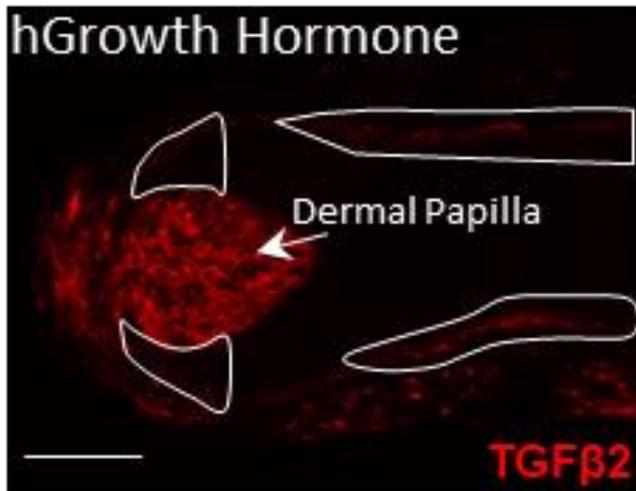


Growth hormone operates as a regulator of human hair growth *ex vivo*



Human hair follicle dermal papilla cells respond to recombinant human growth hormone (rGH) by releasing the catagen inducing growth factor, TGFbeta-2: Strong influence of the “mesenchymal command center” in neuroendocrine regulation of hair growth.

The teams at Monasterium Laboratory and Mediteknia Skin & Hair Lab (Gran Canaria) (Monasterium Laboratory affiliated lab) continue to investigate the interesting and sometimes contradictory effects of neuroendocrine factors on the human hair follicle. A new study from the team together with their academic collaborators, published online on 17th Feb 2019 in the *JID*¹ (Alam et al., *J Invest Dermatol* 2019) (<https://www.ncbi.nlm.nih.gov/pubmed/30660669>), investigated the effects of growth hormone. The teams showed that female occipital human scalp hair follicles express the growth hormone receptor (GHR) and stimulation of these hair follicles in organ culture, by recombinant growth hormone (rGH), induces premature regression towards catagen. This was a somewhat unexpected result given the well-known links between GH and the hair growth maintenance factor IGF-1. However, this study highlights that GHR-expressing human scalp HFs in anagen are not only highly receptive to GH stimulation, but also that GH operates as a neuroendocrine inhibitor of female human HFs *ex vivo* and does this through significant up-regulation of the catagen inducing growth factor, TGFbeta-2, in the dermal papilla. Given the clinical cutaneous manifestations associated with abnormalities in GH serum levels and currently available treatments, further elucidating the role of GH/GHR-dependent signalling could lead to the development of future therapeutics.

Furthermore, this study shows that the human HF organ culture assay provides an excellent research tool for interrogating the as yet insufficiently explored peripheral effects of GH/GHR-dependent signalling in adult human tissues. This assay is available at Monasterium Laboratory. Please, visit (<https://www.monasteriumlab.eu/human-hair.html>) for further details on this model.

1. Alam M, Below DA, Chéret J, Langan EA, Bertolini M, Jimenez F, Paus R, Growth hormone operates as a neuroendocrine regulator of human hair growth *ex vivo*, *The Journal of Investigative Dermatology* (2019), doi: <https://doi.org/10.1016/j.jid.2018.12.022>.