In the news

TIMID AS A MOUSE

Social phobias, depression and post-traumatic stress disorder all have crippling effects on a person's quality of life. Although current antidepressants can be used to alleviate feelings of withdrawal and fear, for many they have no effect. Now, scientists at the University of Texas Southwestern Medical Center, Dallas, USA, have shown that brain-derived neurotrophic factor (BDNF) is involved in the negative responses seen in such disorders.

Eric Nestler and Olivier Berton and their colleagues were interested in BDNF because it is part of the brain's reward circuits — typically associated with drug addiction. To induce symptoms of withdrawal and fear, every day for 10 days a mouse of one strain was exposed to a different, larger mouse from a strain Nestler refers to as “... naturally mean mice” (*News@Nature.com*, 9 February 2006). Bullied mice became withdrawn and fearful and, even after their tormentors were removed, remained wary, hiding in the corners of their cages when introduced to new mice. These symptoms persisted for 4 weeks after the bullying stopped.

Bullied mice had an altered mesolimbic dopamine system — the brain circuit that is linked to addictive behaviour — with BDNF production induced in the reward circuit. Blocking BDNF activity stopped the smaller mice from being afraid of the bigger, more aggressive mice. This effect mimics that of chronic antidepressant treatment.

BDNF is important in several areas of the brain, and so targeting it directly might lead to problematic side effects. However, identifying particular pathways in which BDNF acts, as Berton comments, provides “... a way to develop antidepressants that work faster and in more people” (*Reuters*, 9 February 2006). So, manipulating the molecules that interact with BDNF could help to alleviate the symptoms of social phobias.

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