

Ancient sheep help pinpoint brain timing mechanisms linked to Seasonal Affective Disorder

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(PhysOrg.com) -- New research by Aberdeen scientists suggests that Seasonal Affective Disorder (SAD) relates to an ancient timing mechanism in the brain dating back millions of years.

Discoveries by a University of Aberdeen-led team, involving collaborators in Edinburgh and Strasbourg, and published in the latest issue of *Current Biology*, shed new insights into the mechanisms by which seasonal rhythms are generated.

The researchers studied the primitive Soay breed of sheep, which relies on its strong seasonal biology to survive wild on the North Atlantic

islands of St Kilda.

They identified a new role for a chemical known as thyroid stimulating hormone (TSH), which is secreted by cells in the pituitary gland and is already known to control the thyroid gland.

The new work reveals that a specialised group of pituitary TSH-secreting cells signal directly to the brain to control the sheep's seasonal behaviour.

This surprising discovery reverses the "master - slave" relationship between the brain and the pituitary, found in all vertebrates including humans, in which brain signals control pituitary hormone secretion.

Dr David Hazlerigg, Reader in Zoology at the University of Aberdeen said: "Our research points to an ancient seasonal timing mechanism that survives in modern vertebrates. Some humans may retain remnants of this ancient seasonal timing mechanism which would explain why they experience SAD.

It is now hoped that identifying this new role for TSH may lead to better understanding of seasonal or thyroid disorders in humans.

Dr Hazlerigg continues: "Our next target is to understand exactly what TSH does when it gets into the brain to cause changes in behaviour and hormone secretion. By defining these pathways we hope to increase our understanding not only of the control mechanisms in seasonal animals but also of SAD."

Provided by University of Aberdeen

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