Department of Cellular and Molecular Pharmacology,
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GLOBAL COE SPECIAL SEMINAR

演者 ： 井上 尊生 博士 （Ph.D.）

Chemical and Systems Biology Bio-X Program,
Stanford University

演題 ： Engineering Cellular Behavior :
The Polarity Machinery of Chemotactic Cells

日時 ： 平成19年11月16日（金） 14:00～15:00

場所 ： 医学部教育研究棟13階 第8セミナー室

Cell migration has been intensely investigated due to its involvement in a number of physiological events including angiogenesis, immunity, wound healing, and the establishment of neuronal networks. While the molecular mechanisms underlying cell migration are becoming clearer, investigations are limited without tools for temporally manipulating protein activity and second messenger levels in living cells. I have previously introduced an inducible heterodimerization strategy to control GTPase activity on the second timescale. As an extension of this technique, I have recently developed a system for the in situ manipulation of phosphoinositides, critical regulators of cell migration. In this study I apply both the GTPase and phosphoinositide inducible systems to quantitatively probe the polarity machinery of chemotactic cells in order to address a fundamental question in cellmigration: how do cells sense a small gradient of external cues and convert it into morphological polarization?

1） Suh B.C. *, Inoue T. *, Meyer T. and Hille B. **Science** 314, 1454-1457(2006)
"Rapid chemically-induced changes of PtdIns(4,5)P2 gate KCNQ ion channels" (*Contributed Equally)
2） Heo W.D., Inoue T., Park W.S., Kim M.L., Park B.O., Wandless T.J. and Meyer T. **Science** 314, 1458-1461 (2006)
"PI(3,4,5)P3 and PI(4,5)P2 lipids target Ras, Rho, Arf and Rab GTPases to the plasma membrane"
3） Inoue T. *, Heo W.D., Grimley J.S., Wandless T.J., and Meyer T. **Nature Methods** 2, 415-418(2005)
"Inducible translocation strategies to rapidly activate and inhibit small GTPase signaling pathways" (*Corresponding Author)

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