**Supplementary materials and methods**

*Immunofluorescence*

Pituitaries from 8 to 10-week-old animals were fixed in 4% paraformaldehyde (diluted in PBS) for 1.5 h at room temperature, rinsed in PBS, and left in 30% sucrose at 4°C overnight, as described previously (16). The next day, pituitaries were frozen in optimal cutting temperature (OCT; CA95057-838, VWR) compound on dry ice. Pituitaries were sectioned on a cryostat (at a thickness of 5 μm). Sections were blocked with 10% donkey serum (diluted in PBS with 0.2% Triton X-100, or PBST) for 1 h at room temperature. Slides were incubated with a purified unlabeled goat anti-mouse IgG (0.1 mg/mL; 115-007-003, Jackson ImmunoResearch; RRID: AB_2338476) diluted in PBST (10% donkey serum) for 30 min at room temperature. Slides were washed three times (5 min/wash) with PBST. Sections were then incubated with antibodies detecting LHβ (mouse anti-bovine LHβ, 1:500; 518B7, University of California, Davis; RRID: AB_2665514) and FSHβ (rabbit anti-rat FSHβ, 1:500; AFP-7798_1289P, National Institute of Diabetes and Digestive and Kidney Diseases) diluted in PBST (10% donkey serum) overnight at 4°C. The next day, slides were washed and incubated with secondary donkey anti-mouse (Alexa Fluor 488; A21202, Life Technologies; RRID: AB_141607) and donkey anti-rabbit (Alexa Fluor 594; A21207, Life Technologies; RRID: AB_141637) at a dilution of 1:1000 in PBST (10% donkey serum) for 1 h at room temperature. Sections were washed and mounted with ProLong Gold antifade (P10144, ThermoFisher). Images were acquired using a Zeiss Axio Imager M2 microscope.