

Cambridge-Africa Day 2016

Peter Woodsford and Chris Wagner



U3AC Africa Forum 12th November 2016



What is Cambridge-Africa?

- Website:
 - <http://www.cambridge-africa.cam.ac.uk/>
- Started in 2008, emerged from a number of individual, long-term, collaborations between Cambridge and African researchers.
- It is a working partnership between the University of Cambridge and several African universities and institutes, which supports the training of African doctoral and post-doctoral researchers. It aims to strengthen Africa's own capacity for a sustainable research and mentoring culture, by cultivating the talented individuals who will make this long-term goal a reality.

What is Cambridge-Africa?

- Ongoing Programmes:
 - Wellcome Trust -sponsored Makerere-UVRI Infection & Immunity Training Programme (MUII) (2008-2020)
 - Wellcome Trust-sponsored Training Health Researchers in Vocational Excellence (THRiVE) (2009-2021)
 - Carnegie-sponsored Cambridge-Africa Partnership for Research Excellence (CAPREx) (2012-2018)
 - Cambridge-Africa ALBORADA Trust Research Fund (2012-2026)
 - Isaac Newton Trust-sponsored Cambridge-Africa Fellowship Fund (2012-2016)
 - Wellcome Trust-Cambridge Centre for Global Health Research (WT-CCGHR) (2013-2018)
 - Cambridge-Africa PhD Scholarship Scheme (2015-2020)

Cambridge-Africa Initiatives

CAPREx
(2012-18)

40 postdoc & 12 research admin fellowships have been completed; 14 postdocs on-going, and 10 more to be awarded by 2018

MUII
(2008-20)

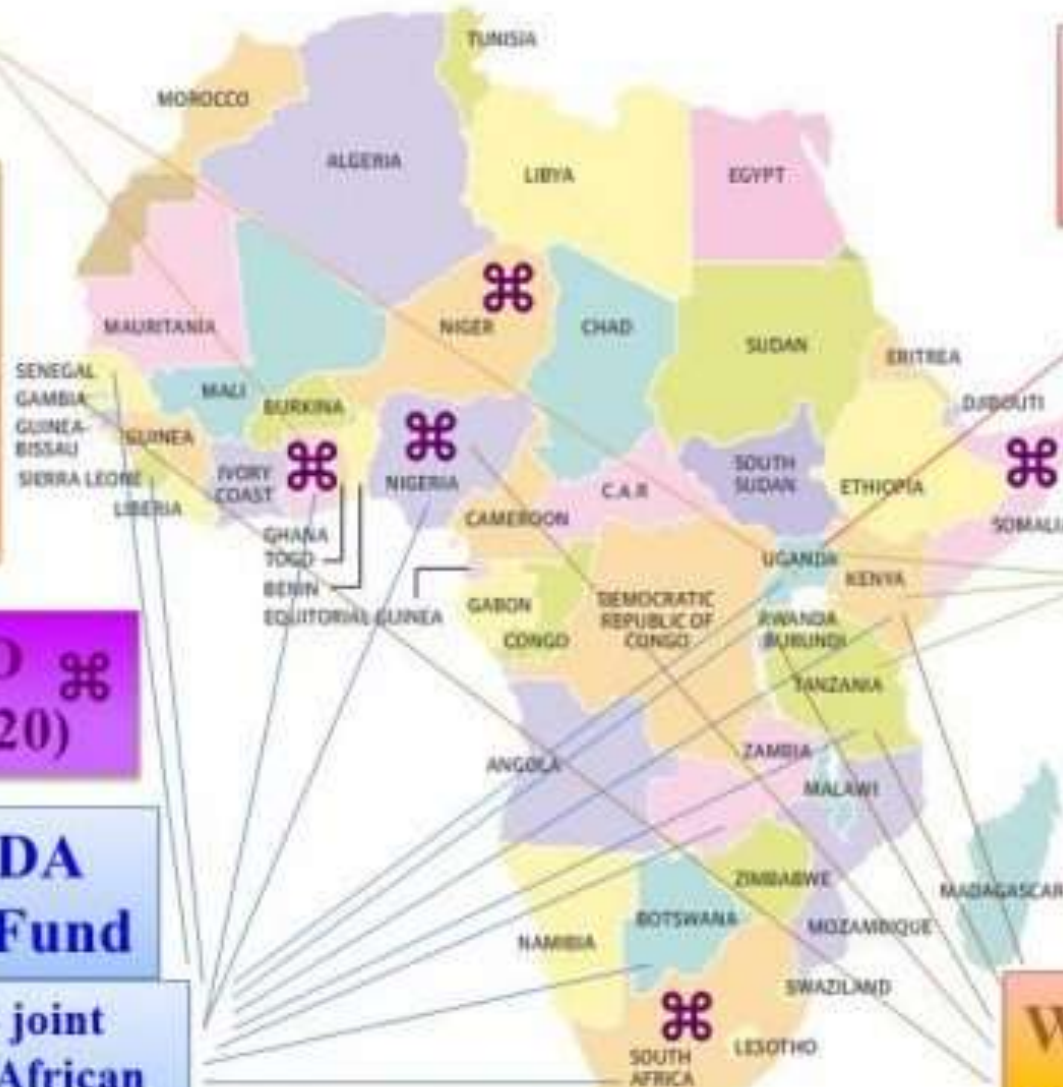
THRiVE
(2009-21)

Cam-Africa PhD ☞
Scholars (2015-20)

ALBORADA
Research Fund

2013-26; 78 joint awards in 11 African countries as at 2015

WT-CCGHR
(2013-18)



What is Cambridge-Africa?

- Staff:
 - Directed by Professor David Dunne (Department of Pathology), with support from Professor James Wood (Department of Veterinary Medicine), and Dr Devon Curtis (Department of Politics and International Studies).
 - Programme Manager: Dr. Pauline Essah
- Topics:
 - interdisciplinary and multidisciplinary, extending across subject areas such as the social sciences and humanities, engineering, biological and health sciences, as well as research management and administration.

2014 Cambridge-Africa Day

- 2014 at U3A Africa Forum
 - Julia Hasler covered BioSciences
 - Peter Woodsford reported on Physical Sciences/IT
 - Rovincer Najjuma talked about Social Sciences and her work on Conflict in Northern Uganda
 - <http://af201415.woodsforads.uk/Autumn-Term/Cambridge-Africa-Day-for-U3A-21112014.pdf>

2015 Cambridge-Africa Day

- 2015 at U3A Africa Forum
 - Dr. Pauline Essah, Cambridge-Africa Programme Manager, gave us a fascinating view of the whole programme
 - Julia and Peter again summarised some topics
 - A highlight was the account of the Fight against Ebola in West Africa by a Cambridge virologist who went there to set up DNA sequencing diagnostic system
 - http://af201516.woodsforwards.uk/Autumn-Term/Cambridge-Africa-Day-2015_for_web.pdf
 - We also had a presentation by Sir Brian Heap on Smart Villages

2016 Cambridge-Africa Day

- The biggest yet, fully booked a week in advance of the event
 - Held in the Queen's Building Lecture Theatre at Emmanuel College
 - Chris Wagner and Sue and Peter Woodsford attended
 - Also Ian Sanderson of Afrinspire and John Mullett of SOWTech, both of whom have been Africa Forum speakers in recent years.
 - And Gregory Akall, our speaker on 25th November

2016 Cambridge-Africa Day

- Whole day, 13 speakers including 3 keynotes
- Topics ranged from 'Human Evolution in Africa' to 'Maternal Health in Uganda', from 'Building Capacity for Conservation in Africa' to 'Alternative Methods for the Cultivation of *Cryptolepis sanguinolenta* - a Medicinal Plant Used in the Treatment of Malaria'
- This year a big emphasis on Life and Social Sciences, no Physical Sciences.

2016 Cambridge-Africa Day

- Introductions by Professor David Dunne, the ‘Father’ of Cambridge-Africa and the Vice-Chancellor, Professor Sir Leszek Borysiewicz
- Three keynotes:
 - Professor Richard Leakey (Paleoanthropologist and Conservationist)
 - Her Excellency Mrs Toyin Saraki (Founder-President of Wellbeing Foundation Africa (WBFA))
 - Professor Ebenezer Owusu (Vice-Chancellor of the University of Ghana, Legon)

2016 Cambridge-Africa Day

- Impossible to give other than a subjective flavour of the event in our session today
- But, you can hear the presentations and see lots of photos at:
 - <http://www.cambridge-africa.cam.ac.uk/resources/photos-videos-and-audio/2016-cambridge-africa-day-2/>

David Dunne



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David Dunne

- ‘Father of Cambridge-Africa’
- Started in 2008
- Still a critical shortage of African mentors
- Caprex model in Uganda now being taken to Kenya
- Human factors:
 - Application forms used to cost £50, payable by credit card. Feedback: Obstacle. Now waived
 - Took Ugandan Ph.D. student (research on HIV and Bilharzia) to see the Arsenal play. Life-time ambition!
- Oxford just now starting Oxford-Africa
 - Cambridge advising

The Vice-Chancellor



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The Vice-Chancellor

- Professor Sir Leszek Borysiewicz
- Cambridge University never comments on 'Rankings'
- CU has invested £4 million in Cambridge-Africa in last 6 years
- Soon to retire, Cambridge-Africa has been for him a major personal commitment and hopefully will be his legacy
 - Successor is keen on Africa

Richard Leakey

- A native-born Kenyan, son of Louis and Mary Leakey, of Olduvai Gorge fame
- Paelontologist, Conservationist, Politician, Survivor....
- Listen to [keynote](#) (Political, African prehistory, Conservation, Opportunity/Responsibility of CU)
- Summarise Q+A
 - Railway is inevitable, how to mitigate its effect
 - Evolution in Kenyan Schools? Fundamentalist pressures but changing
 - How to counter brain drain? Kenya offers dual passports

Human Evolution in Africa

Dr Marta Lahr-Department of Archaeology and Anthropology

Role of Africa:

- Unique role of Africa in human evolution
- As a species, origin in Africa, homosapiens less than 200 000 years. Very short in evolution terms
- Rich record of human evolution
- Project called “In Africa”

Dr Martha Lahr-Tribute to Richard Leakey



“In Africa” Project

- What happened over 150 000 years of our history
 - Dispersal/colonisation of the World
 - What changes?
 - What happened to those who stayed
- Lake Turkana, why chosen:
 - Very rich fossil history (developing from Richard Leakey’s first finds in 1967)
 - Turkana people, unusually diverse geno types

Turkana Basin Initiative



Turkana Basin

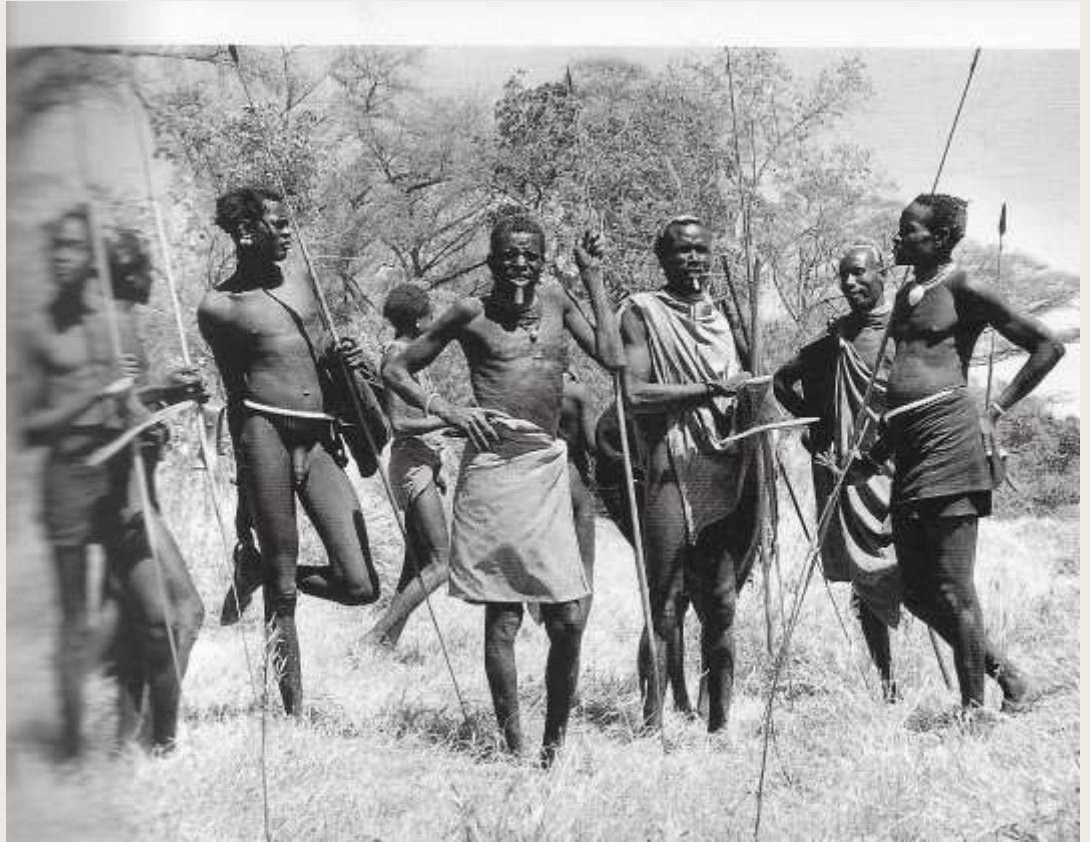
- Source of unprecedented fossil and archaeological evidence for all major stages of human development-hundreds of localities
- View that every human today shares DNA with people living in vicinity of Basin
- Emergence of modern homo sapiens
- Turkana Lake levels- variations due to climate change (over geological time)

Lake Turkana Landscape



Turkana Tribe

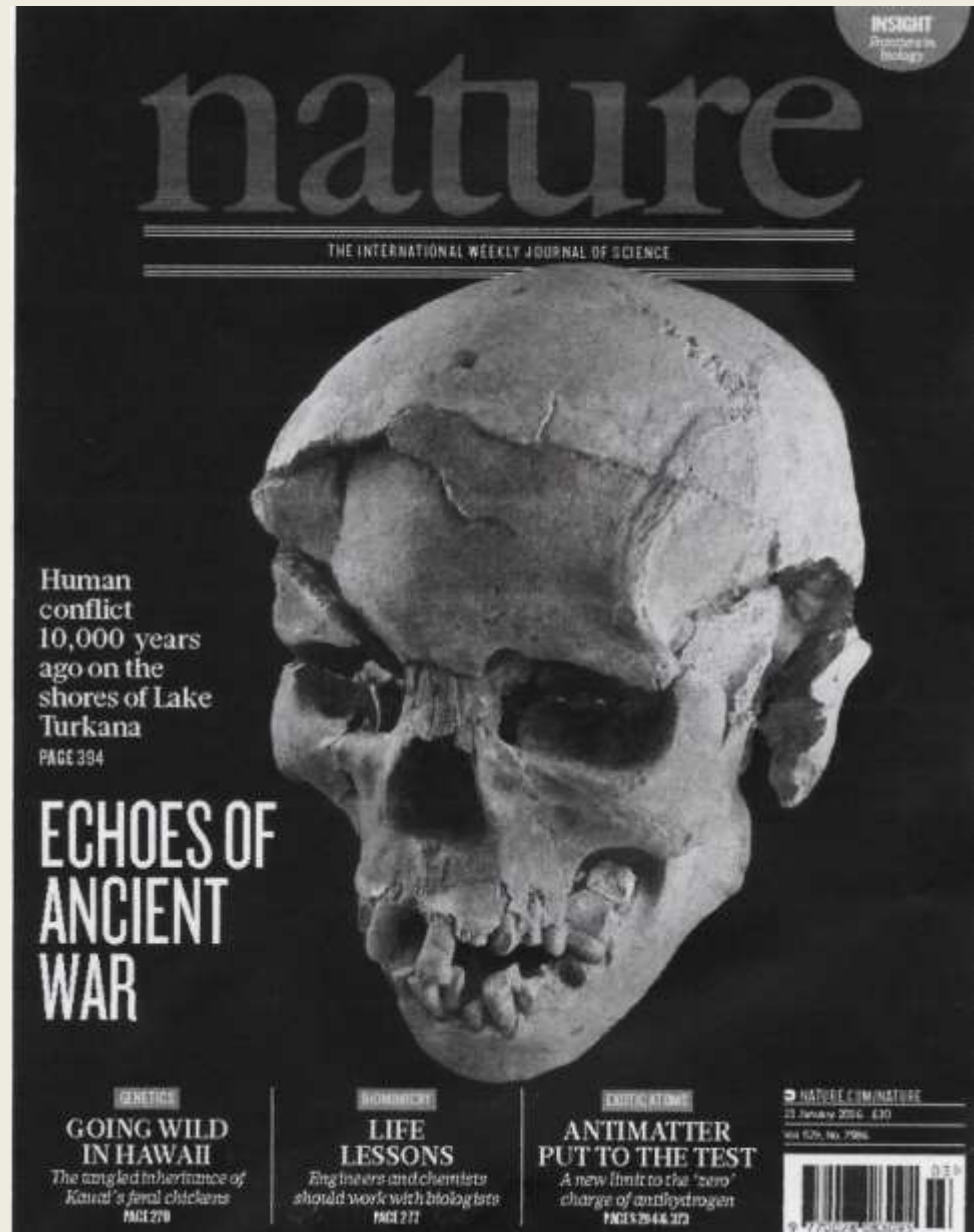
- very interesting history and diversity
- paleo work
- working with Turkana people, looking at genetics



Nature Journal

Evidence of massacre
10 000 years ago –
“warfare” in Late
Stone Age, from
excavations at Lake
Turkana.

Why- hunter
gatherers, no
possessions etc



Alternative Methods for the Cultivation of *Cryptolepis sanguinolenta* - a Medicinal Plant Used in the Treatment of Malaria

- Dr Naalamle Amissah (Department of Crop Science, University of Ghana, Legon; CAPREx Fellow) and Dr Huw Jones (NIAB, CAPREx Collaborator).
- Peter Woodsford to summarise



Introduction



75% of the population in urban and rural areas depend on medicinal plants (Abbiw *et al.*, 2002)

Medicinal plants in Ghana are collected from the wild, leading to the over-exploitation of certain species (Ampaw CSRPM-personal communication, 2009).






Uses


Antimalarials

- Malaherb,
- Herbaquine,
- Nibima
- Phyto-Laria
- Masada Mixture
- Malakare
- Farra Malamix

It is also used by Kasapreko Company Limited in producing Alomo Bitters.




Cryptolepis Sanguinolenta Tincture (4oz)
by Montana Pharmacy
\$50.00



BioPure Cryptolepis Herbal Tincture (4 fl oz)
by Bio Pure
\$70.99 (\$17.75/Fl Oz)
Prime
FREE Shipping on eligible orders

More options available:
\$40.00 Other Sellers

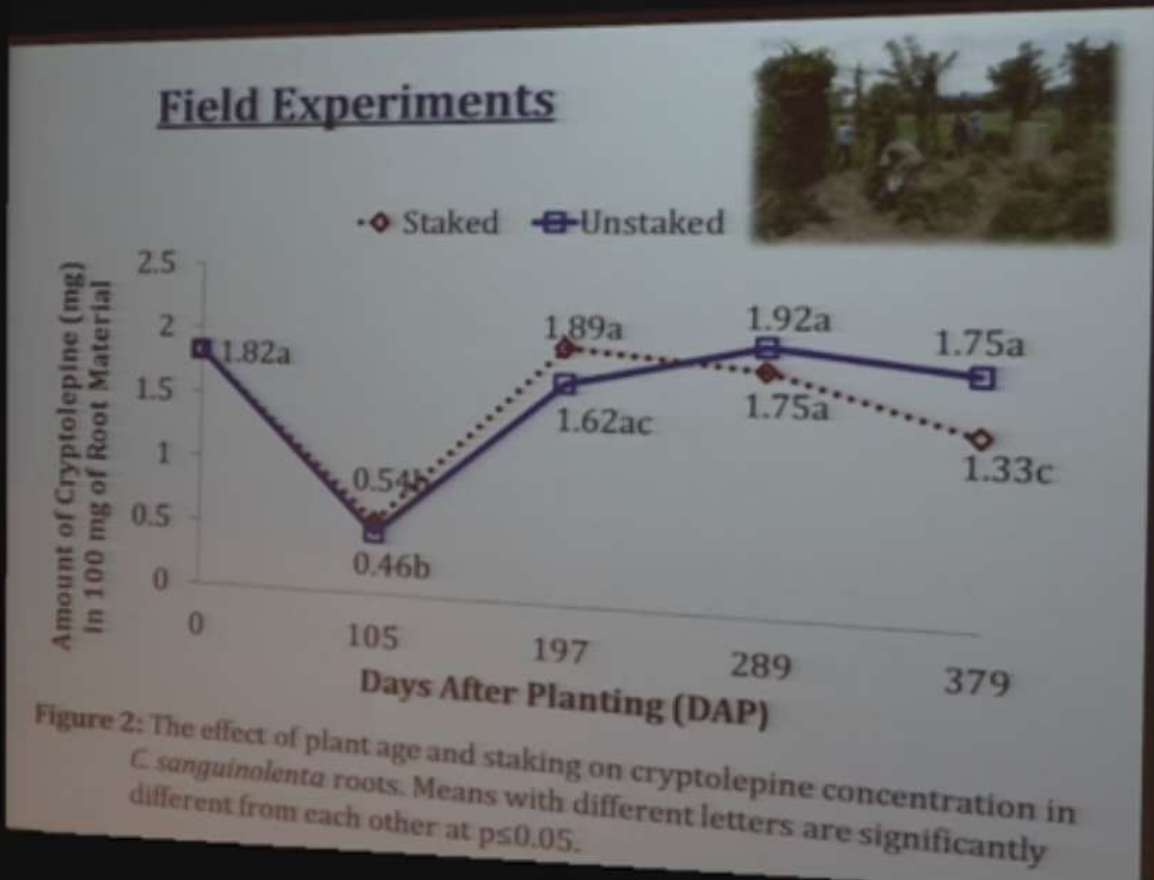




Cryptolepis sanguinolenta (Lindl.) Schltr.

- **Family:** Apocynaceae/Asclepiadaceae
- **Common names:** Ghana quinine, Nibima (Twi); Gangamau (Hausa), Kadze (Ewe)
- **Part used:** Roots














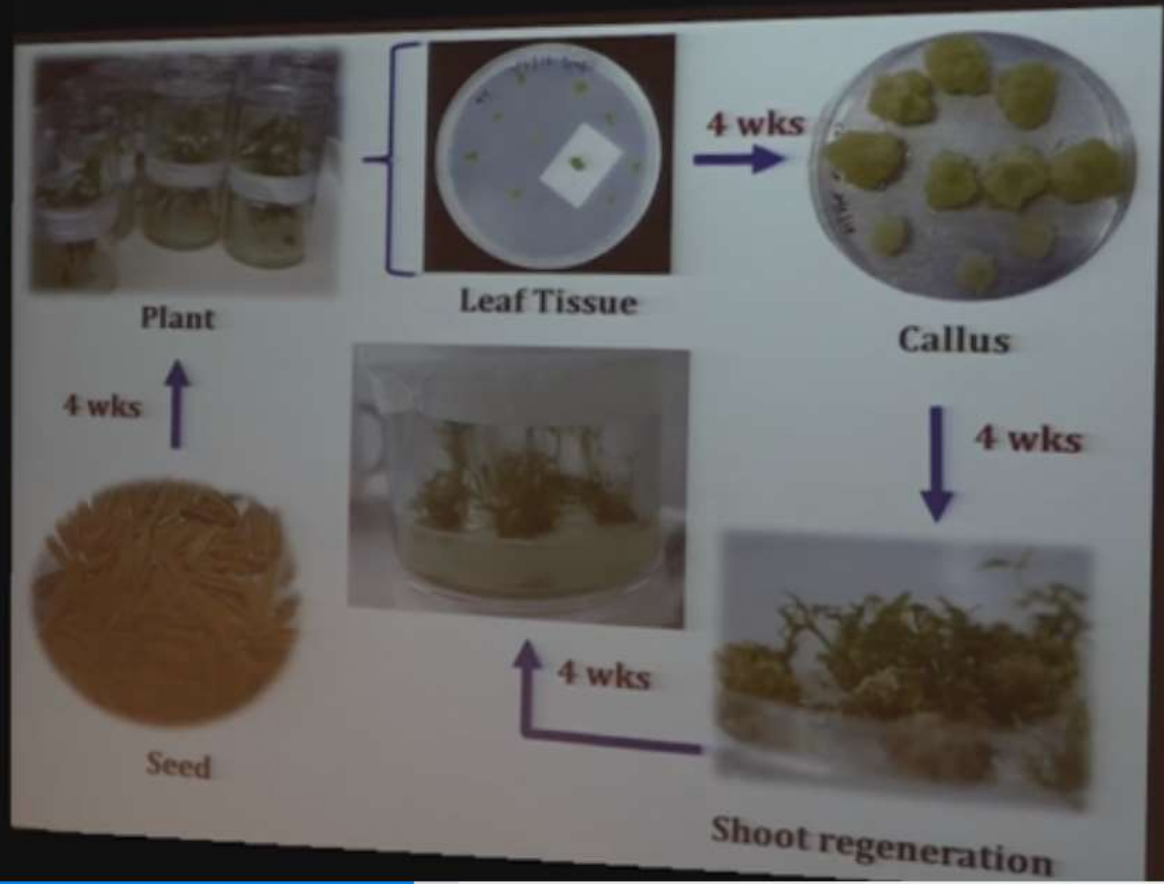
Observations

Medium	CS LCM2	CS LCM3	W4	LC2
CIP	90.9	90.9	60.7	60.7
Callus colour	Greenish yellow	Brownish orange	Creamish whitish	Creamish yellow
Callus texture	Friable	Hard and compact	Soft	Soft and watery
Callus induction	Complete	~60% of leaf still present	~50% of leaf still present	Complete

On Average 9 shts/callus







Dissemination Materials

The slide features a central collage of images. At the top, a group of people stands in a field. To the left, text reads 'Medicinal Plant - Cryptolepis sanguinolenta' and 'Sustainable Crop Management for Ghana's Health'. To the right is a book cover titled 'Medicinal Plant - Cryptolepis sanguinolenta' with the subtitle 'Sustainable Crop Management for Ghana's Health'. Below the book is a calculator and the text 'ROI Calculator'. At the bottom left is the Dow logo.

Benefits of the CAPREx Fellowship

- Trained in tissue culture techniques
- Expanded my research network
- Submitted a joint proposal -BBSRC
- NIAB's *in vitro* Chrysanthemum germplasm collection



Huw Jones (NIAB Collaborator)

- Lots of ‘muddy boots’ field work to find out which seed variation worked best
 - Viability
 - Yield
 - Effectiveness
- International Collaborators
 - Volkswagen Stiftung, Dow Chemicals
 - Leibnitz Univ., Univ. of Tennessee
 - NIAB, Univ. of Ghana

Cambridge Africa and Maternal Health in Uganda

- Professor Ashley Moffett (Department of Pathology, University of Cambridge), Dr Annette Nakimuli (Head, Department of Obstetrics & Gynaecology, Mulago Hospital & Makerere University, Uganda), and Dr Catherine Aiken (Department of Obstetrics & Gynaecology, University of Cambridge).
- Seeking to influence understanding and ideas for action to reduce maternal mortality in Africa

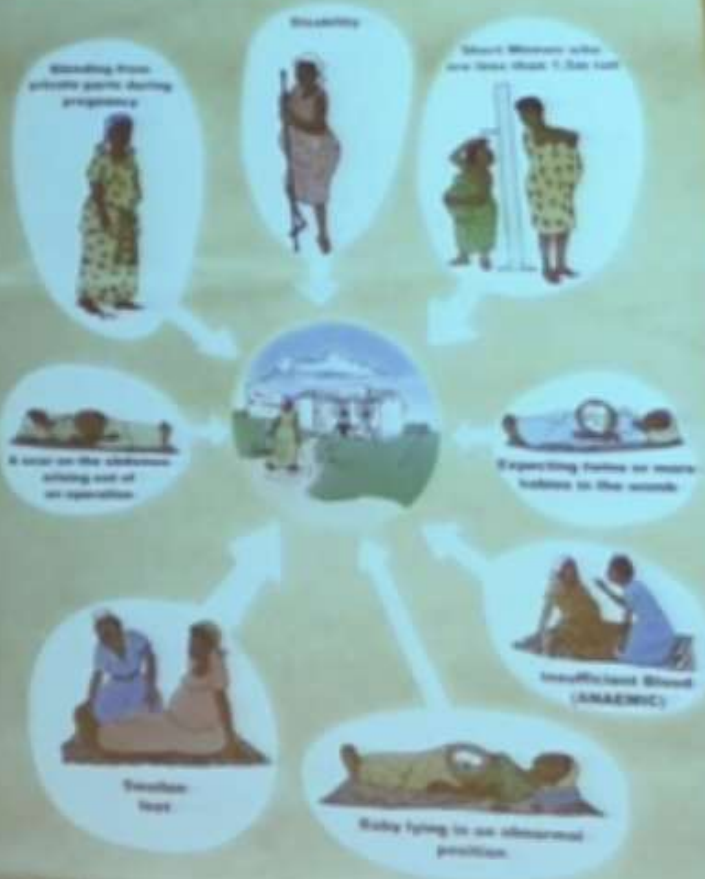
Professor Ashley Moffett

- One Millennium Goal that did not reach its target



Four roughly equal main causes

CONDITIONS THAT MAY LEAD TO COMPLICATIONS DURING PREGNANCY



PREGNANT WOMEN SHOULD ALWAYS VISIT A HEALTH FACILITY FOUR TIMES TO AVOID PROBLEMS DURING DELIVERY

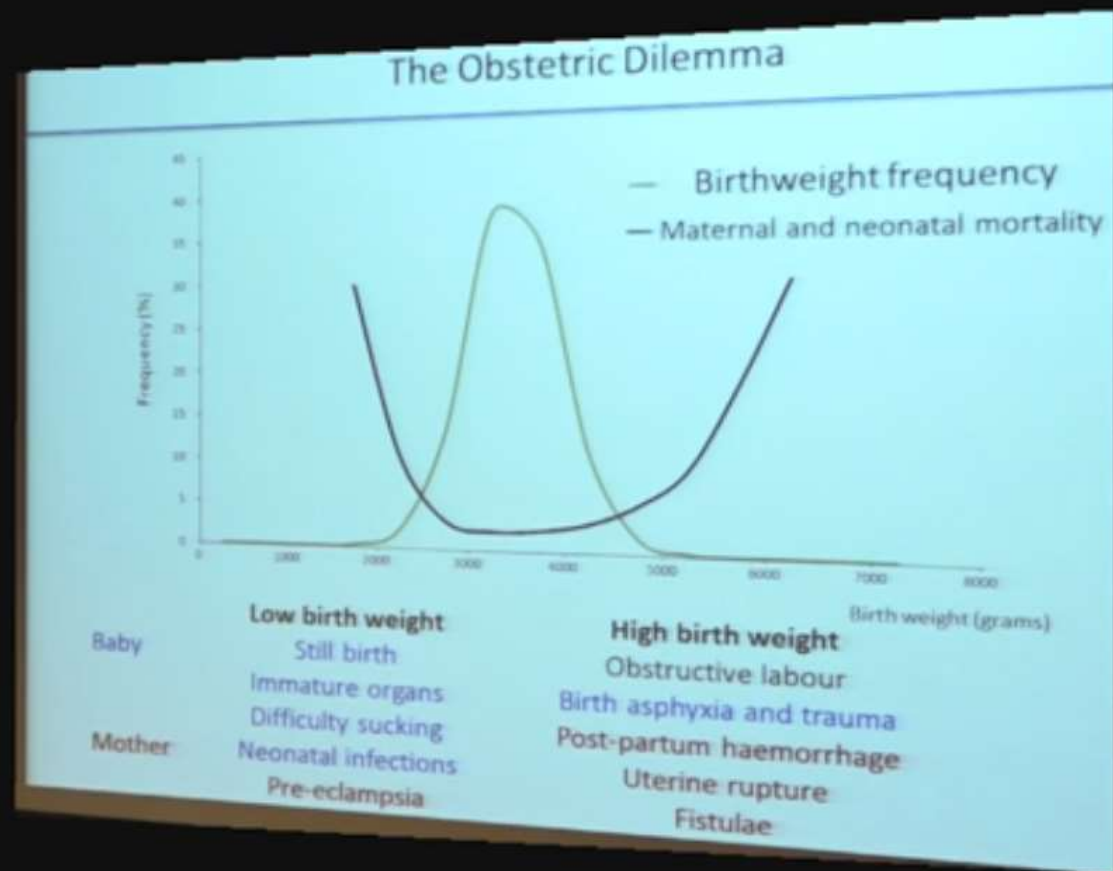
Major Causes of Maternal Death at time of Birth

Haemorrhage

Pre-eclampsia/eclampsia

Obstructed labour

Infection

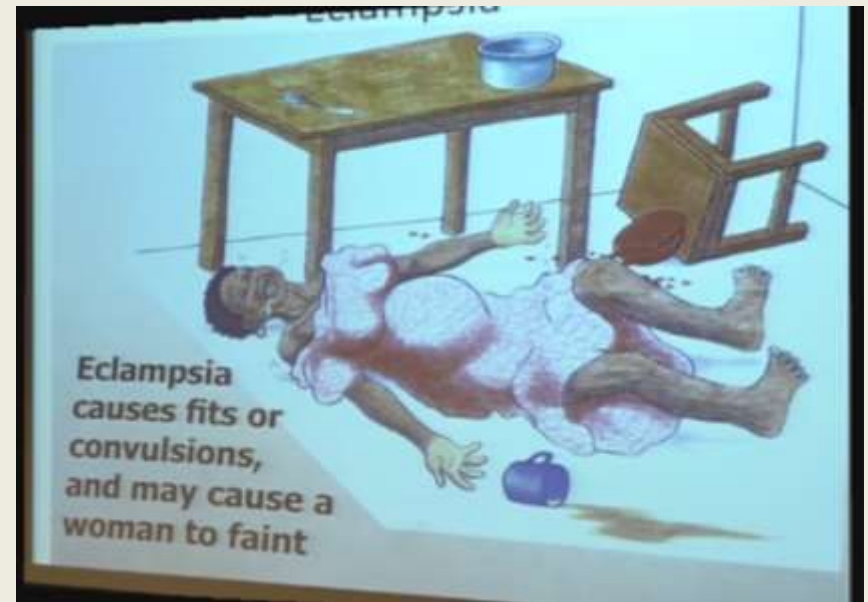


Pre-eclampsia

- Pre-eclampsia (PE) is a disorder of pregnancy characterized by high blood pressure and a large amount of protein in the urine. The disorder usually occurs in the third trimester of pregnancy and worsens over time.
- Results in poor outcomes for mother and child
- If untreated may lead to Eclampsia (seizures)
- 10 years of research by Professor Moffett into the genetic factors involved in Pre-eclampsia, struggle to get a sufficient sample population

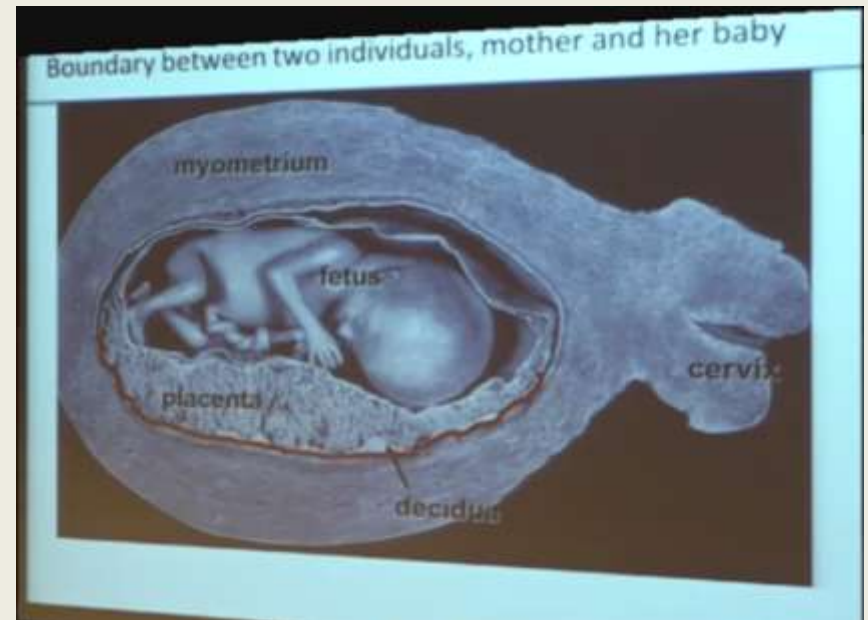
Mulago Hospital, Kampala, Uganda

- Possibly the largest maternity unit in the world
- Rosie, Cambridge, has 6,000 deliveries a year, 2% have pre-eclampsia
- Mulago has 32,000 deliveries a year, 8% have pre-eclampsia. 5 cases of eclampsia a week!
- Arrival of Annettee an opportunity

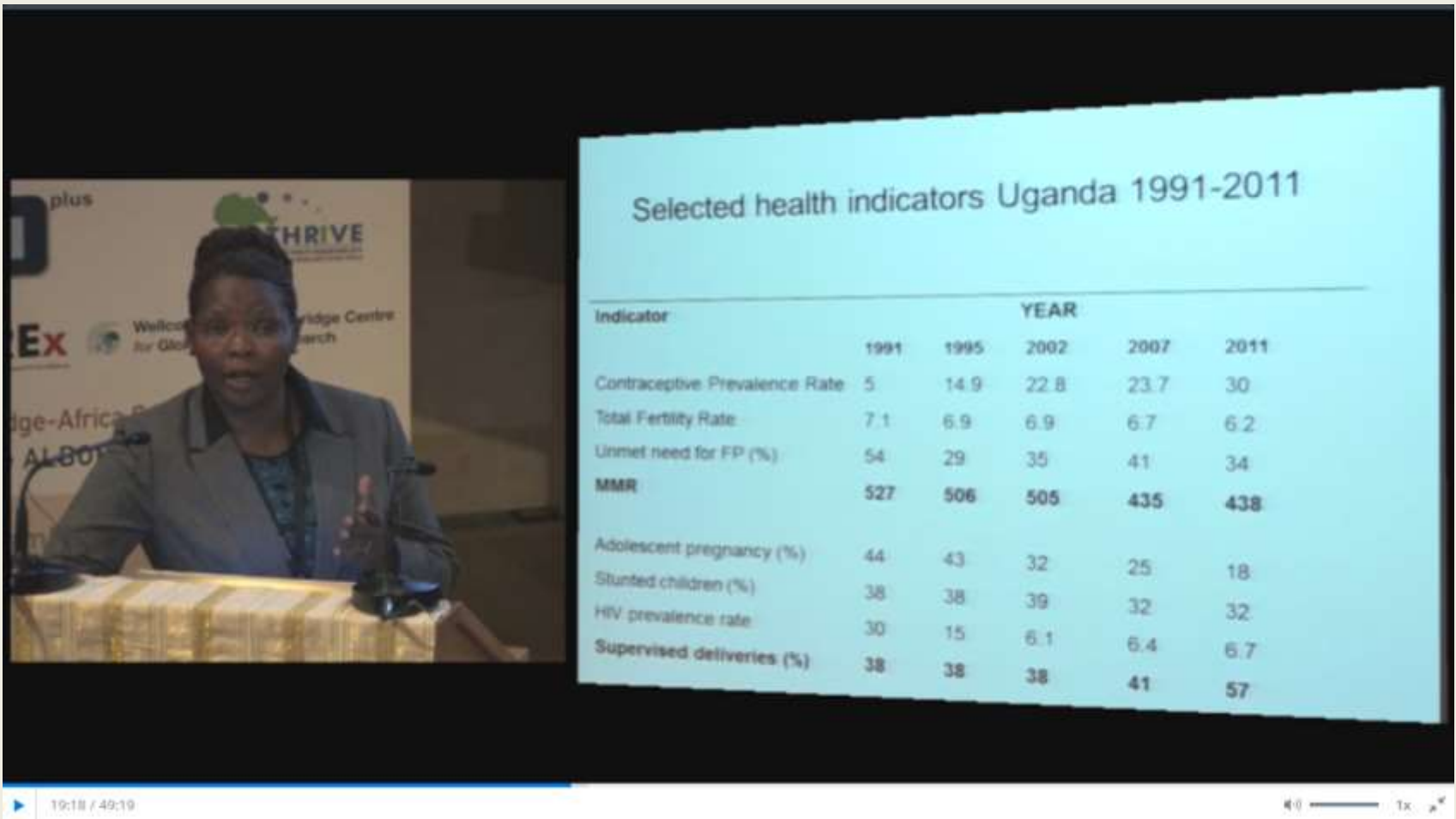


The problem

- The boundary layer between the mother and the foetus does not form in the right place
- Two different genetic systems
 - Mother
 - Baby (mix of mother and father genes)
 - Immune system
 - Goes wrong in first 12 weeks



Dr Annette Nakimuli, Ph.D. student to Front-line Collaborator



The video frame shows Dr. Annette Nakimuli speaking at a podium. The background features logos for 'plus', 'THRIVE', 'Ex', and 'Wellcome Trust Knowledge Centre for Global Health Research'. The presentation slide to her right is titled 'Selected health indicators Uganda 1991-2011' and contains the following table:

Indicator	YEAR				
	1991	1995	2002	2007	2011
Contraceptive Prevalence Rate	5	14.9	22.8	23.7	30
Total Fertility Rate	7.1	6.9	6.9	6.7	6.2
Unmet need for FP (%)	54	29	35	41	34
MMR	527	506	505	435	438
Adolescent pregnancy (%)	44	43	32	25	18
Stunted children (%)	38	38	39	32	32
HIV prevalence rate	30	15	6.1	6.4	6.7
Supervised deliveries (%)	38	38	38	41	57

19:18 / 49:19



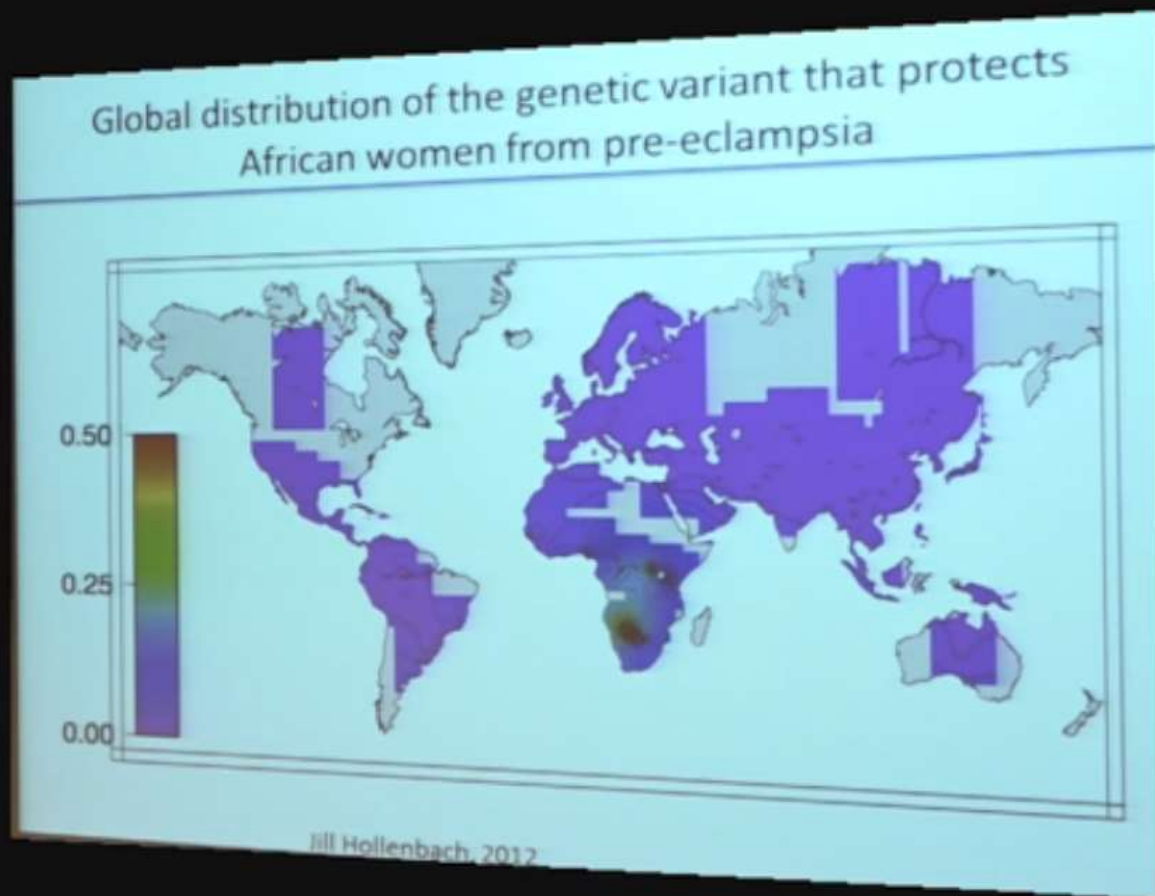
Why Pre-eclampsia

- ❖ A hypertensive disorder of pregnancy
- ❖ Complicates 6-8% of pregnancies
- ❖ Responsible for at least 20% of maternal deaths in Africa
- ❖ Cause unknown
- ❖ Wellcome Trust PhD fellowship with the MUII programme



Pregnancy in women of African origin

- Gestational age in sub-Saharan Africa is 38 weeks rather than 40 weeks
- Maturation of fetal organs such as lungs occurs earlier in gestation
- Head does not engage in pelvis until delivery compared to engagement in last month
- Pelvic inlet is ~1cm smaller (risk of obstructed labour)
- Pre-eclampsia is severe, recurrent and occurs earlier in gestation





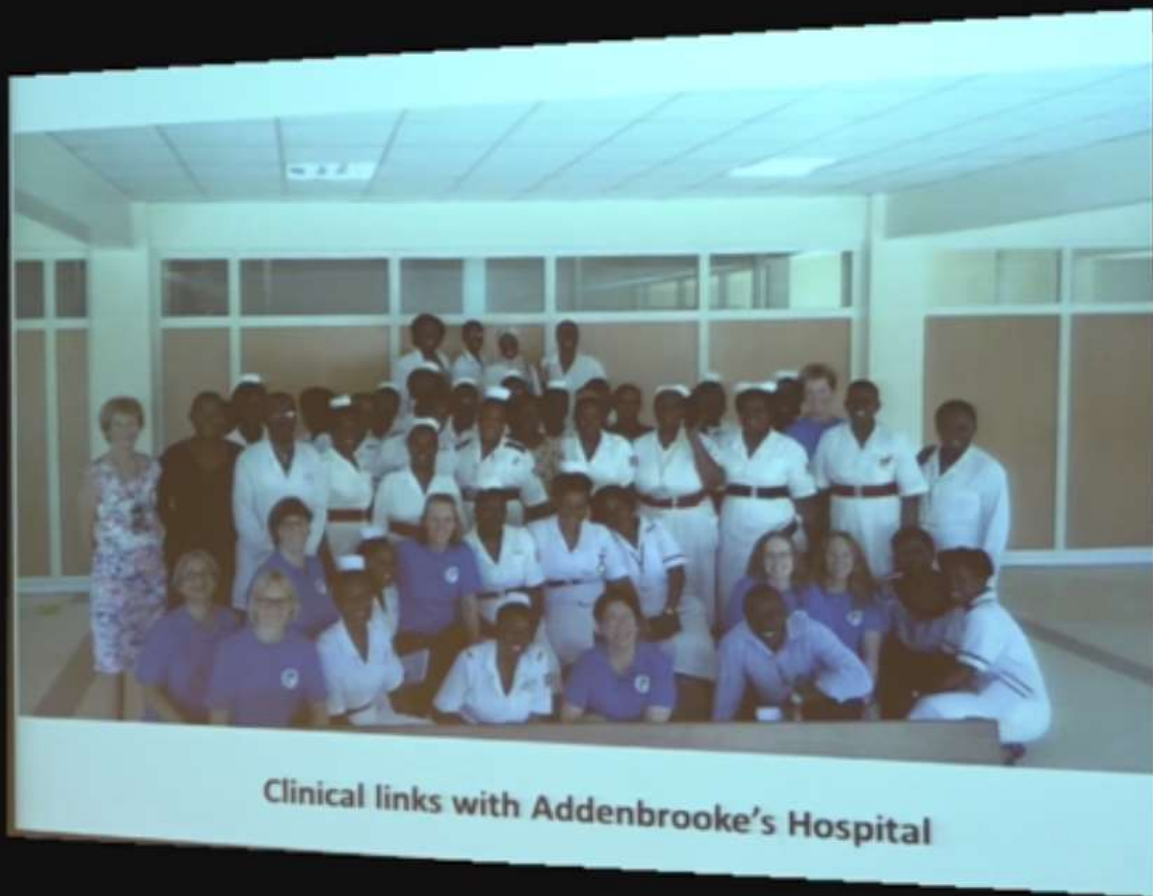
On going work in Uganda at Mulago Hospital

- More pre-eclampsia cases & controls for the genetics study (900 pre-eclampsia & 1500 controls)
- More pregnancy complications studied : recurrent pre-eclampsia, birthweight and unexplained still birth
- Cardiovascular disease risk among survivors of pre-eclampsia
- Investigate KIR and HLA-C genes in placental malaria



The specialized Women's Hospital – July 2017







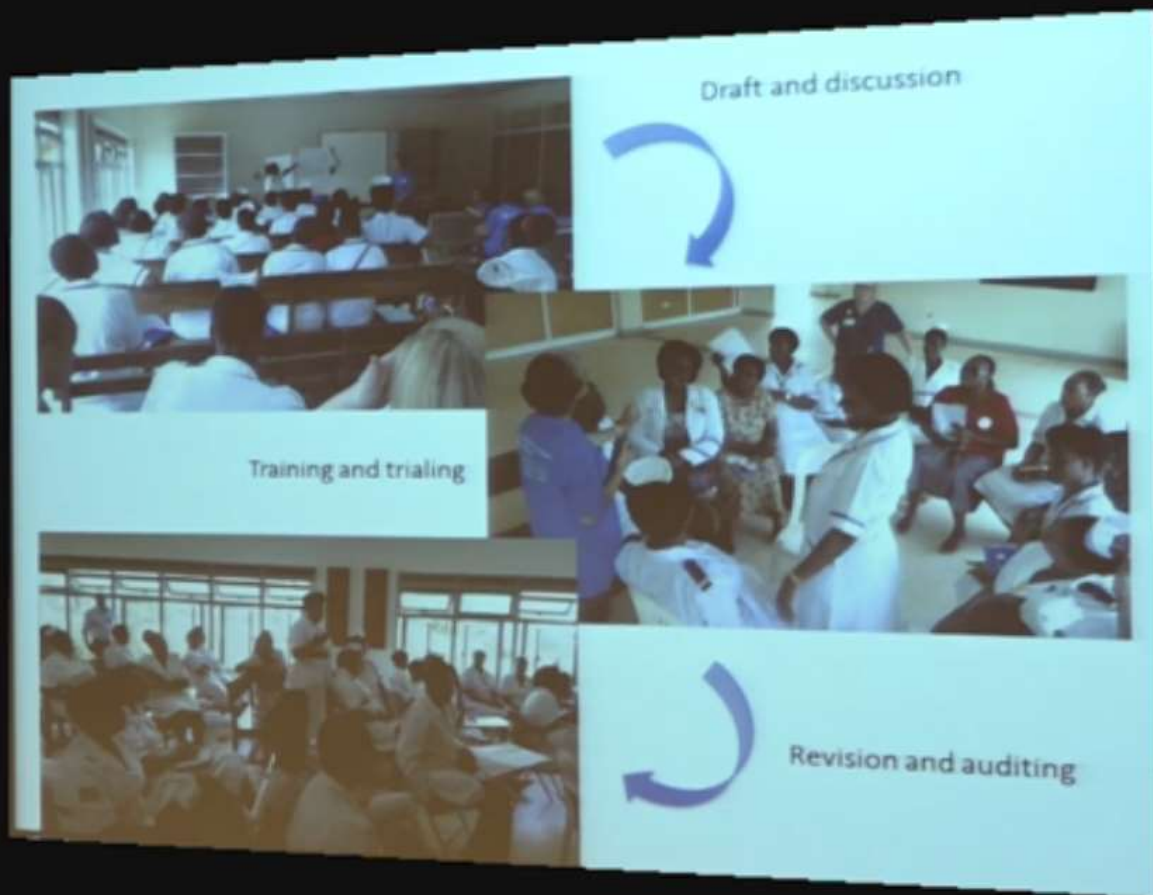
In order to improve rates of pre-eclampsia, need to understand the risk attributable to significant factors that are modifiable

- Attendance at antenatal clinic in first pregnancy
- Maternal education prior to first pregnancy



Developing context-specific protocols to tackle maternal mortality

- Infection
- Postpartum haemorrhage
- Eclampsia/Pre-eclampsia



Empowering Young African Leaders

Patrick Hoffman

(Cambridge Development Initiative)

Started 4 years ago and since then 100 Cambridge volunteer students have worked in Dar-Es-Salaam

Approach:

- Do not broker our placements;
- Create and design our own projects with our Tanzanian partners/students from Dar University;
- Implement projects together ;

Like to see ourselves as the “junior” part of Cambridge Africa



2016- 4 Projects

Background to Choice of Projects in Dar

- Rampant youth unemployment
- Education, access not a problem but learning
- Settlements with no sanitation

Four Projects:

- Entrepreneurship
- Engineering
- Education
- Health

Entrepreneurship

- 20-30 Tanzanian students
- Not workshops, but discussions based on ideas and innovation
- Based on interviews with local small scale businesses, help to create their own social enterprises
- Awards for best proposals \$ 17 000 from SMART villages and others

Engineering

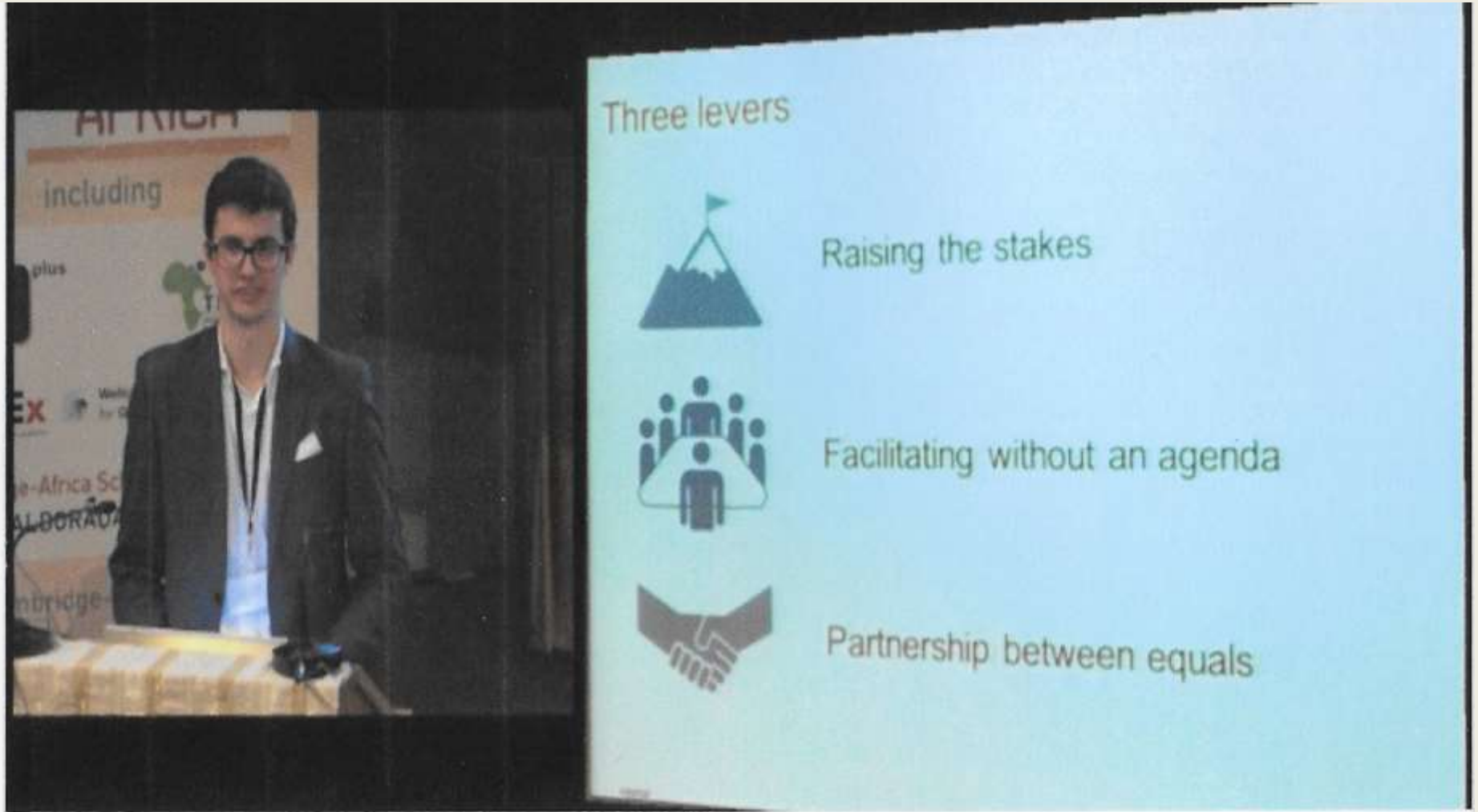
- 20 households every year over last 3 years with simplified sewerage system
- Local people can build and maintain
- Now 500 people.
- “Bottom Up” approach and now support from Tanzanian Govt to expand network
- Introduce new technology, some developed in Cambridge, including biodigesters, evapodryers and solar ovens

Health and Education Projects

Health: this year trained 8 community health workers, delivering vital health goods in the slums. Very poorly paid, so has to revenue earning selling such as vitamin supplements, contraceptives etc

Education; Only just started this year working in schools for disabled children, initiating self-help

Three Levers (experience gained by CDI students)



Initiatives as Regards Lack of African Social Entrepreneurs (proposed project at Moller Institute with 2 week modules)



Track Cambridge-Africa from the website

<http://www.cambridge-africa.cam.ac.uk/>

