology (PPT) on nutrition, input demand and saving: Evidence from East Africa". The (PPT) Technology is a novel approach in pest management which uses a repellent intercrop and an attractive trap plant. She co-authored with her team at BGSE the peer review publication Adoption of Integrated Pest Management Strategy for Suppression of Mango Fruit flies in East Africa: An ex ante and ex post analysis in Ethiopia.

Kenia

SARAH MWANGI

Sarah Mwangi, national of Kenia, earned her PhD in Bioinformatics, in the South African National Bioinformatics Institute, and a postdoctoral fellowship at Karolinska Institute in Sweden. In the University of Pretoria her research focuses on the bioinformatics aspects of the Avocado genomics and works with postgraduate students on all bioinformatics aspects of their projects. Together with researchers at the bioinformatics core facility at the Center for Genomic Regulation (CRG), in Barcelona, Dr. Sarah Mwangi worked on the development of bioinformatics analytical workflows for the analysis of microRNAs that confer resistance to infection in plants, with a special focus on Avocado. The results obtained in these studies will assist in understanding the molecular mechanisms of miRNAs in Avocado plants and their impact during stress response.

Nigeria

EUCHARIA OLUCHI NWAICHI

Eucharia Oluchia Nwaichi, from Nigeria, holds a PhD in environmental toxicology from the Department of Biochemistry at the University of Port Harcourt, Nigeria. In 2019, she was selected as a fellow by the Next Einstein Forum, a highly selective program that recognizes Africa's best young scientists. At the Agrifood Campus of International Excellence she will be studying the clarifying agents involved in the production of beer, which is the fifth most consumed beverage in the world. She anticipates that her research will illuminate the health effects of those agents on consumers as well as improve and optimize the use of agricultural resources for beer production.

Nigeria

SIFAU ADENIKE ADEJUMO

Sifau Adenike Adejumo is a Nigerian lecturer in the Department of Crop Protection and Environmental Biology at the University of Ibadan, Nigeria. She received her Master and PhD in Environmental Biology with a specialization in Environmental Crop Physiology. Her research has focused on understanding the molecular and genetic mechanisms of heavy metal tolerance, detoxification and hyperaccumulation in plants. She has developed method for stress amelioration in crop plants using compost. At the Spanish National Center for Biotechnology in Madrid, she will work to identify the genes for arsenic perception, tolerance and accumulation in Duckweeds. She anticipates the project will enhance nutrient uptake by food crops even in the presence of toxic heavy metals. Her fellowship is sponsored by ENDESA.

Egypt

MARWA ABD EL-RAHMAN

Dr. Abd El-Rahman, from Egypt, holds a PhD in Mechanical Power Engineering from the Cairo University. She is currently a researcher at the Mechanical Engineering Department of the National Research Centre, Egypt, and a Consultant in Renewable Energy System at Fayoum University. She has been working in the power and energy field for more than 10 years, especially in renewable energy, and has published a lot of papers and two books. Her project at Repsol Technology Center, is to study a new principle for retrieving electrical power from renewable energy sources and evaluate the technical and economic performance of a smart grid. Her research questions are relevant for municipalities, companies and the business opportunities to develop smart grid but also and most importantly to meet the rapid increases in energy demand and the energy deficiency that face developing countries. Her fellowship is funded by Repsol and Repsol Foundation.

Nigeria

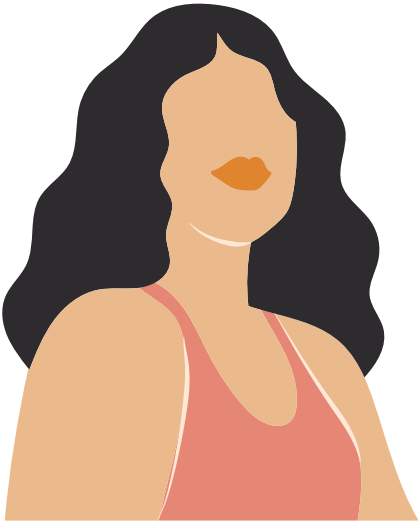
JANE MBOLLE CHAH

Dr. Mbolle, from Nigeria, holds a PhD by the University of Nigeria Nsukka. She is a Senior lecturer in the Department of Agricultural Extension in Nsukka, and has a great interest in climate change, rural development, gender studies, agricultural innovation and poverty. Her research proposal is titled "Gender dynamics of Investment on Climate-Smart Agriculture among Smallholder Farm Households in Nigeria" and aims to increase both women's incomes and decision-making power in order to place them on a better social standing in their communities. In fact, she is convinced that trained and empowered women will promote the use of climate smart agriculture tools and meet the UNSDGs in the long run. She carries out her research at Graduate School of Economics in Barcelona thanks to the funding of ENDESA.

Egypt

AMAL AMIN

Dr. Amal Amin, from Egypt, holds a PhD by the Faculty of Science of the Cairo University. She is an associate professor at the National Research Center of Egypt and has taken part in many national and international conferences. Her research is about "Investment of agricultural wastes in different biomedical applications". Although agricultural wastes may be considered as a renewable resource, they are systematically burnt, causing severe pollution and a tremendous waste of a valuable material. Her project is directed to tackle this issue, intending to have a great environmental impact – by investing these wastes in eco-friendly ways- as well as a social one - by developing cost-effective applications for curing rice husk-.



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Paseo de la Castellana, 144. 28046 Madrid, Spain
+34 914 570 945

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