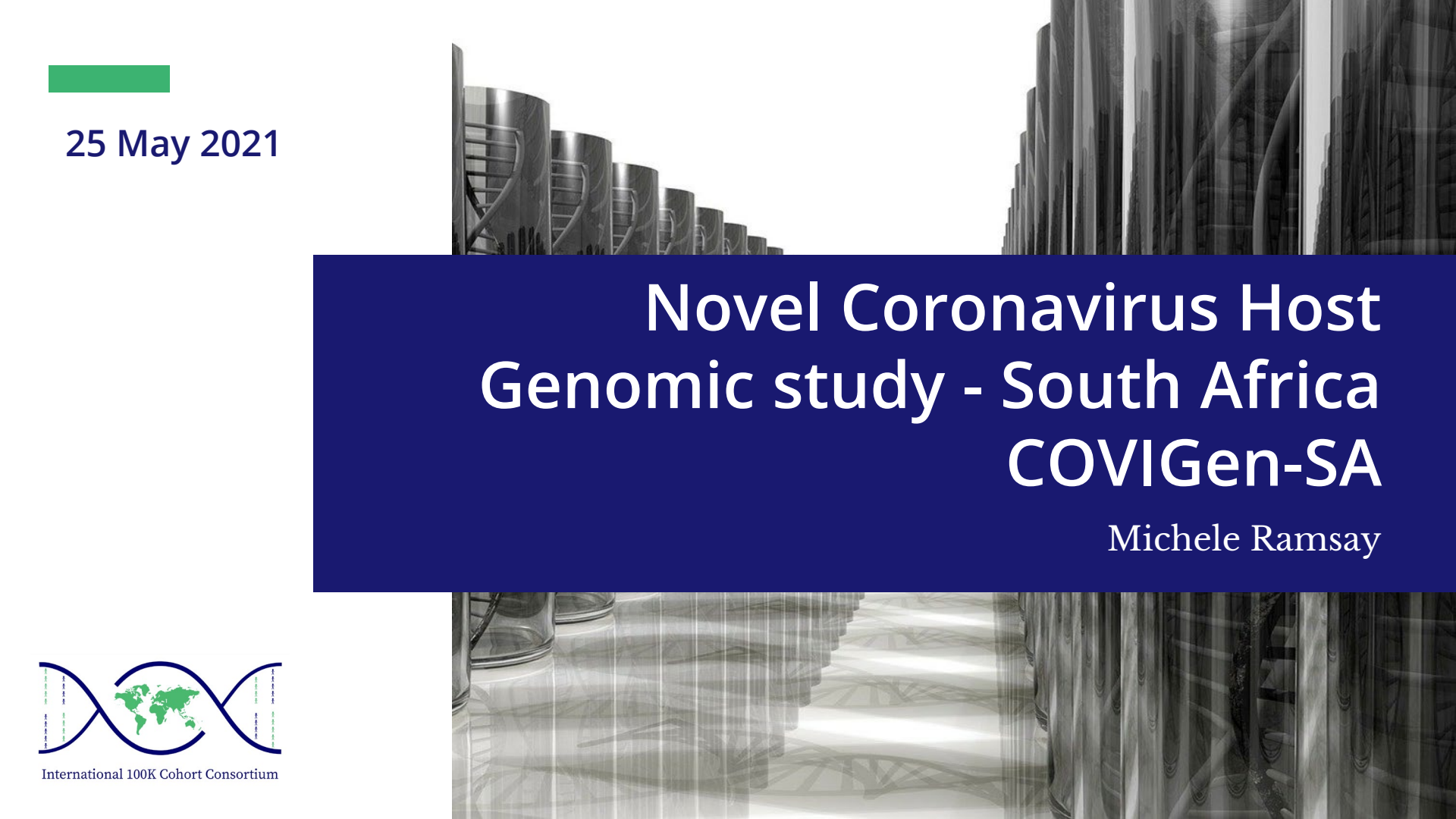




25 May 2021



Novel Coronavirus Host Genomic study - South Africa COVIGen-SA

Michele Ramsay



International 100K Cohort Consortium



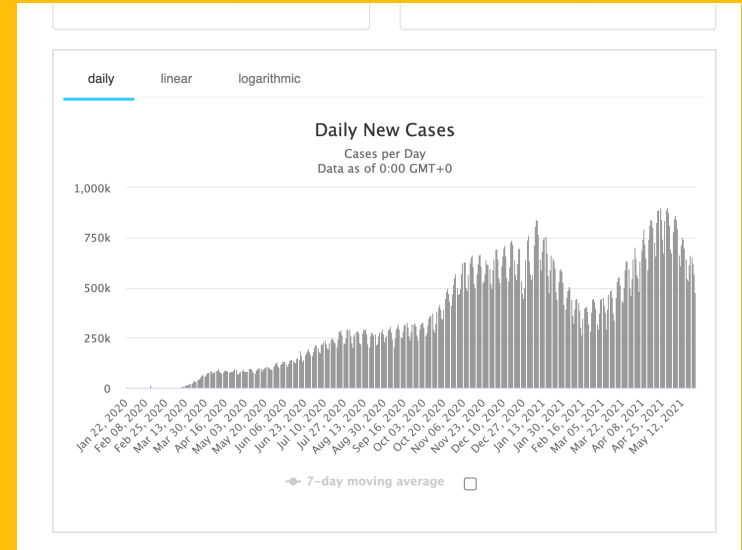
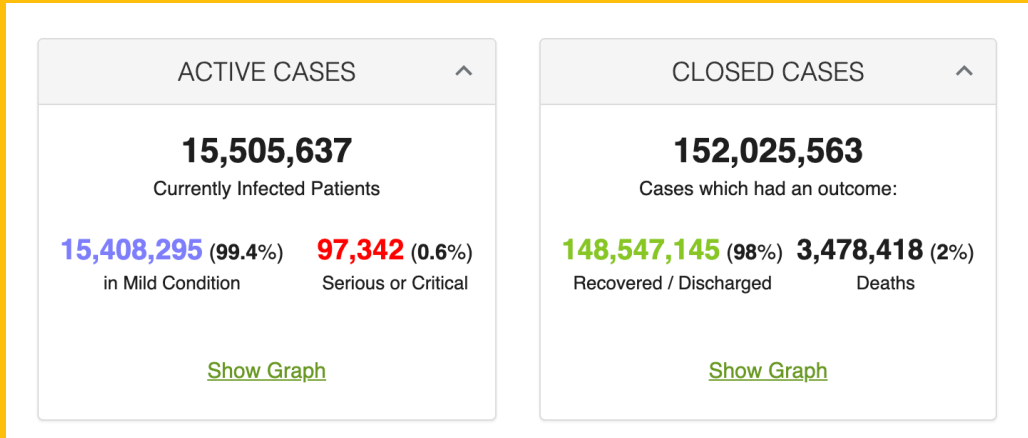
Outline

- Factors that affect COVID-19 outcome
- COVIGen-SA update
- Challenges & Next steps

WITS
UNIVERSITY



— Worldwide statistics (24 May 2021)

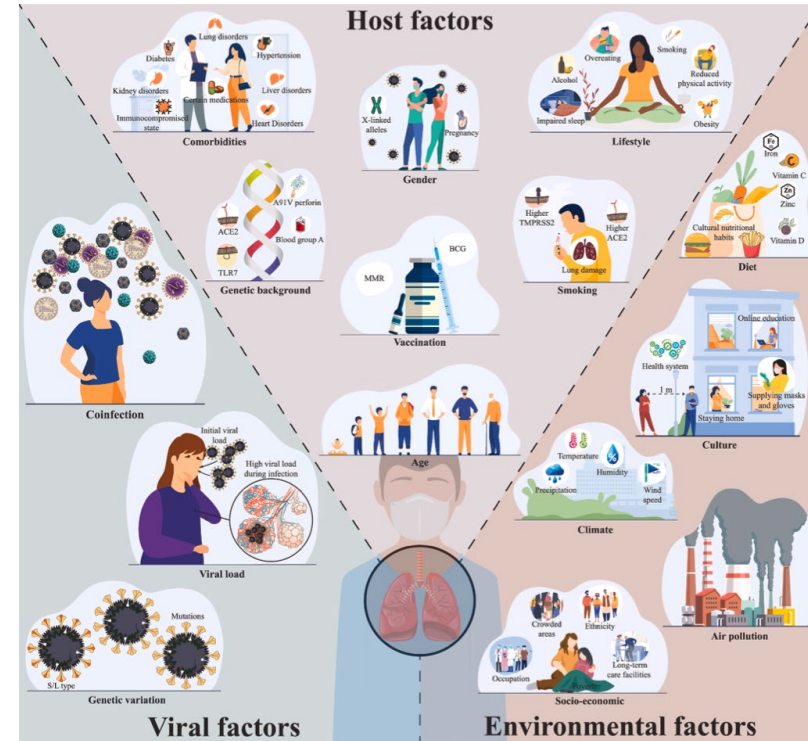


South Africa: 1,635,465 cases 55,802 deaths (3.4%)

Factors that affect COVID-19 outcome

Host factors:

- Genetic susceptibility
- Age & Sex
- Comorbidities
- Behaviour
- Vaccination



Samadzadeh et al., 2021



Update on global COVID-19 host genomic studies



49,562 COVID-19 patients
46 studies
19 countries worldwide

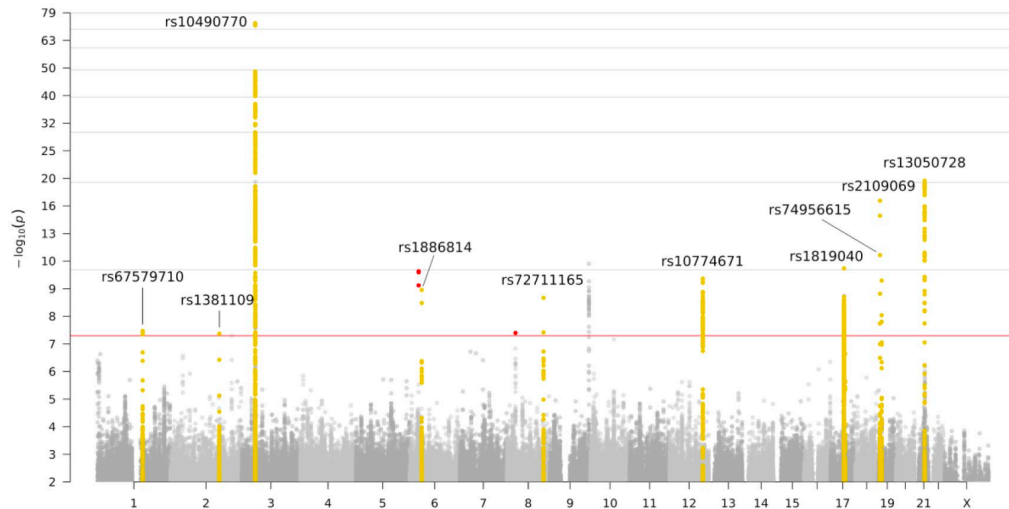
Absence of African data

**Areas of the globe contributing to the most recent meta-analysis of host genetic factors for COVID-19
(The COVID Host Genetics Initiative, 2021)**

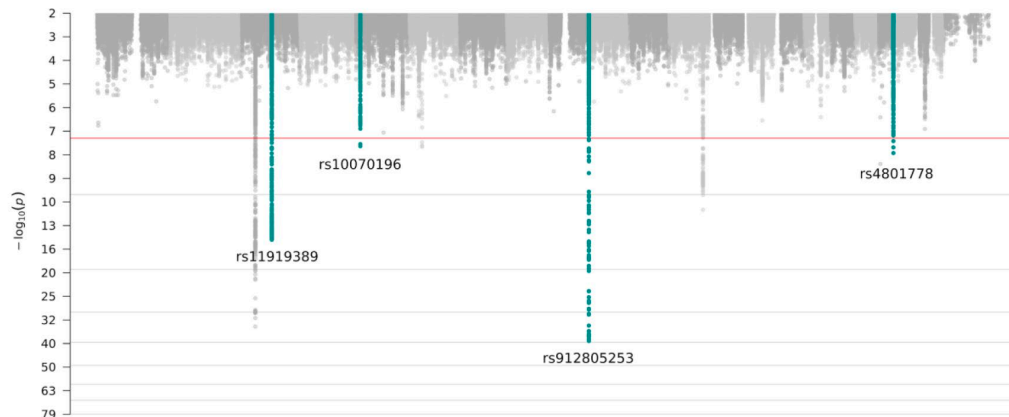
<https://doi.org/10.1101/2021.03.10.21252820> doi: medRxiv preprint



Hospitalized COVID-19+ (N.cases=13,641,N.controls=2,070,709)



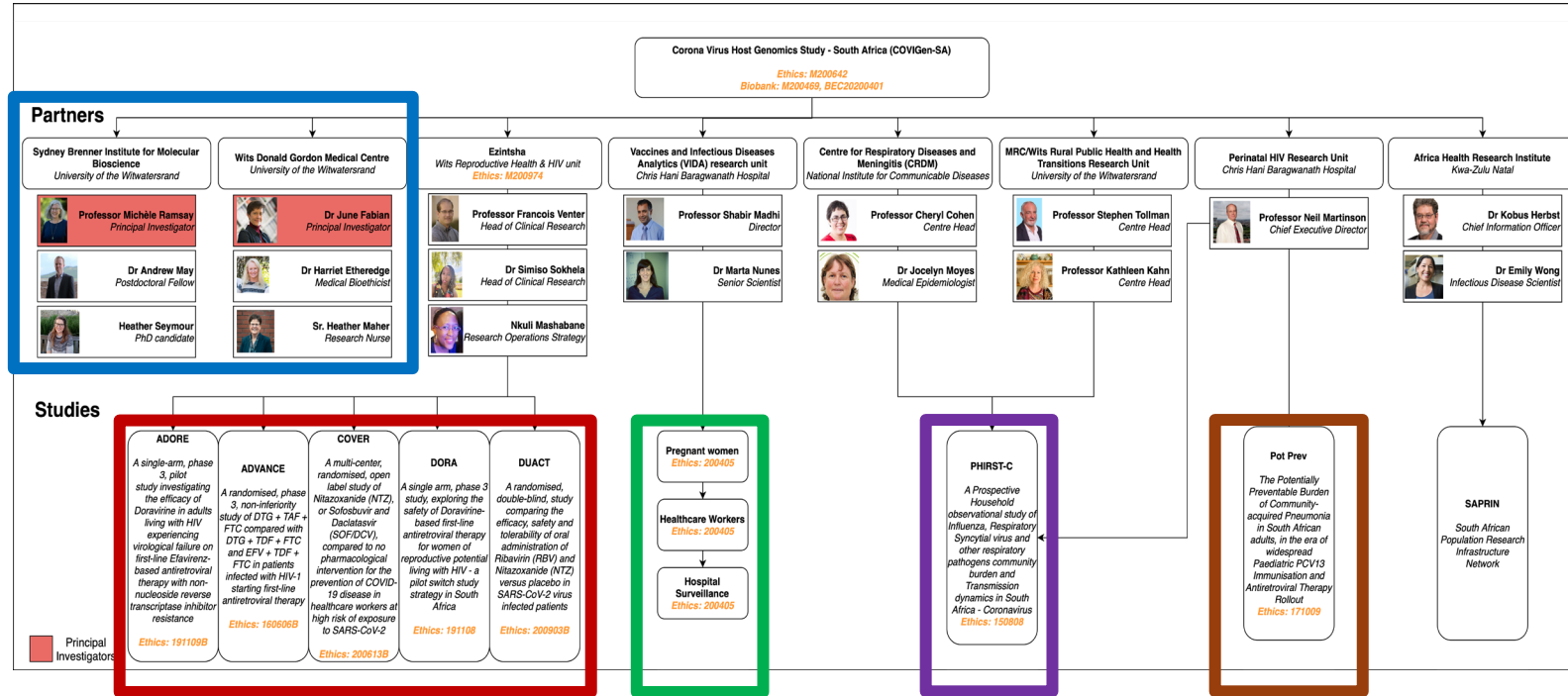
Hospitalized COVID-19
Cases: 13,641
Controls: >2 M



SARS-CoV-2 reported infection (N.cases=49,562,N.controls=1,770,206)

SARS-CoV-2 infections
Cases: 49,562
Controls: >1.7 M

COVIGen-SA update



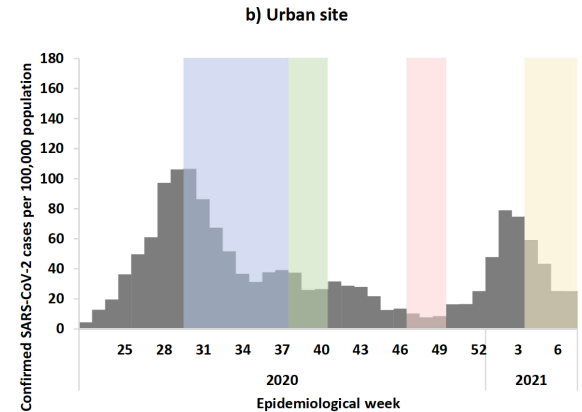
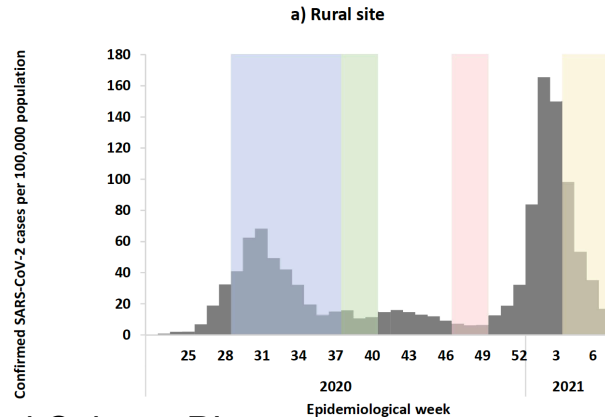
COVIGen-SA update – VIDA Research Unit

- 660 cases (257 asymptomatic; 403 symptomatic)
 - 457 female (70% female)
 - 154 requiring supplemental oxygen
 - 18 placed in ICU (none with mechanical ventilatory support)
 - 25 deceased
 - 106 pregnant



COVIGen-SA update – PHIRST-C (rural/urban community)

- Estimate community burden of SAS-CoV-2
- Assess transmission dynamic of infections
- ~100 households (5 people per household)
- Over a third infected; 16% symptomatic (of these 14% hospitalized; 3% repeat infection)



Images from Cheryl Cohen - PI



COVIGen-SA update - Genomics



576 DNA samples sent for genotyping on the H3Africa SNP genotyping array (~2.3M SNPs) (Funded by IHCC)

Additional funding for more genotyping (ALIVE Consortium at Wits University)

Population controls (~5000 South Africans) – already genotyped





Challenges and Next Steps

- Integrating phenotype data
- Increasing number of severe COVID-19 cases
- Resources
- Focus on fieldwork partnerships
- Analyze preliminary data and assess the African situation
- Partner with other host genomics studies

The core COVIGen-SA team



International 100K Cohort Consortium



Patient-centred. Independent. Academic.