

A ROAD MAP TO BIOINFORMATICS DEVELOPMENT IN MALAWI

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OUTLINE

- University of Malawi
- Bioinformatics Development
- Current State
- Way Forward
- Summary



MALAWI



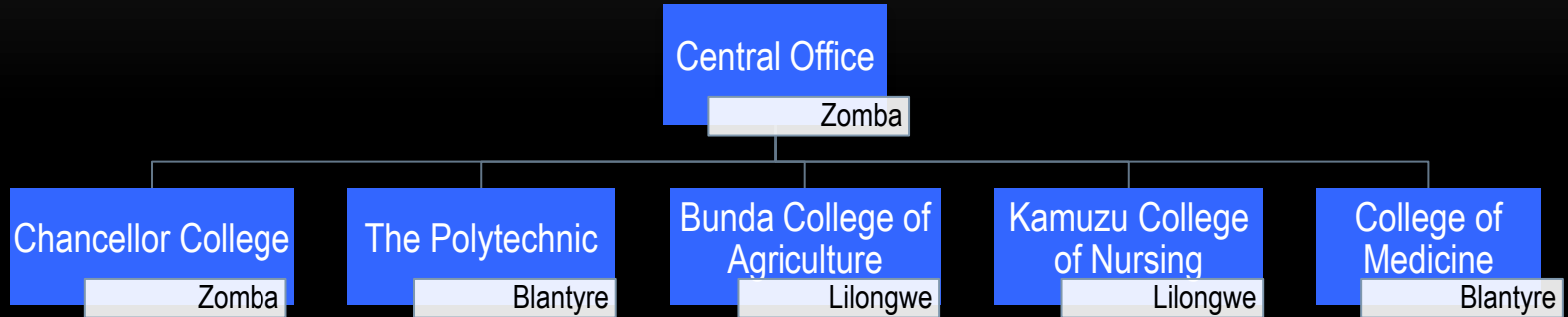
- Population is approximately 15 million

UNIVERSITIES

- University of Malawi
- University of Mzuzu
- Catholic University
- Seventh Day Adventist University
- University of Livingstonia
- Blantyre International University



UNIVERSITY OF MALAWI



- University intake in 2012: 8750 undergraduates; 306 Masters and 46 PhD
- The Faculty of Science at Chancellor College runs Computer Science, Biology, Biochemistry and other sciences
- Biostatistics was introduced at Chancellor College
- A joint Master of Informatics programme is run by the Polytechnic and Chancellor College

BIOINFORMATICS STATE

- There are lots of studies that require Bioinformatics skills such as NGS, Programming, Databases
 - The studies include: Malaria, TB, Pathogens, immunology both in the University and Research Institutes
 - Studies that require sequencing send their samples to UK, Sanger Institute
 - Most Bioinformatics analyses are also done externally at Sanger Institute or other collaborators
 - Most scientists in Malawi are Clinicians, Microbiologists or Biochemical scientists
 - The assistance offered by collaborating institute benefits local scientists in terms of costs reduction
 - This has reduced the need for scientists to demand local Bioinformatics experts
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THE GENESIS OF BIOINFORMATICS IN MALAWI

- SANBio Project IN 2009
- Malawi-Liverpool Wellcome Trust Clinical Trials Research Institute
- Leadership will at COM

THE NEPAD/SANBIO PROJECT

- Workshop Training in 2009, University of Pretoria, Bioinformatics Unit
 - Attended by College of Medicine
 - eBioKit – February 2010, University of Mauritius
 - Attended by College of Medicine
 - eBioKit was donated to Malawi for teaching and learning
 - Pathogen Genomics Workshop 2 to 6 August 2010
 - Attended by COM, CHANCO and BUNDA
 - Phylogeny for Beginners – 15 to 19 Nov 2010
 - Genome Sequencing Assembly and Annotation, 21 to 25 November 2011 in Mauritius
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MALAWI-LIVERPOOL WELLCOME TRUST CLINICAL TRIAL PROJECT

- Dr Dean Everett (University of Liverpool based in Malawi) H3ABioNet Bioinformatics Group
 - Isolation, sequencing and study of Salmonella, E. coli, S. pneumococci
 - Immunology, Drug Resistance
 - Bioinformatics Researchers
 - Dr B. Kumwenda (UNIMA/COM)
 - Dr Anmol Kiran
 - Mr Chrispin Chaguza
 - Mr Patrick Musicha
- Workshops and Training
 - Joint PhD and masters programmes between University of Malawi, College of Medicine and University of Liverpool
 - International Bioinformatics workshops held in Malawi at Wellcome Trust

BIOINFORMATICS DEVELOPMENT AT COLLEGE OF MEDICINE

- To develop a department/unit for Medical Informatics
 - Bioinformatics – H3AFrica/H3ABioNet
 - Medical informatics – Prof Gerry Douglas, University of Pittsburg, USA
 - Health informatics – Prof Jens Johan Kaasboll, University of Oslo, NOMA/SIU
- Started with Health Informatics under the Community Health Master of Public Health Programme (MPH Informatics)
 - 6 students each year, sponsored by NOMA
 - Biased to Health informatics after core Public Health courses
 - Introduction to Health Informatics
 - Implementation of Health Informatics
 - Database Management Course
 - One year Research Project on a Health Informatics problem

TRAINED MALAWIAN BIOINFORMATICIANS

- Dr Vayisolo Nyirongo – UN, outside the country
 - Dr Benjamin Kumwenda
 - Chrispin Chaguza - Msc Bioinformatics Liverpool (to start PhD)
 - Patrick Musicha – Student PhD Bioinformatics
 - Msc Wits University

 - OTHER SCIENTISTS WITH BIOINFORMATICS
 - Dr Chisomo Msefula – Microbiologists – College of Medicine
 - Dr Fingani Mphande – Microbiologists, outside the country
 - Mr Aarox Kamngona – Microbiologists, submitted his PhD
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POLITICAL WILL TO DEVELOP BIOINFORMATICS AT COM

- There is need to supplement clinical studies, laboratory and basic sciences with bioinformatics techniques
 - Three years secondment to MLW-COM Clinical Trial Research Institute to develop collaboration and capacity
 - The Principal, Postgraduate and Undergraduate Dean are in favor of developing a Bioinformatics programmes
 - They rely on guidance and efforts of those in the field
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THE TASK AHEAD

- Local Bioinformatics needs
 - to promote their field to fellow local scientists and learners in universities
 - use existing opportunities develop curricula and programmes in the university
 - provide local support to studies that require Bioinformatics expertise
 - develop bioinformatics research projects to output publications to add value to institutions but also contribute to improvement in health and socio-economic status
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SUMMARY

- There is need for Bioinformatics in Malawi with increasing work in sequencing, NGS and analysis
- However, effort is required to sensitize the field, develop curriculum

Thank You!

