NEUROSCIENCES

THE ROLE OF NT-3 IN THE FORMATION OF THE DORSAL ROOT GANGLION [MAS]

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The goal of this study is to examine the mechanisms involved in the developing avian Dorsal Root Ganglion (DRG) prior to target-mediated programmed cell death. Previous research has shown the expression of Trk C on a discrete subset of migrating neural crest cells (st. 19). Prior to programmed cell death for post-mitotic neurons (st. 24, E4) Trk C is also expressed on the majority of cells in the developing DRG. We wanted to examine the function of NT-3 on the developing DRG's prior to target-mediated programmed cell death. First we injected NT-3 into embryos and found no increase in cell numbers in brachial DRG (limb-innervating). However, in Cervical DRG (non-limb bud innervating) there was a substantial increase (40%) due to the exogenous NT-3. In a separate set of experiments, we transected the wing buds as soon as they appeared. This resulted in a decrease in cell number in the developing brachial DRG compared to the contralateral DRG with an intact limb bud. Since NT-3 has also been shown to be expressed in the developing limb-buds during DRG differentiation (Hallbook and Lefcort, unpublished results), our results suggest a normal function for NT-3 in maintaining survival and/or promoting proliferation of DRG precursor cells. We are now investigating directly how NT-3 elevates DRG cell numbers and why limb bud ablation decreases cell numbers.