Burnet
reach for the many

Vaginal Microbiome R&D

The vaginal microbiome plays a crucial role in maintaining women's reproductive and overall health. Understanding and supporting an optimal vaginal microbiome is essential for preventative healthcare and improved quality of life.

Dominated by beneficial *Lactobacillus* species, an optimal vaginal microbiome helps protect against infections by producing lactic acid, which maintains an acidic environment that deters harmful pathogens. Disruptions to this delicate balance—caused by antibiotics, hormonal changes, or lifestyle factors—can lead to conditions such as bacterial vaginosis, yeast infections, and increased susceptibility to sexually transmitted infections, including HIV.

Our current research

- Defining the role of the vaginal microbiome and their metabolites in modulating adverse sexual (i.e. HIV) and reproductive health outcomes
- Preclinical and clinical studies of a vaginal gel to optimise the vaginal microbiome
- Defining the bactericidal/ bacteriostatic activity of vaginal microbiota metabolites on optimal and non-optimal vaginal bacteria
- Defining the immunobiological activity of vaginal microbiota and their metabolites on cervicovaginal epithelial cells
- Investigations on inflammation in a neovagina model of transgender women
- Prophylactic and therapeutics platforms

Methods and capabilities

Burnet's microbiome researchers have significant expertise and unique technical assays and capabilities. We are ready to work with you on your microbiome research and development activities including diagnostic and therapeutic applications.

Professor Gilda Tachedjian

Dr Anna Hearps

Dr Lindi Masson

- Human vaginal, ectocervical and endocervical epithelial cell models with and without a mucus layer
- Access to genital fluids including simulated vaginal fluid
- Isolation, identification, and propagation of vaginal bacteria including *Lactobacillus* spp. and species associated with vaginal dysbiosis
- Vaginal bacterial competition studies under different conditions (e.g. pH) – growth of commensals of interest: Absorbance, CFU, PMAqPCR (quantify live cells)
- Chemical solutions to specifically target species of interest in complex, mixed communities
- Epithelial and vaginal bacterial co-culture and adhesion assays
- Vaginal microbiome genomics and bioinformatics (e.g. 16SrRNA amplicon gene sequencing)
- Vaginal transcriptomics
- Vaginal metaproteomics
- Bacterial metabolite production
- Taxon specific PCR (bacterial load)
- Evaluation of inflammatory responses to bacterial isolates (Luminex, ELISA)
- Quantitation of microbiome metabolites (enzyme assay)
- Immunobiological effects of bacteria and metabolites on female reproductive tract (FRT) epithelial cells
- Female sex hormones/FRT epithelial cells
- Anaerobic chamber for culturing bacteria
- Biomarkers discovery and diagnostics development
- Multiparameter flow cytometry/immunophenotyping
- High content imaging

Work with us

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