

# A role for TrkA nerve growth factor receptors in mammalian ovulation

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Several members of the neurotrophin (NT) family, including nerve growth factor (NGF), NT-3, and NT-4/5, are expressed in the mammalian ovary. As their respective receptor tyrosine kinases are also found in the gland, the possibility exists that NTs act directly on the gonads to exert effects unrelated to their support of the ovarian innervation. We now report that *trkA*, the NGF receptor tyrosine kinase, is involved in the acute activational process that leads to the first ovulation. The *trkA* gene becomes transiently expressed in periovulatory follicles at the time of the first preovulatory surge of gonadotropins at puberty; the increase in *trkA* messenger RNA (mRNA) content is dramatic (>100-fold), but transient (~9 h). No such changes in *trkB* or *trkC* mRNA were observed; the abundance of these mRNAs, which encode the receptor tyrosine kinases for NT-4/5 and brain-derived neurotrophic factor, and NT-3, respectively, remained at very low levels throughout puberty. *In vivo* and *in vitro* ex