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TEACHING	Environmental Bioscience I Environmental Microbiology Molecular Biology Environmental Toxicology (MC) Advanced Science in Bioremediation (MC)	Microbiology Environmental Bioscience II Advanced Science in Bioremediation (MC)



Professor
Hiroto TAMURA



Associate Professor
Akifumi HOSODA

Research

Challenging for environmental remediation through Cutting-edge analytical approaches & Biotechnology

@ Mechanism of metabolic toxicity by microbial degradation

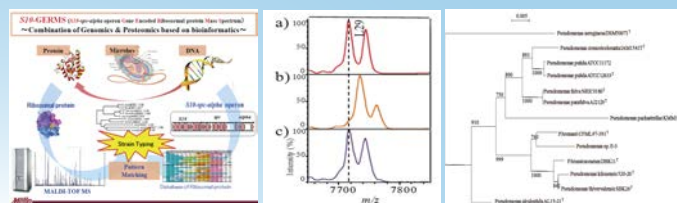
* Environmental dynamics of alkylphenol & Isolation of APEO_n degrading bacteria



Gas Chromatography (GC)
Matrix-Assisted Laser Desorption Ionization mass spectrometry (MALDI-MS)
Gas Chromatography mass spectrometry (GC-MS)

Electron micrograph of surfactant-degrading bacteria

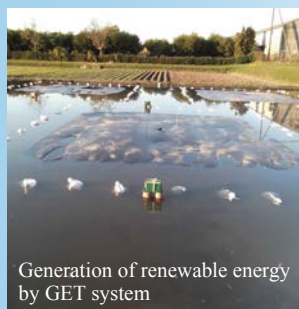
* Molecular phylogenetic analysis based on novel identification & discrimination method - S10-GERMS method -



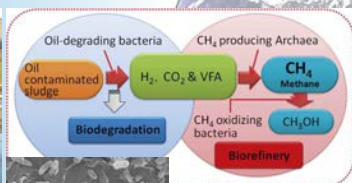
Phylogenetic analysis based on S10-GERMS method

@ Biodegradation of environmental pollutants to Biorefinery

* Biorefinery of wastes & pollutants

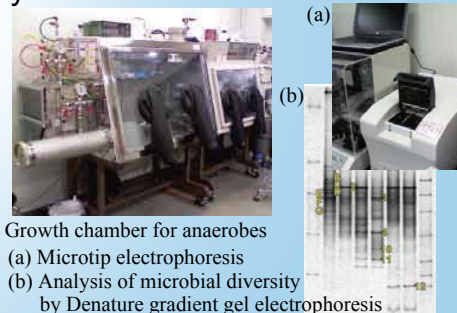


Generation of renewable energy by GET system



Electron micrograph of oil-degrading bacteria on solid surface

* Dechlorination of chlorinated volatile organic compounds by anaerobic bacteria

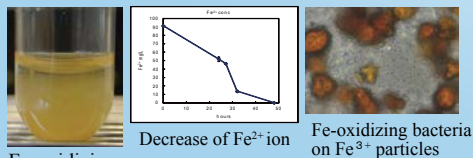


Growth chamber for anaerobes

(a) Microtip electrophoresis
(b) Analysis of microbial diversity by Denature gradient gel electrophoresis

Our goal is to be No.1 eco-friendly laboratory !!

* Wastewater treatment



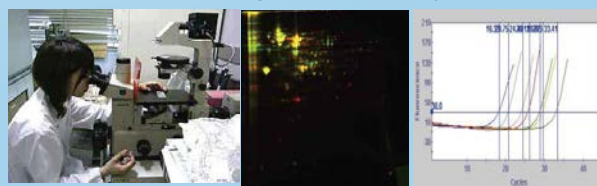
Fe-oxidizing bacteria

Decrease of Fe²⁺ ion

Fe-oxidizing bacteria on Fe³⁺ particles

@ Investigation of environmental compounds disrupting normal endocrine function

* Analysis of Androgen (Glucocorticoid) receptor agonist and/or antagonist activity of chemicals



Proteome analysis

Real-time PCR

Let's find scientific solutions to environmental issues in our Laboratory !

Recent publications:

• Hotta, Y. H. Sato, A. Hosoda, H. Tamura, (2012) MALDI-TOF MS analysis of ribosomal proteins coded in *S10* and *spc* operons rapidly classified the Sphingomonadaceae as alkylphenol polyethoxylate-degrading bacteria from the environment., *FEMS Microbiol. Lett. in press*
 • Hosoda, A., T. Takahashi, K. Numano, K. Nakajou, A. Higashimoto, M. Toda, H. Arai, Y. Hotta, H. Tamura, (2012) Rapid reductive dechlorination of trichloroethene in contaminated ground water using biostimulation agent, BD-1, formulated from canola oil., *J. Oleo Sci.* 61: 155-161.
 • Hotta, Y. J. Sato, H. Sato, A. Hosoda, H. Tamura, (2011) Classification of the genus *Bacillus* based on MALDI-TOF MS analysis of ribosomal proteins coded in *S10* and *spc* operons. *J Agric Food Chem.* 59: 5222-5230.