

CURRICULUM VITAE

Dr Naomi Wangari Njogu Maina

Biochemistry Department, Jomo Kenyatta University of Agriculture and Technology, P.O. Box 62000, 00200, Nairobi, Tel: 0727 726 785, Email: nmaina@hotmail.com

Nationality: Kenyan

Academic qualifications

PhD in Cell Biology (2006). University of Basel, Switzerland.

Thesis: Isolation, propagation and characterization of *T. b. gambiense* isolated from sleeping sickness patients in south Sudan (2006). University of Basel. Web. site edoc.unibas.ch/view/divisions/2101100.html

Masters of Science (Pharmacology) (1992) at University of Strathclyde, Glasgow, UK.

Thesis: Role of Monophosphoryl Lipid A on nitric oxide production in *leishmania* infected macrophages (1991). University of Strathclyde, Glasgow, UK

Bachelor of Science (Biochemistry and Zoology upper class Honours) (1989), degree at the University of Nairobi, Kenya

Research interest

To improve the management of parasitic infections by;

- Drug development from African traditional knowledge
- Determination of drug resistance and/or treatment failure.
- Identification of markers for drug resistance
- Identification of biomarkers of disease.

Employer and respective positions Held

Jomo Kenyatta University of Agriculture and Technology, Biochemistry Department

Senior Lecturer (November 2009 - to date)

Proposal review: Reviewer for JKUAT 2010 research proposal

1. Investigations for mechanisms of aging using rodents (2011)

2. Mycotoxins assessment in maize and maize products (2010)

Program development

1. Team leader: Development of MSC and PhD program for Molecular Biology and Biotechnology program: Pan Africa University under African Union. 2010-2011
2. Team leader; Development of MSC Pharmacology(drug design and development): JKUAT 2009-2011

MSC Supervision

1. 2010. Markers for diagnosis and staging of HAT in infected vervet monkeys
2. 2011. Diagnosis and staging of human trypanosomiasis using LAMP.

MSC On-going

1. Characterization of IFN-gamma Expressing *Plasmodium berghei* in *Mus musculus* (Mice).
2. Use of Nanotechnology to improve diagnosis and chemotherapy of trypanosomosis
3. Safety and toxicity of herbal preparations in use in Kenya.
4. Diagnosis of Human African Trypanosomiasis using non-invasive samples such as saliva and urine.
5. Toxoplasmosis in Thika District, Kenya

PhD supervision (2009-on going). Development of animal models for Toxoplasmosis

Lecturer (December 2005 – Nov 2009)

Others duties

- **Karen Campus co-ordinator** of the Biochemistry programme Jan 2007 to Jan 2008,
- **Co-ordinator for the Integration of HIV/AIDS into Biochemistry** degree programme.

Research projects

1. Biomarkers for sleeping sickness that would be important in diagnosis and disease staging. Funded by Research, Production and Extension (RPE) of Jomo Kenyatta University of Agriculture and Technology.
2. Toxoplasmosis: A neglected tropical zoonosis with serious reproductive and neurological implication in man. The case for Thika District. Funded by RPE) of Jomo Kenyatta University of Agriculture and Technology
3. Safety and toxicity of herbal preparations in use in Nairobi, Kenya. Funded by National Council of Science in Kenya

MSc student Project Supervision

1. 2008. Risk factors of Trachoma in Eastern Equatoria State southern Sudan.

2. .2009. Risk Factors for Onchocerciasis and awareness in Wau Hospital, Southern Sudan.
3. 2009. Pathology of placental malaria in Baboon (*Papio Anubi*) infected with *Plasmodium Knowlensi*.
4. 2009. Determination of Factors Associated with Brucellosis in Terekeka County Central, Equatoria State, South Sudan.

Kenya Trypanosomiasis Research Institute (KETRI) (August 1989 - December 2005).

Senior Research Officer (2004-2005)

Projects undertaken

Melarsoprol resistance in *Trypanosoma brucei gambiense* in south Sudan. Funded under The Eastern African network for Trypanosomosis (EANET), Swiss Development Co-operation (SDC) and Kanto of Basel

Research Officer 1(1998 – 2004)

Projects undertaken;

1. The causes of treatment failure following melarsoprol treatment in sleeping sickness patients under the Eastern African network for Trypanosomosis (EANET). Funded by Swiss Development Co-operation (SDC).
2. Immunology and pathology of nitric oxide in vervet monkeys (*Cercopithecus aethiops*) infected with *Trypanosoma rhodesiense*: Model of human African trypanosomosis. Funded by Wellcome Trust Limited, U.K.
3. The safety and efficacy of Trypan® (diminazene aceturate) in the treatment of camel trypanosomosis. Funded by Government of Kenya.

Research Officer 11 (1993-1998)

Projects undertaken;

1. Drug resistance studies in *Trypanosoma evansi*. The level of resistance to three commonly used trypanocides - Suramin, Melarsomine and Quinapyramine sulphate was determined using *in vitro* and *in vivo* systems. Funded by Overseas Development Authority (ODA).
2. Primary drug screening - Funded by the Government of Kenya
 - (i) Determination of anti-trypanosomal activity in a class of antibiotics - aminoglycosides (paromomycin, Kanamycin, Neomycin and Gentamycin).
 - (ii) Determination of anti-trypanosomal activity in plant material that were/are used traditionally in Kenya for the treatment of veterinary diseases.

Assistant Research Officer (1989-1991)

Projects undertaken;

1. Drug resistance studies in *Trypanosoma evansi*. The level of resistance to three commonly used trypanocides - Suramin, Melarsomine and Quinapyramine sulphate was determined using *in vitro* and *in vivo* systems. Funded by Overseas Development Authority (ODA).
 2. Primary drug screening - Funded by the Government of Kenya
 - (i) Determination of anti-trypanosomal activity in a class of antibiotics - aminoglycosides (paromomycin, Kanamycin, Neomycin and Gentamycin).
 - (ii) Determination of anti-trypanosomal activity in plant material that were/are used traditionally in Kenya for the treatment of veterinary diseases.

ON-JOB TRAININGS

Long-term training

1. *In vitro* cultivation of human pathogenic protozoa - *T. cruzi*, *Leishmania mexicana*, *L. major* and *L. donovani* and the subsequent screening of compounds from Wellcome Pharmaceuticals LTD. At London School of Hygiene and Tropical Medicine (LSHTM)(1992-1993). Supervisor, S. L. Croft. Funded by the British Council.

Short trainings

1. Good Laboratory Practice (GLP) in drug testing. Organised by World Health Organization, April 2001 in Nairobi.
2. Implementation of ISO 9000 standards in industry (March 1998). Organised by Kenya Bureau of Standards, March 1998 in Nairobi.
3. Biometrics.). Organised by Department for International Development (DFID), by John Rowlands (ILRI). December 1997 in Kenya.
4. Communication for scientists.). Organised by Department of International Development (DFID) by Anthony J. Smith and M.A. Steele, University of Edinburgh, U.K. May 1996 in Kenya.
5. Finance for the non-financial Managers.). Organised by Department for International Development (DFID). Course tutors Pace International Kenya LTD. January 1996 in Kenya.
6. Isoenzyme electrophoresis to identify trypanosomes species.). Organised by ODA. Course tutor DR.McNamara (University of Bristol, U.K.), 1990 in Kenya

Publications

1. Idle O. Farah, Maina Ngotho, Thomas Kariuki, Maamun Jeneby, Lawrence Irura, **Naomi Maina**, John Kagira, Michael Gicheru and Jann Hau (2005). Animals

- models for Tropical Parasitic Diseases. Handbook of Laboratory Animals Science/Edited by Jann Hau, Gerald L Van Hoosier, Jr,-2nd ed Volume 3 (169-224).
2. Gaithuma AK, Karanja SM, Ngotho M, Maathai RG, **Kagira JM**, Maina NW. Lipid metabolism and other metabolic changes in vervet monkeys experimentally infected with *Trypanosoma brucei rhodesiense*. J Med Primatol. 2011 Nov 10. doi:
 3. **Kagira JM**, Maina N, Njenga J, Karanja SM, Karori SM, Ngotho JM . Prevalence and types of coinfections in sleeping sickness patients in Kenya (2000/2009). J Trop Med. 2011;2011:248914. Epub 2011 Sep 11
 4. **Maina N.W.** and Kagira J.M. (2010). Co infections and associated haematological changes in patients attending a sleeping sickness hospital in southern Sudan. *J. Protozool. Res.* 20, 12-19 (2010)
 5. Ngotho M, Kagira JM, Gaithuma AK, Kariuki CK, Akinyi MY, Maloba F, Mwaliko VM, Karanja SM, **Maina NW** (2010). A robust and improved monkey model of human African trypanosomiasis. Parasitology International (In press)
 6. Ndungu K, Gitonga P, Kagira J, **Maina N**, et al 2010. The efficacy of Triladyl in cryopreservation of low concentration of pathogenic trypanosomes. Journal of protozoology Research 20, 27-31
 7. **Naomi Maina**, Kagira Joseph Mainaa, Pascal Mäser and Reto Brun. Genotypic and phenotypic characterization of *Trypanosoma brucei gambiense* isolates from Ibba, South Sudan, an area of high melarsoprol treatment failure rate. Acta tropica. Acta Trop. 2007 Nov-Dec; 104(2-3):84-90.
 8. **Naomi W. N. Maina**, Michael Oberle, Charles Oteino, Christina Kunz, Pascal Maser, Joseph M. Ndung'u and Reto Brun (2007). Isolation and propagation of *Trypanosoma brucei gambiense* from sleeping sickness patients in south Sudan. Transactions of the Royal Society of Tropical Medicine and Hygiene 101:540-546.
 9. **Naomi W. N. Maina**, Christina Kunz and Reto Brun (2006). Cryopreservation of *Trypanosome brucei gambiense* in a cryoprotection medium developed for Bull semen. Acta Tropica. 98(3): 207-211
 10. J.M. Kagira and **NW Maina** (2007). Drug resistance of *Trypanosoma rhodesiense* isolates from Kenya. Onderstepoort Journal of Veterinary Research. 2007 Mar;74(1):17-22

11. J. M. Kagira, M. Ngotho, J.K. Thuita, **N. W. Maina**, and Jann Hau (2007). Haematological changes in vervet monkey (*Chlorocebus aethiops*) during eight months adaptation to captivity. *American Journal of Primatology* 69: 1-11.
12. Maina Ngotho, **Naomi Maina**, John Maina Kagira and Jann Hau (2006). IL-10 is upregulated in early and transitional stages of vervet monkeys experimentally infected with *Trypanosoma brucei rhodesiense*. *Parasitology International* 55: 234-248.
13. JM Kagira, **NW Maina**, JK Thuita, M Ngotho and J Hau (2005). Influence of cyclophamide on the haematological profile of Laboratory Bred African Soft-furred rats (*mastomys natalensis*). *Scandinavian Journal Laboratory Animal Science*. No. 3 2005, Volume 32
14. **Naomi Maina**, Joseph Maina Ngotho, Tom Were, John Kibuthu Thuita, David Mumo, Mwangangi, John Maina Kagira, Joseph Mathu Ndungu and Jeremy Sternberg (2004). Proinflammatory cytokines expression in the early phase of *Trypanosome brucei rhodesiense* infection in vevert monkeys (*Cercopithecus aethiops*). *Infection and Immunity*, Vol. 72, 5(3063-3064).
15. **Maina**, J.M. Ngotho, Z. K. Njiru, W. M. Karanja, C. O Gem, S. M. Karanja, J. K. Kibugu and J. M. Ndungu (2003). Efficacy of Trypan (Diminazene DI-Aceturate) in camels infected with *Trypanosoma evansi*. *Journal of Camel Practice and Research*, June vol 10 (125-129).
16. J. Sternberg, **N. Njogu-Maina**, C.W. Gichuki and J.M. Ndung'u, (1998). Nitric oxide production in *T. rhodesiense* infected vevert monkeys: A retrospective study. *Journal of Parasite Immunology* (20): 395-397.
17. **N.W. N. Maina**, C. Otieno, J. Okwara, P.N. Ngatia, J.E. Auma, J.M.N. Nyang'ao, W. Olaho-Mukani, and D.V. Sutherland (1996). Drug resistance of *Trypanosoma evansi* isolated from camel herds in Kenya. *Journal of Camel Practice and Research*, Dec. 125-129.
18. **Naomi W.N. Maina**, Ben Kinyanjui, James O. Onyango, Joanna E. Auma and Simon Croft (1998). The activity of aminoglycoside antibodies against *Trypanosoma brucei*. *African Journal of Health Science* (5): 126-128.

Scientific meetings

1. Naomi Maina et al (October 2010). Biochemical changes in the advanced Vervet monkey model of HAT. HAT Annual scientific conference at Silver Springs Hotel, Nairobi Kenya.
2. 18th International Biomedical Research Conference. Translating non-human primate studies into clinical benefits for humans. July 2010. Kenya Institute of Education, Nairobi

3. 7th International Conference of the Society for Free Radical Research, 28th African Health Sciences Congress, 4th African Rotavirus Symposium. Genotypic and phenotypic characterization of *Trypanosoma brucei gambiense* isolates from Ibba, South Sudan, an area of high melarsoprol treatment failure rate. University of Mauritius, Mauritius
4. Higher Education science and curricular reforms. African Universities responding to HIV and AIDS Kenya onsite country Training. Kenya Institute of Education, Nairobi
5. 2nd. Third world academy of science, Young Scientist conference on mentoring young scientist for innovative application of research and development in Africa. 2007. Nairobi, Kenya
6. Challenges in Chemotherapy of sleeping sickness. 2007. Annual conference of Institute of primate Research
7. Ngotho JM, **Maina NW**, Ndung'u JM, Karanja SM, Njiru ZK and Sternberg JM (2001). Serum and CSF cytokine levels in normal Vervet monkeys: The model of rhodesian sleeping sickness. Proceedings of the 26th. congress of International Scientific Council of Trypanosomiasis Research and Control (ISCTRC) in Ouagadougou, Burkina Faso.
8. **Naomi Maina**, Z. Njiru, J.M. Ngotho, W.M. Karanja, C. Otieno, S. M. Karanja and J.M. Ndung'u (2001). Efficacy of Trypan® (diminazene di-aceturate) in camels infected with *Trypanosoma evansi*. Proceedings of the 26th. congress of International Scientific Council of Trypanosomiasis Research and Control (ISCTRC) in Ouagadougou, Burkina Faso.
9. **N.W.N.Maina**, D.V.Sutherland, C. Otieno, P.N.Ngatia, W. Olaho- Mukani (1997). Pyruvate production as an indicator of drug resistance of *Trypanosoma evansi* isolates. Proceedings of the 16th. International conference of World Association for the advancement of Veterinary Parasitology (WAAVP) held in Sun City, South Africa.
10. **N.W.N.Maina**, J.D.Onyango, B. Kinyanjui, J.E.Auma and S.L.Croft (1996). The effect of paromomycin on the causative agents of rhodesian sleeping sickness. Proceedings of the African Health Sciences Congress (AHSC) held in Nairobi, Kenya.
11. .
12. P.N.Ngatia, F.A.Rashid, **N.W.N.Maina**, J.E.Auma, W.Olaho-Mukani and D.V.Sutherland (1996). *In vitro* characterization of trypanosomes isolates from camel herd from seven districts of Kenya. Proceedings of the African Health Sciences Congress (AHSC) held in Nairobi, Kenya.
13. **Maina N.W.N.**, C. Otieno, J. Okwara, P. N. Ngatia, J. E. Auma, J. M. N. Nyang'ao, W. Olaho- Mukani, and D. V. Sutherland (1995). Drug resistance of

- Trypanosoma evansi* isolated from camel herds in Kenya. Proceedings of the 23rd. congress of International Scientific Council of Trypanosomiasis Research and Control (ISTRC) Banjul, Gambia.
14. P. W. Kinjanjui and **N. W. Njogu** (1990). The trypanocidal effect of serum from African Baboons. The 1st. Biochemical Society of Kenya Symposium (BSK) held in Nairobi, Kenya.
 15. **Maina N.W.N.**, J.M Oteino, G. A. Murilla , R. Rukunga ,W. Kofi-Tsekpo (1997). Determination of anti-trypanosomal activity in selected plant extracts. Proceedings of the 6th. KETRI internal Annual Scientific review. KETRI publication No. 64.
 16. P. N. Ngatia, F.A Rashid, **N.W.N. Maina**, J. E. Auma, J. M. N. Ngang'ao, W. Olaho-Mukani and D.V. Sutherland (1996). Charaterisation of trypanosomes infections found in camel herd of some areas in Kenya. KETRI publication NO. 62
 17. **N.W.N. Maina**, C. Otieno, P. N. Ngatia, J. E. Auma, W. Olaho- Mukani and D. V. Sutherland (1996). Drug sensitivity profiles of *Trypanosoma brucei evansi* isolated from camels. KETRI publication NO.62

Referees

- Professor Mary Wambui Ndungu. Dean Science Faculty of Science, Jomo Kenyatta University of Agriculture and Technology, Box 62000, Nairobi
- Prof. Reto Brun, Head of parasite Chemotherapy, Swiss Tropical Institute, P. O. Box, CH-4002 Basel, Switzerland.
- Professor Esther Kahagi. Deputy Vice-Chancellor Research, Production and Extension. Jomo Kenyatta University of Agriculture and Technology, Box 62000, Nairobi