Aims and Scope

The ISME Journal seeks to promote diverse and integrated areas of microbial ecology spanning the breadth of microbial life, including bacteria, archaea, microbial eukaryotes, and viruses. Contributions of broad biological interest and impact are especially encouraged. Topics of particular interest within the journal’s scope include those listed below:

Microbial population and community ecology
- Theoretical advances in microbial population and community ecology, including novel theoretical development relevant to the diversity and structure of microbial populations and communities, advances in modeling and comparisons of microbial ecological principles with those in macro ecology
- Biogeography of microbial populations
- Environmental factors (biotic and abiotic) defining the distribution and abundance of microbial populations
- Integrated advances in microbial ecophysiology
- Phage genetics and ecology and environmental virology, including studies of interactions between viruses and the environment, vectors of viral transmission, epidemiology, and diversity (including generation and maintenance)
- Community level research of microbial assemblages, with emphasis on the contribution of individuals and populations
- Microbial survival and persistence mechanisms: Development and selection for resistance (heavy metals, antibiotics etc.)

Microbe-microbe and microbe-host interactions
- Microbial communication and signaling, and advances that allow study on scales relevant to microbial interactivities
- Plant-microbe interactions, including feedback and response pathways, underlying mechanisms, environmental cues, unique traits, evolution, adaptation and fitness
- Threat of emerging diseases (pathogenicity, epidemiology, ecology of reservoirs, vectors and host)
- Symbioses and syntrophic relationships
- Microbial contribution to medical biotechnology and microbial therapy
- Commensal microbial ecology – intestinal, oral, etc.

Evolutionary genetics
- Ecological aspects of experimental evolution

- Insights into genome evolution and adaptation
- Genetics and ecology of the horizontal gene pool
- Advances in mathematical and evolutionary genetics

Integrated genomics and post-genomics approaches in microbial ecology
- Studies of in situ function, gene regulation and expression
- Metagenomic genomic approaches to understanding and accessing the genomic potential of microbial communities
- Novel microbial ecology approaches involving (environmental) proteomics and metabolomics
- Theoretical and practical advances in Bioinformatics, including improved linkages between ecological parameters and molecular data, as well as advances in curation and annotation practices
- Novel “-omics” approaches that address microbial activities and potential at the single-cell level

Microbial engineering
- Environmental Biotechnology, including ecological interactions key to waste water treatment, water management, biofilters, energy production, etc.
- Development and mechanisms of microbial biocatalysts
- Developments in bioremediation and biodegradation
- Microbial contributions and potential in biofuel technologies
- Microbial process modeling and its application

Geomicrobiology and microbial contributions to geochemical cycles
- Integrated advances in biogeochemistry
- Microbial contributions to geochemical cycles
- Importance and mechanisms of microbe-mineral interactions

Microbial ecology and functional diversity of natural habitats
- Terrestrial and subsurface microbial ecology
- Aquatic and sediment microbial ecology
- Linking phylogeny and function in diverse ecosystems – common, novel and extreme
- Biofilm functional microbial ecology
- Aero – microbiology (distribution, source impact, etc), including issues of climate and dispersal
- Microbial processes and interactions in extreme or unusual environments
Microbial ecosystem impacts

- Impacts of microbial processes on climate change, and impacts of climate change on microbial communities and processes
- Food web structure, nutrient flow, and biological transformations from micro- through macro-scales
- Systems microbiology and integration of microbial ecology into systems ecology

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  Dr Caron’s work has been funded by the NIH. He has received compensation as a member of the scientific advisory board of Acadia Pharmaceutical and owns stock in the company. He also has consulted for Lundbeck and received compensation. Dr Rothman and Dr Jensen declare no potential conflict of interest.

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