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# グローバル COE 特別セミナー

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## 生物化学専攻セミナー

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日時：平成 24 年 1 月 27 日（金） 15:00～16:30

場所：理学部 3 号館 4 階 412 号室

講師：**Dr. Timothy C. Elston**

Department of Pharmacology, School of Medicine,  
University of North Carolina at Chapel Hill

演題：**Selection of RNA by molecular transport:**

**A physics approach to the origins of life**

要旨：

Most cells possess the ability to change morphology or migrate in response to various environmental cues. To understand the molecular mechanisms that drive cell movement requires a systems-level approach that combines computational approaches, including mathematical modeling and image analysis tools, with high resolution microscopy of living cells. Here we present several examples for how such an integrated research strategy has been successfully applied. First, we combine stochastic modeling with novel biosensors for monitoring the spatiotemporal dynamics of Rho GTPase activity to investigate the role of RhoG in cell polarization and migration. Next mathematical modeling and quantitative image analysis methods are used to establish the role of cerebral cavernous malformation (CCM) proteins in vascular tube formation. Finally, we combine image analysis methods with a novel experimental construct for selectively activating members of the Src kinase family to quantify the role of these proteins in regulating dynamic changes in cell shape.