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Tracking Fruit Flies to Understand the Function of the Nervous System

ScienceDaily (Aug. 9, 2012) — Researchers at the *Freie Universität Berlin*, Germany and the *Center for Genomic Regulation (CRG)* in Barcelona, Spain have designed open source software that allows tracking the position of *Drosophila* fruit flies as well as their larvae during behavioral experiments.

The research appeared in two joint publications in the open access journal *PLoS ONE*.

Dr. Matthieu Louis, the head of the Spanish team explains: "Until we developed these tools, many researchers relied on expensive commercial hardware and software to study the behavior of larvae and adult flies. Now, virtually anybody can do this kind of research. The value of the software we are proposing is that they are written in a simple programming language, which facilitates their adaptation to new experimental paradigms" Inexpensive, ubiquitous digital cameras, such as webcams are sufficient to capture the movements of the animals and the open source software packages both for the evaluation the video feeds for tracking as well as for later data analysis are available for free (http://buridan.sourceforge.net).

"Apart from ruining your glass of expensive red wine, *Drosophila* is a central model organism to study, amongst other problems, how brains work. By carefully watching whether flies turn left or right, we aim at understanding how humans make decisions" explained *Dr. Alejandro Gomez-Marin*, first author in the Spanish team.

The data and tools provided with their publications will allow researchers to not only improve the accuracy of the research results, but also to develop new analysis methods, "maybe someone will come up with an analysis we would have never thought about" hopes Dr. Gomez-Marin. "We have already received several emails from people who are already using our software packages, even before they were officially published" says Dr. Julien Colomb, first author in the German team "it's exciting to see other colleagues adopting the tools we developed, because they're easy to access and free."

The work presented in the two publications is part of a growing movement pushing for Open Science where publicly funded research data become freely accessible. "Opening up some of the research tools is only a first step," says Dr. Colomb, "The next step in our efforts to promote open science is to make the data available online, not only before being published, but automatically while analyzed. And we are working on it." Ultimately, the blueprints for the various experimental containers in which these experiments take place will be translated into a computer-readable format such that 3D printers can re-create the exact experimental conditions anywhere in the world.

"Eventually, I'd like to get everything to be so simple and cheap that anybody would have the

chance to do these experiments, even the high school student with fruit flies in the kitchen." said *Dr. Björn Brembs*, head of the German team.

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Journal References:

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2. Julien Colomb, Lutz Reiter, Jedrzej Blaszkiewicz, Jan Wessnitzer, Bjoern Brembs. **Open Source Tracking and Analysis of Adult Drosophila Locomotion in Buridan's Paradigm with and without Visual Targets**. *PLoS ONE*, 2012; 7 (8): e42247 DOI: 10.1371/journal.pone.0042247

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