

## Poster 2-38

### Growth factors from different superfamilies act in synergy when promoting the survival of auditory neurones *in vitro*.

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Several growth factor superfamilies have been implicated in normal inner ear development and in promoting auditory neurone survival. The neuronal promoting ability of neurotrophin-3 (NT-3), brain-derived neurotrophic factor (BDNF), leukemia inhibitory factor (LIF) and transforming growth factor  $\beta$ -5 (TGF- $\beta$ 5), alone and in combination, were evaluated in dissociated cell cultures of early postnatal rat auditory neurones. Rat pups were anaesthetised on ice and sacrificed by rapid decapitation, followed by removal of the cochleae under aseptic conditions. Here we provide evidence that synergistic relationships exist between growth factors from diverse superfamilies when promoting auditory neurone survival *in vitro*. Administered alone, all factors promoted survival of between 10-15% of initially plated neurones, with NT-3 the most potent of the factors. When used in combination, LIF + BDNF, NT-3 + TGF- $\beta$ 5, and BDNF + TGF- $\beta$ 5 all promoted auditory neurone survival in a synergistic fashion. In contrast, NT-3 + BDNF and LIF + TGF- $\beta$ 5 displayed additive survival effects. These results suggest that growth factors may act by interdependent mechanisms when sustaining neuronal integrity, and that a combination of several growth factors may provide a better approach than single factor therapy when developing pharmacological therapies for the treatment of deafness.



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