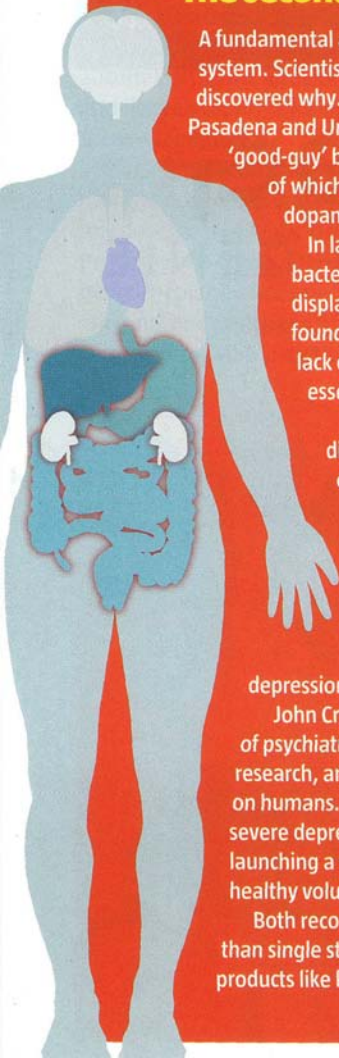


The second brain



A fundamental aspect of Lorrie's recovery was improving her digestive system. Scientists often refer to the gut as a 'second brain', and now they've discovered why. New research at the California Institute of Technology in Pasadena and University College Cork in Ireland has demonstrated that the 'good-guy' bacteria in your gut produces thousands of chemicals, many of which, such as serotonin, gamma-aminobutyric acid (GABA) and dopamine, are necessary for proper signalling in the brain.

In lab studies, mice bred with no exposure to these friendly bacteria have deficiencies in memory and emotion, and even display autistic behaviours; when their brains are examined, they're found to have changes in fundamental brain chemistry, including a lack of certain molecules like neurotrophic factor proteins which are essential for forming new connections in the brain.

Other studies show that mice suffering from anxiety have different gut flora than do healthy mice. When scientists looked closer, they discovered that these good-guy bacteria change the expression of certain receptors in the brain via the vagus nerve, the superhighway between the gut and the brain, and also via the immune system.

Researchers have carried out preliminary studies suggesting that a variety of these friendly bacteria may help treat a number of different kinds of mental illness, including depression, autism and anxiety, at least in animals.

John Cryan, professor of neuroscience, and Timothy Dinan, professor of psychiatry, and both at University College Cork involved in the research, are among the vanguard studying the effects of 'psychobiotics' on humans. They're currently looking at the gut flora of patients with severe depression to see if they are significantly altered; the team is also launching a study using the probiotic *Lactobacillus brevis* to treat anxiety in healthy volunteers.

Both recommend 'cocktails' of bacteria as likely to be more effective than single strains; such cocktails include those present in fermented milk products like kefir (see *WDDTY* February 2014).