

# Genomic science and cardiovascular disease research in Africa and the Diaspora

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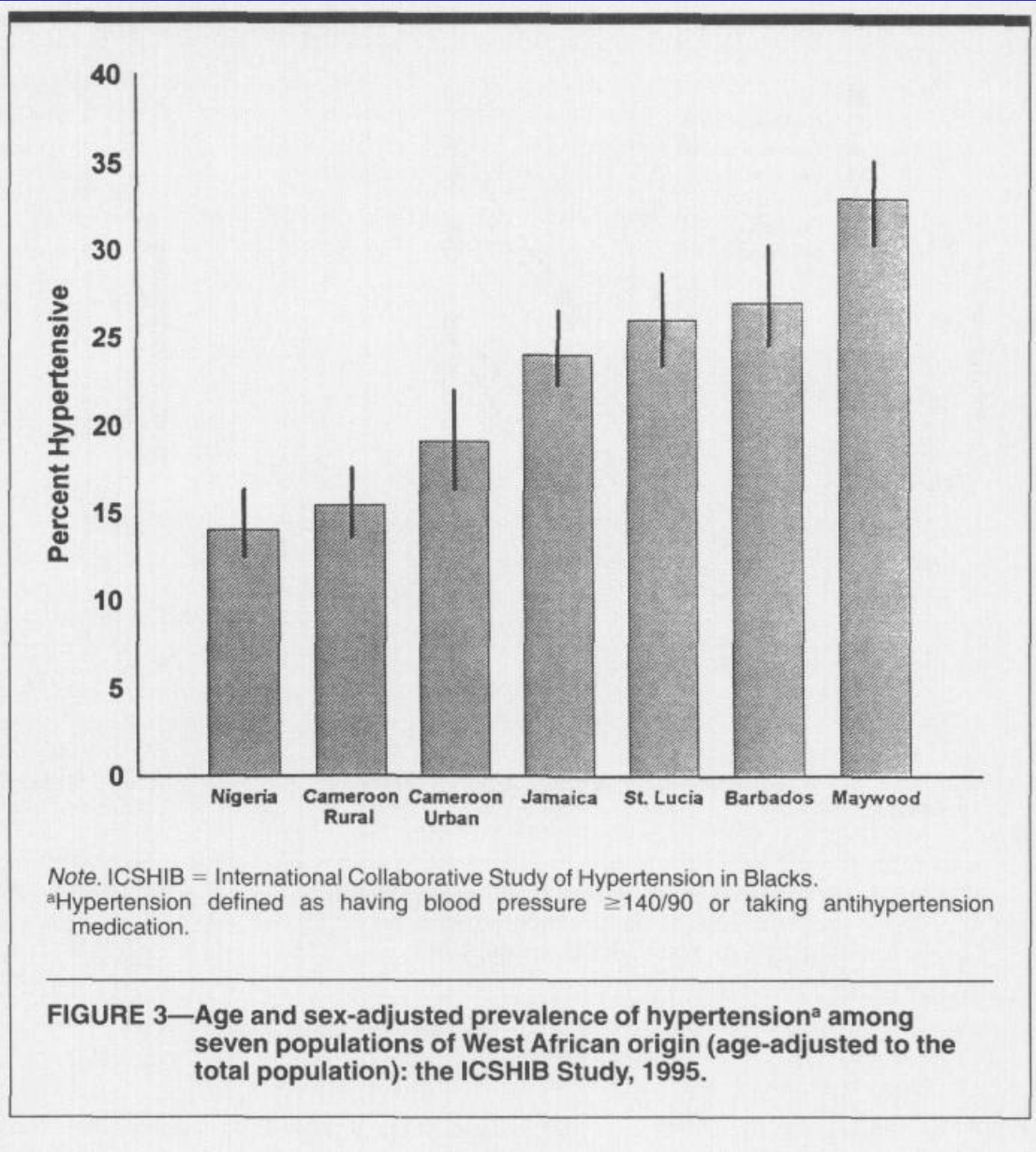
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# Prevalence of Cardiovascular Disease Among Populations of African Descent

- Hypertension
  - Increasingly common and a risk factor for all CVD and Stroke
- Stroke
  - In Accra ~25% of deaths due to stroke (Stephens & Avle, 1993)

# Prevalence in Changing Environments

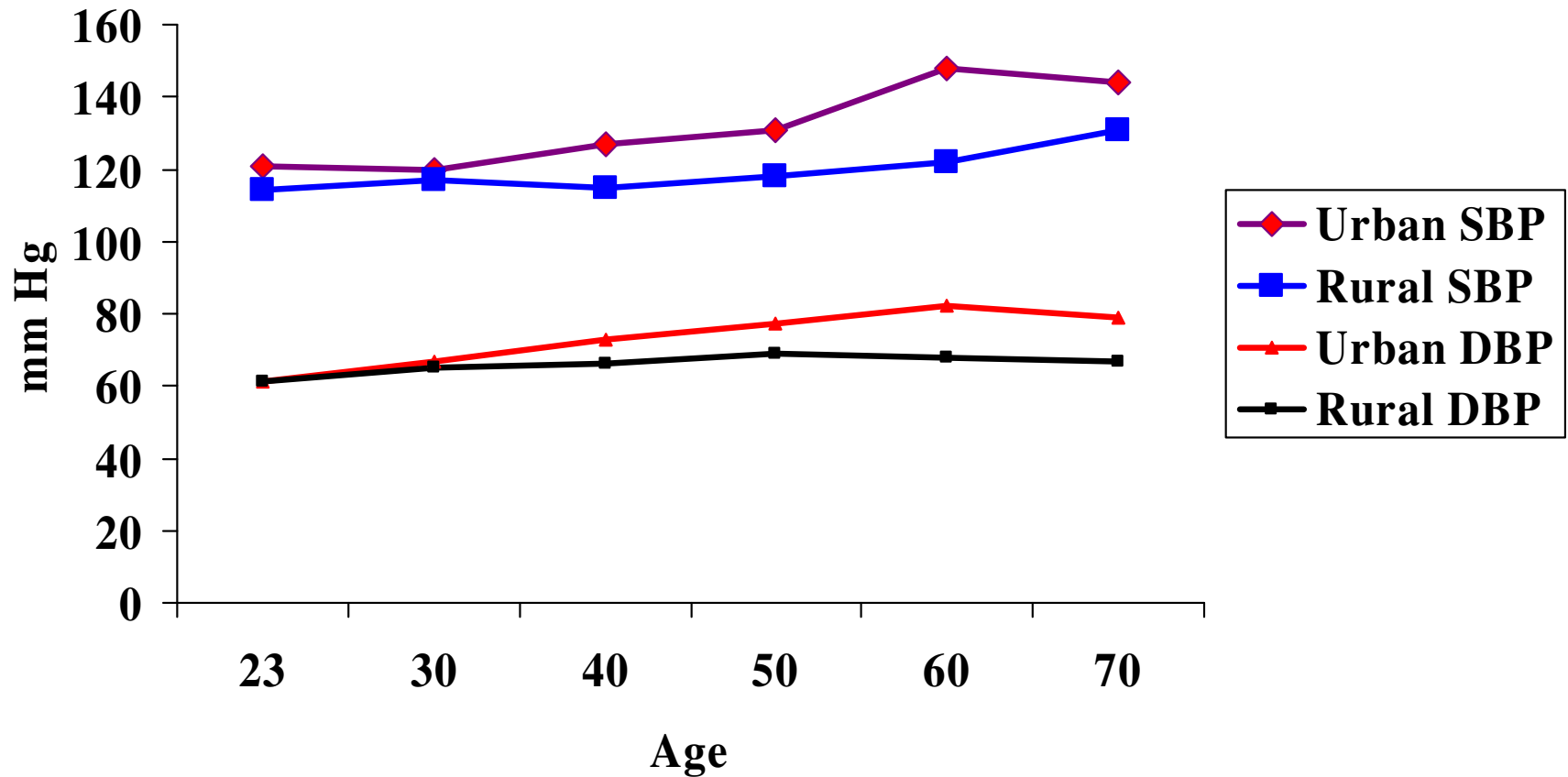
- West African vs. People of African Descent outside of Africa
  - Increasing with “Western” lifestyle



# Prevalence in Changing Environments

- West African vs. Non-African African vs. Non-African
  - Increasing with “Western” lifestyle
- Rural vs. Urban within Africa

# Urban-Rural BP by Age - Kenya



Adapted from Poulter et al *J. Epid. and Comm Health* 38:181 1984

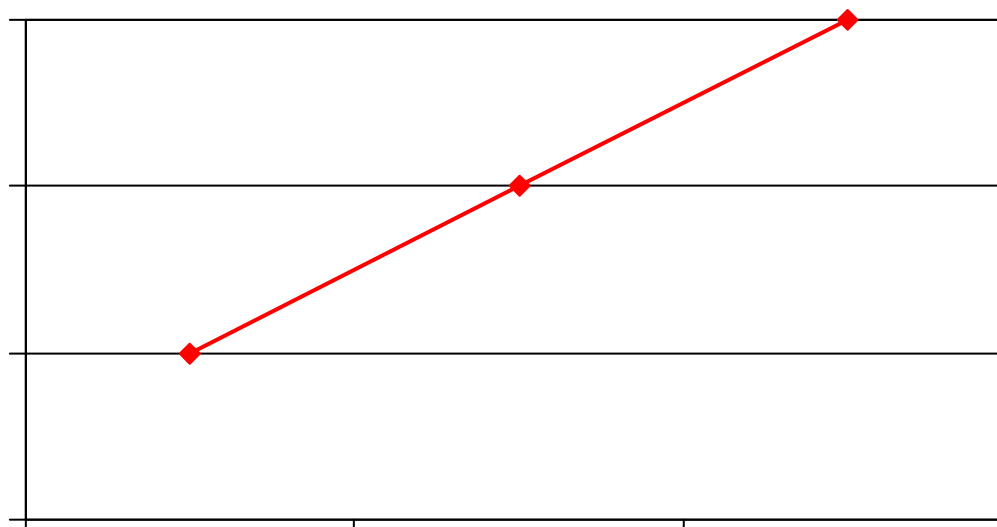
# Role of Genes in Hypertension and Intermediate Phenotypes

- **Hypertension**
  - Nigeria - 43-45% heritability (Rotimi et al *Hypertension* 1999)
- **Angiotensin Converting Enzyme levels**
  - 67% in Nigeria and 18% in US Blacks (Cooper et al *Hypertension* 35:1141 2000)
- **Angiotensinogen levels**
  - 77% in Nigerian and 18% in US Blacks (Cooper et al *Hypertension* 35:1141 2000)

# Genetics of Hypertension: A model of risk by environment

- Define heritability in terms of given environment
- Norm of reaction
  - Set of environment-phenotype relationships for a given genotype

# BP Norm of Reaction: Possibilities



ERROR: rangecheck  
OFFENDING COMMAND: .buildcmmap

STACK:

-dictionary-  
/WinCharacterSetFFF-V2TT3491565Ct  
/CMap  
-dictionary-  
/WinCharacterSetFFF-V2TT3491565Ct