

**Leiden University**

**BioScience Community**

**Leiden - van Leeuwenhoek Lecture**

**Thursday January 26<sup>th</sup> 2012 at 16.00 hrs.**

**Gorlaeus Laboratories, Cell Observatory**

**From 15.30 on: tea/coffee/cookies**

**Drinks after the lecture**

## **Synchronization of Eukaryotic Flagella**

**Speaker: Ray Goldstein** (Cambridge, UK)

Ray Goldstein received undergraduate degrees in physics and chemistry from MIT, and a PhD in theoretical physics and chemistry from Cornell University. Following postdoctoral work at the University of Chicago and faculty positions in physics and applied mathematics at Princeton University and the University of Arizona, he moved to Cambridge as the Schlumberger Professor of Complex Physical Systems in 2006.

His research interests span from statistical physics to nonlinear dynamics and geophysics, with particular emphasis on biological physics, both theoretical and experimental. His work has been recognized by a Sloan Foundation Fellowship, a Presidential Faculty Fellowship from the National Science Foundation, the Stephanos Pnevmatikos Award in Nonlinear Science, an ERC Advanced Investigator Grant, and Fellowship in the American Physical Society, the Institute of Physics, and the Institute of Mathematics and its Applications.

*From unicellular organisms as small as a few microns to the largest vertebrates on earth we find groups of beating flagella or cilia that exhibit striking spatio-temporal organization. This may take the form of precise frequency and phase locking as frequently found in the swimming of green algae, or beating with long-wavelength phase modulations known as metachronal waves, seen in ciliates and in our respiratory systems. The remarkable similarity in the underlying molecular structure of flagella across the whole eukaryotic world leads naturally to the hypothesis that a similarly universal mechanism might be responsible for synchronization. Although this mechanism is poorly understood, one appealing hypothesis is that it results from hydrodynamic interactions between flagella. In this talk I will describe a synthesis of recent experimental and theoretical studies of this issue that have provided the strongest evidence to date for the hydrodynamic origin of flagellar synchronization.*

**Please keep these dates free in your diary:**

**Thursday February 16<sup>th</sup> 2012 at 16.00 hrs., Jean-Francois Joanny (Institut Curie, Paris)**

**Thursday March 29<sup>th</sup> 2012 at 16.00 hrs., Kees Stam (VUmc)**

**Thursday April 26<sup>th</sup> 2012 at 16.00 hrs., Marcus Sauer (Bielefeld)**

**Thursday May 31<sup>st</sup> 2012 at 16.00 hrs., Florian Schiestl (Zurich)**

**Thursday June 28<sup>th</sup> 2012 at 16.00 hrs.**