Microbiome Engineering and Infectious Disease

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Description: The Microbiome and Infectious Disease concentration will train students to understand both the biology of microorganisms and their interactions with human hosts. Understanding the complex relationships between humans and commensal or pathogenic microbes requires a diverse set of skills and concepts. Training will include foundational subjects in Ecology, Immunology, Microbiology, and Genetics. Genomics and Computational Analysis is an essential aspect of the training because DNA sequencing has become the primary means of measuring microbial communities.

Guide for class selection: Any three Restricted Electives from the list below may be taken to satisfy this concentration.

Restricted Electives

20.390 Computational Systems Biology: Deep Learning in the Life Sciences (U)
Prereq: 6.100B or 6.9080; and 7.05; or permission of instructor

20.446 Microbial Genetics and Evolution (G)
Prereq: 7.03, 7.05 or permission of instructor

7.23J/20.230J Immunology (U)
Prereq: 7.06

7.26 Molecular Basis of Infectious Disease (U)
Prereq: 7.06

7.21 Microbial Physiology (U)
Prereq: 7.03, 7.05

7.33J/6.049J Evolutionary Biology: Concepts, Models and Computation (U)
Prereq: 7.03; 6.100A; or permission of instructor

Electives

20.106J/1.084J Applied Microbiology (U)
Prereq: Chemistry (GIR), Biology (GIR)

7.30J/1.018J/12.031J Fundamentals of Ecology (U)
Prereq: None