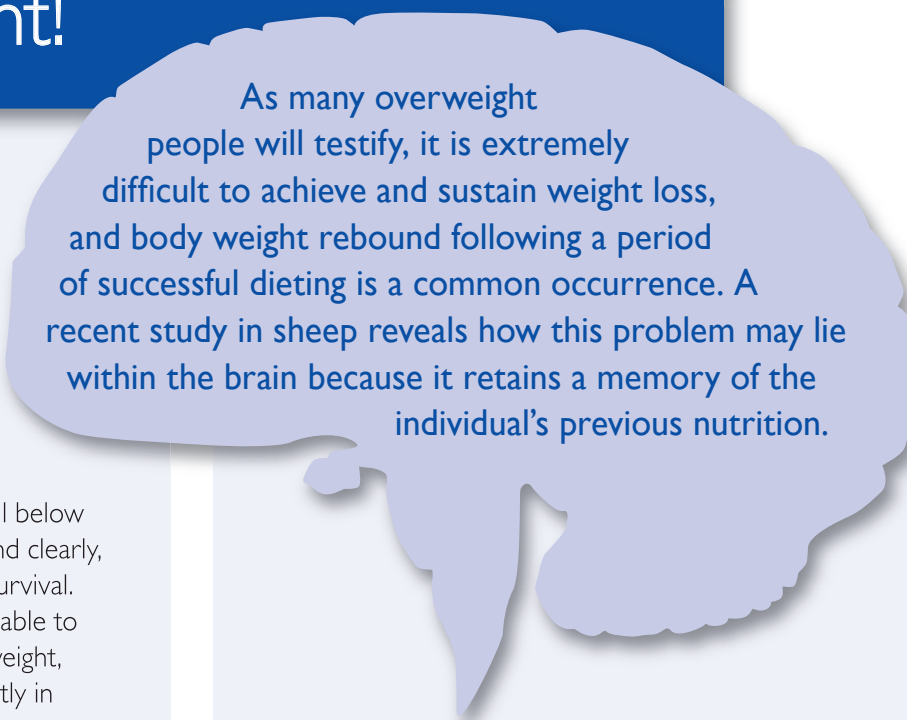


The issue of current body weight and the brain's perception of the appropriateness of this weight is taken up by another recent Rowett study utilising another animal model. (See also page 3).

You may have lost weight, but your brain still 'wants you' to be overweight!

Body weight and appetite drive are controlled from within the brain – a central region called the hypothalamus uses information gleaned from circulating blood about the individual's fatness and nutritional status in order to dictate the drive to eat accordingly. It is generally assumed (see article on page 3) that the brain "knows" what is an appropriate body weight and tries to maintain it. If we fall below that body weight, appetite drive increases and clearly, in evolutionary terms, this is important for survival. However, it appears that our brains are less able to correct or prevent us from becoming overweight, a problem that has emerged relatively recently in evolutionary time.

In this study, groups of thin sheep were fattened and fat sheep were slimmed down, by controlling the amount of food offered, to reach the same (medium) level of body fatness. At this point, despite looking outwardly similar, their brains revealed them to be inwardly very different. Slimmers had markedly increased activity of appetite-stimulating brain pathways compared with fatteners, despite having similar body weights. This could explain why a successful weight-loss diet is often accompanied by persistent feelings of hunger and subsequent weight gain. It also indicates that the brain's perception of the "appropriateness" of a given body weight is altered by previous experience. Thus the brain may be programmed when the animal is fat to subsequently interpret the higher body weight as "appropriate". In other words, this study on sheep has revealed that the



As many overweight people will testify, it is extremely difficult to achieve and sustain weight loss, and body weight rebound following a period of successful dieting is a common occurrence. A recent study in sheep reveals how this problem may lie within the brain because it retains a memory of the individual's previous nutrition.

brain retains a "nutritional memory" that influences its contemporary responses. Recognising the profound influence of an individual's previous nutritional history will undoubtedly assist in devising the best strategies for achieving and maintaining a healthy body weight.

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Reference: D.W. Miller, J.L. Harrison, E.J. Bennett, P.A. Findlay and C.L. Adam. Nutritional influences on reproductive neuroendocrine output: insulin, leptin, and orexigenic neuropeptide signalling in the ovine hypothalamus (2007). *Endocrinology* 148 (11) 5313-5322