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POSTER ABSTRACT FROM

REGULATION AND EXPRESSION OF THYROID-STIMULATING HORMONE (TSH).

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TSH is regulated at both transcriptional and multiple post-transcriptional levels. Both the common α subunit gene as well as the unique TSH-β gene are transcriptionally regulated by stimulatory agents such as thyrotropin-releasing hormone (TRH), cyclic AMP and phorbol esters as well as inhibitory agents such as thyroid hormone. For the human TSH-β gene, regulation by stimulatory agents is mediated by changes in the amount and/or phosphorylation state of at least three nuclear transcription factors, the pituitary-specific protein pit-1 and the proto-oncogenes c-jun and c-fos. Pit-1 interacts with specific DNA elements in the 5' flanking region of the human TSH-β gene while jun-jun homodimers or jun-fos heterodimers interact with an AP-1 site immediately downstream of the transcriptional start site. Inhibition of human TSH-β gene expression by thyroid hormone involves binding of the thyroid hormone receptor to a negative response element in the first untranslated exon as well as interaction of c-jun and c-fos with the AP-1 site.

The common α subunit gene as well as the unique human TSH-β gene have been expressed in various cell lines to produce recombinant TSH with oligosaccharide chains terminating in either sialic acid or sulfate. Different glycosylated forms of recombinant TSH have different *in vitro* and *in vivo* bioactivity as well as different metabolic clearance rates. Chimeric forms of TSH have also been engineered to produce analogues with an unusually slow metabolic clearance rate. Recombinant TSH and its analogues appear clinically useful in the stimulation of radioiodine uptake for the diagnosis and therapy of patients with thyroid cancer.

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