



Where next for infection research?

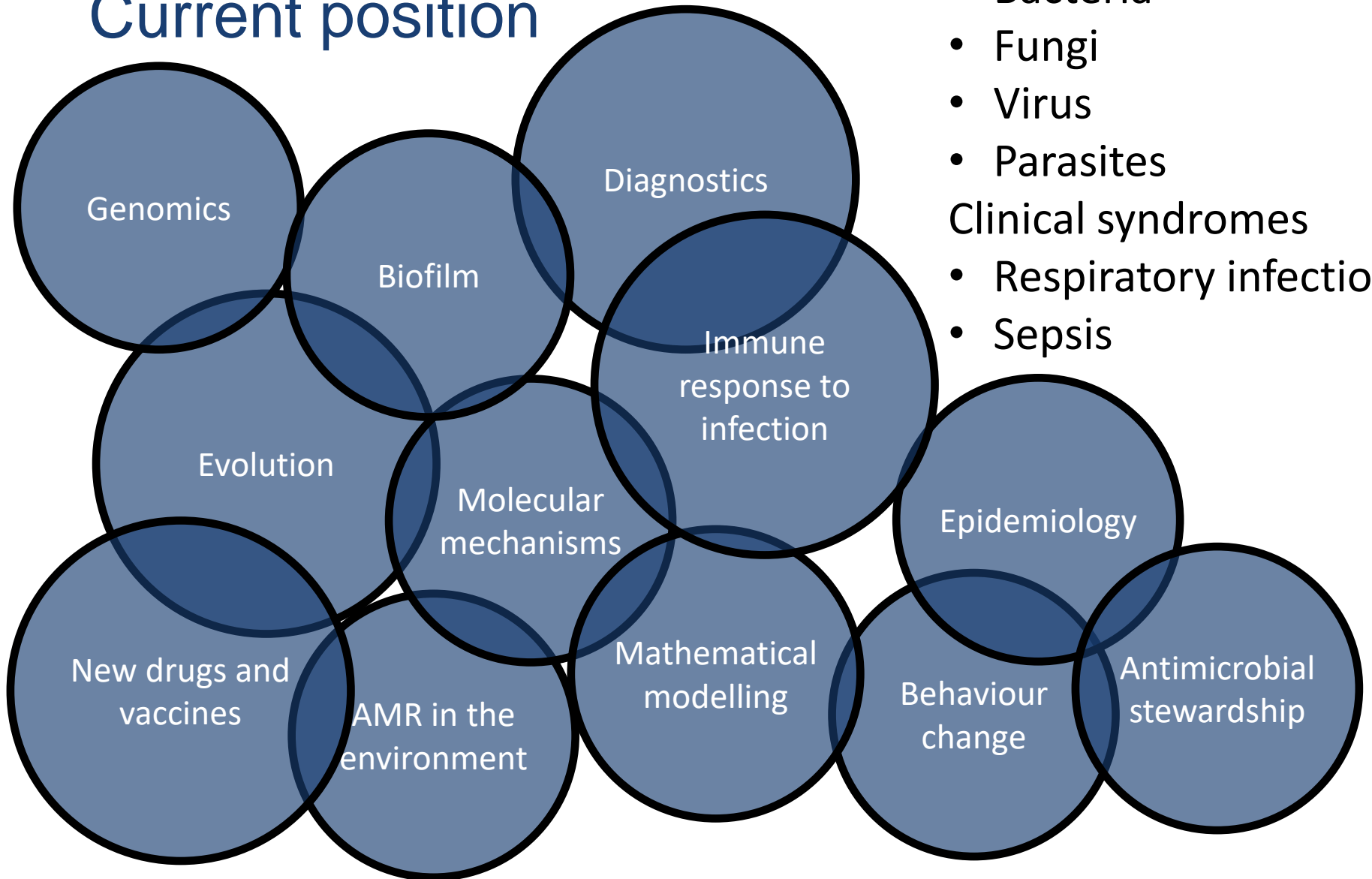
Tim Felton



Where next for infection research?

- Structure
 - Where are we now?
 - Where are we trying to get too?
- Science
 - Drug discovery
 - Suppression of emergence of antimicrobial resistance
 - Diagnostics
 - Data science

Current position



Pathogens

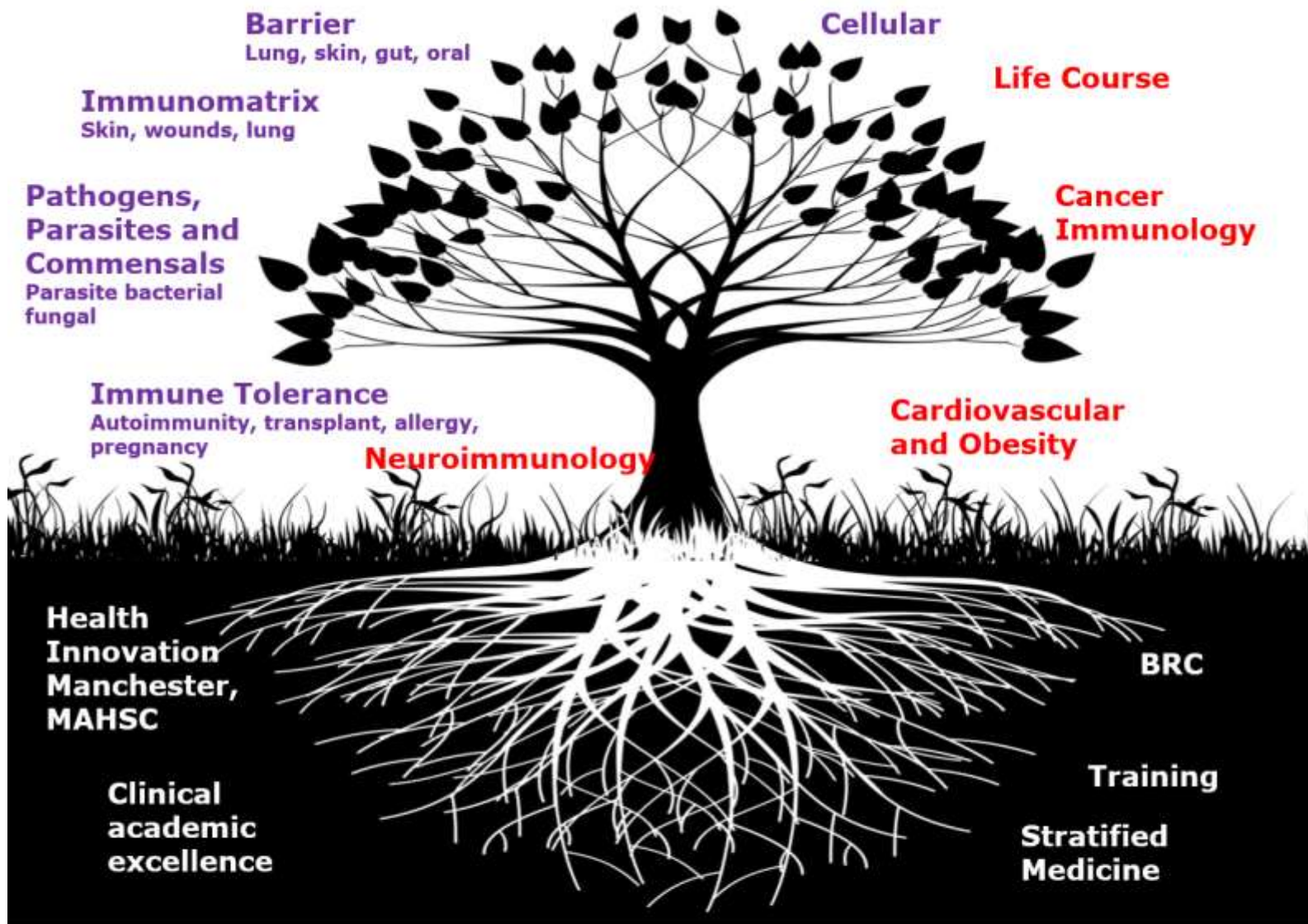
- Bacteria
- Fungi
- Virus
- Parasites

Clinical syndromes

- Respiratory infection
- Sepsis

Current success

- Two Wellcome collaborative awards
 - Understanding and predicting the evolution of antibiotic resistance in human infection (£1.7M)
 - Understanding and predicting the evolution of antibiotic resistance in human infection (£2.2)
- NIHR AMR infrastructure award (£4.4M)
- NIHR Health Technology Assessment
 - Biomarker-guided duration of antibiotic treatment in hospitalised patients with moderate or severe sepsis (£1.6M)



Internationally recognised excellence

Areas for development



Antimicrobial Strategy Manchester

A multidisciplinary task force equipped to be responsive to trends in local and global infection.

- Infection network
- Infection strategy



Antimicrobial Strategy @MANCHESTER

AntiMicrobialStrategyManchester
@AMS_UoM Follows you

An integrated community of clinical, academic and industrial researchers focused on AntiMicrobial Strategy in Manchester

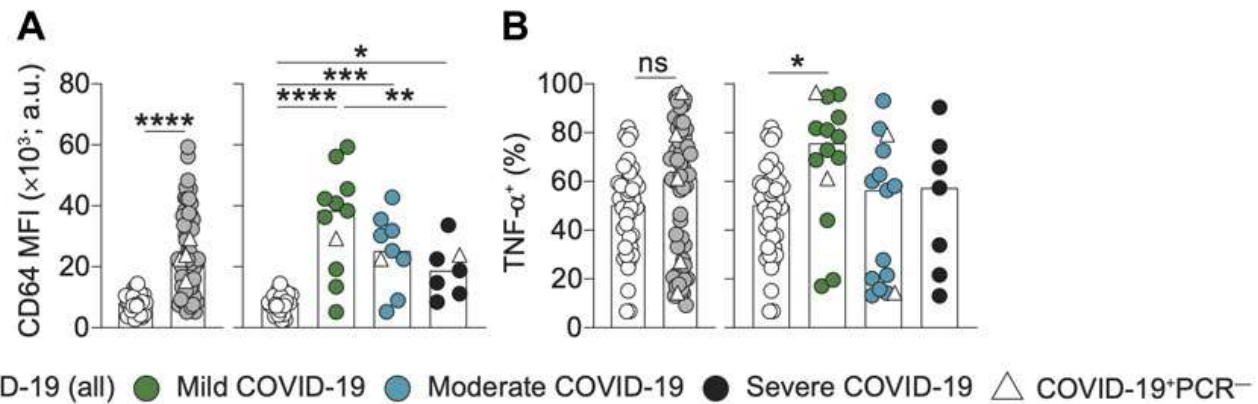
📍 Manchester 🔗 sites.manchester.ac.uk/antimicrobial-... 📅 Joined January 2020

96 Following 74 Followers

Following

Exploring immunology

- Learning from Covid19



- Immune dysregulation
 - Therapeutic targets
 - Biomarkers (diagnosis and prognosis)
- Undercurrent illness in multi-morbidity

Elizabeth R. Mann et al.
Sci. Immunol. 2020;5:eabd6197

Drug discovery

- Identifying and validating novel targets using –omics technologies, bioinformatics and systems biology
 - Minimise the impact of AMR on clinical outcomes and progressing hits to marketed therapeutics
 - Single pathogen agents with companion diagnostics
- Synthetic biology approach to producing antimicrobials agents in the SYNBIOCHEM centre
- Potential TB treatment and antifungal agent

Suppression of emergence of antimicrobial resistance

- Understand molecular mechanisms (mutation and plasmid transfer) of resistance and be able to predict how resistance emerges in both bacteria and fungi
- Pathogen v Drug v Host immunology
- Rapid molecular diagnostic tests, molecular infection control, microbiome and plasmids
- Connect fine-scale microbial evolutionary genomics and macro-level epidemiology

Precision medicine and stewardship

- Treatment success and suppression of resistance
- Biomarker discovery, validation and prospective assessment of impact on patient care pathways
 - Host response, pathogen detection, imaging
- Drug dose, direction and combination
- Dashboards, decision support, diagnostic led stewardship
 - Knowledge support to General Practitioners and patients: evaluation of the effectiveness of periodic feedback, decision support during consultations and peer comparisons in multifactorial cluster randomised trial (BRIT2)
- Behaviour change

Infection research

- Grow on current success
- UoM infection strategy and network
- Collaborative research across UoM with MAHSC, PHE and the NHS
- Infection theme 2022 or 2027?



Questions?

timothy.felton@manchester.ac.uk

