

# Laboratory of Resource Circulation Bioengineering

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We humans have not yet been able to make effective use of renewable biological resources (i.e., biomass). Waste biomass generated by human activities and unutilized biomass have potential to be converted into various resources such as energy, fertilizer, feed and value-added bioproducts. Establishing technologies to convert biomass into resources is indispensable to reduce the environmental impact and develop a resource-recycling society.

Our lab studies environmental biotechnology which utilizes the microorganisms to convert waste biomass into valuable resources. As waste biomass contains a large amount of microorganisms, this process is inevitably not a pure culture system but a complex microbial system with hundreds to thousands species of microorganisms interacting in a complex manner. Our lab is attempting to elucidate the dynamics of these systems using an integrated approach of microbial engineering and bioinformatics, which has been rapidly developing in recent years. We aim to contribute to the construction of a recycling-oriented society by making environmental biotechnology faster, more economical, smaller, and easier to use.

