

Biological Physics Theory Unit (Greg Stephens)

FY2012 Annual Report

Biological Physics Theory Unit

Professor Greg Stephens

Abstract

1. Staff

- Dr. Greg Stephens, Professor
- Momoko Zamami, Research Administrator

2. Collaborations

- **Theme: Physics of Behavior**
 - Type of collaboration: Joint research
 - Researchers:
 - Professor, Will Ryu, University of Toronto, Canada
 - Group Leader, Tom Shimizu, AMOLF, Netherlands
- **Theme: Natural Cognition**
 - Type of collaboration: Joint research
 - Researchers:
 - Professor, Uri Hasson, Princeton University, USA

3. Activities and Findings

4. Publications

Gomez-Marin, A., Parrtoun, N., Stephens, G.J., Louis, M. "Automated Tracking of Animal Posture and Movement during Exploration and Sensory Orientation Behaviors" PLoS ONE 7 (e41642) (2012).

Likitlersuang, J., Stephens, G.J., Palanski, K., Ryu, W.S. "C. elegans Tracking and Behavioral Measurement". JoVE 69 e4094 (2012).

Stephens, G.J., Mora, T., Tkacik, G., Bialek, W. "Statistical Thermodynamics of Natural Images.", Physical Review Letters 110, 018701 (2013).

4.2 Books and other one-time publications

Nothing to report

4.3 Oral and Poster Presentations

Invited talks/Presentations:

- Stephens, G.J. "More bits for behavior: Stochastic dynamics in the reversal motions of *C. elegans*", Laboratory for Molecular Biology, Cambridge, March 2012.
- Stephens, G.J. "More bits for behavior: Stochastic dynamics in the reversal motions of *C. elegans*", CWI, Amsterdam, April 2012.
- Stephens, G.J. "More bits for behavior: Stochastic dynamics in the reversal motions of *C. elegans*", Brain and Spine Institute, ICM Paris, May 2012.
- Stephens, G.J. "Towards a biophysics of organisms", AMOLF, Amsterdam, March 2013.

5. Intellectual Property Rights and Other Specific Achievements

Nothing to report

6. Meetings and Events

Organiser/Host:

- Physics of Behavior Workshop at the Aspen Center for Physics. 27 May -17 June 2012.
- American Physical Society Focus Session on Physics of Behavior, Baltimore, 21 March 2013.

Invited Lecturer:

- Okinawa Course in Computational Neuroscience, OIST, 10 -28 June 2012.
- Dynamics and Regulation of Biomolecular Networks, Hong Kong Baptist University 10-14 Dec 2012.

6.1 Seminar

September 2012

- Professor Chris H. Wiggins, Columbia University, U.S.A., Seminar title: Variational and hierarchical modeling for biological data

January 2013

- Dr. Alex Gomez-Marin, EMBL-CRG Systems Biology Unit, Center for Genomic Regulation, Barcelona, Spain, Seminar title: Closing the Loop in *Drosophila* Chemotaxis