MedicalXpress

Zebrafish could hold the key to understanding psychiatric disorders

May 17 2012

Scientists at Queen Mary, University of London have shown that zebrafish could be used to study the underlying causes of psychiatric disorders.

The study, published online in the journal *Behavioural Brain Research*, found zebrafish can modify their behaviour in response to varying situations.

Dr Caroline Brennan, from Queen Mary's School of Biological and Chemical Sciences who led the study, said: "Zebrafish are becoming one of the most useful animal models for studying the developmental genetic mechanisms underlying many psychiatric disorders; they breed prolifically and we have many new and exciting techniques that allow us to explore their genetic make-up in the laboratory."

The scientists took 15 zebrafish through a series of experiments involving colour choice to test aspects of behaviour associated with psychiatric disease.

The fish were given a choice between two colours - they learnt to choose one of the colours which gave them food. The colours were then reversed and they learnt to change their colour choice.

The scientists then introduced a new set of colours and started the process again. The fish were able to change their behaviour accordingly, learning the new set of colours much faster than the original set, a

process psychologists call 'behavioural flexibility'.

The research challenges previous studies which suggested fish were unable to elicit behavioural flexibility, unlike mammals and humans, because they didn't have a frontal cortex.

"Problems with behavioural flexibility, and general deficits in attention, are key symptoms displayed by people suffering a variety of psychological disorders related to impulse control, such as drug addiction , attention-deficit hyperactivity disorder (ADHD) and some personality disorders," Dr Brennan said.

"The results of our study suggest that there may be a role for zebrafish in the future as a useful comparative model to study the cause and prognosis of some of these disorders."

Zebrafish are often used by neuroscientists to explore mechanisms controlling behaviour and in the search for new compounds to treat behavioural disease such as addiction, attention deficit disorders or autism. This study adds further weight to the argument for using zebrafish in the study of these disorders and conditions.

Provided by Queen Mary, University of London