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CDB scientist garners innovator accolade

November 25, 2004 – Hiroki R. Ueda (Team Leader; Laboratory for Systems Biology) was presented with one of six Japan Innovator Awards awarded this year by the publisher Nikkei BP. The prize was established in 2002 by Nikkei to recognize IT pioneers who have made significant advances in their fields through the development of novel technologies, leading to commercial applications and new market growth.



Hiroki R. Ueda (second from right) with other recipients of 2004 Nikkei Japan Innovator Awards

Ueda earned the award for his work in devising techniques capable measuring the activity of internal biological clocks in animals such as the mouse. Such clocks are regulated by complex networks of genes expressed in specific brain regions and other parts of the body that, when functioning normally, create cycles of gene expression that approximate a 24-hour day. The disruption of this internal cycle in humans has been linked to a range of health problems, including insomnia and depression.

To investigate this elaborate and interacting gene network, Ueda and colleagues created a system for taking samples from mice at 4-hour intervals over a 48-hour period and analyzing expression levels across the genome to search for trends dependent on or independent of the light/dark cycle. The success of this system in tracking time-linked changes in the expression of clock genes has significantly contributed to the study of mouse circadian biology, and the development of a similar ability to monitor genetic timekeeping in humans would be of great value in clinical applications, enabling physicians, for example, to create drug delivery regimens tailored to individual patients' biological rhythms.