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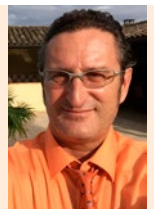
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Support *icipe*



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Dr Lukas Bertschinger,
Chair, *icipe* Governing Council

Dear Colleagues and Friends,

Welcome to the *icipe* e-bulletin, covering the Centre's activities between October – December 2018.

Five years ago, *icipe* marked a landmark with the appointment of Dr Segenet Kelemu as the first woman, and the second African to head the Centre. Having completed her first term in November 2018, Dr Kelemu dedicates her Thought Leadership Column to a candid reflection of the journey so far; the intricate vigilance to secure *icipe*'s rich and unique legacy, seizing new opportunities as they arise, while fortifying the Centre's growing importance in a fast changing local and global environment.

A second introspection in this issue (From Our Partners section) is from Dr Yves Guinand, Senior Thematic Advisor Rural Development, Federal Department of Foreign Affairs, Swiss Agency for Development and Cooperation (SDC). Dr Guinand explains why for more than 20 years, SDC has been a key supporter of *icipe*, noting the shared mission of development efforts aimed towards poverty reduction among smallholder farmers. Further, he highlights his personal preference among *icipe*'s technologies, and comments on the recent,

very “un-Swiss” decision by SDC to support the “hardware” side of things by funding the greening of *icipe* initiative.

Part of *icipe*'s mandate is to increase the capacity of diverse stakeholders to contribute to the production and use of scientific knowledge and technologies. In addition to its postgraduate training programmes, each year the Centre conducts numerous courses, workshops and other training events for scholars, researchers, government officials, policymakers and farmers, among others. In our In-Focus section, we take stock of capacity building events held by the Centre and partners this year, which have reached 41,000 people.

Friends and colleagues, it is our hope that you will enjoy reading the items highlighted above, as well as the rest of the sections of this *e-bulletin* including Recently Published, Recently Funded and Research Highlights.

On behalf of the entire *icipe* community, we thank you for your partnership in 2018, and wish you a good holiday season and prosperous 2019.

Dr Lukas Bertschinger,
Chair, *icipe* Governing Council

Part of *icipe*'s mandate is to increase the capacity of diverse stakeholders to contribute to the production and use of scientific knowledge and technologies.



Dr Segenet Kelemu
Director General, *icipe*

Reflection: First Term

In November 2018, I completed my first, five-year term, as the Director General of *icipe*. By coincidence, this milestone came just months before the *icipe* Periodic External Review (IPER) for 2013 – 2017, which concluded that *icipe* is a well-managed and highly productive research Centre. Alongside the entire *icipe* community, I am heartened by this feedback. It endorses our intricately vigilant approach that has taken into account the past, the present and the future. In other words, it has been our goal to secure *icipe*'s rich and unique legacy, making adjustments to rectify past challenges, seizing new opportunities as they arise, while fortifying the Centre's growing importance in a fast changing local and global environment. Such a process comes with numerous moments of learning and growth, some of which we briefly outline below.

Leading *icipe*



I have been honoured to be the first woman and the second African to lead *icipe*, a distinctive institution that I believe strongly epitomises my personal vision of contributing to building world-class research capacity in developing countries, and in particular in Africa, where such competence is most urgently needed. Having grown up in a remote village in Ethiopia, I know only too well the problems faced by rural communities. I am aware that many people, especially women, continue to undertake backbreaking, endless chores on a daily basis. Therefore, my dream has always been to play a role in lessening the heavy burden borne by rural communities. As a scientist, I am clearly aware of the dramatic changes that focused agricultural research can have on the lives of people. Being at the helm of *icipe* has, and continues to be an important opportunity, as it enables me to contribute towards the development and dissemination of technologies and strategies that have a real impact on the livelihoods of communities in Africa.

Validity of a centre of excellence in insect science



The founding mission of *icipe*, that of a centre of excellence devoted to producing insect science knowledge and leadership as a basis for enhanced agricultural production, and management of tropical and vector-borne diseases in Africa, remains as compelling today as it was close to 50 years ago. Insects

and other arthropods persist as a cross cutting factor in the mosaic of developmental issues in Africa. Amidst this scenario, the *icipe* 4H research themes — Plant Health, Animal Health, Human Health and Environmental Health, are a binding and exceptional framework to tackle the interlinked problems of poverty, poor health, low agricultural productivity and environmental degradation in a comprehensive manner. The four themes approach, supported by *icipe*'s eight research and development units, provides a strong platform to build the capacity and leadership of African scientists in a cross-cutting manner; it allows collaboration with hundreds of researchers and partners across Africa and the world; and it enables the effective transfer of the Centre's technologies and strategies to end-users.

Multidimensional approach to scientific excellence



Since its founding, *icipe* has maintained the idea of excellence at the core of all its activities. The Centre is aware that as a concept, excellence in science is a compounded issue. Within the international scientific community, excellence is defined by having an international reputation. However, as an organisation based in Africa, *icipe* recognises that excellence must also have another dimension, which is the ability to respond to the critical developmental needs facing the continent. It is a complex duality that we have quite successfully negotiated over the past five years.

icipe's international reputation over the past five years is demonstrated by the Centre's impressive citation metrics. During this period, *icipe* published 646 peer-reviewed journal articles. More than 40% of these articles were published in journals with an impact factor of 2.0 and above. We have also recognised the need to make the knowledge that we produce more widely available and as such, we have increased the number of articles published in open access journals or those with open access models, from 45% to 81%. Other indicators of *icipe*'s growing prestige is the receipt of close to 100 regional and international awards by the Centre and various teams. In addition, *icipe* has been designated a Food and Agriculture Organization of the United Nations (FAO) Reference Centre for vector-borne animal diseases; a Stockholm Convention Regional Centre for reduction of persistent pollutants; and World Organization for Animal Health (OIE) Collaborating Center for Bee Health in Africa.

While we embrace this international eminence, we have maintained our focus on developing environmentally friendly, accessible and affordable tools and disseminating them to local communities. Selected examples include: climate-adapted Push-Pull technology to address the major constraints of cereal-livestock production systems in Africa especially in view of changing weather and emerging pests like the fall armyworm; integrated pest management packages for fruits and vegetables; community-based silk and bee enterprises; tsetse control technologies including repellent collars and

fly traps; integrated vector management for mosquito-borne diseases; and adaptation strategies to address the impact of climate change on ecosystem services. These interventions are contributing to food security needs, household and national incomes, access to education and health care, and most importantly, inclusive development, by creating opportunities for marginalised sections like women and the youth.

New research initiatives and directions



As we progressed, we have identified the need to reassess our research strategy against emerging developmental issues and changing donor trends. In accordance, the Centre has established itself as a leader in the globally emerging insects for food, feed and other uses research agenda. We have also started studies to explore the potential of symbionts in making insects, primarily bees and mosquitoes, more resistant to pathogens, and preventing malaria parasite transmission, respectively. In partnership with the Mastercard Foundation, we are implementing the Young Entrepreneurs in Silk and Honey (YESH) project, which aims to enhance youth employment in Ethiopia through beekeeping and silk farming enterprises. Over the past five years, in partnership with the International Institute of Tropical Agriculture (IITA), we have initiated activities in soil health, primarily focusing on the field of nematology, including establishing what is probably sub-Saharan Africa's (SSA) largest team of nematologists (complete with a fully functional, dedicated laboratory).

Research evaluation



To ensure that our research remains of the highest possible standards, we have also introduced several assessment processes, key to which is the establishment of a Sustainable Research Evaluation System Framework by the *icipe* Governing Council in collaboration with the Management, to evaluate the Centre's scientific Units and Themes. The appraisals commenced in 2017 with the review of the Animal and Human Health Themes. In addition, to secure its role as a global hub of bee health expertise in Africa,

icipe initiated a process towards developing a strategy to guide the advancement of its bee research and development portfolio. To ensure that our interventions have the most effective outcomes, we have strengthened our technology transfer and social science and impact assessment capacity. We intend to continue these adjustments, and in particular, address a number of opportunities identified in the IPER including adopting a stronger systems approach, by taking advantage of *icipe*'s 4-H themes to build a One Health approach; and paying stronger consideration to entire value chains, thereby extending our focus beyond on-farm or postharvest levels.

Contributing to a bioeconomy in Africa



We have also re-examined our contribution to Africa's concerted goals of achieving inclusive and sustainable development by creating much needed technical and scientific capacity for the advancement and use of innovative bioscience research knowledge and technologies, and ultimately, the creation of a bioeconomy in Africa. As a result, we are now hosting and managing two novel programmes: the Regional Scholarship and Innovation Fund (RSIF); and BioInnovate Africa Programme, one of Africa's largest regional innovation-driven science initiatives.

Alignment to regional and international development agendas



We recognise the increasing mainstreaming of research for development (R4D) in attaining social economic transformation in Africa, with governments and development partners committing more support to the sector. These two scenarios present opportunities and challenges for institutions like *icipe*. We believe that for these investments to translate into real impact, R4D actors must be well organised, managed and strategically linked to international, regional and national developmental research agendas and priorities. Therefore, we are making constant efforts in aligning our research, for example, to the United Nations sustainable development goals (SDGs) 2030; the African Union Agenda 2063; the African Union Commission through

the New Partnership for Africa's Development (NEPAD) Planning and Coordinating Agency, Science, Technology and Innovation Strategy for Africa (STISA-2024); the Comprehensive African Agriculture Development Program (CAADP) and the African Bioscience Initiative.

Building and maintaining partnerships



Partnerships are a crucial part of *icipe*'s strategy. The Centre currently has close to 300 partners in Africa and around the world including universities, government institutions, national and international research organisations, community based organisations, non-governmental organisations (NGOs), private sector actors, and media outlets. Over the past five years, while maintaining our commitment to partnerships, we have re-evaluated our approach, to ensure that our affiliations are mutually beneficial and that we have the required range of partners. For this purpose, we now have clear criterion and guiding principles for engagement with like minded institutions. This process requires a delicate balance of tact and diplomacy, but we believe that it ultimately leads to stronger, sustainable alliances. We have also bolstered our partnerships with the private sector, to ensure that the Centre's innovations and new technologies are commercialised and available to communities across Africa.

Nurturing scientific capacity and leadership in Africa



Building capacity in insect science has always been one of *icipe*'s key roles. Every year, the Centre hosts between 140 and 190 students at MSc and PhD level, primarily from across SSA. Over the past five years, we have aimed to transform the *icipe* capacity development efforts from functional training to high quality mentoring. We believe this approach lays a stronger career foundation and supports research capacity in Africa more effectively. Our training now provides not only technical skills in specific research areas, but also a more extensive range of academic and professional capabilities, as well as research leadership. We have also ensured the presence of extremely qualified and motivated supervisors and mentors,

and instituted strategies for progressive interactions among them and the students, while also maintaining a supportive academic environment across the Centre. As a result, the *icipe* African Regional Postgraduate Programme in Insect Science (ARPPIS) and the Dissertation Research Internship Programme (DRIP) stand as showcase examples of nurturing scientific capacity and leadership. We are also gratified that 646 journal articles published by *icipe* in 2013-2017, 232 (36%) and 54 (8%) were lead-authored by postgraduate and postdoctoral fellows, respectively, and 82 (13%) were co-authored by postgraduate and postdoctoral fellows. A spill over benefit of this process is the strengthening of partnering African universities. For example, 92% of the postgraduate scholars between 2013 – 2017 represent 21 African nationalities. Moreover, we have promoted women participation in our capacity building programmes; 44% of fellows in the PhD programmes are women. In addition, *icipe* continues to support national systems. During the past five years, *icipe* has held more than 290 workshops and other training events for more than 12,000 participants (55% women) in 11 African countries with participants from 50 African countries.

Maintaining a highly motivated team



Upon commencement of my leadership of *icipe* in 2013, we embarked on a process of strategic recruitment to fill in prevailing gaps and strengthen existing teams. *icipe* currently has 556 staff, translating into a lean but highly effective leadership and operational structure. Our goal has been to provide our teams with research leadership and planning skills; to create institutional pride, confidence and team work. The vision of identifying the right talent for the right role at the right time is a tough challenge, but one that the Centre continues to pursue dedicatedly, as the only option for achieving our mission.

Expanding *icipe*'s presence in Africa



Headquartered in Kenya, *icipe* prides itself as an African organisation. And today *icipe* has activities in 41 African countries." Over the past five

years, we have revisited this image and noted the need to reduce over-focus in one region. As a result, we have remarkably strengthened our country offices, and operations, in Ethiopia, Uganda and Somalia. In addition, we have extended our activities, especially in west, central and southern Africa. We are aware that we have more work to do in this aspect, and we will continue exploring opportunities and strategies.

Looking after our bricks and mortars



In general, *icipe* provides unique modern research facilities and well-equipped laboratories. In particular, the Africa Reference Laboratory for Bee Health and the Martin Lüscher Emerging Infectious Diseases (ML-EID) Laboratory stand as noteworthy examples. However, during the past five years, we have noted the need to improve our infrastructure. For example, we have upgraded and modernised the Behavioural and Chemical Ecology Unit. One of our main initiatives has been the greening of *icipe*, including renewable energy, energy saving, water harvesting and conservation measures, with the aim of reducing the Centre's carbon footprint and making its environment more eco-friendly. We have also upgraded and renovated the Thomas Odhiambo Campus, Mbita, on the shores of Lake Victoria, and our field stations in Muhaka, coastal Kenya, Nguruman, Kajiado, Rift Valley. Most importantly, in 2018 we commenced a major, and long overdue refurbishment to bring the R&D complex at the *icipe* Duduville Headquarters to modern laboratory standards.

Enhancing communication



Communication is one of the most vital components of R&D, and one that we have embraced strongly over the past five years. Starting from the basics, we have created a Communication Unit, developed strategic plans for individual programmes, launched various implementation platforms and strengthened our relations with traditional and digital media. Between 2013 – 2017, 600 articles on *icipe* were published or broadcast in local, regional and international

media. Most of this coverage is available online, with many of the items reproduced, on average, by five additional outlets (beyond the initial publisher or broadcaster). As such, *icipe* news items have appeared in over 3000 outlets. The cumulative potential reach of *icipe*'s coverage is approximately 300 million people, and the value of this publicity (advertising potential) is US\$ 31 million. Due to this, and other communication products generated by the Centre, *icipe* is now part of a global complex of specialists that the media, and indeed diverse stakeholders, often taps into for knowledge and authoritative comments on various subjects. We intend to continue augmenting our communication capacity, for example by reinforcing the ability of selected teams as thought leaders, as well as science and innovation diplomats.

Resource mobilisation



Through concerted and continuous dialogue with the Centre's donors, we have been able to increase our core funding, and to maintain our restricted funding somewhat constant. Moreover, the effectiveness and transformation of *icipe* (the culture of transparency, equity and accountability) over the past five years has attracted 28 new organisations, to support our various research programmes.

Reaching end-users



Over the past five years, using different mediums, we have reached 115,400 end-users, of our technologies including: Push-Pull, tsetse repellent collars, fruit fly integrated pest management, integrated vector management for malaria, beekeeping and silk farming, among others. As a result, and as just one example, currently, the *icipe* Push-Pull technology has now been adopted by 157,890 farmers across Africa.

icipe Governing Council Students Awards

During its Annual General Meeting held in Addis Ababa, Ethiopia, in November 2018, the *icipe* Governing Council, which consists of globally renowned scientists, honoured six outstanding postgraduate scholars, currently undertaking their research at the Centre, as listed below.

Best published science paper by an *icipe* scholar



Winner: Teresiah N. Njihia (PhD scholar)

Registered at: Jomo Kenyatta University of Agriculture and Technology, Kenya.

Mentors: Dr Régis Babin (CIRAD/*icipe*), Baldwyn Torto and Janet Irungu and at JKUAT Lucy Kananu.

Publication details: Njihia T.N., Torto B., Murungi L.K., Irungu J., Mwenda D.M. and Babin R. (2018) Ripe coffee berry volatiles repel second instar nymphs of *Antestia* bugs (Heteroptera: Pentatomidae: *Antestopsis thunbergii*). *Chemoecology* 28, 91–100. <https://doi.org/10.1007/s00049-018-0259-3>. IF 1.642

Funding: The scholar is supported by the German Academic Exchange Service (DAAD) In-region postgraduate scholarship. Further financial support was obtained from: Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD), Montpellier, France; Climate Change Impacts on Ecosystem Services and Food Security in Eastern Africa (CHIESA) project funded by the Ministry of Foreign Affairs of Finland; and *icipe* core funds.



Second runner-up: Beatrice T. Nganso (PhD Scholar)

Registered at: University of Pretoria, South Africa.

Mentors: Prof. Baldwyn Torto (*icipe*); Dr Abdullahi A. Yusuf, Prof. Christian W. W. Pirk (University of Pretoria, South Africa).

Publication details: Nganso B.T., Fombong A.T., Yusuf A.A., Pirk C.W.W., Stuhl C. and Torto B. (2018) Low fertility, fecundity and numbers of mated female offspring explain the lower reproductive success of the parasitic mite *Varroa destructor* in African honeybees. *Parasitology*, 1–7. <https://doi.org/10.1017/S0031182018000616>. IF 2.511

Funding: The United States Department of Agriculture (USDA)/ARS- grant #58-6615-3-011-f and *icipe* core funds.



Third runner-up: Nelson L. Mwando (MSc. scholar)

Registered at: Egerton University, Kenya.

Mentors: Dr Subramanian Sevgan and Dr Johnson Nyasani (*icipe*); Dr Meshack Obonyo (Egerton University, Kenya).

Publication details: Mwando N.L., Tamiru A., Nyasani J.O., Obonyo M.A.O., Caulfield J.C., Bruce T.J.A. and Subramanian S. (2018) Maize Chlorotic Mottle virus induces changes in host plant volatiles that attract vector thrips species. *Journal of Chemical Ecology* 44, 681–689. <https://doi.org/10.1007/s10886-018-0973-x>. IF 2.419

Funding: The German Federal Ministry for Economic Cooperation and Development (BMZ) – Grant 81141840 for the Thrips Project; European Union Grant contract no. DCI-FOOD/2014/346-739; Biovision Foundation for Ecological Development; and *icipe* core funds.

Best science poster by an *icipe* scholar



Winner: Juliet Ochola (MSc scholar)

Registered at: Kenyatta University, Kenya.

Poster title: ‘Wrap and Plant’ technology: Elucidating the mechanisms of banana fibre paper in the management of potato cyst nematodes.

Mentors: Prof. Baldwyn Torto (*icipe*); Drs Laura Cortada and Danny Coyne (International Institute of Tropical Agriculture, IITA); Dr Margaret Ng’ang’a and Prof. Ahmed Hassanali (Kenyatta University).

Funding: North Carolina State University, USA, through a grant to IITA under the project: Field deployable nutrient-rich biodegradable matrix for crop protection; and *icipe* core funds.



Second runner up: Olabimpe Yewande Olaide (PhD scholar)

Poster title: Zebras as potential sources of potent repellents for savannah tsetse fly control.

Registered at: University of Pretoria, South Africa.

Mentors: Dr David P. Tchouassi, Dr Daniel K. Masiga and Prof. Baldwyn Torto (*icipe*); Dr Abdullahi A. Yusuf, Prof. Christian W. W. Pirk (University of Pretoria, South Africa); Dr Rajinder K. Saini (Pestnix-International Pest and Vector Control Specialist, Nairobi, Kenya).

Funding: European Union and *icipe* core funds.



Third runner up: Hillary K. Kirwa (MSc scholar)

Poster title: The plant hormone zeatin identified in tomato root exudate elicits attraction in the root knot nematode, *Meloidogyne incognita*.

Registered at: Jomo Kenyatta University of Agriculture and Technology, Kenya.

Mentors: Prof. Baldwyn Torto (*icipe*); Dr Lucy K. Murungi (Jomo Kenyatta University of Agriculture and Technology).

Funding: United States Department of Agriculture – Agricultural Research Service (USDA–ARS) project 58-6615-3-011-F and *icipe* core funds.

BiolInnovate Africa fellowship for women scientists

BiolInnovate Africa – one of Africa’s largest regional innovation-driven science initiatives – which is hosted and managed by *icipe*, has launched a fellowship scheme for women scientists, as part of the Programme’s strategy to enhance gender participation in the African bioeconomy. The fellows will be attached to selected BiolInnovate Africa funded projects outside their home countries for four months, to advance their skills, innovation capacity and overall career progression. The first cohort includes 12 competitively selected women scientists from Burundi, Ethiopia, Kenya, Uganda and Tanzania. The fellowship scheme was launched during a Gender Integration Workshop held by BiolInnovate Africa in partnership with Penn State University, USA, in Addis Ababa, Ethiopia, attended by over 50 participants from research, academia and business from eastern Africa.

World Food Prize Foundation award

In October 2018, on the occasion of the 20th Anniversary of the Borlaug-Ruan International Internship Programme, the World Food Prize Foundation awarded *icipe* a certificate to extend its profound gratitude for exceptional commitment to the Borlaug-Ruan International Internship Program thus carrying forward the legacy of Dr Norman E. Borlaug and John Ruan, Sr. *icipe* has hosted an intern for 20 consecutive years in the Push-Pull Programme.

Research award

Research by GeoInformation Unit on a remote sensing model for predicting the distribution as well as areas that are potentially suitable for the African citrus triozid (ACT), presented at the African Association of Remote Sensing of the Environment conference (25 – 29 October 2018), held in Alexandria, Egypt, by Dr Elfatih Abdel-Rahman was awarded the European Space Agency Prize for the best paper (See page 12).

L'oreal-UNESCO fellowships

Gladys Mosomtai, a PhD scholar at *icipe* has been awarded the L'Oréal-UNESCO For Women in Science Africa fellowship. Gladys is conducting geoscience led research on the epidemiology of coffee pathosystem in the smallholder context, aiming to model the impact of agro-ecological factors of coffee pests and disease dynamics. At *icipe*, her study is hosted by the Increasing Murang'a Union farmers' income by improving their coffee's quality and productivity and by establishing quality recognition signs project, funded by Agence Française de Développement (AFD). In addition, Fiona Mumoki, a former *icipe* MSc scholar, now conducting PhD research at the University of Pretoria, Kenya, has also received the fellowship for her studies on the role of brood pheromones in inhibiting dominance in *Apis mellifera capensis* reproductive parasites.



Gladys and Fiona pictured with (left) Robert Skilton, Head, *icipe* capacity building and institutional Building, and (right) Prof. Mabel Imbuga, Vice Chancellor of Jomo Kenyatta University of Agriculture and Technology.

BiolInnovate PAC Chair appointment



Dr Peggy Efua Oti-Boateng, Chair of the BiolInnovate Africa Program Advisory Committee, has been appointed Director of the Division of Science Policy and Capacity Building in the Natural Sciences Sector, United Nations Educational,

Scientific and Cultural Organization. since 2015, Dr Oti-Boateng has been responsible for projects and programmes relating to science policy and basic sciences at the UNESCO multisectoral regional office in Harare, Zimbabwe. She was regional thematic adviser for Africa for the formulation of policies and capacity building in science, technology and innovation. She also served as focal point for the African Ministerial Conference on Science and Technology and was the Head of the Sciences Sector for the Southern African Development Community. She had additional responsibilities in the area of water sciences, ecology and intersectionality. For further information: <http://unesco.org/dr-peggy-oti-boateng-named-director-at-unesco-the-african-network-of-scientific-and-technological-institutions-ansti/>

Travel grant



Oscar Mbare, a Postdoctoral Research Fellow in the Human Health Theme received a travel award from the American Society of Tropical Medicine and Hygiene (ASTMH). He attended the Society's 2018 annual conference held in New Orleans, Louisiana, USA,

between 27 October– 1 November 2018 and presented a poster titled: Numerous autodissemination are required for use of *Anopheles gambiae* to deliver larvicides to breeding habitats.

Top presentations

Harrison Mburu (MSc, Research on Nematodes), Hillary Kirwa (Behavioural and Chemical Ecology Unit) jointly won the first prize for best student presentation at the Horticultural Association of Kenya Conference in November 2018. Harrison's presentation was entitled: Distribution and characterization of potato cyst nematodes in Nyandarua, Elgeyo Marakwet and Taita Taveta Counties in Kenya. Hillary presented on: Root knot nematode herbivory of tomato *Solanum lycopersicon* is influenced by root exudate chemistry.

IJT changes



Starting on 1 January 2019, *icipe* will hand over the management of the *International Journal of Tropical Insect Science* to the African Association of Insect Scientists. In addition, Springer Nature will become the Journal's new publisher, taking over from Cambridge University Press.

2018 *icipe* Staff Awards

Partner of the Year

Swedish International Development Cooperation Agency (Sida)



Publication of the Year

Nyasembe V.O., Tchouassi D.P., Pirk C.W.W., Sole C.L. and Torto B. (2018) Host plant forensics and olfactory-based detection in Afro-tropical mosquito disease vectors. *PLOS Neglected Tropical Diseases* 12(2), e0006185. <https://doi.org/10.1371/journal.pntd.0006185>.

Principal Staff of the Year



Gatigwa Kimana (left), Director of Finance & Administration (DFA)

Employee of the Year



Philip Kinyua (left), Information and Communication Technology (ICT)

Support Staff of the Year



Robert Weru (right), executive driver in the Director General's Office

Team of the Year



Duduville International Guest Centre (DIGC)

Donor: The Rockefeller Foundation

Project title: Testing business models for Scaling insect-based Protein Feed for use in poultry farming and aquaculture in Kenya (SiPFeed).

icipe researchers: Drs Sunday Ekesi, Chrysantus Tanga and Subramanian Sevgan (Insects for Food and Feed programme); Drs Menale Kassie and Monica Fisher (Social Science and Impact Assessment Unit); Dr Fathiya Khamis (Plant Health Theme); and Saliou Niassy (Technology Transfer Unit).

Collaborators: Dr Jonathan Munguti, Kenya Marine and Fisheries Research Institute; Dr Charles Mwendia, Treasure Feeds Ltd, Kenya; Mr Kirtesh Shah, Sigma Feeds Ltd, Kenya; Dr David Mwangi, Kenya Agricultural and Livestock Research Organization (KALRO).

Donor: International Fund for Agricultural Development (IFAD)

Project title: Alternative Livelihoods for Food and Income Security in four Indian Ocean Island Nations (Mauritius, Seychelles, Comoros and Madagascar) and in Zanzibar (United Republic of Tanzania) phase 2.

icipe researchers: Drs Everlyn Nguku, Kiatoko Nkobo, Michael Lattorff, and Workneh Ayalew (Environmental Health Theme).

Collaborators: Ministry of Agriculture and Husbandry, Madagascar; Ministère de l'Agriculture, de la Pêche, de l'Environnement, de l'Aménagement du Territoire et de l'Urbanisme, Comoros; Ministry of Fisheries and Agriculture, Seychelles; Ministry of Agriculture and Natural Resources, Zanzibar; Ministry of Agro-Industry and Food Security, Agricultural Services Entomology Division, Reduit, Mauritius.

Donor: German Research Foundation (DFG) German African Cooperation Projects in Infectology - 2016/ CHARITÉ – Universitäts medizin Berlin

Project: Identification of virus transmission networks to control key arboviral diseases in Kenya.

Researchers: Rosemary Sang, David P. Tchouassi, Baldwin Torto and Menale Kassie.

Collaborator: Dr. Sandra Junglen, Group leader, Institute of Virology, Charite – Universitäts medizin, Berlin

Donor: Newton Fund Proposal: The Biotechnology and Biological Sciences Research Council (BBSRC), UK, and the National Research Fund (NRF), Kenya

Project title: Enhancing Ruminant Livestock Productivity/University of Liverpool, The role of heartwater (*Ehrlichia ruminantium* infection) and other tick-borne pathogens in Acute Camel Death Syndrome in Kenya.

icipe researcher: Jandouwe Villinger.

Collaborators: Dr Lesley Bell-Sakyi (Principal Investigator, PI), Prof Matthew Baylis and Prof Eric Fevre, University of Liverpool, UK; Dr Esther Kanduma (co-PI) University of Nairobi, Kenya; Dr Joel Bargul, Jomo Kenyatta University of Agriculture and Technology; Dr Naftaly Githaka, International Livestock Research Institute (ILRI); Dr Dino J Martins, Mpala Research Centre; Dr Mario Younan (Veterinary Consultant) and Mr Boku Bodha (Marsabit County Director of Veterinary Services).

Donor: Bill & Melinda Gates Foundation

Project title: A Crowd-Sourcing Approach to Large Scale Monitoring of Pests.

icipe researcher: Dr Menale Kassie, Head, Social Science and Impact Assessment Unit.

Donor: Korea-World Bank Group Partnership Facility

Project title: Africa Regional Scholarship and Innovation Fund for Applied Sciences, Engineering and Technology.

Awarded to *icipe* as the Regional Coordinating Unit.

Donor: The European Commission Directorate for International Cooperation and Development (DEVCO)

Project title: Integrated pest management strategy to counter the threat of invasive fall armyworm to food security in Eastern Africa (FAW-IPM).

icipe researcher: Dr Sevgan Subramanian.

Collaborators: National agricultural research and extension systems, private sector, regional and international organisations.

CAP-Africa inception workshop



icipe and partners held an inception meeting of the Combating Arthropod Pests for Better Health, Food and Resilience to Climate Change (CAP-Africa) project, an initiative funded by the Norwegian Agency for Development Cooperation (Norad). *icipe* will lead CAP-Africa, with partners including: Kenya Medical Research Institute (KEMRI); Kenya Agricultural and Livestock Research Organization (KALRO) and Jomo Kenyatta University of Agriculture and Technology (JKUAT); Mikochei Agricultural Research Institute (MARI) and Tanzania Agricultural Research Institute Tanzania; National Agricultural Research Organisation (NARO); and Norwegian Institute of Bioeconomy Research (NIBIO). To be implemented between 2018 and 2023, CAP-Africa will focus on: Global health – malaria and emerging infectious diseases (in Ethiopia and Kenya); Climate change ecosystem services focusing on invasive species (in Kenya) and climate smart Push-Pull technology (in Kenya, Uganda and Tanzania). Technology transfer, social economic assessment and capacity building will be cross cutting areas of CAP-Africa.

Improving chickpea production



Technologies and strategies being tested by *icipe* and partners over the past two years have demonstrated significant potential in controlling diseases and pests, thereby enhancing productivity of chickpeas in Ethiopia. The production of chickpea, an important crop in the country, is heavily constrained by the pod borer pest, wilt and blight. The approaches introduced by *icipe* include treated and improved pest tolerant chickpea seed varieties and better farming practices like use of raised beds. The research is being conducted within the Rice, Maize and Chickpea IPM for East Africa project, supported by the Feed the Future Collaborative Research on Integrated Pest Management Innovation Lab of the United States Agency for International Development (USAID).

INSFEED Phase II

The second phase of the Insect Feed for Poultry, Fish and Pig Production (INSFEED) in Kenya and Uganda was recently launched. During the first phase, the project researched the nutrition profiles, rearing protocols and production value chains of over 28 insects. The new phase will primarily focus on the black soldier fly, and specifically its maggot, to advance research to enable its commercialisation in Kenya and Uganda. The INSFEED project is supported by Cultivate Africa's Future (CultivAF, Phase 2) initiative, International Development Research Centre by the International Development Research Centre (IDRC), Canada, and Australian Centre for International Agricultural Research (ACIAR).



Multiplying YESH benefits

Bee colony multiplication is becoming a viable, novel source of revenue for youth beekeepers within the Young Entrepreneurs in Silk and Honey (YESH) project in Ethiopia. This function is crucial for the supply of productive and strong bees. Indeed, the absence of quality colony multiplication has been one of the major challenges encountered by commercial beekeepers. The YESH project is supporting nearly 10,000 out-of-school and unemployed youth in commercial beekeeping, helping them to secure land, organising them into enterprises, providing skills in entrepreneurship, beekeeping and sericulture techniques, product handling and postharvest processes, and finance management, starter kits and technical supervision. Colony multiplication training is offered to outstanding beneficiaries who have shown potential in queen rearing and colony splitting practices, and the ability to train to other beekeepers accordingly.



Animal Health Theme scales up

The Animal Health Theme has formed a new collaboration with the Tsetse and Trypanosomiasis Control Unit (TTCU), Department of Veterinary Services, Ministry of fisheries and livestock, Zambia. The new initiative aims to expand research and scale up *icipe* technologies to the Zambian tsetse belt. Dr Joshua Njelemba, an *icipe* African Regional Postgraduate Programme in Insect Science (ARPPIS) alumni and currently Principal Tsetse Biologist, TTCU, is the key contact.

Meanwhile, the Theme has initiated a research and development collaboration project with the regional government of Benishangul-Gumuz, Ethiopia, to find solutions to vector and vector-borne infectious diseases that limit the productivity of livestock in the region. This project will take advantage of *icipe*'s proved integrated vector management technologies for sustainable tsetse and trypanosomiasis, as well as ticks and tick-borne disease management. The activities commenced with a consultative meeting between *icipe* researchers, regional officials and key stakeholders in National Institute of Tsetse & Trypanosomiasis Control and Eradication (NICETT) and the Regional Veterinary Investigation Laboratory.

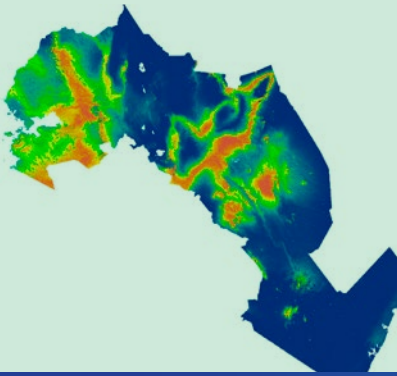


ACT task force

In 2015, the Asian citrus psyllid *Diaphorina citri*, which transmits the devastating Huanglongbing or citrus greening disease, was detected in Tanzania. A year later, *icipe* researchers working within the Strengthening Citrus production systems through the introduction of IPM measures for pests and diseases (SCIPM), detected the same pest in coastal Kenya and Zanzibar. The arrival of this invasive species raised significant concern, as, if uncontrolled it could ruin citrus production in Africa. Indeed, the citrus industry in Florida, USA, is greatly affected by invasion of *D. citri* and citrus greening disease. Now, a pan-African, task force spearheaded by *icipe* has been formed to develop an action plan for the containment and prevention of further spread of the citrus psyllid and Huanglongbing.



ACT remote sensing



A study by *icipe* researchers has identified an appropriate remote sensing model for predicting the distribution as well as areas that are potentially suitable for the African citrus triozid (ACT), which transmits the African citrus greening disease or Huanglongbing. The tool will help to develop distribution prediction maps of the pest, an important strategy for identifying risk zones, understanding risk drivers, and establishing baseline information for effective integrated pest management tools of the pest. The research shows that apart from already established factors like temperature, rainfall and elevation, vegetation patterns and dynamics at landscape level play a key role in influencing vector-host-pathogen transmission and distribution. Therefore, *icipe* intends to undertake further modeling studies on ACT density on a landscape scale. Paper link: <https://www.mdpi.com/2220-9964/7/11/429>

Arboviruses vertical transmission



There is limited understanding about the role of arboviruses passed through mosquito stages, also known as vertical transmission, in maintaining such pathogens within mosquito populations during inter-epidemic periods. *icipe* research has demonstrated this to be possible, and that, as a result, mosquitoes may potentially transmit arboviruses during their first bite after emergence. This vertical transmission stipulates enhanced virus and vector surveillance, even during inter-epidemics, and the study of vector-arbovirus interactions. Paper link: <https://journals.plos.org/plosntds/article?id=10.1371/journal.pntd.0006949>

Mosquito siblings



Most malaria vectors belong to species complexes. Sibling species, or pairs or groups of mosquitoes that are genetically closely related, often exhibit divergent behaviours that, in effect, dictate control measures. Despite their importance in malaria transmission in sub-Saharan Africa, there is limited knowledge regarding sibling species of the *Anopheles funestus* mosquito complex, and their potential to transmit the malaria pathogen. Recent studies by *icipe* have underscored the importance of active mosquito surveillance using molecular approaches to understand parasite-vector associations possibly contributed by cryptic species. Paper link: <https://www.ncbi.nlm.nih.gov/pubmed/30400976>

Netting mites



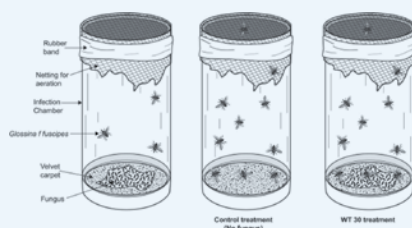
icipe studies have established that acaricide-treated nets are effective in controlling *Tetranychus evansi* and *T. urticae* spider mites, major pests of nightshade (*Solanaceae*). Furthermore, the use of the nets in combination with the predatory mite *Phytoseiulus longipes* that feeds on *T. evansi*, could reduce mite numbers close to zero. Paper link: <https://www.ncbi.nlm.nih.gov/pubmed/30203617>

Beer and black soldier flies



Beer production by-products can be transformed into effective substrates for mass rearing black soldier fly, *Hermetia illucens* Linnaeus. As a result, the flies present great potential for converting such products, which typically end up in uncontrolled dumpsites creating pollution problems. This waste treatment capacity is yet another added benefit of black soldier flies, which have demonstrated great potential as an affordable protein source of animal feed. Paper link: <https://peerj.com/articles/5885/>

Fungi and tsetse



Entomopathogenic fungi can reduce the blood feeding abilities of hematophagous arthropods such as mosquitoes, tsetse flies and ticks, thereby hindering the development and transmission of parasites. Specifically, *Metarhizium anisopliae* ICIZE 30, an isolate developed through the Centre's research has significant impact on *Glossina fuscipes fuscipes* tsetse species and their ability to harbour and transmit *Trypanosoma congolense* parasite. Paper link: <https://www.ncbi.nlm.nih.gov/pubmed/30470175>



Dr Yves Guinand
Swiss Agency for Development and Cooperation

More than 20 years of Swiss support to *icipe* one of the most trusted and respected research for development institutions in Africa

For more than 20 years, the Swiss Agency for Development and Cooperation (SDC) has supported *icipe*'s research for development efforts, for the successful implementation of the Centre's strategic plans. SDC considers *icipe*'s strategic and development-oriented research crucial for Africa's development. The Centre delivers world-quality science, contributes to regional and national food and health policies and produces biological products that help smallholder farmers to obtain better crop harvests.

icipe was one of the first international research centres to be established in the developing world, with the mission of undertaking applied research. The Centre has remained active in its outreach to farmers on globally important issues such as combatting malaria, tsetse flies, fruit flies, and the recently introduced and devastating fall armyworm infestation, while also conducting research on beneficial insects like bees and silkworms.

Swiss funds invested in *icipe*'s progressive applied research are well invested because they contribute to SDC's poverty oriented development efforts for smallholder farmers. SDC's reliable and sustained support has contributed to *icipe* becoming one of the most trusted and respected research for development institutions that African governments and international development organisations, United Nation agencies and others look to for advice on insect-related matters for food security and health issues.

icipe's initiatives to build consortiums with other research institutions like the International Institute of Tropical Agriculture (IITA) and the Center for Agriculture and Bioscience International (CABI) to contribute to the elaboration of continental strategies to fight invasive species like the fall armyworm, are commendable. Currently, the fall armyworm has spread to at least 43 African countries and devastates major food staple crop maize and other cereal crops placing at risk the food security and the livelihoods of around 300 million people.

Personally, I appreciate and value most one of *icipe*'s flagship research for development initiatives: the fruit fly integrated pest management programme, which includes the development of an affordable biopesticide for smallholder farmers. In Africa, fruit flies cause annual losses of fruits and vegetables worth USD 2 billion. The direct damage to horticulture farmers are 30 to 100% of fruits destroyed. *icipe* managed to develop a biopesticide that lowers fruit fly damage to fruit production from well over 50%, for example for mango, to an acceptable level of 5% damage. *icipe* started a

partnership with a Kenya-based enterprise to produce locally Fruitfly Mania™, a biopesticide produced through *icipe* research. The local production of the biopesticide will make it more accessible and available to fruit and vegetable growers in the region. Once Fruitfly Mania™ is registered in Uganda and Tanzania, an additional 400,000 mango growers will be able to benefit. Furthermore, Fruitfly Mania™ costs 70% less than other commercially available fruit fly pesticides, and it is therefore affordable to SDC's most important target group, smallholder farmers.

Besides being an innovative, unique and successful strategic research institution based in Kenya, *icipe* also cares for its environment and proposes innovative ways to fight climate change in its day-to-day activities and address constraints such as irregular power supply and water availability in all its campuses. SDC welcomed the Greening of



Participants of an invasive species workshop co-organised by *icipe*, the International Institute of Tropical Agriculture (IITA) and CABI, with support from the Swiss Development Cooperation (SDC) in early 2018.



Fruitfly Mania™ produced and packaged at the newly launched Fruit Fly Protein Bait Facility will cost 70% less than other commercially available products in the market.

icipe initiative, which allowed the reduction of energy consumption by means of intelligent energy saving measures, sustainable energy supply and reduction of diesel fuel dependency by using solar photovoltaic systems and solar thermal systems, and the reduction of clean water consumption by using rainwater as well as water conservation.

The photovoltaic power plants installed at *icipe*'s various locations are actually amongst the largest of their kind in Kenya. They save the Centre up to 40% of current electricity costs. This SDC contribution is very "un-Swiss" (SDC usually prefers to support "software" components such as capacity and institution building, or training and research, rather than costly hardware), but this investment has been well worth the risk. The project has actually triggered the development and implementation of similar and even bigger solar power projects in Kenya and hence created, among other positive side effects, job opportunities and work for a number of affiliated local companies and their Kenyan staff. Hence, *icipe*'s water and energy saving measures initiative allows solar power and its climate friendly industry a memorable breakthrough in Kenya.

The specific examples of *icipe*'s innovative and creative power discussed above more than justify why SDC has over all these years supported, and continues to support *icipe* in its efforts for sustainable, affordable, climate friendly and ecological solutions that benefit first and foremost smallholder farmers and their families in Africa. Through the long-term strategic investments supporting the work of *icipe*, SDC contributes to building a strong and highly competitive research for development organization that is contributing to the efforts of Africa's development.

SDC in Africa:

Swiss international cooperation, which is an integral part of the Swiss Federal Council's foreign policy, aims to contribute to a world without poverty and in peace, for sustainable development. It fosters economic self-reliance and state autonomy, contributes to the improvement of production conditions, helps address environmental problems, and ensures better access to education and basic healthcare services.

International cooperation for the 2017–20 period pursues seven strategic goals:

- Contribute to developing an international framework that responds to global challenges
- Prevent and manage the consequences of crises, disasters and fragility, and promote conflict transformation
- Ensure sustainable access to resources and services for all
- Promote sustainable economic growth
- Strengthen the rule of law and democratic participation while supporting institutions that serve society and the economy
- Respect and promote human rights and fundamental freedoms
- Strengthen gender equality and the rights of women and girls

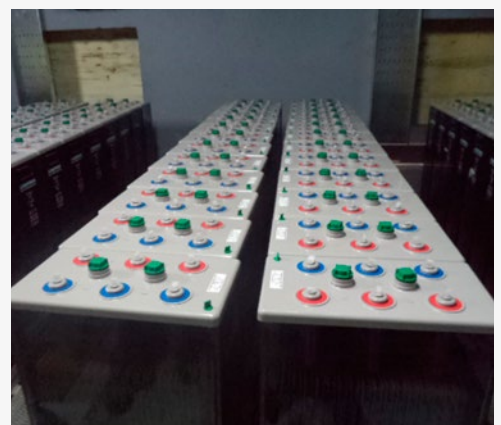
SDC Research objective

The main objective of research within the context of Swiss international cooperation is to produce new findings and innovative approaches as well as to enable the use and dissemination of scientific knowledge to the benefit of the people in poverty-stricken and developing regions.

Webpage: <https://www.eda.admin.ch/deza/en/home.html>



Pictured during the launch of the *icipe* solar plants (l-r): Mr Gatigwa Kimana, Director of Finance and Administration, *icipe*; Dr Daniel Davies, General Manager, Solarcentury Africa; Mr Donald Kaniaru, Member, *icipe* Governing Council; Dr Yves Guinand, Senior Thematic Advisor Rural Development, Federal Department of Foreign Affairs, Swiss Agency for Development and Cooperation (SDC); Dr Segenet Kelemu, Director General, *icipe*; Eng. Samson Kasanga, Deputy Director in charge of Solar Unit, Ministry of Energy, Kenya, representing the Cabinet Secretary; Dr Thomas Oertle, Head of Cooperation, Embassy of Switzerland in Kenya.



icipe has signed an agreement with the Pan African Regional Scholarship and Innovation Fund (RSIF), one of the flagship programs of the Partnership for skills in Applied Sciences, Engineering and Technology (PASET) for the Centre to administer the Pan African Regional Scholarship and Innovation Fund (RSIF). The occasion also marked the launch of the new phase of RSIF, one of the flagship programmes of PASET; and the recognition of a contribution from the Government of Korea to RSIF.



L-R: Hon. Amb. (Dr.) Amina Mohamed, Chairperson of the PASET Governing Council and *icipe* Director General & CEO, Dr Segenet Kelemu.



Ms Dahee Song, First Secretary and Consul, Embassy of the Republic of Korea in Kenya.



Dr Roy Steiner (left), Managing Director Food, The Rockefeller Foundation, during a visit to *icipe*, in discussions with Dr Chrysantus Tanga, scientist, and Faith Nyamu, technician on insects for food and feed.



Dr Eddi Michel (second right), President Director General, CIRAD visited *icipe* for discussions regarding on going collaborations.



Dr Duncan Barker (second left), Livelihoods Adviser, Agriculture Research Team, Department for International Development (DFID) visited *icipe* for discussions with the Director General, Director of Research and Partnerships, Director of Finance and Administration and various scientists.

icipe trainings

Part of *icipe*'s mandate is to increase the capacity of diverse stakeholders to contribute to the production and use of scientific knowledge and technologies. Each year, the Centre conducts numerous courses, workshops and other training events for scholars, researchers, farmers and extension workers, and other stakeholders. In the recent past, the following events have been held by the Centre and partners, leading to the training of 41,000 people.

Title: Push-Pull technology trainings

Facilitators: *icipe* Technology Transfer Unit

Participants: 27,916 (13,954 women, 13,962 men).

Funding: Push-Pull sub-Saharan Africa project, funded by Biovision Foundation for Ecological Development, Switzerland.



Title: Community-based Fall Armyworm Monitoring, Forecasting, Early Warning and Management (CBFAMFEW)

Facilitators: TTU and *icipe* Uganda Office.

Participants: 1,037.

Countries represented: Burundi, Rwanda, Uganda.

Funding: Food and Agriculture Organization of the United Nations (FAO) and the United States Agency for International Development.



Title: Science writing and publishing workshop

Facilitator: African Population and Health Research Centre (APHRC).

Participants: 20 (11 women, 9 men)

Countries represented: Kenya, Nigeria, Rwanda, Uganda, Zimbabwe.

Funding: *icipe* core funds.



Title: Vector ecology and disease workshop

Facilitators: *icipe*, Kenya, University of Nairobi, Kenya, and the Kenya Medical Research Institute (KEMRI), and Ohio State University, USA.

Participants: 30 (9 women, 21 men)

Countries represented: Burundi, Cameroon, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, Uganda, Zimbabwe.

Funding: THRiVE consortium (through the Developing Excellence in Leadership, Training and Science – DELTAS, Africa programme funded by the Wellcome Trust, UK, through the African Academy of Sciences), *icipe* core funds, Ohio State University.



Title: Rearing of Afrotropical stingless bee

Facilitators: Bee Health programme team.

Participants: 15 (2 women, 13 men)

Countries represented: Democratic Republic of Congo, Ethiopia, Gabon, Kenya.

Funding: Bayer Bee care.



Title: Planning, monitoring, evaluation and learning training workshop

Facilitators: Dr Michael Mukembo Kidoido and Dr Menale Kassie, Social Science and Impact Assessment Unit.

Participants: 28 (7 women, 21 men)

Countries represented: Ethiopia, Cameroon, Uganda, Kenya, Togo, Malawi, Sudan

Funding: *icipe* core funds



Title: Australia Awards Africa Short Course

Facilitators: *icipe* researchers.

Participants: 30 (15 women and 15 men).

Countries represented: Botswana, Cameroon, Ethiopia, Ghana, Kenya, Madagascar, Nigeria, Rwanda, South Africa, South Sudan, Uganda, Zambia, Zimbabwe.

Funding: Department of Foreign Affairs and Trade, Government of Australia.



Title: 9th training course on planning execution of Pan African Tsetse and Trypanosomiasis Eradication Campaign (PATTEC)

Organiser: the African Union (AU)-PATTEC Coordination Unit.

Participants: 21 (4 women, 17 men)

Countries represented: Ethiopia, Ghana, Kenya, Malawi, Mozambique, Rwanda, South Sudan, Tanzania, Uganda, Zambia and Zimbabwe.



Title: Integrated vector management model training

Facilitators: Santiago Blanco, Millennium Institute, Washington DC, USA; and Dr Charles Mbogo, *icipe*/KEMRI integrated vector management (IVM)/Malaria programme.

Participants: 20 (women, men).

Countries represented: Kenya.



Title: Beekeeping and sericulture technical skills; entrepreneurship and life skills development for beneficiaries of the Young Entrepreneurs in Silk and Honey (YESH) project

Participants: 11,000 (women, 4,182, men 6,818)

Facilitators:

Countries represented: Ethiopia

Funding: Mastercard Foundation



Title: Honeybee biosecurity and epidemio-surveillance of bee pests and diseases, Training of the OIE National Focal Points for Wildlife (Cycle V) within the OIE Regional Workshop.

Facilitator: Michael Lattorff (training), Facilitator of the whole workshop was the OIE Sub-Regional Representative for Southern Africa.

Countries represented: Afghanistan, Angola, Botswana, Egypt, Eswatini, Libya, Lesotho, Lebanon, Mauritius, Namibia, Malawi, Mozambique, Iran, Jordan, Sierra Leone, Zimbabwe, Zambia, Uganda, Somalia, Sudan, South Sudan, South Africa.

Participants: 22 (5 women, 7 men).

Funding: West African Health Organization (WAHO), European Union, the Government of Italy, with the support from the Government of Botswana.



Title: Integrated vector management model training

Facilitators: Santiago Blanco, Millennium Institute, Washington DC, USA; and Dr Charles Mbogo, *icipe*/KEMRI integrated vector management (IVM)/Malaria programme.

Participants: 20.

Countries represented: Kenya.



Title: BiInnovate Africa bio-business boot camp

Facilitator: Ms Kanana Mwti-Njuguna, Growth Africa, Mr Aizer Mugahed – Golden Africa Limited and Ms Anna Othoro, Valentis Health Limited.

Participants: 25 (9 women, 16 men).

Countries represented: Uganda, Kenya, Tanzania, India, Britain, Zimbabwe.

Funding: Swedish International Development Cooperation Agency (Sida).



Title: BiInnovate incubation model development workshop

Facilitator: Dr Jesper Vasell, Consultant, Chalmers University.

Participants: 19 (1 woman, 18 men).

Countries represented: Kenya, Ethiopia, Tanzania, Uganda

Funding: Sida.



Title: Open science training

Organiser: Mozilla and H3ABioNet in collaboration with SageBionetworks.

Facilitators: Dr Daniel Masiga and Dr Caleb Kibet, *icipe*; Amel Ghouila, Institut Pasteur de Tunis, Tunisia; Ziyaad Parker, University of Cape Town, South Africa; Brian Michael Bot, Sage Bionetworks, USA.

Participants: 25.

Funding: Biovision Foundation.



Title: Training of trainers (ToT) course on fruit flies taxonomy, monitoring and management:

Participants: 295 (92 women, 203 men).

Countries represented: Kenya, Zanzibar, Tanzania.



Title: Basic Crash Course in Nematology (BCCN) (in the frame of VLIR-UOS ICP Nematology 2017 – 2021)

Co-organisers: *icipe*, International Institute of Tropical Agriculture (IITA), International Master of Science in Agro- and Environmental Nematology Ghent University.

Participants: 15 (11 women, 4 men).

Facilitators: Dr Solveig Haukeland, *icipe*; Drs Laura Cortada and Danny Coyne, IITA; George Ngundo, KEPHIS; Vitallis Wekesa, Dudutech.

Countries represented: Kenya, Tanzania, Senegal, Rwanda, Uganda, Nigeria, Madagascar.

Funding: Ghent University, VLIR-UOS, Belgium.



Title: Beekeeping Fall Armyworm training within the Adaptation for Food Security and Ecosystem Resilience in Africa (AFERIA)

Participants: 91 (32 women, 59 men).

Facilitators: Technology Transfer Unit
Countries represented: Kenya, Tanzania.

Funding: Ministry for Foreign Affairs of Finland.



Title: Diptera identification and field and laboratory techniques

Participants: 14.

Funding: JRS Biodiversity Foundation through a grant for the Afrotropical Diptera Pollinator Information Network.

Title: Potato cyst nematode (PCN) training of trainers

Participants: 107 (48 women, 52 men).

Facilitators: Dr Solveig Haukeland, Ms Miriam Kung'u.

Countries represented: Kenya.

Funding: BMZ/GIZ.



New staff



Dr Holger Kirscht joins *icipe* as an Integrated Gender Expert in the Social Science and Impact Assessment (SSIA) Unit. Holger holds a PhD and an MSc in Social Anthropology from Johann Wolfgang Goethe University, Frankfurt. Previously, he was an Advisor at the Advisory Service on Agricultural Research for Development (BEAF), of the German Federal Ministry for Economic Cooperation and Development (GIZ), Bonn, Germany. Prior to this, Holger served as a social scientist at the International Institute of Tropical Agriculture (IITA), Cameroon, and as a gender focal point for the Humidtropics CGIAR Research Program (CRP) that was led by IITA, and for the Roots, Tubers and Bananas CRP. He has also developed and managed research projects including the development of gender trainings. He is a member of the CGIAR Gender Research Network.



Dr Theresia Estomih Nkya joins *icipe* as a Postdoctoral Research Fellow, in the World Health Organization-Africa Regional Office (WHO-AFRO II) Integrated Vector Management for Malaria Control project, which focuses on southern Africa. Dr Nkya holds a PhD in Medical Entomology from Tumaini University Makumira-Kilimanjaro Christian Medical University College; a MSc in Parasitology and Medical Entomology from Muhimbili University of Health and Allied Sciences, Tanzania; and a BSc in Biology from Texas Southern University, Houston, Texas. Prior to join *icipe*, she was a Principal Research Scientist at the National Institute for Medical Research, Amani Centre, Muheza, Tanzania. She also served as a Project Coordinator for the The United States Agency for International Development/President's Malaria Initiative (USAID/PMI) funded programme – Detection and Monitoring of Insecticide Resistance in Tanzania. Theresia has also worked as a Facilitator and Lecturer at Muhimbili University of Health and Allied Sciences.

Fare thee well



Dr Sizah Mwalusepo, a Postdoctoral Fellow in the *icipe* Geoinformation Unit passed away in November 2018. A Tanzanian national, Sizah joined *icipe* in 2012 as a PhD scholar hosted by the Climate Change Impacts on Ecosystem Services and Food Security in Eastern Africa (CHIESA), while registered at the University of Dar es Salaam, Tanzania. His thesis was titled: Climate change induced life history changes among stemborer pest communities and their main natural enemies *Cotesia* spp. along altitudinal gradient in Mt. Kilimanjaro, Tanzania and Taita Hills, Kenya. After obtaining his doctorate in 2014, Sizah was awarded a Postdoctoral Fellowship at *icipe* in 2015, a position he held until his untimely demise. In addition to continuing his own research, Sizah was extremely committed to training young scholars in modelling. The *icipe* community will remember Sizah as a highly dedicated, motivated, prolific, kind hearted colleague and friend; a dynamic scientist that we were all privileged to know.

icipe gratefully acknowledges the financial support of the following organisations and agencies

Core donors

- Swiss Agency for Development and Cooperation (SDC), Switzerland
- Swedish International Development Cooperation Agency (Sida), Sweden
- UK Aid, Government of the United Kingdom
- Ministry of Higher Education, Science and Technology, Kenya
- Government of the Federal Democratic Republic of Ethiopia

Restricted project donors

- African Union
- African Women in Agricultural Research and Development (AWARD)
- AIRD (French Inter-institution Agency for Research and Development)
- Bill and Melinda Gates
- Bioinnovate Africa Programme
- Biotechnology and Biological Sciences Research Council, UK, through Rothamsted Research, UK
- Bayer: Science For A Better Life
- Biovision Africa Trust
- Biovision Foundation for Ecological Development, Switzerland
- Canadian Government through International Development Research Centre (IDRC)
- CIRAD – Agricultural Research for Development, France
- Cultivate Africa's Future (CultiAF) through International Development Research Centre (IDRC)/Australian Centre for International Agricultural Research (ACIAR)
- European Union
- Federal Ministry for Economic Cooperation and Development (BMZ), Germany
- Food and Agriculture Organization of the United Nations (FAO)
- German Academic Exchange Service (DAAD)
- Deutsche Forschungsgemeinschaft (DFG)
- Global Environment Facility (GEF)/United Nations Environment Programme (UNEP)
- Government of South Korea
- Grand Challenges Canada (GCC)
- Innovative Vector Control Consortium (IVCC), through Wageningen University
- International Atomic Energy Agency (IAEA)
- International Centre for Genetic Engineering and Biotechnology (ICGEB)
- International Fund for Agricultural Development (IFAD)
- IRD, Institut de Recherche pour le Développement, France
- JRS Biodiversity Foundation, directly and through Royal Museum for Central Africa (RMCA)
- Korean Government
- Liechtenstein Development Service (LED), Principality of Liechtenstein
- Max Planck Institute
- Medical Research Council, UK
- Ministry for Foreign Affairs of Finland
- National Geographic Society
- National Research Fund, Kenya
- Netherlands Organisation for Scientific Research (NWO)
- Newton Fund
- Norwegian Agency for Development Cooperation (NORAD)
- The governments of Ivory Coast, Malawi, Mozambique, Rwanda, Senegal and Tanzania
- R. Geigy Foundation, Switzerland
- Research Institute of Organic Agriculture (FiBL), Switzerland
- Russell IPM Ltd, UK
- Scottish Funding Council through University of Glasgow
- Swedish Research Council through the Kungliga Tekniska Högskolan (KTH)
- Swedish University of Agricultural Sciences (SLU)
- Swiss National Science Foundation (SNSF)
- SWITCH Africa Green
- Mastercard Foundation, Canada
- The Rockefeller Foundation
- The Volkswagen Foundation, Germany
- The World Bank
- United Nations Environmental Programme (UNEP)
- USAID—United States Agency for International Development's IPM Innovation Lab (Feed The Future Innovation Lab for Integrated Pest Management) of Virginia Tech, USA
- United States Agency for International Development Partnerships for Enhanced Engagement in Research (USAID-PEER) Science program with funding from National Academy of Sciences (NAS)
- United States Department of Agriculture (USDA)
- United States National Institutes of Health (NIH)
- United States National Science Foundation (NSF)
- Wellcome Trust, UK
- World Federation of Scientists through the ICSC-World Laboratory
- World Health Organization
- World Trade Organization (WTO) – Enhanced Integrated Framework (EIF)

In realising its mission, *icipe* also benefits from extensive partnerships with research partners (including universities and research institutes in Africa and beyond), private sector partners, and communities across Africa.

For more information on these and other topics, please visit our

Website: <http://www.icipe.org> or contact us through our

Email address: icipe@icipe.org

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