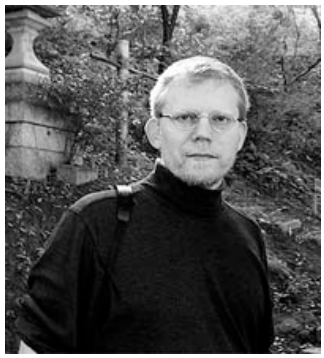
東京大学大学院理学系研究科
生物化学専攻／GCOE セミナー

演者：Dr. David Whitmore

Deptment of Cell and Developmental Biology,
University College London, London, UK



演題：Clock control of cell division:
intimate links in zebrafish

日時：平成 22 年 11 月 8 日（月）11：00～12：30
場所：東京大学理学部 3 号館 4 階 416 号室

Zebrafish are a useful model for the study of clock function, not least because they possess robust circadian oscillators within most of their tissues and cells. These tissues are themselves directly light responsive, and so the fish clock system appears to be highly decentralized with little, if any, need for a central, master clock, as in mammals. This light responsive property is also found in zebrafish cell lines, making them a unique system with which to study clock function. In addition, zebrafish are an excellent system to study the development of the circadian clock, as large numbers eggs are fertilized and develop outside the female, providing a major advantage to embryonic studies in mammals. Data relating to clocks in cell lines and during embryo development will be discussed further in this seminar. In contrast, we will describe new data regarding clock function in *Astyanax mexicanus*, the blind Mexican cavefish, and discuss some of the changes that have occurred following evolution in the dark.

Another issue of significant interest relates to what cell biological processes the clock itself controls; what are the rhythmic, clock controlled outputs in zebrafish? Dr Tamai will present new data describing the very close molecular connection between the zebrafish clock and control of the cell cycle. In zebrafish cells and embryos, the clock drives very robust rhythms in both S- and M-phase timing of the cell cycle through the rhythmic regulation of key cell cycle regulators.

Dekens, M.P. and Whitmore, D. Autonomous onset of the circadian clock in the zebrafish embryo. (2008) *EMBO J*. **27**: 2757-65.

Tamai, T.K., Young, L.C., and Whitmore, D. Light signalling to the zebrafish circadian clock by *Cryptochrome 1a*. (2007) *PNAS* **104**: 14712-14717.

Carr, A.J. and Whitmore, D. (2005) Imaging of single light responsive clock cells reveals fluctuating free-running periods. *Nat. Cell Biol*. **7**: 319-321.

世話人：深田 吉孝（内線 24381）