Oliver Watson

Modelling the spread of *pfhrp2* deletion concern in Africa

MRC Centre for Outbreak Analysis & Modelling, Department of Infectious Disease Epidemiology, Imperial College London

Imperial College London

MRC Centre for Outbreak Analysis and Modelling

Proportion of individuals infected with only *pfhrp2*-deleted parasites (y-axis) vs PCR Prevalence in children 6-59 months old (x-axis)

Legend: ● Observed DRC Dataset
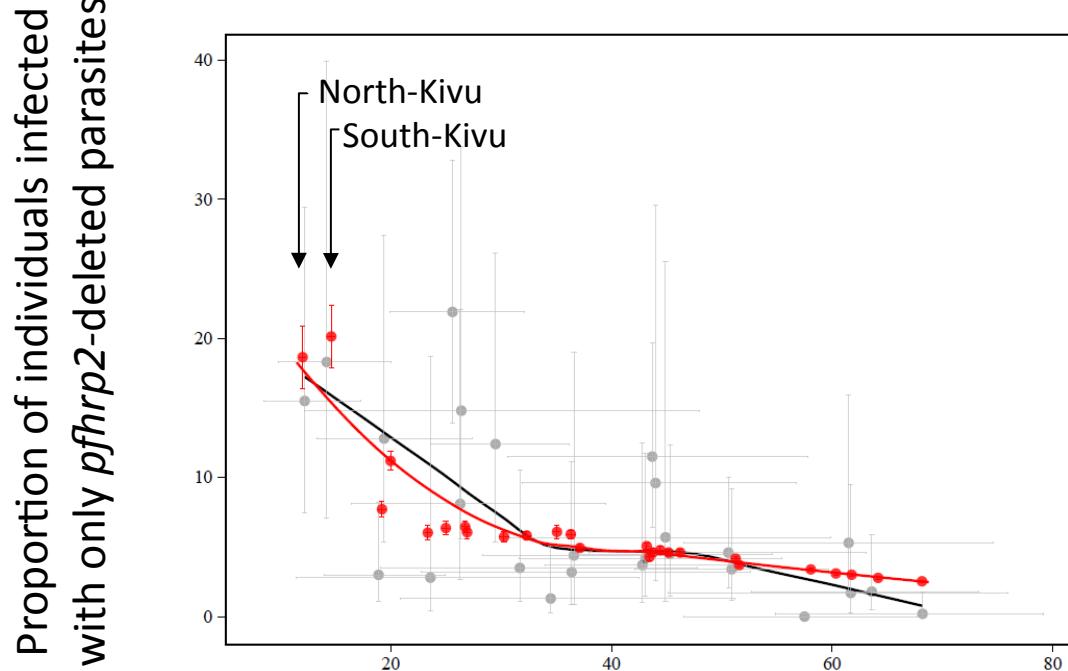
Parr et al. in press
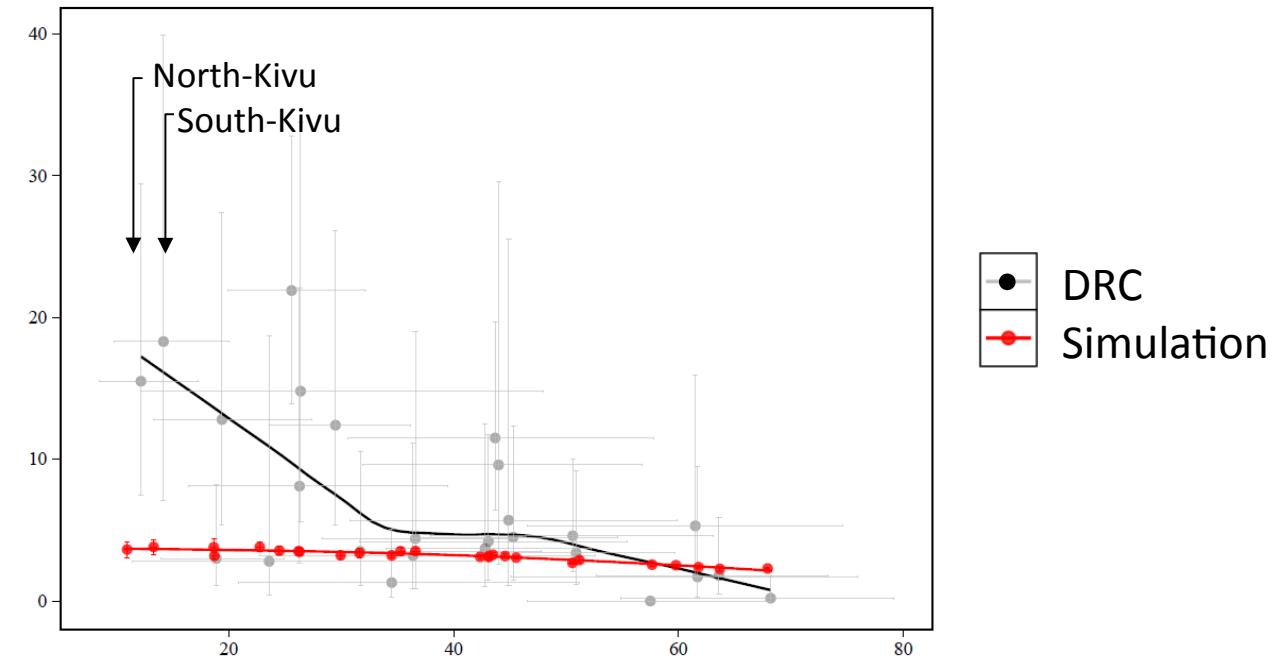
Significantly higher proportion of deleted samples in low transmission areas
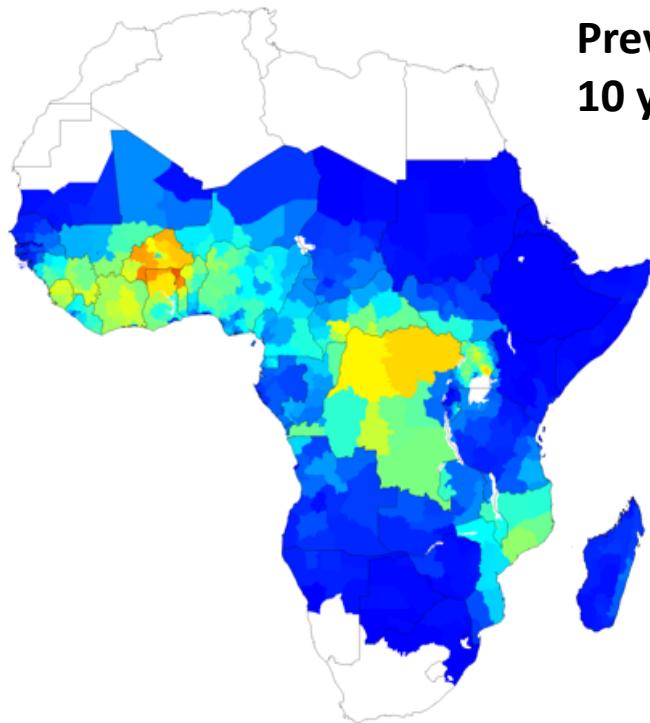
➤ Can only be explained by selection through RDT-guided treatment decisions

With selection
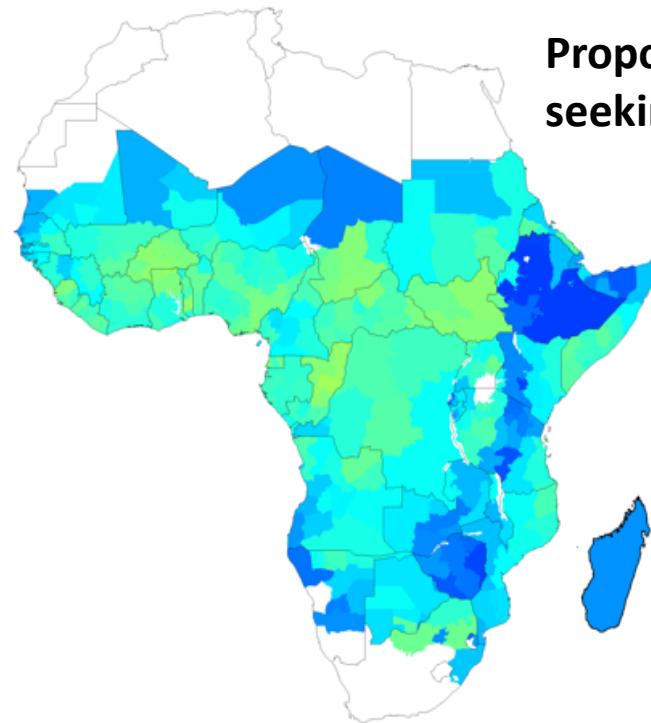
Without selection
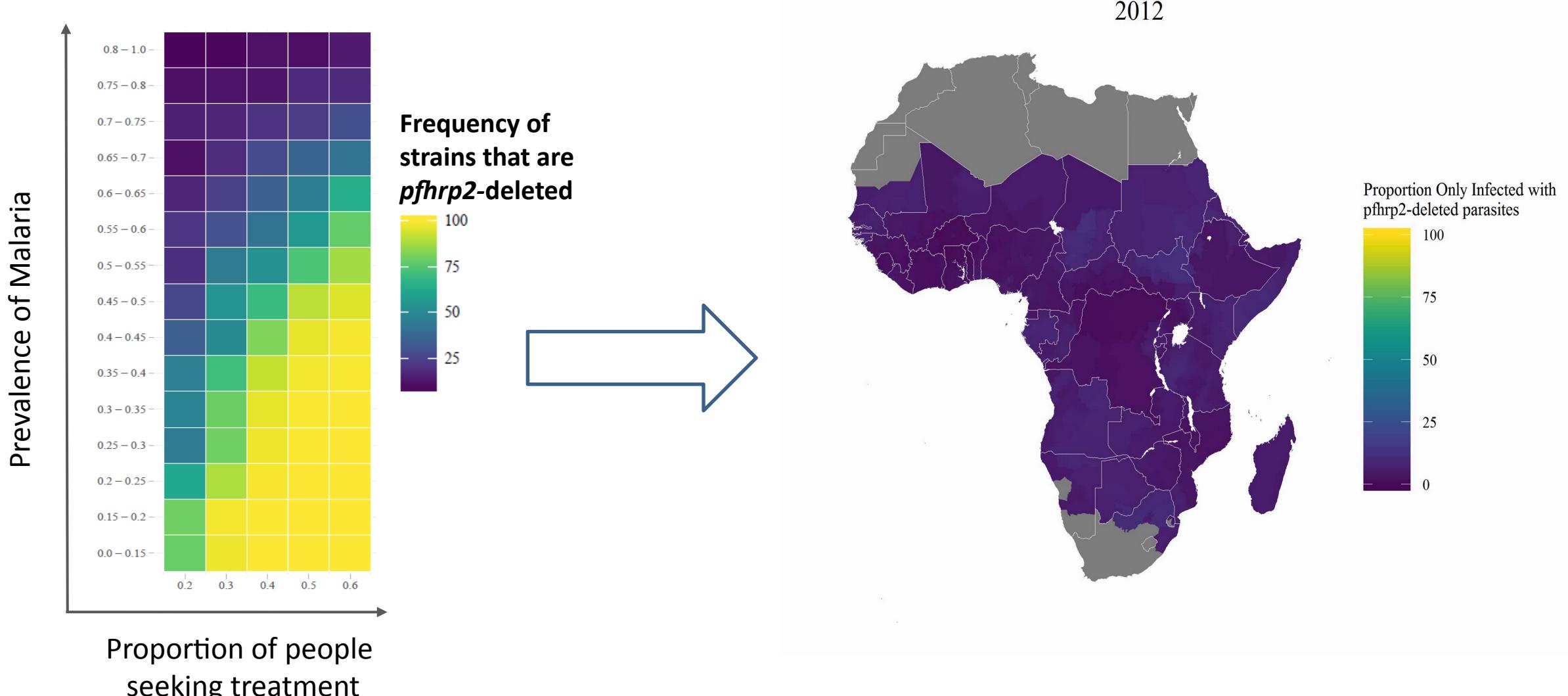
PCR Prevalence in children 6-59 months old

Prevalence in children ⩽ 10 years old

Proportion of people seeking treatment

Modelling selection-driven spread

Frequency of strains that are *pfhrp2*-deleted

Prevalence of Malaria

Proportion of people seeking treatment

2012

Proportion Only Infected with pfhrp2-deleted parasites

* Model assumes no change in prevalence and treatment coverage – spread therefore conservative

Modelled selection-driven spread

Fitted model identifies areas of concern for potential selection-driven spread in Africa

➤ Highest concern: Low prevalence plus high RDT-guided treatment

Proportion of infected population possessing only *pfhrp2*-deleted mutants

HRP2 Concern

>20% by 2016

>20% by 2022

>20% by 2030

<20% by 2030

High
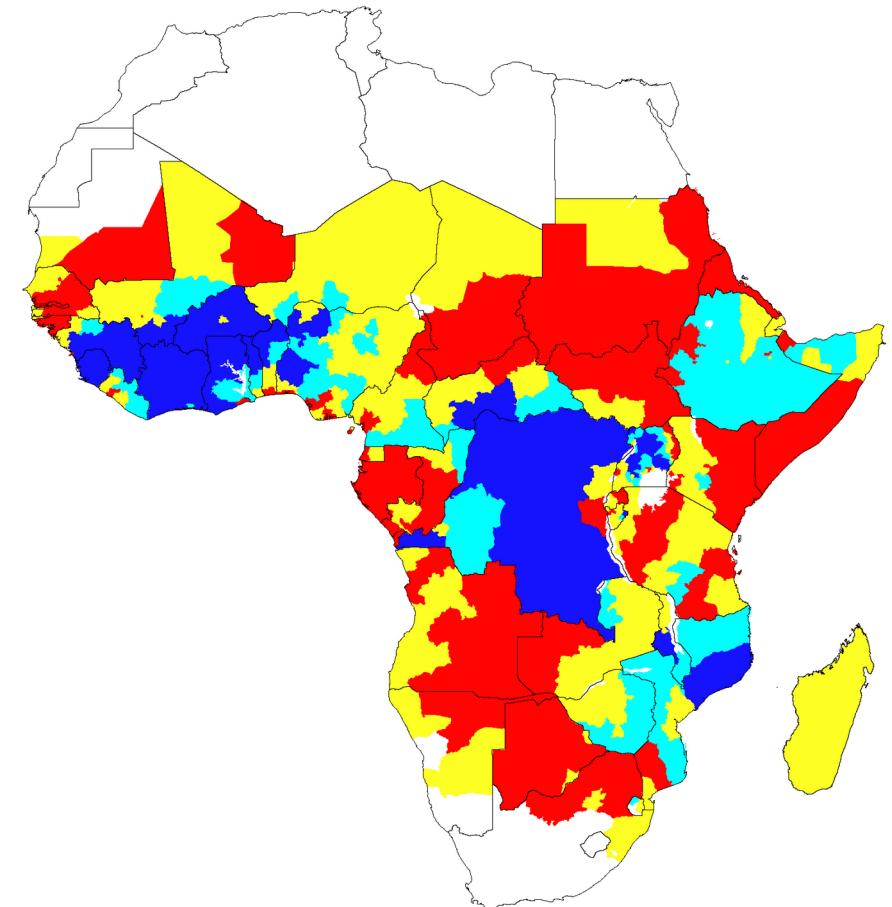
Moderate

Slight

Marginal

1. An increased emergence of *pfhrp2*-deleted mutants can be explained by the introduction of testing by PfHRP2-based RDTs in the last 10 years.

2. The use of these RDTs will result in the greatest selection pressure in regions that have low malaria transmission and a high frequency of people seeking treatment.

3. Need for further genetic investigations in the regions identified as having a high HRP2 concern.

1. Imperial College London:
   - A. C. Ghani
   - H. C. Slater
   - R. Verity
   - Malaria Modelling Group

2. University of North Carolina:
   - S. R. Meshnick
   - J. B. Parr

3. University of Kinshasa:
   - M. K. Mwandagalirwa
   - A. Tshefu

4. Wellcome Trust & MRC Centre for Outbreak Analysis and Modelling

Thank you for listening

Email: o.watson15@imperial.ac.uk