

A Southern African Region overview of Personalized/ Precision Medicine Initiatives

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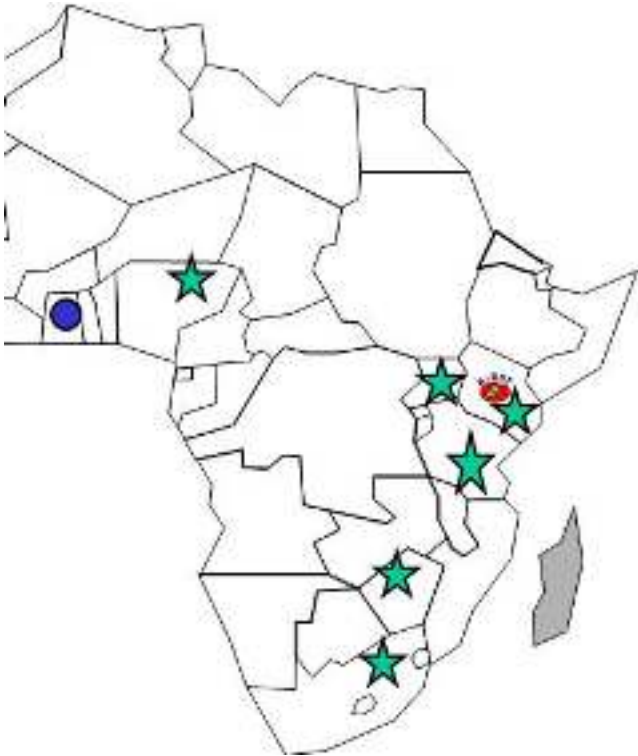
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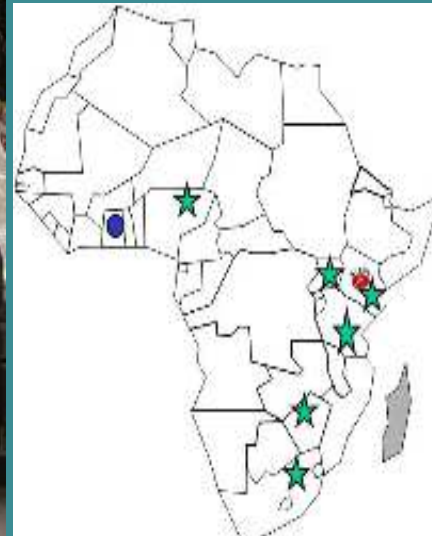


History of Pharmacogenomics in Africa.



- **August 2003** (Nairobi, Kenya)
- African Pharmacogenetics workshop:
- This was about the same time when in **2003 1st Draft of the complete Human genome** was finalised after its release in 2001

Two important meetings in Africa in 2003



August 2003 (Nairobi, Kenya)
African Pharmacogenetics workshop

December, 2003 (Accra, Ghana) The African
Society for Human Genetics (AfSHG)

Positioning PGx research and funding in Africa

- The last 10 years characterised by major funding inflows into Africa, from both domestic & international funders
- However, no serious attempt to provide funding focussed on pharmacogenomics
 - Lately, 2018/2019 SAMRC released a Pharmacogenomics focussed RFA
 - And now this EU-Africa PerMed Call



Why is Pharmacogenomics???

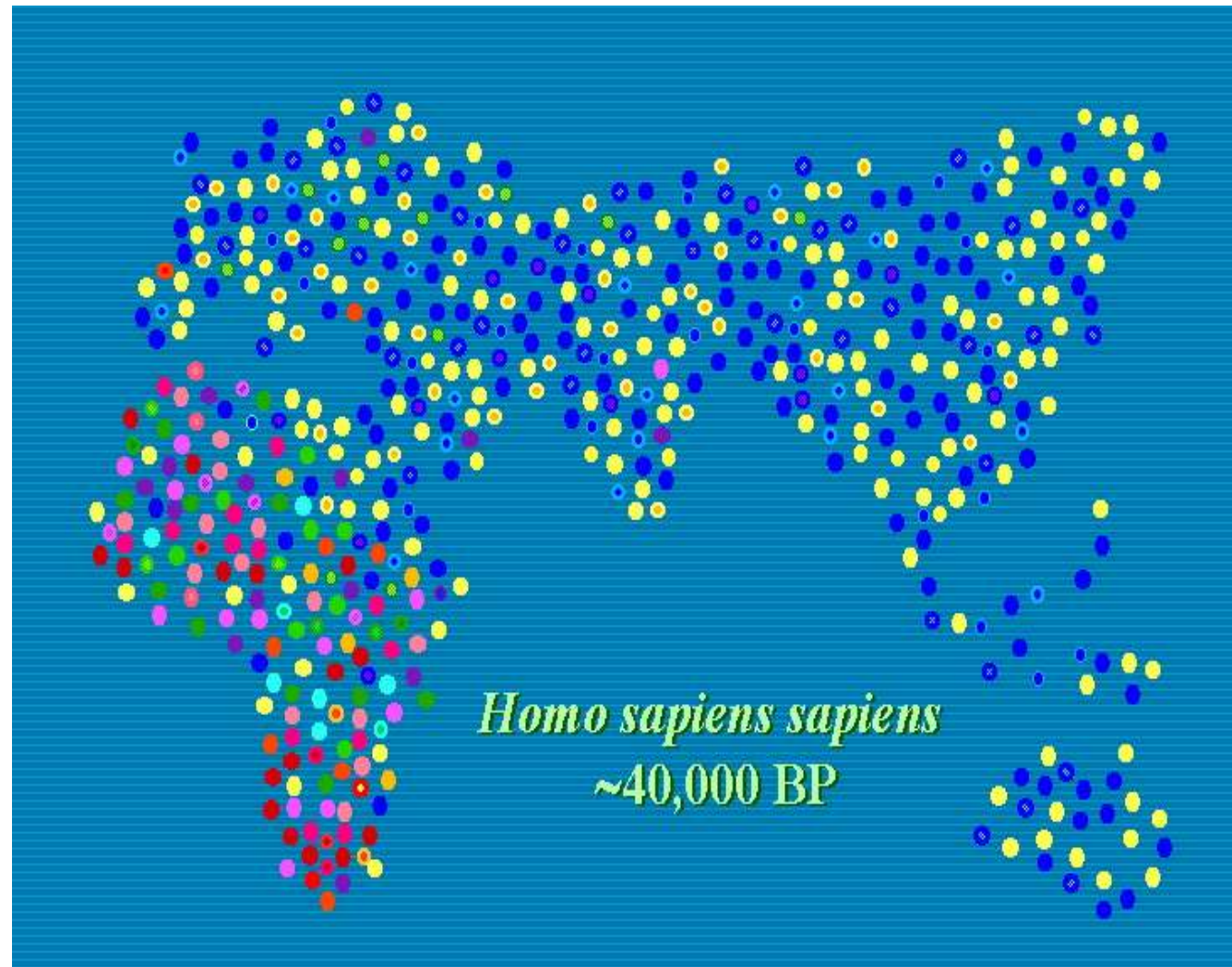
The Problem – Drugs don't always work!

One Size does not fit all

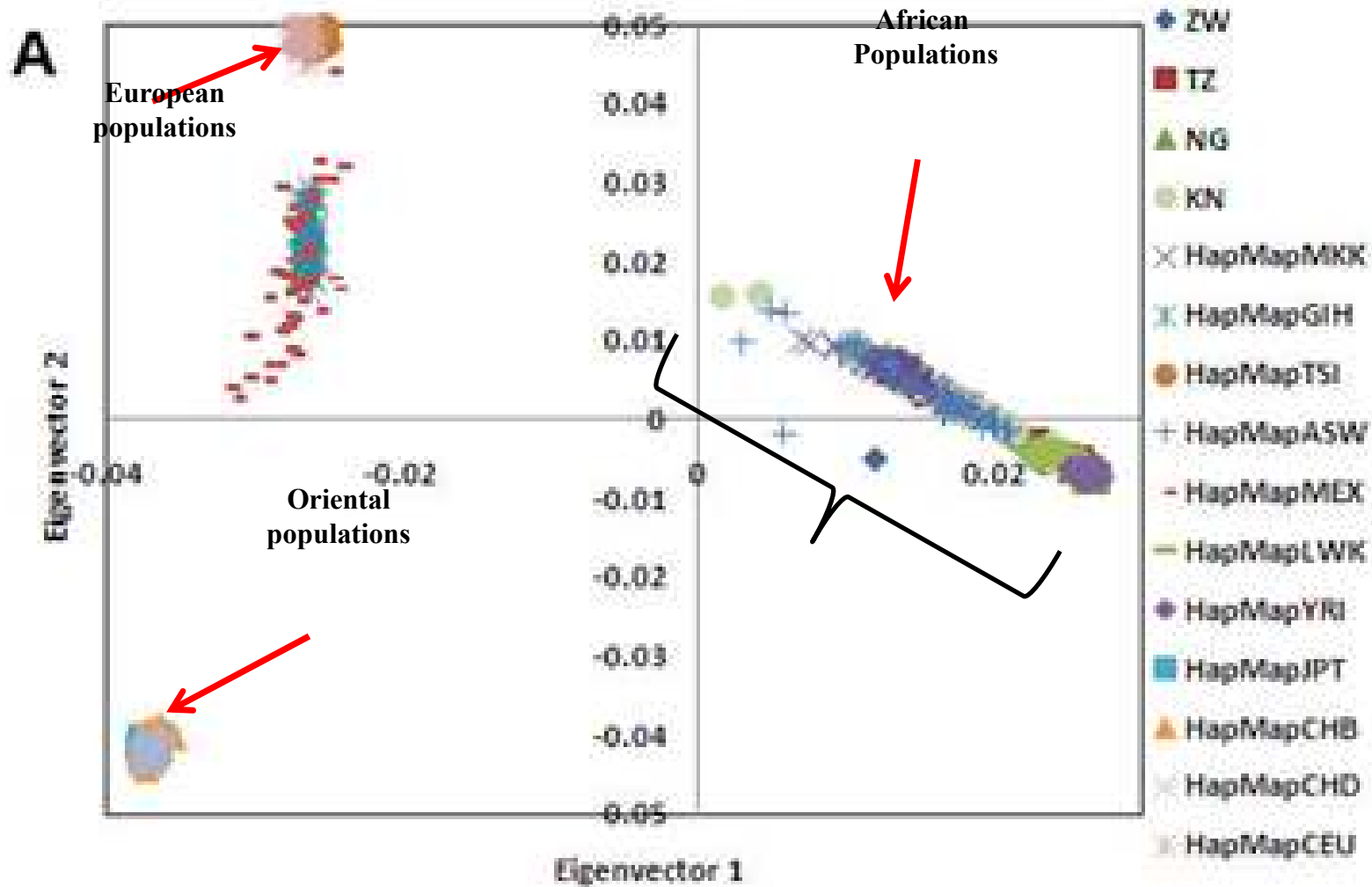
Patients can respond differently to the same medicine



The Question is always, ...*but there are numerous studies on pharmacogenomics across the world, so why should we have to do more here??*



Genomic Differentiation of world populations



A therapeutic drug can work well in one population but present with side effects in another

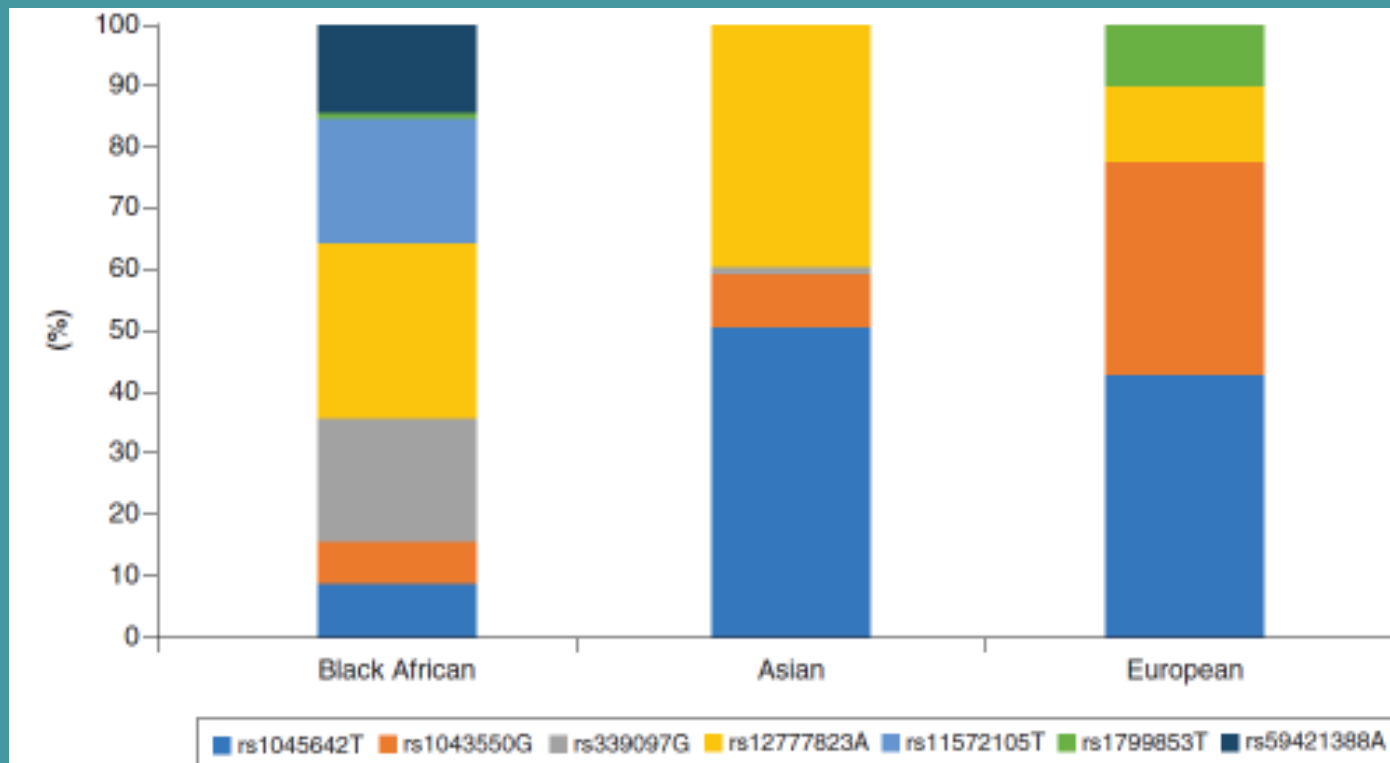
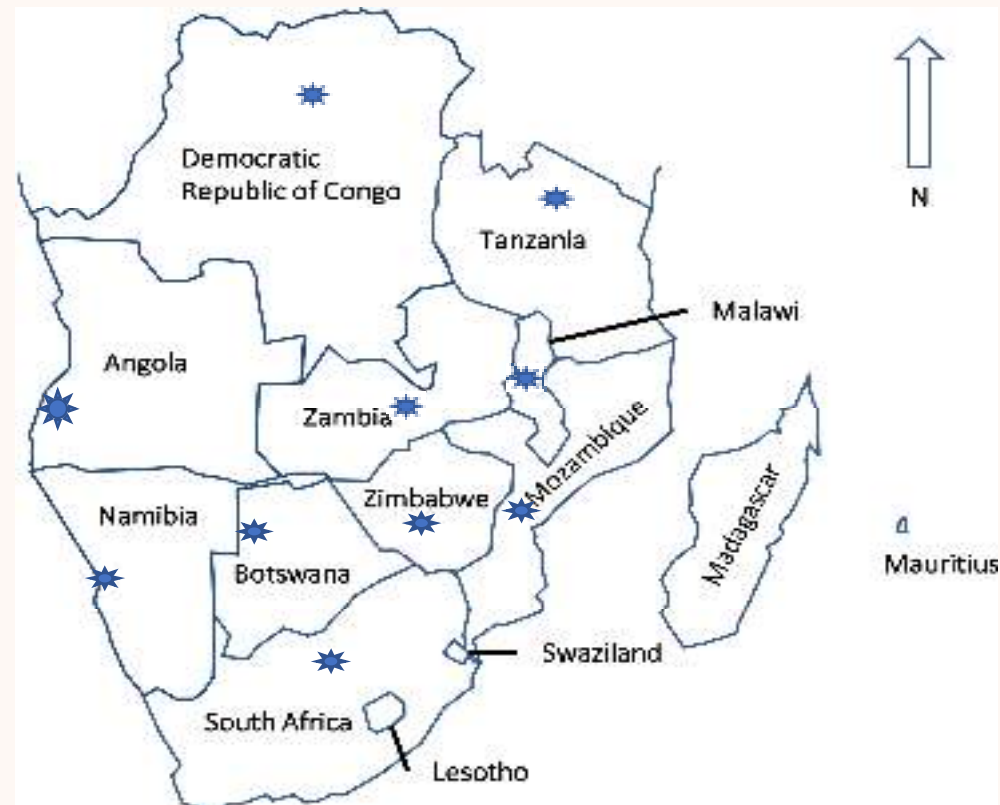
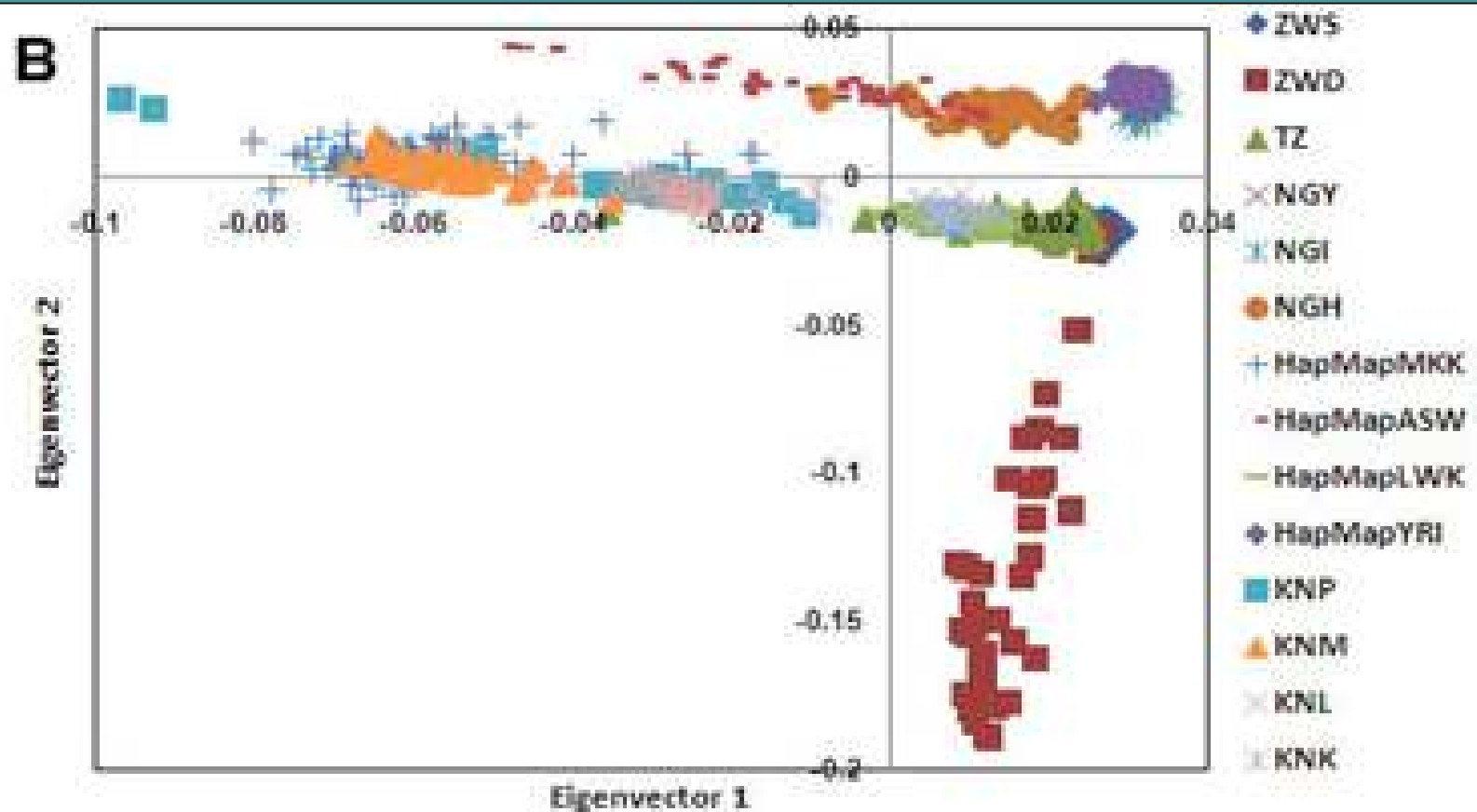


Figure 1. Comparison of frequencies of pharmacogenes variants among black Africans, Asians and Europeans

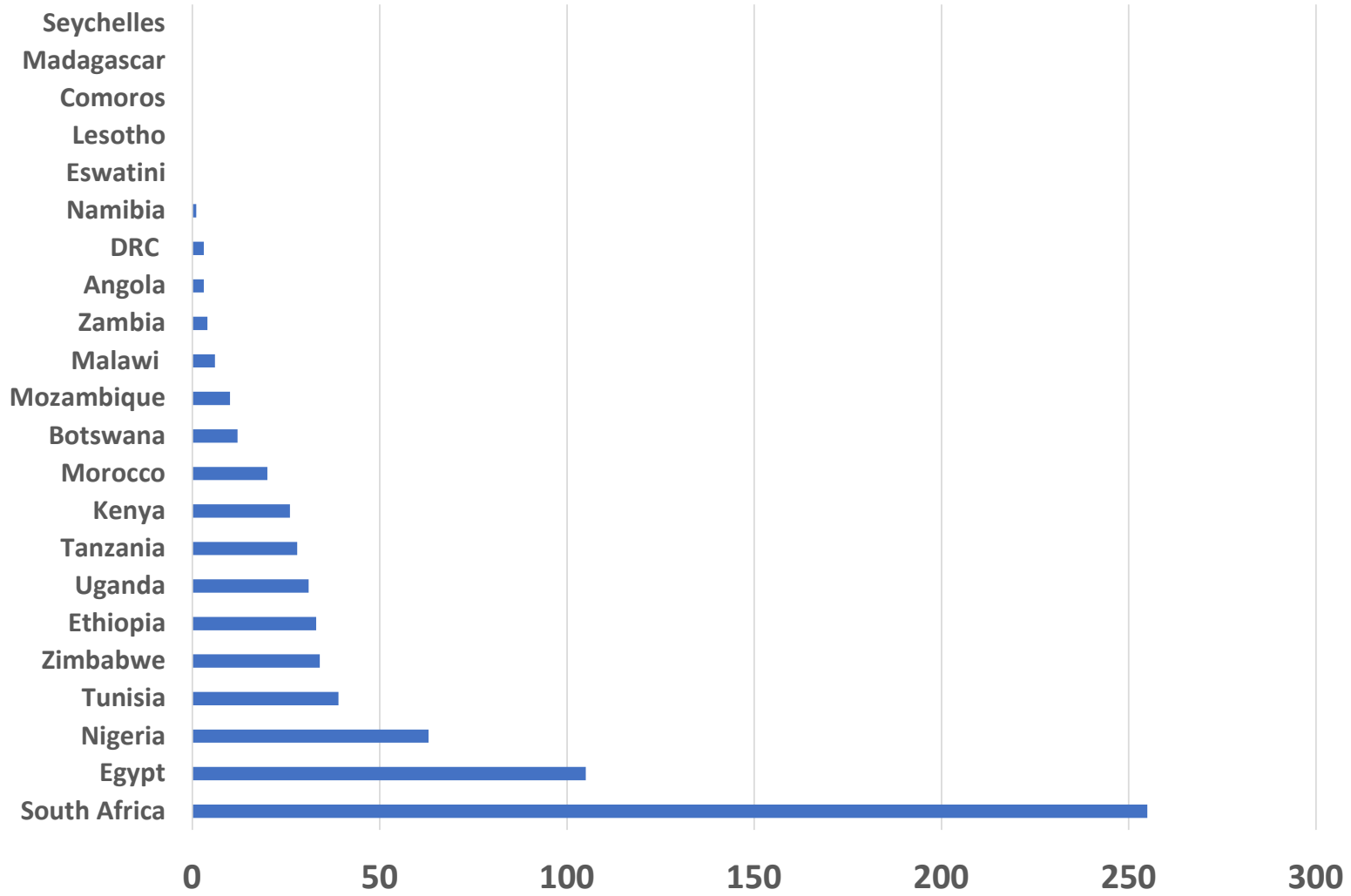
A focus on Southern Africa



Do we have to study each & every African population group, or a few can give us enough clues on African pharmacogenomics?



Pharmacogenomics Publications Comparison



African Pharmacogenomics Network (APN)

Research, training & translation

Meeting of September 2018 (Nairobi Kenya): realizing the dream

- Masimirembwa C
 - Dandara C
 - Haffani YZ
 - Ogutu B
 - Mabuka J
 - Aklillu E
 - Bolaji O
- Zimbabwe**
South Africa
Tunisia
Kenya
Kenya/USA/H3Africa
Ethiopia/Sweden
Nigeria



A large orange shape on the left side of the slide, consisting of a vertical rectangle on the left and a quarter-circle on the right.

Vision of African
Pharmacogenomics
Network

**Exploring & leveraging African genomes for
better health for world populations**

(African genomes are key to genomic medicine)



Objectives:

Awareness of pharmacogenomics among Africans

Research & Training on Pharmacogenomics in Africa

Clinical Implementation of Pharmacogenomics in Africa

APN: Consolidating pharmacogenomics knowledge, research capacity & translation in Africa

- Masters in Genomic Medicine (AiBST & Chinhoyi University)
- Masters/PhD in Genetics (PGx) (SA Universities)
- Collaborative platforms
- Support for regional centers of excellence



Catalysis of
PGx research
in Southern
Africa

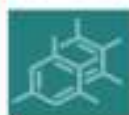
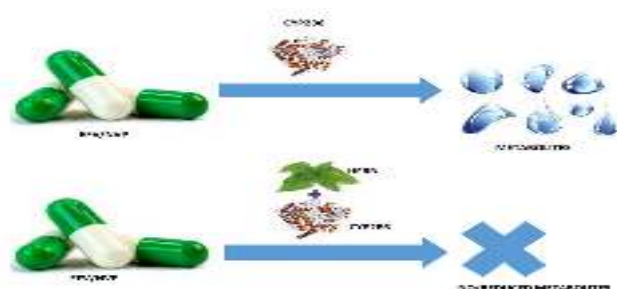
Dedicated funding for PGx

Identification of genuine PGx
researchers with a track record &
dedicated funding

Creation of consortia, networks or
training hubs

Collaborative regional focus on
PGx translation

Herbal medicine is a *REALITY* and has pharmacogenomics relevance



molecules



Article

Inhibition of CYP2B6 by Medicinal Plant Extracts: Implication for Use of Efavirenz and Nevirapine-Based Highly Active Anti-Retroviral Therapy (HAART) in Resource-Limited Settings

Nicholas E. Thomford ^{1,2}, Charles Awortwe ³, Kevin Dzobo ^{4,5}, Faustina Adu ², Denis Chopera ⁶, Ambroise Wonkam ¹, Michelle Skelton ¹, Dee Blackhurst ⁷ and Collet Dandara ^{1,*}

A glimpse into
the training on
PGx

UCT PGx Group



Dr E Kampira: **MALAWI** (*d4T & mtDNA PGx*)



Dr M Swart: **SOUTH AFRICA** (*EFV PGx*)



Dr N Thomford: **GHANA** (*Herbal Medicine PGx*)



Dr ND Soko: **ZIMBABWE** (*Statin PGx*)



Dr K Lebeko: **SOUTH AFRICA** (*Hearing Loss*)



Dr K Mhandire: **ZIMBABWE** (*Immunogenetics*)



Ms A Ndadza: **SOUTH AFRICA** (*Warfarin PGx*) **PhD Student**



Dr D Mhandire: **ZIMBABWE** (*EFV & CMV*)



Dr K Mnika: **SOUTH AFRICA** (*Sickle Cell PGx*)



Ms S Muyambo: **Zimbabwe** (*Warfarin PGx*) **PhD student**



Dr P Thami: **Botswana** (*Efavirenz PGx*)

