



# NIMR Highlights

Newsletter of the National Institute for Medical Research

Tanzania

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## Editorial Committee

Leonard E.G. Mboera

Susan F. Rumisha

Irene R. Mremi

Jonathan M. Mshana

## Editorial

Dear readers,

Welcome once again to the NIMR Highlights. As it has always been our objective, this newsletter intends keep you regularly updated on our activities. In the process, we hope to introduce you to important events that have happened during the past six months, profiles of our staff, new projects, and publications. In this issue, the newsletter reports on NIMR's Internship program for foreign students, new project established and upcoming events. We would like to remind readers of our request for submission of articles to be included in the future issue of the newsletter.

Enjoy your reading,

The Editorial Team

## International Students Internship Program at NIMR

(By *Sia Malekia*)

The National Institute for Medical Research (NIMR), under the Directorate of Research Coordination and Promotion (DRCP) has been running an International Internship program with Georgetown University (GTU) in the United States of America ever since 2009. The NIMR and GTU have established and signed a Memorandum of Understanding (MoU) to host the Internship program that hosts final year graduate students from Georgetown University.

The internship programs provide international students with research experience from the Tanzanian health sector while they are attached at various NIMR centers and stations throughout the country for a period of 3 months where they work hand in hand with Research Scientists from NIMR.

The NIMR Internship policy was developed to guide its centers and stations where the students are attached. The Intern Coordinator liaises with the NIMR Human Resources (HR) Departments and Directors of the specific centers so as to ensure that the students are provided with supervisors in relation to their field of interest. NIMR also ensures that the students get the necessary documentations from the Ministry of Education and Vocational Training and Immigration office to ensure their legal stay in the country.

Since its establishment, NIMR has hosted a total of 33 intern students from Georgetown University. Moreover, in September this year NIMR will host another group of 7 GTU intern students who will be attached at NIMR Mwanza and Tanga centers, and Korogwe station.

## NIMR Scientist has successful won the Tanzania – South Korea Joint research grants

**Dr. Lucas E. Matemba** and his colleagues from NIMR Morogoro have been collaborating with partners from the republic of Korea Advance Institute of Science and Technology (KAIST) specifically Prof. Hyun Gyu Park's team since 2015. These scientists realizing the existing burden of neglected zoonotic infections in Tanzania and the urgent need to have point of care diagnostic options, collaboratively developed a joint project entitled "Development of Smartphone linked leptospirosis Point of Care (POC) diagnostic platform by the use of isothermal target and signaling probe amplification technology (iTPA)"

Their proposal was among the three successful projects following a comprehensive and intensive peer review and evaluation conducted recently. The call was announced and coordinated by the

COSTECH and the National Research Foundation (Korea). Whereby, a total of 14 research proposals were submitted and reviewed. This project is current implemented jointly for two consecutive years between NIMR Scientists/researchers and their South Korean counterparts since October 2016. Few details are given hereby:

**Hypothesis:** The project will test if an affordable (<\$2) and user-friendly diagnostic platform for leptospirosis screening using a Smartphone Linked POC Diagnostic Platform through the use of iTPA can be developed and used in the Tanzanian public health system.

**Innovation:** Taking advantage of the electrochemical system, the team will formulate a low cost leptospirosis POC diagnostic tool that can be effectively used in the Tanzanian public health system. Specifically, the technological innovation

consists of the following three steps:

(i) Simple and easy to use “syringe type DNA preparation protocol”, (ii) isothermal target and signaling probe amplification, and finally (iii) Development of a “multimeter based voltage measurement and transfer of the fluorescence signal wirelessly to the smartphone”.

The POC diagnostic platform for leptospirosis will further be field tested in local hospitals in Tanzania to ensure efficiency.

## Journal Publications by NIMR Scientists: January-June 2017

A total of sixteen manuscripts were published during the past six months. Citations of all papers are listed here.

1. Sanga, E.S., Lerebo, W., Mushi, A.K., Clowes, P., Olomi, W., Maboko, L. & Zarowsky, C. (2017) Linkage into care among newly diagnosed HIV-positive individuals tested through outreach and facility-based HIV testing models in Mbeya, Tanzania: a prospective mixed-method cohort study. *BMJ Open* 7:e013733. doi:10.1136/bmjopen-2016-013733
2. Kapologwe, N.A., Kagaruki, G.B., Kalolo, A., Ally, M., Shao, A., Meshack, M., Stoermer, M., Briet, A., Wiedenmayer, K., Hoffman, A. (2017) Barriers and facilitators to enrollment and re-enrollment into the community health funds/Tiba Kwa Kadi (CHF/TIKA) in Tanzania: a cross-sectional inquiry on the effects of socio-demographic factors and social marketing strategies. *BMC Health Services Research* (2017) 17:308. doi 10.1186/s12913-017-2250-z
3. Nondo, R.S.O., Moshi, M.J., Erasto, P., Masimba, P.J., Kidukuli, A.W., Heydenreich, M., Zofou, D. & Machumi, F. (2017) Anti-plasmodial activity of Norcaesalpin D and extracts of four medicinal plants used traditionally for treatment of malaria. *BMC Complementary and Alternative Medicine* 17: 167.
4. Mashauri, F.M., Manjurano, A., Kinung’hi, S., Martine, J., Lyimo, E., Kishamawe, C., Ndege, C., Ramsan, M., Chan, A., Mwalimu, C.D., Changalucha, J., Magesa, S. (2017) Indoor residual spraying with micro-encapsulated pirimiphos-methyl (Actellic 300CS) against malaria vectors in the Lake Victoria basin, Tanzania. *PLoS One* 12(5): e0176982. <https://doi.org/10.1371/journal.pone.0176982>.
5. Muganyinzi, P., Maswanya, E., Kilima, S., Stanley, G., Makuwani, A., Massaga, J., Bakengesa, V. & Msemu, G. (2017) Availability, coverage and geographical distribution of emergency obstetric and neonatal care services in Tanzania Mainland. *Journal of Gynecology and Obstetrics* 5 (1): 1-8. Doi:10.11648/j.jgo.20170501.11.
6. Kimaro, G.D., Mfinanga, S., Simms, V., Kivuyo, S., Bottomley, C., Hawkins, N., Harrison, Th.S., Jaffar, S., Guinness, L., on behalf of the REMSTAT trial team (2017) The costs of providing antiretroviral therapy services to HIV-infected individuals presenting with advanced HIV disease at public health centres in Dar es Salaam, Tanzania: findings from a randomised trial evaluating different health care strategies. *PLoS One* 12 (2): e0171917. Doi: 10:1371/journal.pone. 0171917.

7. Clarke, G.M., Rockett, K.A., Kivinen, K., Hubbart, C., Jeffreys, A.E., Rowlands, K., Jallow, M., Conway, D.J., Bojang, K.A., Pinder, M., Usen, S., Sisay-Joof, F., Sirugo, G., Toure, O., Thera, M.A., Konate, S., Sissoko, S., Niangaly, A., Poundiougou, B., Mangano, V.D., Bougouma, E.C., Sirima, S., Modiano, D., Amenga-Etego, L.N., Ghansah, A., Koram, K.A., Wilson, M.D., Enimil, A., Evans, J., Amodu, O.K., Olaniyan, S., Apinjoh, T., Mugri, R., Ndi, A., Ndila, C.M., Uyoga, S., Macharia, A., Peshu, N., Williams, T.N., Manjurano, A., Sepúlveda, N., Clark, T.G., Riley, E., Drakeley, C., Reyburn, H., Nyirongo, V., Kachala, D., Molyneux, M., Dunstan, S.J., Phu, N.H., Quyen, N.N., Thai, C.Q., Hien, T.T., Manning, L., Laman, M., Siba, P., Karunajeewa, H., Allen, S., Allen, A., Davis, T.M.E., Michon, P., Mueller, I., Molloy, S.F., Campino, S., Kerasidou, A., Cornelius, V.J., Hart, L., Shah, S.S., Band, G., Spencer, C.C.A., Agbenyega, T., Achidi, E., Doumbo, O.K., Farrar, J., Marsh, K., Taylor, T., Kwiatkowski, D.P., MalariaGEN Consortium. (2017) Characterisation of the opposing effects of G6PD deficiency on cerebral malaria and severe malarial anaemia. *eLife* 2017 6:e15085. DOI: <http://dx.doi.org/10.7554/eLife.15085>. Published January 9, 2017.
8. Ishengoma, D.S., Kamugisha, M.L., Rutta, A.S.M., Kagaruki, G.B., Kilale, A.M., Kahwa, A., Kamugisha, E., Baraka, V., Mandara, C.I., Materu, G.S., Massaga, J.J., Magesa, S.M., Lemnge, M.M. & Mboera, L.E.G. (2017) Performance of health laboratories in provision of HIV diagnostic and supportive services in selected districts of Tanzania. *BMC Health Services Research* 17:70. DOI 10.1186/s12913-017-2030-9
9. Kweka, E.J., Lee, M., Mwang'ombe, B.J., Tenu, F., Munga, S., Kimaro, E.E. & Hlmeidan, Y.E. (2017) Bio-efficacy of deltamethrin based durable wall lining against wild populations of *Anopheles gambiae* s.l. in Northern Tanzania. *BMC Research Notes* 10:92. doi 10.1186/s13104-017-2414-2.
10. Mahende, C., Ngasala, B., Lusingu, J., Mårtensson, T., Lushino, P., Lemnge, M., Mmbando, B. & Premji, Z. (2017) Profile of C-reactive protein, white cells and neutrophil populations in febrile children from rural north-eastern Tanzania. *Pan African Medical Journal* 26:51. [doi:10.11604/pamj.2017.26.51.10264](https://doi.org/10.11604/pamj.2017.26.51.10264)
11. Malima, R., Emidi, B., Messenger, L.A., Oxborough, R.M., Batengana, B., Sudi, W., Weston, S., Mtove, G., Mugasa, J.P., Mosha, F.W., Rowland, M.W. (2017) Experimental hut evaluation of a novel long-lasting non-pyrethroid durable wall lining for control of pyrethroid-resistant *Anopheles gambiae* and *Anopheles funestus* in Tanzania. *Malaria Journal* 16:82. DOI 10.1186/s12936-017-1710-6
12. Mangesho, P.E., Ole Neselle, M., Karimuribo, E.D., Mlangwa, J.E., Queenan, K., Mboera, L.E.G., Rushton, J., Kock, R., Häslér, B., Kiwara, A. & Rweyemamu, M. (2017) Exploring local knowledge and perceptions on zoonoses among pastoralists in northern and eastern Tanzania. *PLoS Neglected Tropical Diseases* 11(2): e0005345. doi:10.1371/journal.pntd.0005345. <http://dx.doi.org/10.1371/journal.pntd.0005345>
13. Mazigo, H.D., Dunne, D.W., Morona, D., Kinung'hi, S.M. & Nuwaha, F. (2017) Comparison of HIV-1 viral loads, CD4- $T_H2$ -lymphocytes and effects of praziquantel treatment among adults infected or uninfected with *Schistosoma mansoni* in fishing villages of north-western Tanzania. *Tanzania Journal of Health Research* 19 (1) January 2017. Doi: <http://dx.doi.org/10.4314/thrb.v18i4.7>
14. Mkumbaye S, Wang C, Lyimo E, Jespersen J, Manjurano A, Mosha J, Kavishe R, Mwakalinga S, Minja D, Lusingu J, Theander T, Lavstsen T.

- (2017) The severity of *Plasmodium falciparum* infection is associated with transcript levels of var genes encoding EPCR-binding PfEMP1. *Immunity and Infection* 2017. Accepted
15. Muganyizi, P., Maswanya, E., Kilima, S., Stanley, G., Makuwani, A., Massaga, J., Bakengesa, V. & Msemu, G. (2017) Availability, coverage and geographical distribution of emergency obstetric and neonatal care services in Tanzania Mainland. *Journal of Gynecology and Obstetrics* 5:1-8 doi: 10.11648/j.jgo.20170501.11
16. Rambaud-Althaus, C., Shao, A., Samaka, J., Swai, N., Perri, S., Kahama-Marro, J., Mitchell, M., D'Acromont, V. & Genton, B. (2017) Performance of Health Workers Using an Electronic Algorithm for the Management of Childhood Illness in Tanzania: A Pilot Implementation Study. *American Journal of Tropical Medicine and Hygiene* 96:249-257 doi:10.4269/ajtmh.15-0395. <http://www.ajtmh.org/content/96/1/249.abstract>

## Tanzania Journal of Health Research

The Tanzania Journal of Health Research Volume 19 No. 1 and 2 of 2017 have been published and is now available on-line. The Journal is owned and managed by NIMR. A total of 17 original articles and three short communications have been published these issues:

### Volume 19, Number 1, January 2017

#### ORIGINAL RESEARCH ARTICLES

1. Evaluation of XpertMTB/RIF performance for diagnosis of tuberculosis among HIV positive patients in northern Tanzania. Edson W. Mollel, Jaffu O. Chilongola, Stelah G. Mpagama and Gibson S. Kibiki. <http://dx.doi.org/10.4314/thrb.v19i1.1>
2. Seroprevalence and risk factors of *Toxoplasma gondii* infection among pregnant women attending antenatal care in Kigali, Rwanda. Esperance Murebwayire, Kariuki Njanaake, Jean Claude S. Ngabonziza, Walter Jaoko and Kato J. Njunwa. <http://dx.doi.org/10.4314/thrb.v19i1.2>
3. Cognitive and social predictors of generalized anxiety disorder symptoms among fresh undergraduates in Uganda. Gregory C. Umeh and Paul Bangirana. <http://dx.doi.org/10.4314/thrb.v19i1.3>
4. Reported incidences and factors associated with percutaneous injuries and splash exposures among healthcare workers in Kahama District, Tanzania. Rose M. Laisser and John F. Ng'home. <http://dx.doi.org/10.4314/thrb.v19i1.4>
5. Casual blood pressure among Tanzanian undergraduate students: need for re-defining population specific operational threshold between normotension and hypertension. Nasra Rashid and Haruna I. Dika. <http://dx.doi.org/10.4314/thrb.v19i1.5>
6. Clinical presentation and precipitating factors of diabetic ketoacidosis among patients admitted to intensive care unit at a tertiary hospital in Mwanza, Tanzania. Shabani Iddi, Francis A. Brayson, Hyasinta Jaka, Mariam M. Mirambo and Martha F. Mushi. <http://dx.doi.org/10.4314/thrb.v19i1.6>
7. Prevalence and antimicrobial sensitivity of Shiga-toxin-producing *Escherichia coli* among underfives presenting with

diarrhoea at hospitals in Mwanza City, Tanzania. Nyambura Moremi, Abdalla S. Othman, Bahati P. Msaki and Stephen E. Mshana.

<http://dx.doi.org/10.4314/thrb.v19i1.7>

8. Prevalence and factors associated with over-the-counter use of antifungal agents in Mwanza City, Tanzania. Martha F. Mushi, Benedictor Masewa, Mary Jande, Mariam M. Mirambo, and Stephen E. Mshana.

<http://dx.doi.org/10.4314/thrb.v19i1.8>

## Volume 19, Number 2, April 2017

### ORIGINAL RESEARCH ARTICLES

1. Decline in the prevalence HIV among pregnant women attending antenatal clinics in Tanzania, 2001-2011. Joel Manyahi, Boniphace S. Jullu, Mathias I. Abuya, James Juma, Bonita Kilama, Vryeh Sambu, Josef Nondi, Bernard Rabel, Neema Makyao, Angela Ramadhani, Geoffrey Somi and Mecky I. Matee.

<http://dx.doi.org/10.4314/thrb.v19i2.1>

2. Prevalence and risk factors for HIV among people aged 50 years and older in Rombo district, Northern Tanzania. Scolastica J. Swai, Damian J. Damian, Sarah Urassa, Beatrice Temba, Michael J. Mahande, Rune N. Philemon and Sia E. Msuya.

<http://dx.doi.org/10.4314/thrb.v19i2.2>

3. Increased memory phenotypes of CD4+ and CD8+ T cells in children with sickle cell anaemia in Tanzania. Emmanuel Balandya, Teri Reynolds, Said Aboud, Stephen Obaro and Julie Makani.

<http://dx.doi.org/10.4314/thrb.v19i2.3>

4. Asymptomatic malaria and associated factors among blood donors in Mwanza, Tanzania. Domenica Morona, Bertrand Msemwa, Maria M. Zinga, Martha F. MUSHI, Mariam M. Mirambo and Stephen E. Mshana.

<http://dx.doi.org/10.4314/thrb.v19i2.4>

5. Prevalent use of herbs for reduction of labour duration in Mwanza, Tanzania: are obstetricians aware? Haruna Dika, Mauki Dismas, Shabani Iddi and Richard Rumanyika.

<http://dx.doi.org/10.4314/thrb.v19i2.5>

6. Stagnating maternal mortality in Tanzania: what went wrong and what can be done. Rumishael S. Shoo, Leonard E.G. Mboera Sydney Ndeki and Gaspar Munishi.

<http://dx.doi.org/10.4314/thrb.v19i2.6>

7. Prevalence of malocclusion and its associated factors among pre-schoolchildren in Dar es Salaam, Tanzania. Matilda Mtaya, Pongsri Brudvik and Anne N. Astrom.

<http://dx.doi.org/10.4314/thrb.v19i2.7>

8. Applicability of structured telephone monitoring to follow up heart failure patients discharged from Muhimbili National Hospital, Tanzania. Sabina Mmbali and Pilly Chillo.

<http://dx.doi.org/10.4314/thrb.v19i2.8>

9. Factors associated with child sexual abuse in Tanzania: a qualitative study. Mangi J. Ezekiel, Idda H. Mosha, Felix Kisanga, Rose Mpembeni, Amani Anaeli, Switbert R. Kamazima and Eustace P.Y. Muhondwa.

<http://dx.doi.org/10.4314/thrb.v19i2.9>

### SHORT COMMUNICATION

10. The use of 0.01M phosphate buffered saline as detection buffer for Alere Determine® HIV rapid test in resource limited settings. Mariam M. Mirambo, Martha F. Mushi, Ley Shilewangwa, Caroline A. Minja, Benson R. Kidenya, Majigo Mtebe and Stephen E. Mshana.

<http://dx.doi.org/10.4314/thrb.v19i2.10>

11. Magnitude and factors associated with injection site infections among underfives in a district hospital, northern Tanzania. Martha F. Mushi, Clara T. Mushi, Nyambura Moremi, Mariam M. Mirambo and Stephen E. Mshana.

<http://dx.doi.org/10.4314/thrb.v19i2.11>

12. Serological profiles of Herpes simplex virus type 2 among HIV negative population in Mwanza City, Tanzania. Mariam M. Mirambo, Chrispus Isdori and Stephen E. Mshana.

<http://dx.doi.org/10.4314/thrb.v19i2.12>

## Who is Who with the National Institute for Medical Research



Dr Mary Mayige is a principal research scientist at the National Institute for Medical Research (NIMR). Dr. Mary Mayige (MD, MPH, PhD) holds a Bachelor's degree in Medicine and Surgery from Makerere University, Kampala Uganda, Masters of Public Health, from Muhimbili University of Health and Allied Sciences, Dar es Salaam Tanzania. Dr. Mary also received her

Doctor of Philosophy in Clinical Epidemiology (Diabetes) from, Newcastle University, Newcastle, United Kingdom. Dr. Mary's work experience spans from clinical practice, research and consultancy services in non-communicable diseases.

Dr. Mary has received several awards and short term training. She was fellow of IMHOTEP program and received short term Public Health Training at Morehouse College, Atlanta, USA: fellow Mentorship Program, International Association of Public Health Institutes, Emory University, Atlanta USA. Dr. Mary was also nominated as a Young Physician Leader by the Inter Academy Medical Panel (IAMP) which recognizes medical doctors who have made outstanding contribution to society. Dr. Mary has published various scientific publications in peer reviewed journals and is the Chair of the Tanzania Young Academy of Science.

## Upcoming Events

### Rescheduling of the 31<sup>st</sup> Annual Joint Scientific Conference

Traditionally, the National Institute for Medical Research (NIMR) has been holding an annual joint scientific conference (AJSC) since 1982. Through the AJSC, the visibility of NIMR nationally, regionally and internationally has increased over the years. To-date, the conference is the largest scientific gathering in Tanzania. It is the only forum that brings under one roof NIMR and other health researchers, practitioners and policy makers for acquaintances and sharing of experiences. The conference has attracted different partners/donors from outside the country hence more collaborations and more funding opportunities have been explored, created and established. The conference has fostered debate among different partners on emerging issues and recommendations, hence more improvement in health systems research and health delivery services. The conferences have provided the best forum for exchange of research information to policy makers, media and the public at large; as well as providing opportunities for national leaders (including the Ministers, Prime Minister and Vice President) to learn and acclimatize themselves with the research processes and products from national health institutions.

Over the years, the AJSC has expanded its catchment populations, attracting participants from all over the world, making the conference a no miss annual event. With this expansion, the expenses to support this growth have multiplied over the recent years. On the other hand, the amount of funds AJSC has raised has not proportionally grown and number of donors has actually fallen. In recent years, mobilization of resources for AJSC and other NIMR activities has been difficult because of dwindling of government subventions and donor fatigue.

With the various challenges experienced since 2013, the needs for holding annual scientific conference have to be revisited. To hold AJSC requires adequate time for preparations; including composing the conference themes, advertisement, resource mobilization and engagement of key stakeholders. This has prompted NIMR Management to reconsider and change the frequency from Annual to Biennial Conferences, starting with 2018. With this communique, therefore, the AJSC Organizing Committee would like to inform you that the 31<sup>st</sup> Annual Joint Scientific Conference has been rescheduled for April 2018. Thereafter, the holding of the Conference will biennially.

For further information contact:

AJSC Secretariat  
3 Barack Obama Drive  
P.O. Box 9653, 11101 Dar es Salaam, Tanzania  
E-mail: [ajsc@nimr.or.tz](mailto:ajsc@nimr.or.tz);  
Tel: +255-22-2121400; Telefax: +255-22-2121360