Brain project gives young scientists a flying start

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Through collaborative work, an EU-funded research team aims to uncover how neural circuits are genetically encoded and how neuronal computation controls behaviour. It has also set out to give some of Europe's brightest young scientists the chance to cooperate with colleagues in other countries and push forward our understanding of the

brain.

Just how do billions of interconnected cells in the brain interpret and regulate all our bodily functions, in addition to storing all our memories and experiences? Understanding this remains one of medical science's greatest challenges, but also one of its most tantalising, potentially opening the door to cures for diseases such as Alzheimer's, dementia and Parkinson's.

One thing is clear: achieving this dream will require painstaking examinations of the numerous mechanisms and processes that go on at the genetic and biochemical levels of the brain. In addition, scientists need to better understand the behaviour of neurons - the cells which process and transmit information through electrical and chemical signals - and how these adapt to outside stimuli.

Such research is time-consuming and costly, and achieving a full understanding of the brain remains a long way away. A sensible use of resources would therefore be to train up young scientists in innovative forward-looking projects who will be able to apply the know-how gained in the project to other studies and programmes.

This is precisely the objective of the EU-funded FLIACT ('Systems neuroscience of Drosophila: from genes to circuits to behaviour') project, which is training researchers starting out in their careers in cutting-edge concepts and techniques. The FLIACT programme's ultimate objective is to create a unique pan-European training network that interconnects eight academic partners and three SMEs specialised in complementary fields of research, from molecular and behavioural neurogenetics to electrophysiology, bioengineering and applied biomedicine.

In order to facilitate knowledge transfer across this network - and to

achieve meaningful results - FLIACT is focusing on one model organism, the fruit fly Drosophila melanogaster. During the last decades, the tiny fruit fly has become the main model system for studying how we perceive and integrate information arising from our five senses. Drosophila has also emerged as a powerful model for studying the genetic bases of neurodegenerative diseases that affect humans.

As Drosophila has a million times fewer neurons than humans, the study of its brain is expected to shed light on general principles underlying the functional organisation of neural circuits.

A major long-term benefit of this project will be the development of a fruit fly toolkit, which can be used to investigate the function of neural circuits in vivo and to scientifically test their functions. The project aims to provide the FLIACT neuroscientists with the necessary support to use these tools effectively.

In the short term, FLIACT fellows will seek - through collaborative and personalised research projects - to better understand how neural circuit computation controls behaviour and how circuit-function relationships are genetically encoded. In order to share best practice, the project will organise a series of interdisciplinary workshops on neurogenetics, neuroanatomy, neuroimaging, and behavioural analysis and transferable skills.

The project's impact will also be maximised by opening all workshops and conferences to the European neuroscience community as a whole.

More information: FLIACT www.fliact.eu/

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