

Oxytocin



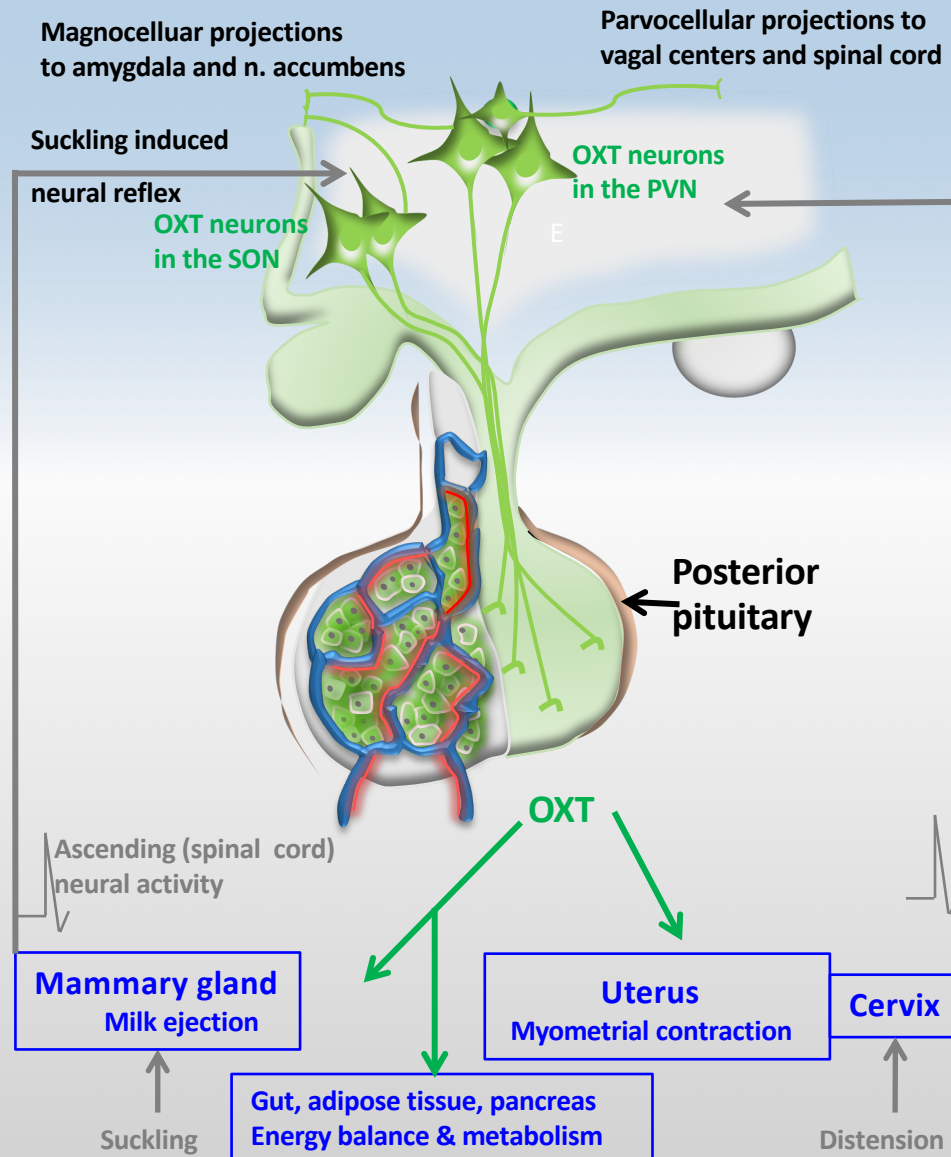
Hypothalamus and Neurohypophysis

Oxytocin (OXT) is synthesized by magnocellular neurons in the supraoptic and paraventricular nuclei (SON and PVN) of the hypothalamus and transported by axons to the posterior pituitary or neurohypophysis. In addition, magnocellular neurons and parvocellular OXT neurons from the PVN also project to several brain regions where the peptide acts as a neuromodulator regulating feeding and social behaviors. OXT release from the posterior lobe into the systemic circulation is regulated by the temporal pattern of action potentials generated by the OXT expressing perikarya in the SON and PVN. Action potentials invading the nerve terminals result in depolarization, calcium influx and OXT release. Suckling, or uterine distension at the time of parturition, elicit afferent neural signals that ascend via the spinal cord to the hypothalamus triggering OXT release from the posterior pituitary.

↓ OXT

Target Tissues

OXT stimulates milk ejection from the mammary gland at the time of suckling and regulates uterine contractility during parturition. In addition to breast and uterus, OXT receptors are expressed in a diversity of peripheral tissue including, but not limited to, gut, pancreas and adipocytes. The non-classical actions of OXT are species dependent and establishing their full physiological significance is an emerging and important area of investigation.



Oxytocin (OXT) is essential for milk ejection induced by nursing, and for amplifying uterine contractions during parturition. In addition, roles for brain oxytocin in regulating appetite, energy balance and metabolism, and social behaviors such as pair bonding are currently being elucidated in the research literature.

Dr. Handa has investigated the central action of oxytocin, particularly in regard to its regulation by estrogen receptor beta.

Dr. Grattan, an associate of QS³, is an expert on the regulation of oxytocin neuron activity during pregnancy and lactation.

Dr. Engler-Chiurazzi, an associate of QS³, is an expert in the assessment of experimental treatments on learning and behavior in animal models.

Let QS³ scientists help you evaluate whether effects that you may have observed on parturition, lactation, or maternal and social behaviors are mediated by oxytocin.