



Press release VIB – K.U.Leuven

## **New genetic marker makes fruit fly a better model for the study of neuronal development and human brain disorders**

**Leuven, 12 Nov. 2010 – VIB researchers attached to the K.U.Leuven have improved the fruit fly as a model for studying the connections between brain cells. The researchers developed a specific marker for a part of the fly's nerve cell which had previously been difficult to distinguish. Their discovery will not only contribute to gaining a better insight into brain development but also makes the fruit fly into a better model system for studying brain development and brain disorders.**

### **The brain, a complex network**

The human brain is composed of 100 billion individual nerve cells which communicate with each other via a complex network of connections. Errors in communications of these cells are often at the basis of brain and nerve diseases such as Alzheimer's and multiple sclerosis. In the search for possible solutions to these diseases, one important aspect is to understand how the connections between nerve cells develop.

### **Drosophila as a model organism**

The fruit fly, *Drosophila melanogaster*, is an important, low-cost model organism with 60% genetic similarity with humans. The fruit fly plays a significant role in clarifying various neurological processes such as the way our memory works and our sense of smell and in studying particular neurodegenerative diseases. The team headed by Bassem Hassan uses the fruit fly as a model to study brain development.

### **DenMark, the missing key**

Though *Drosophila* has long been used to study the connections between nerve cells, one specific marker was still missing. To understand the whole circuit between nerve cells, markers are needed for the different compartments of nerve cells (presynaptic or output cells and postsynaptic or input cells).

Under the direction of **Bassem Hassan** and in collaboration with **Wim Annaert, Laura Nicolai, Ariane Ramaekers** and their colleagues have identified *the* missing marker, DenMark (**Dendritic Marker**), a hybrid of a mouse protein and a fluorescent protein. The high specificity of such a marker for the input compartment of the nerve cells in *Drosophila* gives rise to hope that it can also be used in other model organisms.

### **What is a synapse?**

Nerve cells communicate via a synapse. A synapse is a space in the connection between nerve cells, more specifically the space between the presynaptic membrane (of an axon) and the postsynaptic membrane (of a dendrite). Axons conduct away from the cell, dendrites (usually) to it. The "message is transmitted" via the synapse by neurotransmitters.



### Scientific publication

Genetically encoded dendritic marker sheds light on neuronal connectivity in *Drosophila* - *PNAS* - Nicolaï *et al.* - doi: 10.1073/pnas.1010198107

### Financing

This research was financed by FWO, Methusalem grant K.U.Leuven, IWT and VIB

### Notes to the editor

### More information

Joris Gansemans, VIB Press Office	+32 472 594 067
Bassem Hassan, VIB Group leader	+32 16 34 62 26
Laura Nicolaï, VIB Scientist	+32 16 33 01 32

<http://www.vib.be/en/research/scientists/Pages/Bassem-Hassan-Lab.aspx>

#### 1. About VIB

VIB is a non-profit research institute in the life sciences in Flanders, Belgium, with 1200 scientists conducting strategic basic research on the molecular mechanisms that are responsible for the functioning of the human body, plants, and micro-organisms. Through a partnership with four Flemish universities – Ghent University, the Katholieke Universiteit Leuven, the University of Antwerp, and the Vrije Universiteit Brussel – and a solid funding program, VIB unites the forces of 72 research groups in a single institute. Through its technology transfer activities, VIB strives to convert the research results into products for the benefit of consumers and patients. VIB develops and disseminates a wide range of scientifically substantiated information about all aspects of biotechnology. For more information, please visit [www.vib.be](http://www.vib.be).

#### 2. About K.U.Leuven

The University of Leuven is Belgium's largest university and one of the oldest universities in Europe, founded in 1425. It is a comprehensive university with 14 faculties, with a long tradition of high-quality interdisciplinary research and teaching. The University of Leuven has over 33,000 students (12 percent international) and over 17,000 staff members (8,600 in the various university departments and 8,700 at UZ Leuven, the university hospital). More info at: [www.kuleuven.be](http://www.kuleuven.be)