



ANNUAL REPORT 2018

NATIONAL UNIVERSITY RESEARCH INSTITUTE (NURI)



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بسم الله الرحمن الرحيم
معهد أبحاث الجامعة الوطنية
تقرير عن إنجازات معهد أبحاث الجامعة الوطنية للعام ٢٠١٨

الورش والتدريبات التي أقيمت في معهد الأبحاث:

- Introduction to Bioinformatics (Online from University of Cape Town-Hosted by NURI).
- Workshop on Scientific writing collaboration with the University of Heidelberg (Germany), German Academic Exchange Service (DAAD) and the German Federal Ministry of Health: 10/11/2018.
- Workshop on Neglected Tropical Disease collaboration with the University of Heidelberg (Germany), German Academic Exchange Service (DAAD) and the German Federal Ministry of Health: 12-15/11/2018.

Research projects at the Institute:

- Genetic Identification of Echinococcosis species in Human in Sudan
- Prevalence and Genetic Identification of Echinococcosis Species in Dogs in Khartoum Area
- Identification of Environmental Factors Associated with the Transmission of Cystic Echinococcosis in Sudan
- Whole Genome Sequencing of Staphylococcus aureus
- Food and Water Transmitted Diseases among School Children in Khartoum Area
- Genetic Diversity of Plasmodium falciparum in Sudan
- Parasite and Host Factors Associated with Post- kalazar Dermal Leishmaniosis

Master of Bioinformatics

- The Master of Bioinformatics program has been approved by the decisions of the Ministry of Higher Education and Scientific Research and registration has been opened, and the study will start on 3/11/2018.
- Bioinformatics Diploma
- The Diploma in Bioinformatics was approved by the College of Graduate Studies at the National University.
- Participation in training courses outside Sudan
- 3 employees of the institute participated in training courses outside Sudan as follows

PARTICIPATION INTERNATIONAL EVENT

- Dr. Rihab A. Omer: International Deanship Workshop (Germany, Uganda and Ethiopia)
- Dr. Rihab Ali Omer and Dr. Sofia Basher: (University of Putra - Malaysia)
- Dr. Rihab Ali Omer: German Research Foundation (Entebbe-Uganda)
- Mohamed A. Basheer: (Cape Town University - South Africa)
- Mohamed A. (Heidelberg - Germany)
- Nouh Saad Mohamed: (Korea)
- Dr. Rihab Ali Omer and Dr. Sofia Basher shared in the judging of the poster presentation during the molecular biology and bioinformatics poster presentation of the Functional Genomics and Structural Biology conference, Malaysia.

ORGANIZING SCIENTIFIC CONFERENCES

- The Institute organized the second university scientific conference, entitled Multidisciplinary Research for Community Development. National University, Khartoum 28-29 April, Sudan.
- The Institute, in cooperation with the National University, organized a global conference with the University of Putra, Malaysia, entitled The 3rd International Symposium and Workshop on Functional Genomics and Structural Biology Malaysia, 23-28 July 2018

RESEARCH GRANTS

- The Institute received a grant from the German Alexander Alexander von Humboldt Foundation in the amount of 20,000 Euros and a grant from the German Dad Organization Accrediting the Research Institute as one of the Centers of Excellence.

- The Scientific Research and Innovation Authority of the Ministry of Higher Education and Scientific Research has approved the Institute's Center of Excellence in the field of molecular biology and bioinformatics for neglected tropical diseases.
- Work began to issue a document on scientific research at the National University.

PUBLICATION & SCINTIFIC CONFERENCES

Poster presentation

1. The second scientific conference of the National University –Sudan. Multidisciplinary Research for Community Development (2018):

➤ In Silico structural and SNP analysis of Penicillin-Binding Protein (PBP) of Methicillin-Resistant Staphylococcus aureus strain SO-1977. Mohammed Ahmed B. Elnour, Nusiba I. Abdalla, Zaina b SA. Ahmed, Ahmed H. Elsadig, Mohamed M. Hassan, Rihab A. Omer, Sofia B. Mohamed.

➤ Computational Analysis of the Structural and Biochemical Features of Three Ribosome-Inactivating Proteins (RIPs) with anti-breast cancer activities: Saporin6, Riproximin and Trichosanthin. Ghada Mustafa Eltayeb, Nagla Mustafa Eltayeb, Salizawati Muhamad Salhimi and Sofia B. Mohamed.

➤ A Bioinformatics Approach to the Structure, Function Of the major facilitator superfamily (MFS) of Methicillin-Resistant Staphylococcus aureus strain SO-1977. Nusiba I. Abdalla, Mohammed Ahmed B. Elnour, Zainab SA. Ahmed, Ahmed H. Elsadig, Rihab A. Omer, Sofia B. Mohamed.

• A Comprehensive in Silico Analysis of the Functional and Structural Impact of Non-Synonymous Single Nucleotide Polymorphisms in the Human KRAS Gene. Nahla E. Abdelraheem, Ghada M. El-Tayeb, Lamia O. Osman, Samar A. Abedlrhman, Aisha S. Ali, Ahmed H. Elsadig, Sofia B. Mohamed.

2. The 3rd International Symposium and Workshop on Functional Genomics and Structural Biology (FGSB2018). (2018)

Poster presentation

➤ In silico functional annotation analysis of hypothetical protein CA803_03125 from Methicillin-Resistant Staphylococcus aureus strain SO-1977 from Sudan. Aisha K. Babiker and Sofia B. Mohamed.

- Genomic analysis of proteins involved in RNA metabolism from Methicillin-Resistant *Staphylococcus aureus* strain SO-1977 from Sudan. Fatima H. Khidir, Sofia B. Mohamed.
- Insights into cell wall and capsule proteins of Methicillin-Resistant *Staphylococcus aureus* SO-1977 strain. Sarah M. Osman, Sofia B. Mohamed.
- In silico analysis and molecular of docking Penicillin-Binding Protein 2a (PBP 2A) of Methicillin-Resistant *Staphylococcus aureus* strain SO-1977 from Sudan. Nagla A. Khalafalla, Talal A. Adlan, Mohammed Ahmed B. Elnour, Nusiba I. Abdalla, Sofia B. Mohamed.

Oral presentation

- Molecular Modelling of anti-apoptotic BCL-2 (B cell lymphoma 2) and molecules from Anticancer herbs in India | A Virtual Screening, Molecular Docking & Simulations Study. Sofia B. Mohamed¹, Susha Shajigeorge, Raghav Choudary, Yash Shrivastava, Syed Asif Husain Naqvi. 2018.

SCIENTIFIC PUBLICATIONS

1. Teivi Laurimäe, Liina Kinkar, Epp Moks, Thomas Romig, Rihab A. Omer, Adriano Casulli, Gérald Umhang, Guna Bagrade, Malik Irshadullah, Mitra Sharbatkhori, Hossein Mirhendi, Francisco Ponce-Gordo, Silvia V. Soriano, Antonio Varcasia, Mohammad Rostami-Nejad, Vanessa Andresiuk and Urmas Saarma Molecular phylogeny based on six nuclear genes suggests that *Echinococcus granulosus sensu lato* genotypes G6/G7 and G8/G10 can be regarded as two distinct species *Parasitology* 1–9. <https://doi.org/10.1017/S0031182018000719>.
2. Anas Mahadi Elnazeer., Abdallah Elssir., Rihab Ali Omer., Mubark Mustafa., Khitma Hassan Elmalik (2018). DNA Extraction and PCR Detection of *G. Lambli*a Cyst from Human Fecal Samples in Some Sudanese Suspected Patients. *American Journal of Zoology*.
3. Omer RA, Dauschies, Gawlowska S, Elnahas, Kern P, Bashir S, Ali MSA, Osman A, Romig T First detection of *Echinococcus granulosus sensu stricto* (G1) in dogs in central Sudan. (2018 *Parasitol Res.* May;117(5):1657-1661. doi: 10.1007/s00436-018-5851-5. Epub 2018 Apr 7.
4. Mohamed SB., Alagib A., AbdElkareim TB., Hassan MM., Johnson WC, Hussein HE., Taus NS., Ueti MW., Wendell C. Johnson., Hala E. Hussein., Naomi S., Taus and Massaro W (2018). Molecular Detection and Characterization of *Theileria* spp infecting Cattle in Sennar State, Sudan. *Parasitology Research*. <https://doi.org/10.1007/s00436-018-5775-0>.
5. Eman Taha Ali, Tagwa Mohamed Fadul, Marwa Ali Nasr, Emmanuel Edwar Siddig, Nouh S. Mohamed and Ali Mahmoud Mohammed Edris. Comparison between Immunohistochemical Marker and Conventional Histochemical Stains in Detecting *Helicobacter pylori*. *ECMICROBIOLOGY* 2018.
6. Rowa M Osman, Nusaiba S Eisa, Awad A Nasr, Omer OS Ali, Emmanuel Edwar Siddig and Nouh S Mohamed. Prevalence of *Schistosoma haematobium* among School Children in Al-

Lamab Bahar Abiad Area, Khartoum State, Sudan 2017: A Cross Sectional Study. ECMICROBIOLOGY 2018.

7. Nouh S Mohamed, Musab M Ali Albsheer, Hanadi Abdelbagi, Emanuel E Siddig, Mona A Mohamed, Mohamed SE Muneer and Mohamed M Elbasheir. A Comprehensive Analysis on the Genetic Diversity of Plasmodium Falciparum MSP-1 Field Isolated from Different Regions in Sudan. A Cross-Sectional Study. ECMICROBIOLOGY 2018.

8. Mohammed Saad Mohammed Farah Alnour, Abdel Rhim Mohammed Elhussein, Isam Mohammed Elkhidir, Seif Eldin Tayeib, osama mohammed khair, Khalid A Enan, Nouh S. Mohamed. Detection of Drug-Resistant Genes in Mycobacterium Tuberculosis in Sudanese Tuberculosis patients in Khartoum state Using Multiplex PCR. ECMICROBIOLOGY 2018.

9. Nouh S. Mohamed, Emmanuel E. Siddig, Mona A. Mohamed, Basma A Alzain, Hanaa H Saeed, Emmanuel E.Tanyous, Bahaeldin K. Elamin, Ali Mahmoud Edris. Prevalence of Enteroparasitosis Infections among Renal Transplant Recipients in Khartoum state, Sudan 2012 – 2013. BMC Research Notes. 2018.

10. Walaa Salah Abdulla Mohamed, Kaykinye Yasin, Nouh S. Mohamed, Muzamil Mahdi Abdel Hamid. Cross Sectional Study to Determine Chloroquine, Resistance among Plasmodium Falciparum Clinical Isolates from Khartoum, Sudan. F1000 Research. 2018.

ACCEPTED PAPER

- Sofia B. Mohamed, Mohamed M.Hassan, Abdalla Munir K.A , Nusiba I. Abdalla, Talal Adlan, Aisha K. Babiker. Re-annotation of hypothetical protein CA803_03125 of Methicillin-Resistant Staphylococcus aureus strain SO-1977 isolated from Sudan. **bioinfo-2018-0105.R1.**

SUBMITTED PAPER

3. Sofia B. Mohamed, Talal A. Adlan, Nagla A. Khalafalla, Nusiba I. Abdalla, Zainab SA. Ali, Abdella Munir K.A , Mohamed M.Hassan, Mohammed-Ahmed B. Elnour. Proteomics and docking study targeting Penicillin-Binding Protein and Penicillin-Binding Protein2a of Methicillin-Resistant Staphylococcus aureus strain SO-1977 isolated from Sudan. **EVb-2018-0087.**
4. Sofia B. Mohamed, Abdella Munir K.A, Nusiba I. Abdalla, Mohamed A.I. Alfaki, Salma R. Awad, Mohamed M.Hassan, Talal A. Adlan. Comparative study of DNA Gyrase Subunit A in Methicillin-Resistant Staphylococcus Aureus SO-1977 Strain from Sudan using Next Generation Sequencing and in-silico tools. **BBI.2018.0040.**
5. Sofia B. Mohamed, Abdella Munir K.A, Talal A. Adlan, Mohamed M.Hassan, In-Silico Characterization of a Hypothetical Proteins from Methicillin-resistant Staphylococcus aureus strain SO-1977. **BBI.2018.0070**
6. Genetic polymorphism of the N-terminal region in circumsporozoite surface protein of Plasmodium falciparum field isolates from Sudan. (**BMC Research Notes**)
7. Single Nucleotide Polymorphism in IL17A among Rheumatoid Arthritis Sudanese Patients (**Arthritis & Rheumatology**).
8. Identifying asymptomatic infections of visceral leishmaniasis in non-endemic areas with the associated risk factors in Gedaref state, Sudan: A cross sectional study. (**BMC Infectious Diseases**).