“The Homeodomain Protein VAX1 is Required for Fertility by Regulating GnRH Neuron Maturation and Circadian Rhythms”

During the last century our society has changed dramatically, and today more than 20% of the population works odd hours, travels across time zones, and has disrupted sleep patterns. These are all factors affecting circadian rhythms and that lead to medical illnesses including diabetes, decreased cognitive capacity, and impaired fertility. The suprachiasmatic nucleus (SCN), the master pacemaker of the body, orchestrates the reproductive axis by coordinating gonadotropin-releasing hormone (GnRH) neuron activity with peripheral tissues and light cycles.

We here identify the homeoprotein Ventral Anterior Homeobox 1 (VAX1) to be required for both SCN and GnRH neuron development, and conditional deletion of Vax1 in either of these cell populations compromises fertility and hormone release. Thus, VAX1 has a dual role in fertility maintenance, it is required for GnRH expression, and is involved in circadian rhythm generation in the SCN, where its absence leads to abnormal SCN output, and impaired female fertility. In conclusion, Vax1 is a novel transcription factor in fertility maintenance through its role in coordinating hormone release in the reproductive axis.

Thursday, March 23rd, 2017

9:00 AM – 10:00 AM
1310 Anthony Hall (Videoconference to 492 Secchia Center)