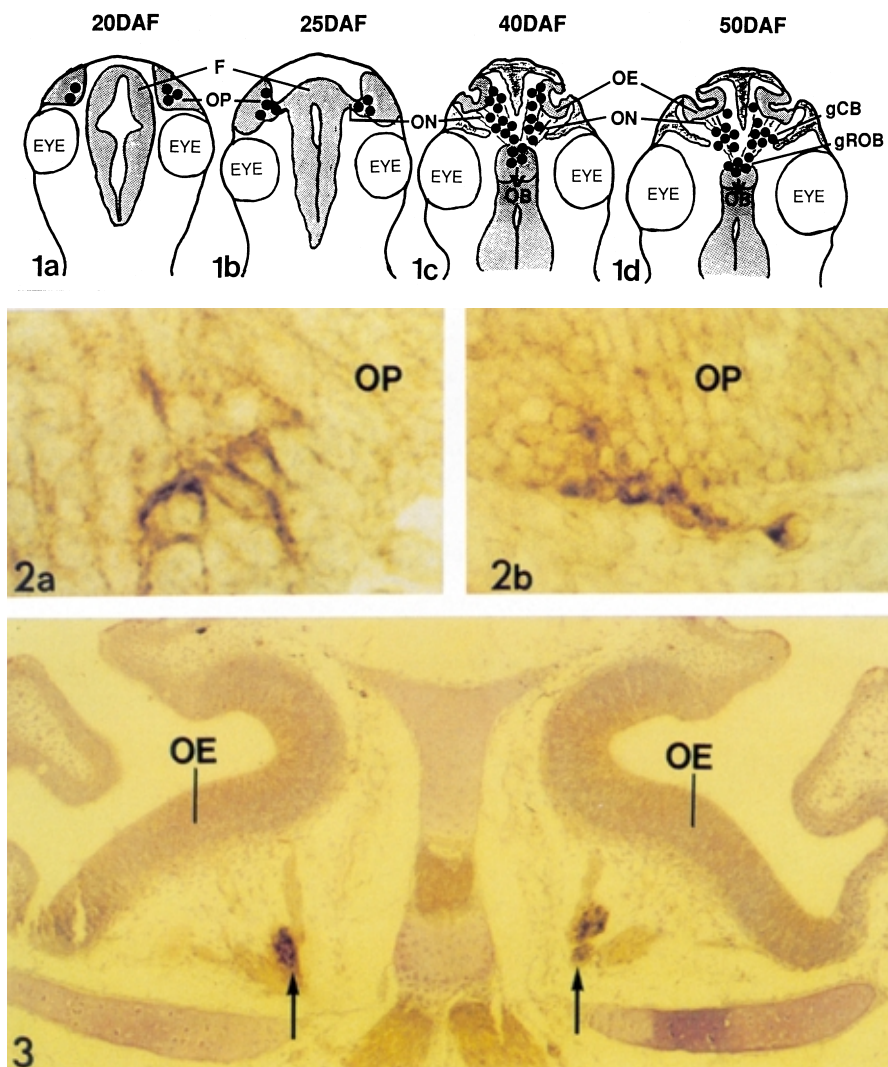


グラビア

Kallmann syndrome: A failure of GnRH neuronal migration

Ishwar S. Parhar and Yasuo Sakuma
Department of Physiology, Nippon Medical School



Gonadotropin-releasing hormone (GnRH) neuronal migration from the olfactory placodes to the basal forebrain is a vertebrate wide phenomenon seen in species ranging from fish to humans. The failure of these neurons to migrate leads to Kallmann syndrome (hypogonadotropic hypogonadism coupled with anosmia)

Fig. 1 a d Embryonic fish (20 50 days after fertilization, DAF) . Camera lucida drawings show the migratory route of GnRH neurons from the olfactory placodes(OP) to the basal forebrain (F) . Olfactory epithelium(OE)

Fig. 2 a, b GnRH-immunoreactive neurons seen in the olfactory placodes on(a) embryonic day 25 and(b) day 30.

Fig. 3 4 GnRH neurons in a ganglia along the olfactory nerve(ON) at day 100.

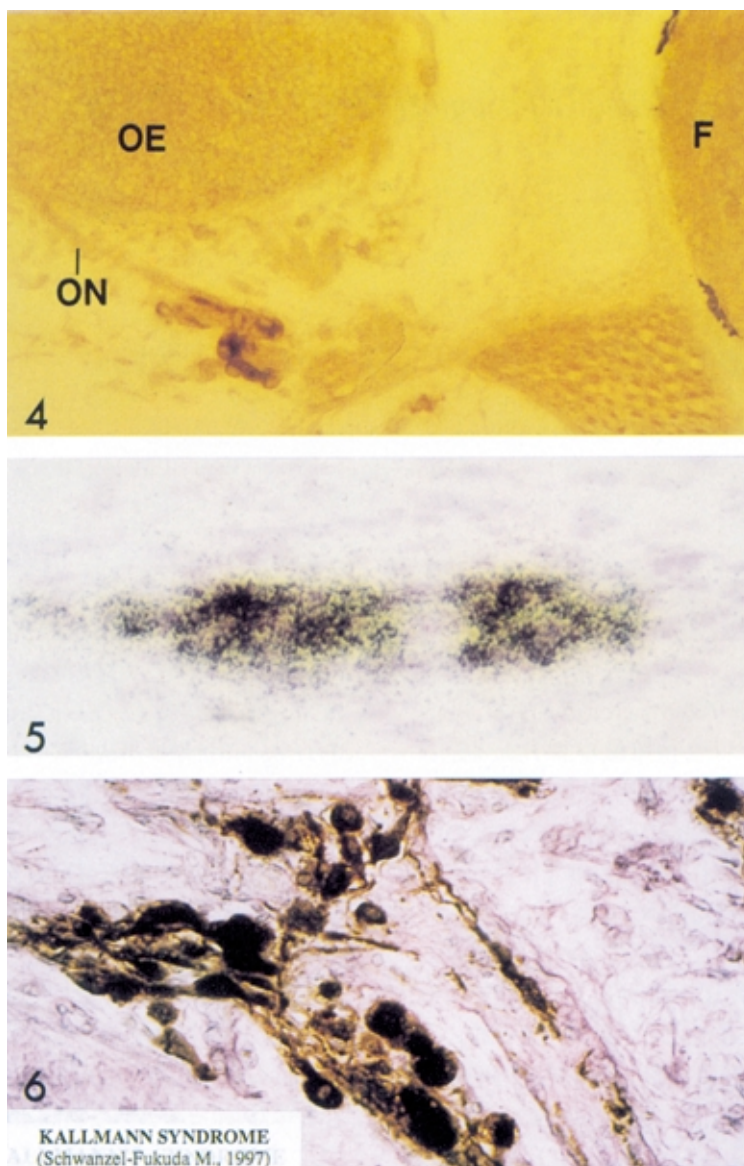


Fig. 5 Neurons expressing GnRH mRNA hybridization signals along the olfactory nerve.

Fig. 6 Nasal region of a 19 week old human fetus with Kallmann syndrome. A cluster of GnRH neurons seen "dammed up" at the top of the olfactory apparatus. No GnRH immunoreactivity was found in the brain, and both olfactory bulbs were absent (Schwanzel Fukuda, 1997)

解説：視床下部の神経細胞により産生され、下垂体前葉の分泌を調節する物質を放出ホルモンとよぶ。性腺刺激ホルモンの放出を起す性腺刺激ホルモン放出ホルモン(GnRH)を産生するニューロンは、嗅上皮の原基である嗅板 olfactory placode に発症して、脳に入り込み、視床下部に移動するという特異な個体発生を経過する。嗅板から脳への移行が阻止されたために生じた病態が Kallmann syndrome で、嗅覚の欠損と中枢性の性腺機能低下を呈する。

Reference

Schwanzel-Fukuda M: The origin and migration of LHRH neurons in mammals: A comparison between species including human. In: Parhar I.S. and Sakuma Y(eds), GnRH Neurons, Gene to Behavior. 1997; pp 221-242. Brain Shuppan Publishers, Tokyo.