

Study to investigate how fear and anxiety are formed in the brain

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About 25 per cent of us will experience the effects of anxiety disorders at some point in our lives, with sometimes dire repercussions for friends, family and our own well-being. Yet little is known about the molecular mechanisms in the brain which contribute to stress-induced anxiety.

A neuroscientist at the University of Leicester has recently been awarded major EU funding amounting to €1.7m over four years to investigate how fear and anxiety are formed in the brain, in a project that could lead to more efficient ways of treating stress-related conditions.

Dr Robert Pawlak, a researcher in the University's Department of Cell Physiology and Pharmacology, has received the prestigious Marie Curie Excellence Grant to support his research project which will look at the mechanisms in the brain that lead to anxiety.

Fear memories are encoded as changes in neuronal connections called synapses, in a process known as plasticity. Dr Pawlak and his colleagues have recently shown that proteases (proteins that cut other proteins) play a critical role in this process and significantly contribute to fear and anxiety related to stress.

Dr Pawlak commented: "Understanding neural bases of stress, fear and anxiety is of immense importance to modern society. The most dramatic form, posttraumatic stress disorder (PTSD) is characterised by cognitive impairment, depression, fear, anxiety, and may eventually lead to suicide.

“Understanding the neural mechanisms of PTSD, depression and anxiety disorders could reduce the personal and societal impact through development of more efficient therapies. This project looks at cellular mechanisms involved in experience-induced neuronal plasticity underlying learning, fear and anxiety.”

Dr Blair Grubb, Head of the Department of Cell Physiology and Pharmacology, added: “EU Marie Curie Excellence Grants are extremely competitive and it is a major achievement that Robert Pawlak has made a successful application so early on in his independent research career.

“Robert is one of a number of neuroscientists working in this department and this grant award adds significantly to our research profile in this general area. The proposed research programme will make a major contribution to our understanding of how stress leads to fear and anxiety.”

Source: University of Leicester

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