

Studying Heterogeneity & Clustering

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Bayesian Mixtures & Non-parametric models

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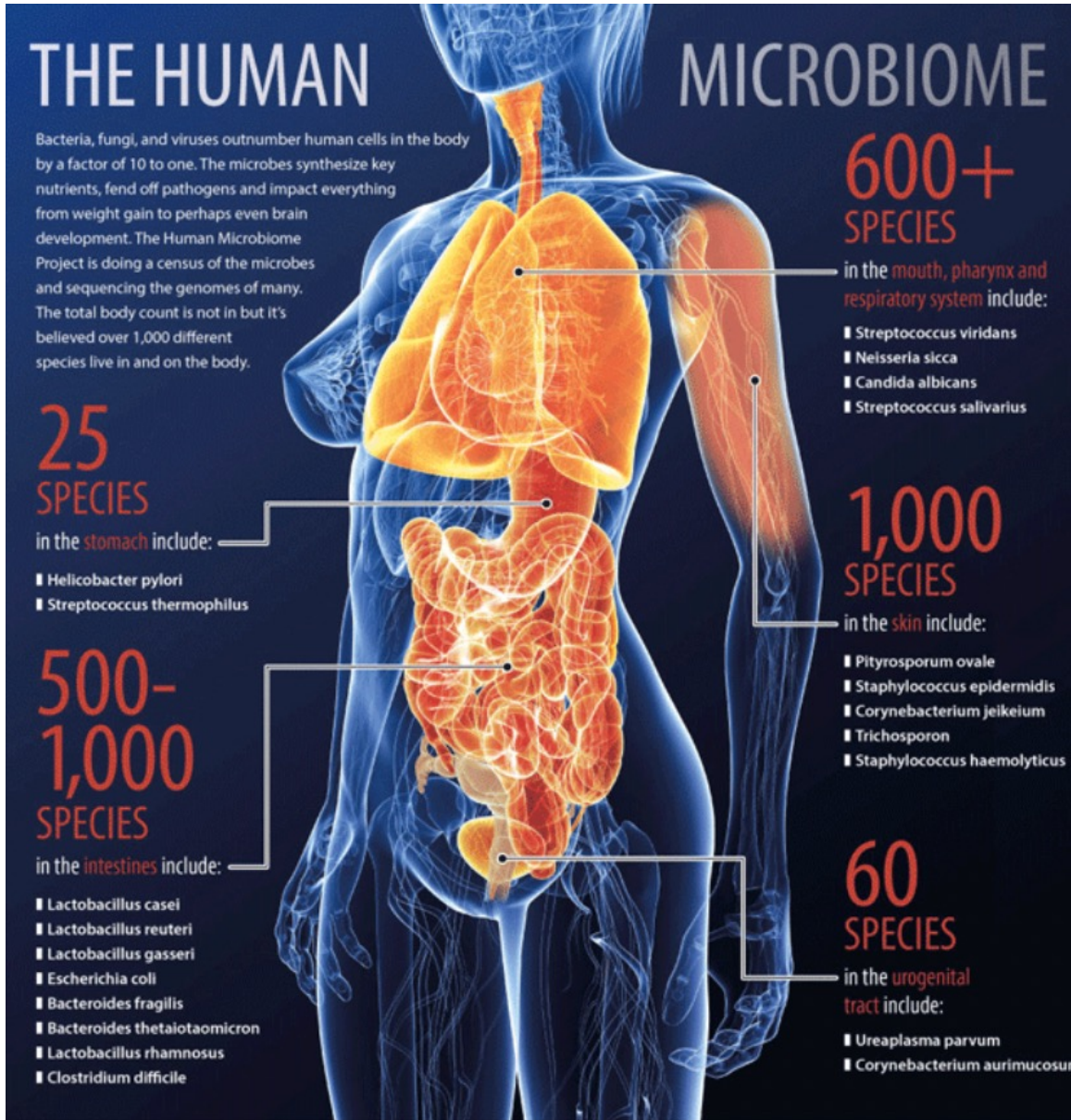


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Bayesian Mixtures & Non-parametric models

Study **heterogeneity** across subpopulations, i.e. how complex features or outcomes **vary** across **different subgroups**:



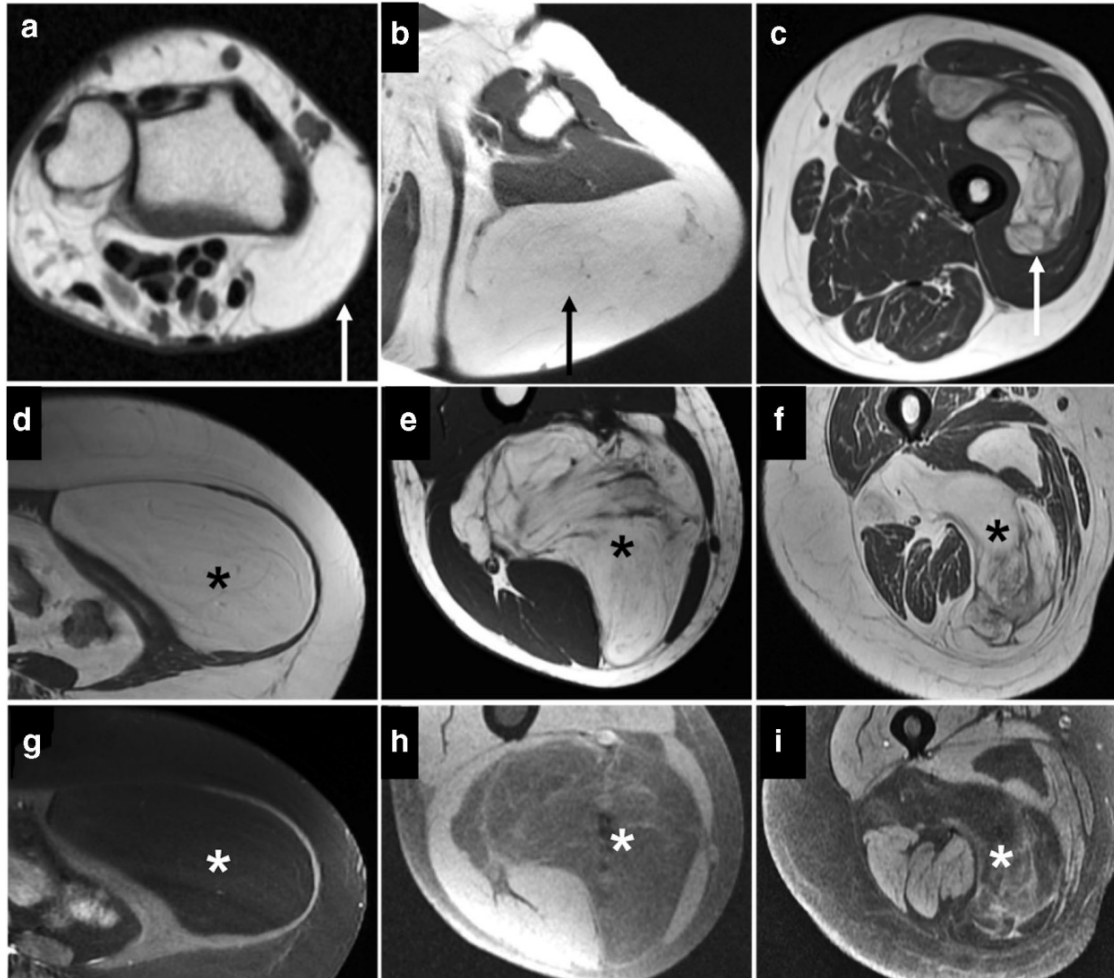


Bayesian Mixtures & Non-parametric models

- Human Microbiome and microbial communities

- *A Common Atom Model for the Bayesian Nonparametric Analysis of nested data*, JASA, 2023.
- *Two-group Poisson-Dirichlet mixtures for multiple testing*, Biometrics, 2021

Bayesian Mixtures & Non-parametric models



Levels of lesion architecture complexity in Lipoma and Liposarcoma

- Human Microbiome and microbial communities
- Studying tumor heterogeneity in Radiology

- *A Bayesian nonparametric model for textural pattern heterogeneity*, Journal of the Royal Statistical Society, Series C, 2021.
- *Qualitative evaluation of MRI features of lipoma and atypical lipomatous tumor: results from a multicenter study*, Skeletal Radiology, 2020.



Bayesian Mixtures & Non-parametric models

- Human Microbiome and microbial communities
- Studying tumor heterogeneity in Radiology
- Brain functioning, genetics and resulting phenotypes

The Minnesota Twin Family Study (MTFS)



- *Bayesian nonparametric analysis for the detection of spikes in noisy calcium imaging data*, Biometrics, 2023
- *A nonparametric Bayesian model for estimating spectral densities of resting-state EEG twin data*, Biometrics, 2022.
- *Beyond t test and ANOVA: applications of mixed-effects models for more rigorous statistical analysis in neuroscience research*, Neuron, 2021