

Seminar by Prof. Jongyoon Han and Prof. Ryuji Kato
December 9th Tuesday, 9:30 - 11:30, Central Terrace Salon

Lecture 1:

Monitoring Biological Iron as a Label-free Critical Quality Attribute Assay for Cell Manufacturing

Jongyoon Han, PhD

Professor of Electrical Engineering and Professor of Biological Engineering
Department of Biological Engineering, Massachusetts Institute of Technology



Abstract: In order to address the inherent challenge of heterogeneity in cell manufacturing, it is essential to develop a rapid and label-free assay that can be correlated with the phenotypic changes in ongoing cell culture. In this presentation, I will introduce a portable, micro magnetic resonance relaxometry (microMRR) as a unique tool to monitor biological iron species (Fe^{3+}), which is a critical component in many cellular metabolic pathways that determine cell phenotypes. Originally developed as a disease diagnostic tool for malaria and diabetes, the microMRR assay has recently been used in determining the qualities of cultures of MSCs and iPSCs, and has provided information related to cellular senescence, differentiation efficiency, and phenotype deviation.

Lecture 2

Image-based AI for Stable Cell Manufacturing and Real-time Quality Assessment

Ryuji Kato, PhD

Associate Professor, Graduate School of Pharmaceutical Sciences, Nagoya University

Abstract: The industrialization of regenerative medicine via cell-based product manufacturing is advancing, but quality-control technologies for quantitatively understanding processes and stabilizing production are still maturing. Under a Multi-layered Quality Attribute Assurance framework, there is a growing need to integrate multiple quality-assessment modalities and operate systems with reproducibility and generalizability. This talk highlights the potential and challenges of image-analysis AI for stabilizing cell manufacturing and enabling real-time quality evaluation.



当拠点では、マサチューセッツ工科大学のJongyoon Han先生および名古屋大学 加藤竜司先生を本学にお迎えし、細胞製造における品質管理／インプロセスモニタリングに関するご講演をいただきます。

ご興味ある方は是非ご参加ください。(講演内容は英語のみとなります。)

日時：2025年12月9日(火) 9:30 - 11:30

会場：センテラスサロン (工学研究科センテラス3階)

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企画 大阪大学 大学院工学研究科 生物工学専攻生物プロセスシステム工学領域
/ テクノアリーナ最先端研究拠点「細胞製造コトづくり拠点」

