

The 64th iCeMS SEMINAR

CeMI セミナーシリーズ 19

2010 11. 30 (火)
14:00-15:30

場 所： 京都大学 アイセムス本館 2階 (東一条北西角)
セミナー室 (A207)

講演者： 谷口雄一 博士

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演 題： Quantifying E. coli proteome and transcriptome
with single-molecule sensitivity in single cells

Protein and messenger RNA (mRNA) copy numbers vary from cell to cell in isogenic bacterial populations. However, these molecules often exist in low copy numbers and are difficult to detect in single cells. We carried out quantitative system-wide analyses of protein and mRNA expression in individual cells with single-molecule sensitivity using a newly constructed yellow fluorescent protein fusion library for Escherichia coli. We found that almost all protein number distributions can be described by the gamma distribution with two fitting parameters which, at low expression levels, have clear physical interpretations as the transcription rate and protein burst size. At high expression levels, the distributions are dominated by extrinsic noise. We found that a single cell's protein and mRNA copy numbers for any given gene are uncorrelated.

Quantifying E. coli proteome and transcriptome with single-molecule sensitivity in single cells. Taniguchi Y, Choi PJ, Li GW, Chen H, Babu M, Hearn J, Emili A, Xie XS. *Science* 329, 533-538 (2010)

