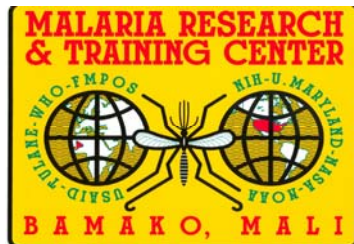




How and What are the Conditions to Develop Best Science and Best Practices in Africa ?

Ogobara K. Doumbo, MD, PhD
Malaria Research and Training Center
Département d'Epidémiologie des Affections Parasitaires
Faculté de Médecine, de Pharmacie et d'Odontostomatologie du Mali
Université de Bamako, Mali



The National, Regional, and International Health Environment

- ❑ 1] Tropical parasitic diseases are still in the 21st century important cause morbidity and DALYs in SSA: Malaria, Schistosomiasis, Filariasis, Geo-Helminths, Neglected Tropical Diseases with viruses and bacterial diseases such as HIV-Aids, Tb. Chronic Diseases are becoming Public Health Concerns: Cancer, Cvx Disorders, Diabetes, Mental illness.....
- ❑ 2] Current Tools for control are efficient for most of these diseases, but need to reach $\geq 80\%$ of the target population and access to clinical laboratories and best practices are real issues in SSA.
- ❑ 3] More and more competitive research teams for health are needed in SSA \Rightarrow best patient care, evidence-based health strategies \Rightarrow knowledge research \Rightarrow Health care system improvement

\Rightarrow How to build an enabling environment for capacity building in clinical research and best science to reduce African Scientists and Health workers' "Brain Drain"?

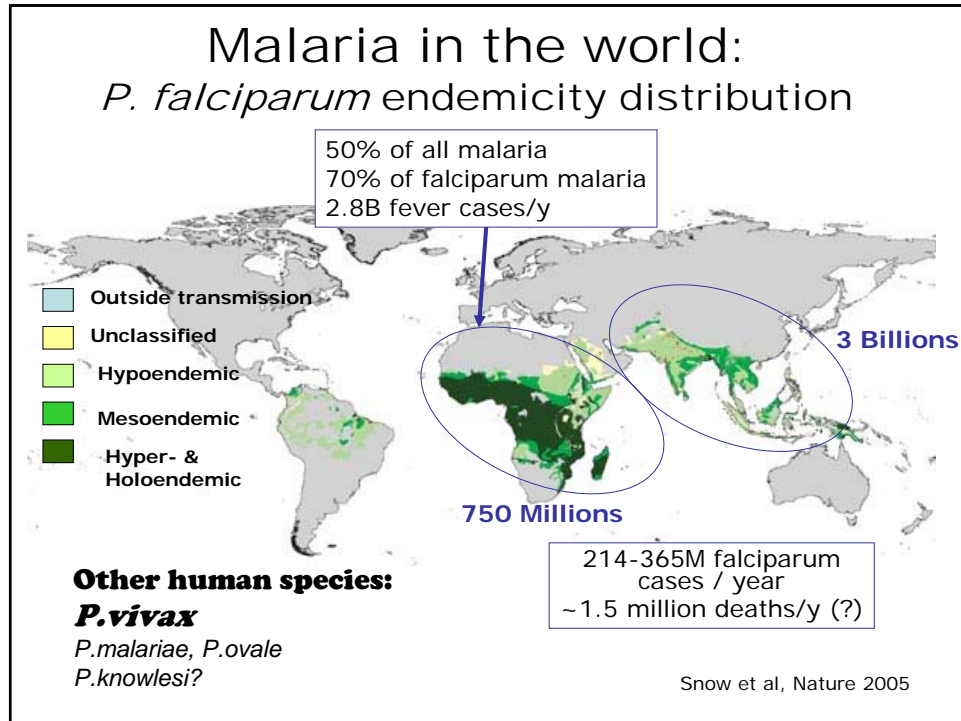


Malaria control → elimination → eradication
All about: Prevention & Treatment with
Effective tools/ interventions available
Political will & support: Paradigms change!!

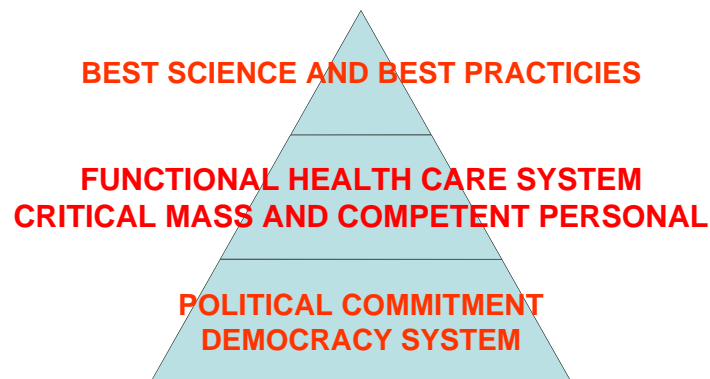


Looks simple ...
But isn't:
Slow progress

P.Olliaro, WHO, Séoul 2008,



CONDITIONS of SUCCESS For Best Science and Best Practices in Africa





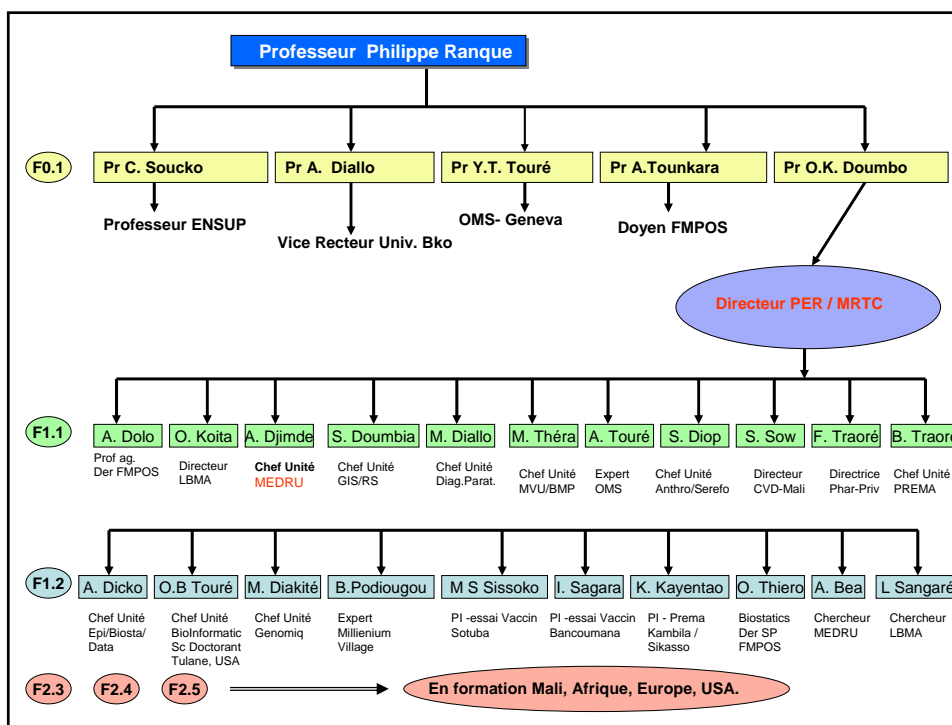
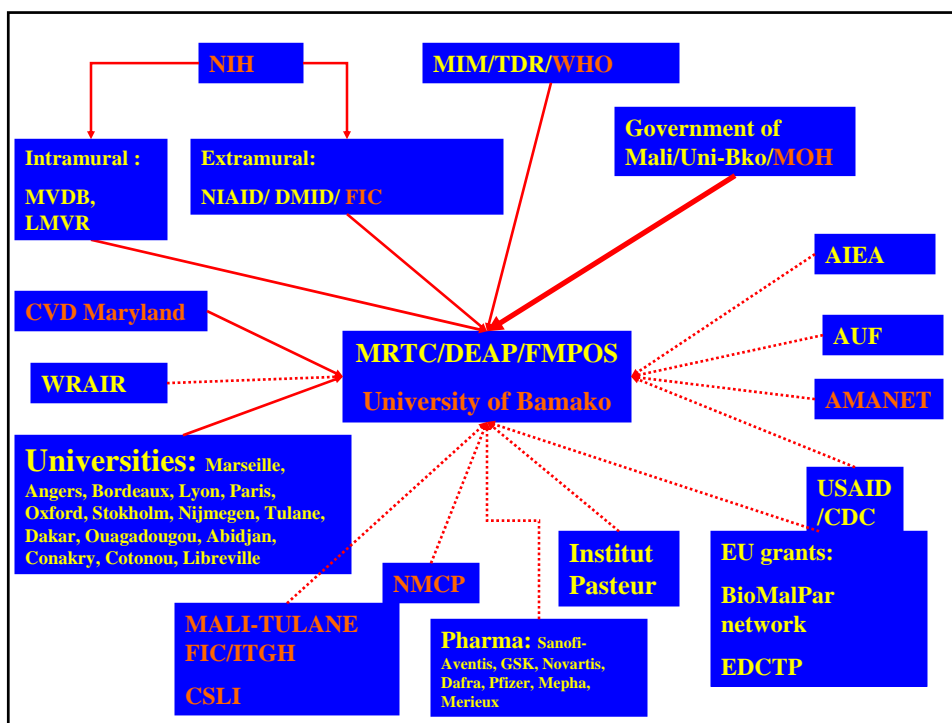
ICH/GCPs are standards for:

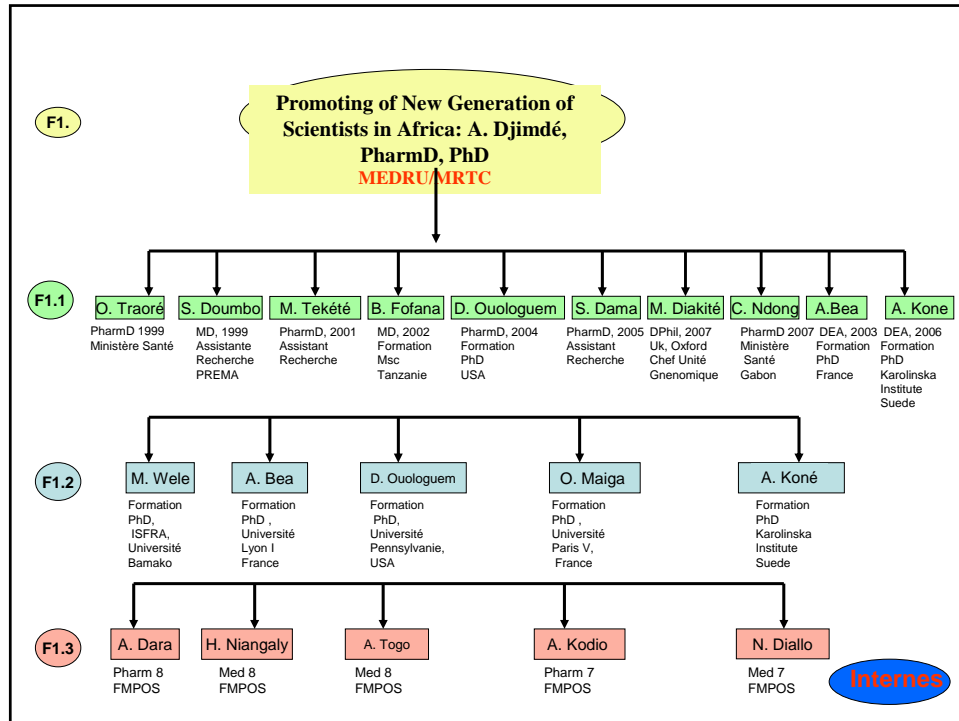
- ☐ Designing
 - ☐ Conducting
 - ☐ Performing
 - ☐ Monitoring
 - ☐ Auditing
 - ☐ Recording
 - ☐ Managing and Analyzing
 - ☐ Reporting data for clinical trials
- => **Subject protection and Evidence based Practices and Public Health Strategies**

Training g and retention of top level scientist in Africa: MRTC-NIAID/NIH

Experience in Mali

- ☐ 1] Selection Process of Msc and PhD trainees,
- ☐ 2] Training strategies: **The MRTC PCR type strategy,**
- ☐ 3] Mentorship strategies both locally and oversea,
- ☐ 4] PhD research questions links to Malian's needs,
- ☐ 5] **95% of retention of Msc and PhDs, since 1992,**
- ☐ 6] **Career path within university of Bamako,**
- ☐ 7] **Autonomy, research management and science, production and NIAID long term support,**
- ☐ 8] **Local Buying in! Government, local Institution community**
- ☐ 9] **Clinical Trials associated with Basis Research,**
- ☐ 10] **Usage of research results to inform policy.**



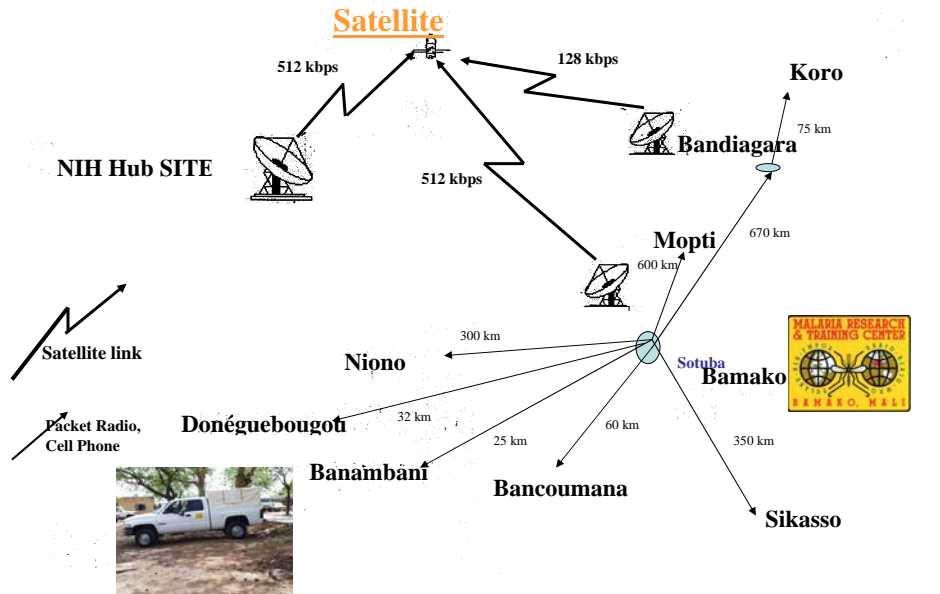


Insights: Impact of Training and Career Development

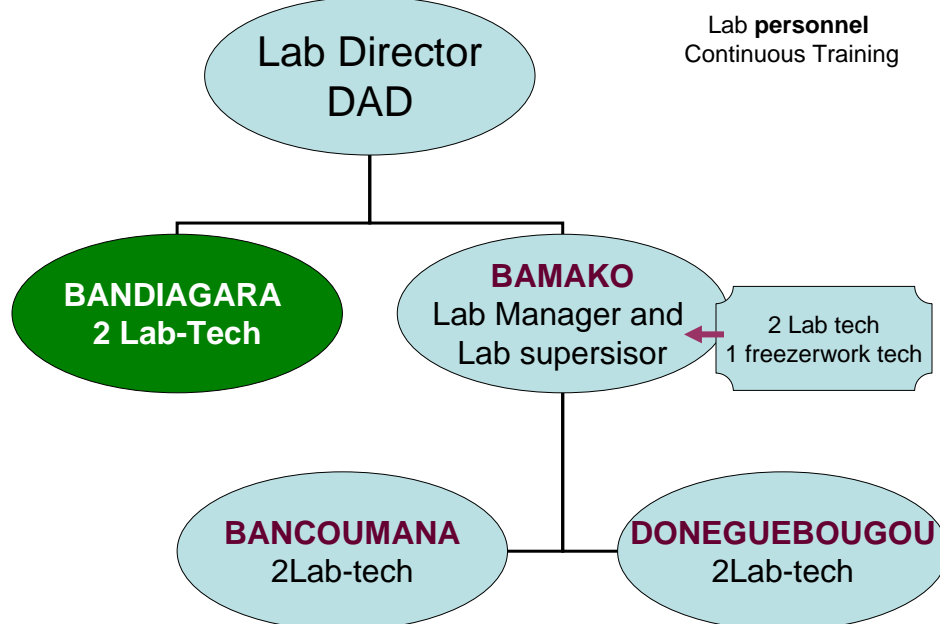
- ☐ Milieu –Rich with NIH grants, technology used in transfer of data
- ☐ Opportunities to work with NIH-MRTC investigators
- ☐ University integrated with research
- ☐ Compliance with MOH's need for Health Information System
- ☐ Peer reviewed publication record of trainees



IMPORTANCE OF CONNECTIVITY AND NETWORKING FOR GCP IN AFRICA



NETWORK OF MRTC CLINICAL LABORATORY: CLSI CERTIFICATION





Field Clinical Laboratory



MRTC-MVDB-CLSI collaboration in Clinical Laboratory building in Mali.

- ☐ 1] Careful process of lab personnel selection: working together, in the field and Bko => building trustful relationship.
- ☐ "We are partners"
- ☐ 2] Selection of adapted lab equipments for tropical countries (by listening and documented experience) and continuous training plan → **responsible and accountable.**
- ☐ 3] Space organization, electricity system, fire system, SOPs documentation... → **lab governance improvement**
- ☐ 4] Communication and participation in real time lab activities during clinical studies in the field **"Open mind and listening"**
- ☐ 5] **"We are learning together for sustainability"**



Countries using ISO 15189: Mali on the Next list of Certification=CHALLENGE



Harold E. VARMUS, Nobel Prize in Medicine 1989 for his discovery of the cellular origin of retroviral oncogenes.

US Agency for International Development have established a Malaria Research and Training Center (MRTC) that is staffed mainly by Malian scientists and technicians, has good internet connectivity, serves as a regional institution for training, receives its own grant money from the NIH, and hosts scientific visitors from NIH and Tulane University for collaborative projects. The center is well known and well respected by the political leadership of Mali, is a source of public pride, and offers a positive view of health research to students at the adjacent school of medicine. *The Lancet. Volume 360 Supplement 1, 21 December 2002, Pages 1-4*



Informatics in Africa for best science and best practices: Distance Learning

- ☐ Capacity Development and Sustainability
- ☐ Critical Mass per country
- ☐ Career path and continuous training
- ☐ Technology Transfer and maintenance
- ☐ Link with Health information Network at the MOH
- ☐ Evidence based decisions in public health
- ☐ Maintaining research and training link with the overseas mentor.





QUALITY OF STUDIES SITES IN AFRICA: ICH/GCP COMPLIANTS



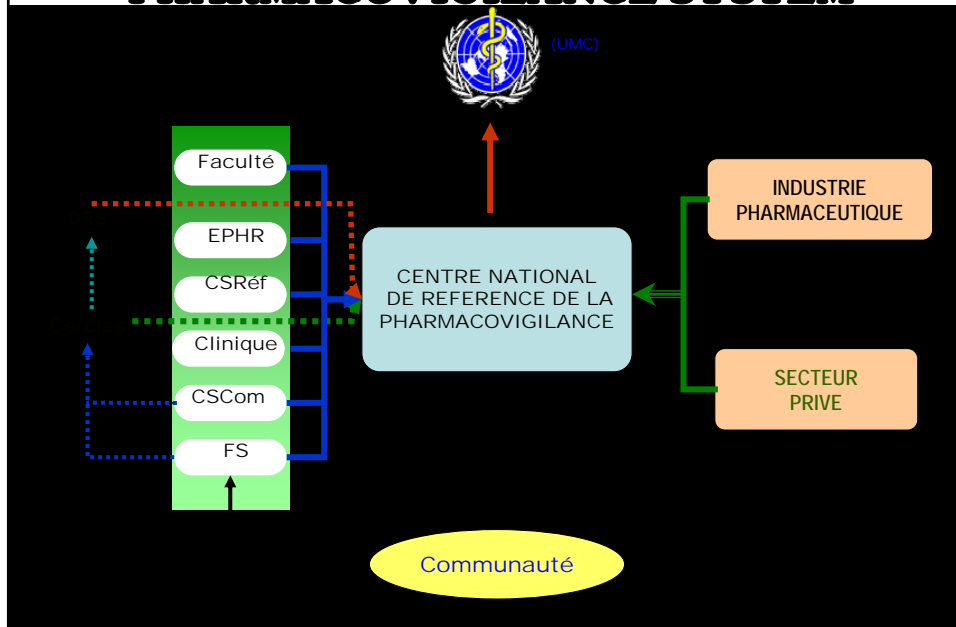
Qualité des Capacités de Gestion des "SAEs"

- ☐ Equipements pour les Urgences Médicales,
- ☐ Disponibilité de Kits de prise en charge
- ☐ Disponibilité d'Urgentistes Compétents
- ☐ Disponibilité d'une possibilité d'Evacuation en cas de Problèmes Médico-Chirurgicaux.



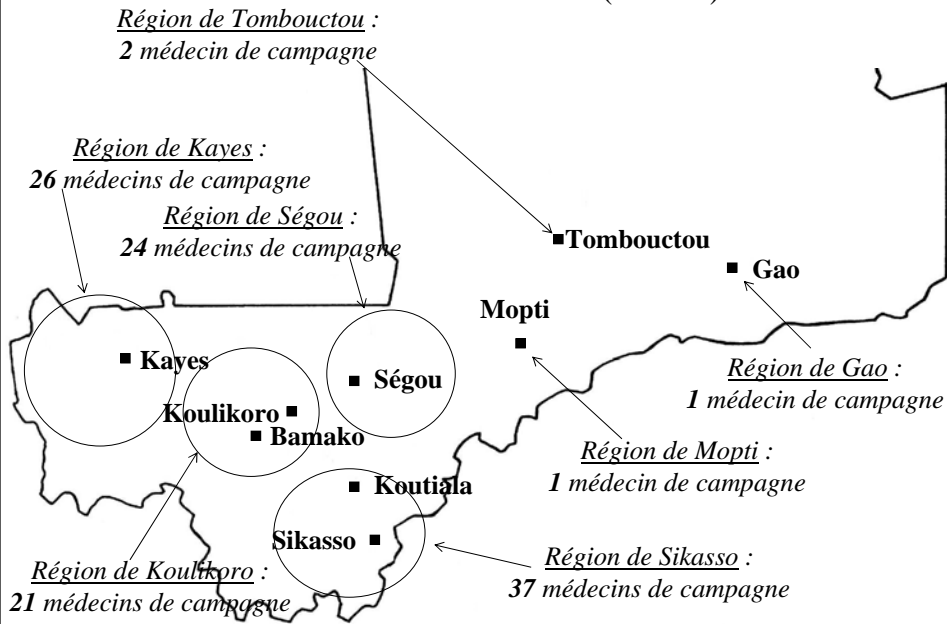
In case of emergency: SAEs==→ Standard of Care +++

ESTABLISHMENT OF A PHARMACOVIGILANCE SYSTEM

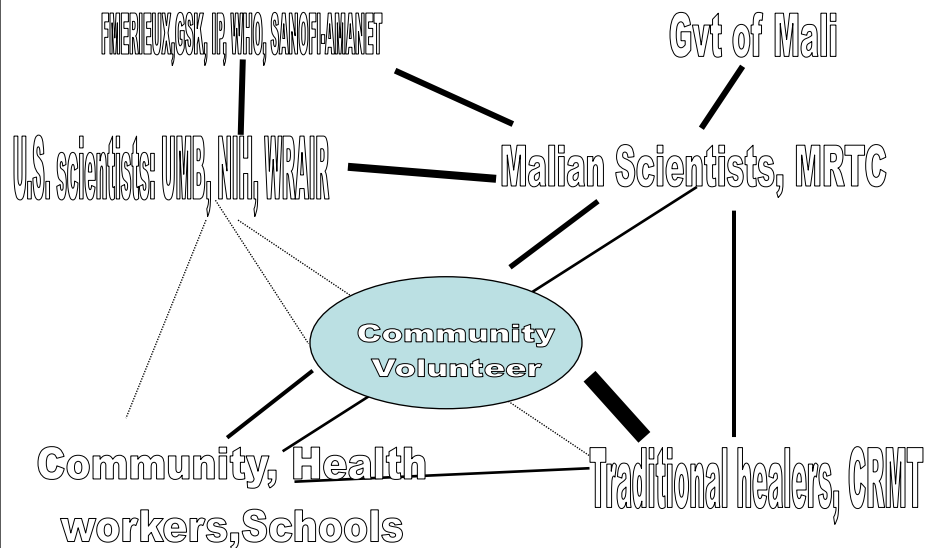




IMPORTANCE OF COMMUNITY DOCTORS NETWORK FOR PHARMACOVIGILANCE (N=115)



IMPORTANCE OF PUBLIC PRIVATE, COMMUNITY PARTNERSHIP





NEEDS AND CHALLENGES FOR THE MRTC and AFRICAN COUNTRIES

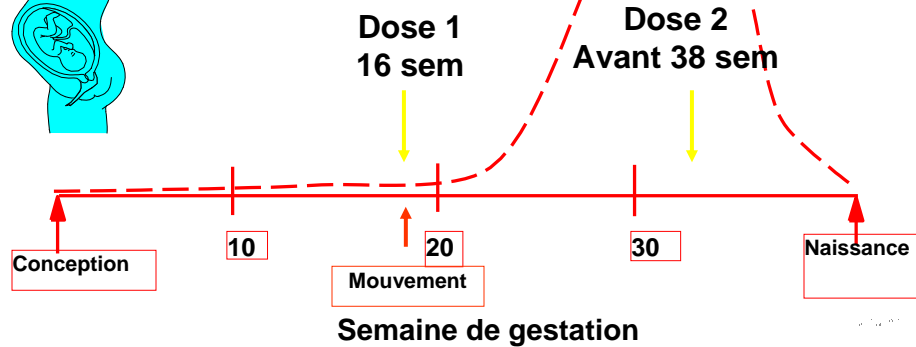
- ☐ Maintenance of lab equipment for emergencies,
- ☐ Calibration of equipment "Metrology",
- ☐ Easy access to lab reagents,
- ☐ Power (electricity) problem and impact on the equipment,
- ☐ Training opportunities in Africa and the lack of south-south collaboration,
- ☐ Common training platform in clinical lab and feedback system
- ☐ Important component of support come from foreign grants ==> need to increase government and partners long term support in the development and sustainability of clinical laboratories.
- ☐ Language barrier (Mali is French speaking country) and the need of translation of the clinical lab materials
- ☐ Successful trainee and job attraction ==> critical mass !

IMPORTANCE OF TRAINING, MONITORING, QA/QC AND EVALUATION,
MRTC-AMANET REGIONAL WORKSHOP FOR GCP/ETHIC/DATA MANAG.





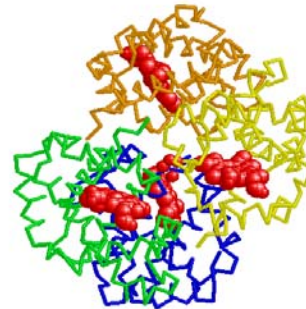
A black and white line drawing of a pregnant woman in profile, facing left. The drawing is simple, showing the outline of the body, head, and limbs. The fetus is visible inside the uterus, curled in a fetal position. The drawing is used to illustrate the concept of a fetus in the womb.





DEVELOPMENT OF BASIS RESEARCH IN AFRICA : THE HbC HISTORY

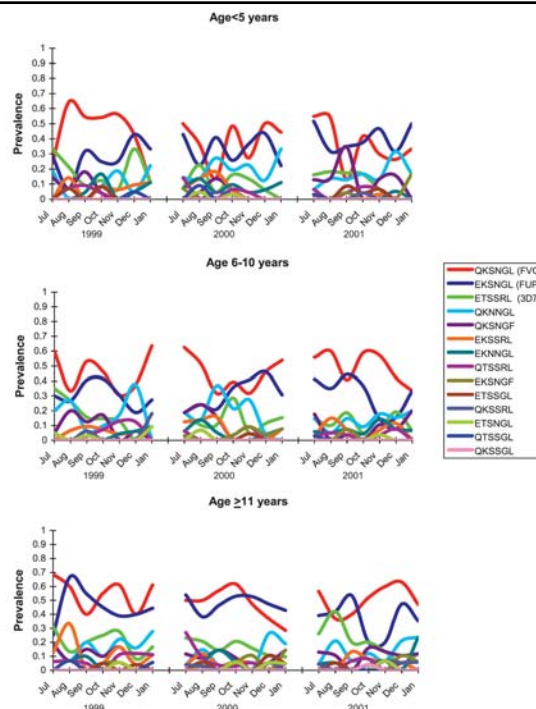
- $\beta 6$: Glu \rightarrow Lys
- Focus in West Africa
- HbC protect against CM
 - *Blood, 2000,*
 - *Nature 2001,*
 - *Nature 2005*



Dynamics of blood stage antigen diversity at a vaccine testing site in Mali

- ❑ 100 children followed 3y
- ❑ MSP-1₁₉ genotyped by Pyrosequencing
- ❑ 17 haplotypes among 1,363 infections
- ❑ Frequency distribution similar over time, season, age groups
 - Suggests balancing selection
- ❑ 3D7 vaccine strain prevalence: 16%

Takala et. al PLoS Medicine 2007





The political climate is Changing in Africa +++



The political climate changes for Best Practices in Africa

- ☐ Millennium development goal (MDG) #4 = reduce under 5 mortality by two-thirds by 2015
- ☐ Roll Back Malaria (RBM) initiative (1998)
- ☐ Abuja declaration of African Heads of State, 2000
- ☐ Global Fund for HIV, Tuberculosis & Malaria
- ☐ Bill & Melinda Gates Foundation (BMGF) malaria conference 2007 = call for the 'eradication' of malaria (by 2050). The MalEra initiative agenda
- ☐ G8 Gleneagle summit, 2005: pledge to double aid to Africa by 2010
 - initiative to 'eradicate malaria in ~30 years' (Birmingham communiqué, 17 May 1998, G8 Bulletin 2(10))
- ☐ UN Secretary General: timetable for comprehensive malaria control in Africa by end of 2010
- ☐ **AU? ECOWACS? UEMOA? SADEC? ==> to be engaged for best science and best practices funding in Africa**



**Best Science and Best Practices are
Network of International Team With
Transparency and Mutual Trust**

