



From the chair of the Sponsoring Group of *icipe*

Dear colleagues and friends of *icipe*,

icipe continues to prosper and is strengthening its team to help realise the Centre's strategic objectives. It is a future that has been envisioned since *icipe*'s founding more than 40 years ago, and which has been accelerating toward becoming a reality with each passing year.

As the keynote speaker at Africa Day in May, organized by the World Academy of Sciences in partnership with the Ministry of Foreign Affairs of Italy, the Director General of *icipe*, Dr Segenet Kelemu, told a packed audience of international diplomats and policymakers in Rome that science and education hold the key to Africa's sustainable economic growth and development.

This same message was given by African Union Chairperson Madam Nkosazana Dlamini-Zuma, who told a recent meeting of the AU Heads of State Government that "modernisation and the use of science and technology will not only help to address productivity, but also build resilience against climate change".

Yet there is still progress to be made, and this is where *icipe* plays a crucial role. Echoing the words of *icipe* founder Thomas Odhiambo's letter to *Science* in 1967, a group of the Centre's current and former lead scientists recently published an article in *PLoS Neglected Tropical Diseases* celebrating the Centre's "footprint" in Africa, and the foundation that has been laid for African science to really start to make a difference. "To get here, a point at which talk of elimination and eradication of some Neglected Tropical Diseases is possible, has taken years of building African capacity, with considerable support from donors, institutions and individuals," they wrote.

icipe currently hosts 118 PhD and Master's students from 14 countries through the ARPPIS and DRIP programmes. They're a strong cohort, who recently organised their own *icipe* Scholars' Day to foster closer ties between students and their mentors. They will add to the capacity of the continent, as each entering class has done for decades, and they will continue to serve African science much like their predecessors.

In recent months, I'm pleased to note that *icipe* has invited many donors to meet the scientists and hear what their support allows *icipe* to achieve. Through local partnerships, *icipe*'s work is making a real difference, as the Centre scales up its work, putting tangible technologies in farmers' hands.

Dr Gity Behravan
Chair of the Sponsoring Group for *icipe*
Senior Research Advisor/First Secretary: Regional Research Cooperation,
Embassy of Sweden in Kenya

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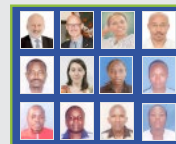
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Publications: tsetse fly genome, disease-resistant African bees, protecting maize crops and focusing on neglected tropical diseases



Staff news: awards and recognition for Council members, and welcoming new staff to *icipe*

icipe by the numbers — Since November 2013, *icipe* has:

Secured more than **USD 18 million** in new funding

\$18m

mobilized more than **USD 50 million** in additional pipeline funding

\$50m

Supervised **118** graduate students

118

Published **72** peer-reviewed papers

72

Reared more than **2 million** silkworms

2m

Installed solar-powered mosquito traps in **1300** more homes on Rusinga Island

1300





Insects to Feed the World: *icipe*'s lead in edible insect research in Africa

Insects hold huge potential to address food and nutritional security issues, with a global push to explore their use as food for humans and as feed for animals.

In May, 450 people from 45 countries came together in The Netherlands for [Insects to Feed the World](#), the first major international conference on edible insects.

Entomophagy (the practice of consuming insects) is common in Africa, Asia and South America, with more than 2 billion people worldwide reporting to have eaten some 2000 different insect species. They are an important source of protein and offer a sustainable, ecologically-friendly way to feed a growing population and boost incomes by diversifying farming activities.

However, to make insects a viable source of food and feed, research for development (R4D) activities must address the entire edible insect value chain, from production to legislation to consumer attitudes.

icipe Director General Segenet Kelemu addressed the meeting, highlighting how the Centre is strategically placed to lead R4D on raising insects for food and feed in Africa.

The Centre already produces a variety of insects, including crickets, grasshoppers, black soldier flies and silkworms, and has the facilities to measure the nutritional content of insects and to analyse food safety-related issues. We have also developed a comprehensive framework to guide our R4D activities.

icipe is also part of a global consortium, [GREEINSECT](#), which aims to investigate the use of edible insects as a new, sustainable source of food and feed. It will contribute to a greener economy in Africa through research and capacity building, bringing together research organisations, the private sector and government to build sustainable frameworks for insect farming.

Dr Sunday Ekesi, head of our Edible Insects programme, sits on the editorial board of the new [Journal of Insects as Food and Feed](#).



No conference would be complete without some insect-based snacks
Photo: *icipe*

launched at the conference. The first issue is expected in January 2015.

The conference was co-organised by Wageningen University and the Food and Agriculture Organization of the United Nations.

Read more about the conference at:

<http://www.fao.org/forestry/edibleinsects/86385/en/>

<http://www.wageningenur.nl/en/show/Insects-to-feed-the-world.htm>

Help *icipe* take an inventory of the world's edible insects:

<http://www.icipe.org/edibleinsectsurvey/>

Silkworms: a path out of poverty for rural women

Silk is high on Kenya's development agenda. As the government works to rejuvenate the nation's textile industry, silk has been identified as a product that can help farmers diversify their income.

icipe is working with a consortium of local and international research groups to explore the potential of silk farming in Kenya, which led to a recent visit by the group Joyful Women Organization, led by their patron, Her Excellency Rachel Ruto, Kenya's Second Lady.

This Kenyan NGO looks for opportunities to support women's livelihoods, and they wanted to understand how *icipe*'s silk farming programmes could be shared with local women's groups across Kenya.

Dr Everlyn Nguku, from our Commercial Insects programme, took them through the whole process – from silkworm rearing to silk fabric weaving – which all takes place on the *icipe* campus in Nairobi. The facilities at *icipe* are used to train farmers' groups in sericulture.

Joyful Women have since approached [microfinance network Kiva](#)

with a proposal to support small loans for local women's groups across Kenya to buy the equipment they need to start rearing silkworms and spinning their own silk.



Mulberry leaves: the main source of silkworm sustenance
(L-R) Daisy Waimiri, founder of 'village banking' organization Maono, Dr. Segenet Kelemu, H.E. Rachel Ruto, Dr. Everlyn Nguku
Photo: *icipe*





Celebrating the diversity of *icipe*'s students at the first *icipe* Scholars' Day

With 118 graduate students from 14 countries studying at *icipe*, our scholars are a huge part of the *icipe* community, and it's important that they feel that they are part of a close-knit community, despite their diversity.

So, on 29th April, the students organised the first *icipe* Scholars' Day – a day to celebrate and share something of their work and their culture.

"We wanted to showcase the richness and diversity of cultures of *icipe*'s scholars, and to enhance the interaction among students, *icipe* supervisors and staff," said Yvonne Ajamma, a Nigerian and president of the *icipe* Scholars' Association.

Students from each of *icipe*'s divisions shared their work, with the challenge of describing their PhD research in just one slide.

The students shared a little of their culture through slides and short stories, and ended the event with a potluck lunch of local dishes from across Africa.

The *icipe* Scholars' Association would like to thank students Bridget Bobadoye and Eunice Owino for their work in organising the event, Amel Bela for inviting her country's ambassador (the Ambassador of Sudan) and his wife, and Ruth Wekesa from the Duduville International Guest Centre for her assistance.



icipe's scholars are a diverse group, but they have worked hard to form a close-knit community. The Republic of Sudan's Ambassador Osama Ahmed Abdul Bari and his wife Hanadi Hassan Ali were the guests of honor



Yvonne Njamma, from Nigeria; Nduta Mwangi, from Kenya; Marycelin Baba, from Nigeria
Photos: *icipe*





Welcoming donors to *icipe* to share in our combined success

In May, we extended an invitation to our donors to join us for a day at *icipe* to show how their support is making a difference.

Delegates from 11 donor agencies, as well as Kenyan journalists, were able to get a taste of *icipe*'s work from our lead scientists and students, with presentations from each of our 4-H themes (animal, plant, human and environmental health) plus the capacity building team.

They heard about:

■ how bee die-offs are threatening food security, and how beekeeping can help to ensure pollination for crops and benefit resource-poor communities across Kenya

■ the impact of fruit fly infestations on trade and food security, and how integrated pest management can reduce pests without chemical pesticides

■ tsetse fly collars, which are protecting pastoralists' cattle herds in the Shimba Hills area from trypanosomosis, the debilitating and eventually fatal disease the flies carry

■ controlling malaria with integrated vector management by preventing bites and interrupting the mosquito life cycle

■ how our studies of silkworms have led to improvements right through the silk value chain, from caterpillar to silk scarves



(L-R) Dr Sunday Ekesi explains fruit fly pest management to representatives from the Swedish Embassy: Dr Gity Behravan (centre), Dr Duncan Marigi (centre) and Dr Elphas Ojiambo; Dr Zeyaur Khan speaks with Biovision's CEO Andreas Schriber about how push-pull technology protects crops; Dr. Gity Behravan, also Chair of the Sponsoring Group of *icipe* (SGI), takes a close-up look at varroa mites, a bee pest, under the microscope



(L-R) The Swiss Agency for Development Cooperation's Ines Islamshah speaks with Sarah Achola and Sizah Mwalusepo of the CHIESA (Climate Change Impacts on Ecosystem Services and Food Security in Eastern Africa) team; Marita Dieling, Executive Secretary of AIRCA with Biovision CEO Andreas Schriber; Dr. David Amudavi (right) explains Biovision's Farmer Communication work to Paul Greener of the Australian High Commission, with John Cheburet, programme manager for the Organic Farmer's radio outreach (TOF Radio)

Photos: *icipe*

Guests on the day included:

- Dr Gity Behravan, current Chair of the Sponsoring Group of *icipe* (SGI) and colleagues Dr Duncan Marigi and Dr Elphas Ojiambo from the Swedish International Development Cooperation (Sida)
- Ambassador Mr Shemsudin Ahmed Roble, from the Embassy of the Federal Democratic Republic of Ethiopia
- Ms Liz Ogutu, Regional Manager at the Australian Centre for International Agricultural Research (ACIAR)
- Mrs Ines Islamshah, Development Consultant at the Swiss Agency for Development and Cooperation (SDC)
- Mr Andreas Schriber, CEO of the Biovision Foundation for Ecological Development
- Dr Simon Carter, Regional Director for Sub-Saharan Africa and Dr Pascal Sanginga, Senior Program Specialist, from the International Development Research Centre (IDRC)
- Dr Paul Greener, Agricultural Productivity and Markets Specialist from the Australian High Commission in Kenya
- Dr Joerg Lohmann, Manager, Technology Transfer, Rural Development and Agriculture from GIZ, the main implementing agency for German development cooperation





Science for sustainable development: Segenet Kelemu addresses diplomats and scientists in Rome



Dr Segenet Kelemu

Africa Day, held 27 May in Rome at the Italian Ministry of Foreign Affairs in partnership with the Trieste-based World Academy of Sciences, brought together scientists and policymakers from Europe and Africa to share thoughts on scientific cooperation for development.

icipe Director General Segenet Kelemu was invited to speak. She told the room, which included Italy's Foreign Minister Federica Mogherini and TWAS Executive Director Romain

Murenzi, that science is the key to sustainable development, not just in terms of research outcomes, but also in the employment opportunities a strong research sector creates.

Kelemu stressed that investment in science education and capacity building is crucial to Africa's development.

Read more about Africa Day at: <http://www.twas.org/article/italy-africa-day-2014>

PUBLICATIONS

The tsetse fly genome mapped: what next?

In April, an international team of researchers including *icipe* published the [complete genetic map of the tsetse fly](#), the blood-sucking insect that transmits African sleeping sickness in humans and trypanosomiasis, also called nagana, in animals.

Since then, researchers at *icipe* have been working to unravel the fly's genetic secrets.

Dr Dan Masiga, from the Molecular Biology and Bioinformatics Unit, last month published a paper in *PLOS ONE* explaining how we're using the tsetse fly genome to make new connections in our understanding of the deadly flies.

His team are comparing the gene sequence with what we already know about tsetse flies from a century or more of study, and comparing it with the genome of other well-studied insects, like mosquitoes and fruit flies.

He is working to confirm the genetic basis of certain tsetse fly behaviours, to use that knowledge to find new ways to control them.

For example, tsetse flies seem to be attracted to the colour blue, which is used to attract them into traps. In the genome sequence the team found genes which code for the protein opsin Rh5, which is linked to the blue-sensitive photoreceptor R8p.

The team also found genes which code for odour and taste receptors, which could help us find odorant and gustatory cues (smells and tastes) that can be used to attract or repel the flies.



Approximately 70 million people in 36 African countries are at risk of sleeping sickness, which is transmitted by tsetse flies
Photo: *icipe*

Besides teaching us more about these deadly flies, this work also lays the way for using genome data to make new discoveries about thousands of other insects.

By solidifying our understanding of the way the tsetse fly's genes influence its behaviour, Masiga hopes to validate these techniques, which will be increasingly valuable as the [i5k project](#) works to sequence the genomes of 5,000 insects of medical and agricultural importance.

Read the paper in *PLOS ONE* at: <http://www.plosntds.org/article/info%3Adoi%2F10.1371%2Fjournal.pntd.0002663>

icipe positioned to lead Africa's push to eradicate neglected diseases

Top current and former scientists at *icipe* have underlined that the Centre, with decades of trailblazing scientific research and home-grown capacity building in Africa, should lead African science in combating the continent's neglected yet still devastating load of tropical diseases.

In an article published in the journal *PLOS Neglected Tropical Diseases (NTDs)*, the scientists outline *icipe*'s history from 1970 until

today. *icipe*-trained scientists now form a critical mass of expertise across Africa on NTDs. In addition, since its founding, *icipe* has published more than 200 papers in peer-reviewed journals on NTDs.

The authors state that while increased attention could mean diseases such as trypanosomiasis and Rift Valley fever could soon mean they are no longer 'neglected,' they state, "to get here, a point at which

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PUBLICATIONS

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talk of elimination and eradication of some NTDs is possible, has taken years of building African capacity, with considerable support from donors, institutions and individuals.”

As a result, *icipe* is a uniquely placed world-class research institute, one that continues to build endogenous capacity for managing NTDs in Africa.

Read their article at: <http://www.plosntds.org/article/info%3Adoi%2F10.1371%2Fjournal.pntd.0002687#s1>



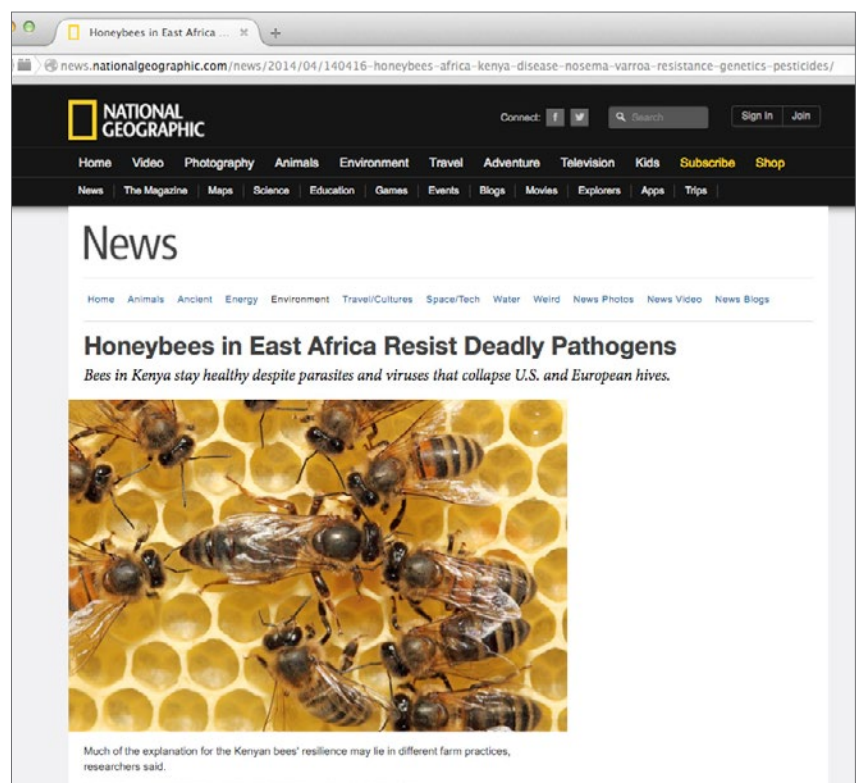
icipe has trained more than 300 researchers since 1983
Photo: *icipe*

Hardier African honey bees could harbour ‘novel resistance’ to bee diseases

In work featured by *National Geographic*, *icipe* researchers have found that African honey bees remain unaffected by a number of diseases that have been linked to significant colony losses in the United States and Europe, raising the prospect that African honey bees may possess ‘novel resistance mechanisms’ to disease that warrant further investigation.

The joint study, published in *PLOS ONE* by *icipe* and the Pennsylvania State University Center for Pollinator Research suggests that honey bee populations in East Africa appear to be largely resistant or tolerant of the parasites and pathogens that threaten honey bee populations in other parts of the world, and are not yet significantly impacted by other stressors, such as exposure to environmental toxins

Read more about this work in *National Geographic*: <http://news.nationalgeographic.com/news/2014/04/140416-honeybees-africa-kenya-disease-nosema-varroa-resistance-genetics-pesticides/>



New maize storage bags to protect against insects and deadly fungal poisoning

icipe scientists have started field trials of a new crop storage bag that they hope will prevent post-harvest losses: insects devouring families’ food supplies and deaths due to poisoning by a deadly fungus that can proliferate in bags that are traditionally used to store grain and legumes.

The triple-layered, tough plastic bags, designed at U.S.-based Purdue University, are already being used to protect cowpea crops in West Africa from insects.

The *icipe* team hope the airtight PICS bags (Purdue Improved Crop Storage bags) could be tested for a variety of crops and protect against a variety of pests and contaminants.

Read more at: <http://www.icipe.org/index.php/news/842-aflatoxin-bags.html>



The team will be working with maize farmers to see if the bags can protect against pests and mould without affecting the quality of the grain
Photo: *icipe*





STAFF NEWS

Prof John Pickett elected to National Academy of Sciences



Prof John Pickett

Prof John Pickett, former chair of *icipe*'s Governing Council and a longtime pillar of the Centre's research has been elected a foreign associate of the National Academy of Sciences of the United States of America, one of the highest honours in science.

With *icipe* scientist Dr Zeyaur Khan, Pickett pioneered the innovative push-pull system to protect food crops from pests in an ecological, feasible way for smallholders,

enabling them to move beyond subsistence farming to producing surpluses they can sell for income.

Pickett has also recently taken over as president of the Royal Entomological Society.

Read more at:

<http://www.rothamsted.ac.uk/news/pickett-nas>

icipe council chair Prof Dr Bill Hansson elected Vice President of the Max Planck Society



Prof Dr Bill Hansson

Prof Dr Bill Hansson, chair of the *icipe* Governing Council, has been elected vice president of the Max Planck Society, which oversees the running of the 83 Max Planck Institutes.

During his six-year term, Hansson will be responsible for the 27 institutes focusing on biology and medicine. He is the first person to accept this office who is not a German, and one of his main priorities will be to advance the internationalisation of the Max Planck Society.

Hansson was also recently recognised by The International Society of Chemical Ecology, winning one of its top awards for 2014: the Silverstein-Simeone Lecture Award.

It recognises outstanding recent or current work at the frontiers of chemical ecology, rather than long-term career achievement.

The focus of Hansson's lecture: understanding how fruit flies use scent to locate resources and avoid danger.

Read more at: <http://www.idw-online.de/en/news590515>

Read more about the award at: <http://www.chemecol.org/silverstein-simeone.shtml>

Segenet Kelemu featured in the East African

The weekly *East African* recently published a profile of *icipe* Director General Segenet Kelemu. She spoke about childhood in Ethiopia and her return to Africa after 25 years working abroad, to her new role at the helm of *icipe*.

Read the article online: <http://www.theeastafrican.co.ke/magazine/Dr-Segenet-Kelemu-ICIPE-Women-Scientist/-/434746/2330830/-/2e77d1z/-/index.html>





Welcoming new staff to *icipe*

Gatigwa Kimana – Interim Director of Finance & Administration



Gatigwa joined *icipe* in early June as the Interim Director of Finance and Administration based at headquarters in Nairobi.

He holds an MBA in Finance from the University of Bradford in the United Kingdom, he is a Certified Public Accountant, Kenya (CPA-K), a Certified Public Secretary-Kenya (CPS-K) and is also a Member of the Association of Certified Accountants (ACCA-UK).

Prior to joining *icipe*, Gatigwa was the Acting Director of Corporate Services at ILRI since 2012. He has held several consultancy appointments with various international organisations and his previous regular appointment was that of Director of Finance and Administration with Action Aid Kenya from 1996 to 2002.

Gatigwa brings to *icipe* a wealth of experience gained working with various international organisations both in the non-profit sector as well as the manufacturing and auditing sectors.

Gatigwa will discharge the full responsibilities of the Director of Finance and Administration until the arrival of the substantive holder of this position.

Dr Elfatih Mohamed Abdel-Rahman – Postdoctoral Fellow, Earth Observation Unit



Elfatih joined us from Sudan to work as a postdoctoral fellow on a DFID-funded project pertaining to agricultural productivity and climate change: capturing changes in the occurrence of stemborers in maize. In particular, he is mapping crops and crop cycles using multi-temporal and multi-scale remotely-sensed and in situ data. The results of his research will be used to improve food security and to monitor the relationship between crop seasonality and insect pests in maize.

Elfatih holds an MSc in Crop Production and a PhD in Environmental Sciences, with a specialisation in Geographic Information Systems and remote sensing. He was an Assistant Professor at the Department of Agronomy in the Faculty of Agriculture at the University of Khartoum, Sudan. Prior to joining *icipe*, he was also a postdoctoral fellow at the School of Agricultural, Environmental and Earth Sciences of the University of KwaZulu-Natal, South Africa. Elfatih is an author of 17 peer-reviewed papers and conference proceedings.

Tamzin Byrne – Communication Officer



Tamzin joined us from Australia to work for 12 months with Nancy McNally and the Communication team at *icipe*. In particular, she will be helping with social media and the re-launch of the *icipe* website.

She studied science (genetics and biochemistry), but was also involved in student radio, which led her to pursue a journalism degree. After graduation, she worked at Australia's national broadcaster, the ABC, on their national radio station.

Her most recent job, at the Australian company Science in Public, combined her interest in science with her writing skills. Her clients included several universities, the CSIRO, the Australian government, and the L'Oreal Australia For Women in Science programme.

Dr Amarendra Sahoo, visiting scientist, Partnership for Economic Policy



Dr Amarendra Sahoo joined *icipe* as an International Visiting Scientist at the Partnership for Economic Policy (PEP-Net) on foresight and economy-wide impact of change in wheat and maize technologies, food securities and economy-wide impact of water supply.

He has a PhD in Economics from Tilburg University, The Netherlands. His dissertation related to impact of competitive pressure on productivity-efficiency of the economy and household welfare distributions. Prior to joining *icipe*, Dr Sahoo was a researcher in Leiden University in The Netherlands and a research fellow with University College Dublin. He has also held various positions with national economics organisations in New Delhi, India.

His major fields of research include applied macro-development economics, economy-wide multi-sectoral modelling, input-output analysis, environmental policy, productivity-efficiency analysis and international trade.





Dr Jeremy Herren – Swiss National Science Foundation Fellow



Dr Herren joins *icipe* from the EPFL (École polytechnique fédérale de Lausanne) on a Swiss National Science Foundation Fellowship.

Jeremy studies the interactions between maternally transmitted endosymbiotic bacteria and their insect hosts. He completed his Bachelor's degree at the University of Oxford, where he collaborated with *icipe* to research the dynamics of endosymbiont infections in Kenyan butterflies.

While at *icipe*, he will explore the use of endosymbiotic bacteria as a means to control insect vector-borne diseases, hosted by Dan Masiga in *icipe*'s Molecular Biology and Biotechnology Department.

His project will aim to determine the effects of the endosymbiont *Spiroplasma* on anopheline mosquito hosts and will ask whether the symbiotic relationship could protect mosquitoes against the malaria parasite *Plasmodium*.

SUPPORT STAFF



Ms Gladys Wanjiru Wanjiku joined us as a receptionist in our Nairobi guest house, the Duduville International Guest Centre.

We also welcome several new members to our janitorial team:



Ms Jackline Jepchumba



Mr Samuel Mumo Kawetu



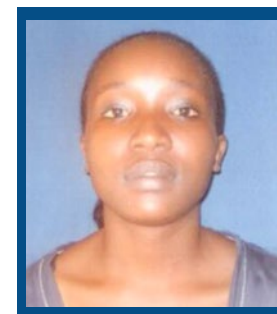
Mr Geoffrey Kaendi Kimanzi



Mr Nicholus Odhiambo Odera



Ms Moureen Marciline Sigana



Ms Julia Anyango Auma



Mr Onesmus Mativo Muendo