

Video Article

## JoVE 4th Issue

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### Abstract

### Protocol

This issue mainly focuses on studies of [microbial communities](#). Genomics and microfluidics have made a substantial impact on this field with a remarkable scope ranging from infectious diseases to environmental change and biofuels. Jared Leadbetter and his group at the California Institute of Technology describe a method of analysis of the complex, species-rich [microbial community resident in the California dampwood termite hindgut](#). This microbial community plays a key role in the nutritional symbiosis involved in wood decay. Beyond the mere understanding and appreciation of this complex ecosystem, their research highlights a key step involved in the conversion of plant biomass. Edward DeLong and his group at MIT provide insight into the rising fields of metagenomics and [environmental genomics](#), and how the idea of a dynamic genome – a “motion picture” as opposed to a “snapshot” - is emerging. Another group at MIT, led by Roman Stocker, describes [applications of microfluidics](#) to studies of chemotactic responses in marine microbes.

In a different field, Diane O'Dowd of the University of California, Irvine, demonstrates the [preparation of neuronal cultures](#) from mid-gastrula stage *Drosophila* embryos. The model is used to explore the role of specific genes in regulating functional plasticity of neural circuits. Beyond an appreciation of small scale, this video article strongly highlights the value of visualization in biologic research.