**Description of Additional Supplementary Files** 

File name: Supplemental Movie 1

**Description: Identification of distinct OXT and AVP nuclei with iDISCO+**. Video shows a representative example of a cleared adult mouse brain. This technique allows to identify individual nuclei, which appear labeled in different colors. Abbreviations: PeVN, periventricular nucleus; ADPN, anterodorsal preoptic nucleus; BNST, bed nucleus of strial terminalis; VMPO, ventromedial preoptic nucleus; SON, supraoptic nucleus; PVN, paraventricular nucleus; RCH, retrochiasmatic nucleus; AN, accessory nucleus; SCH, suprachiasmatic nucleus.

File names: Supplementary Movies 2-5

**Description: 3D reconstruction of OXT and AVP nuclei in the mouse brain over development.** Whole brain immunohistofluorescence for OXT (green) and AVP (red) at different developmental stages: E16.5 (2), PN0 (3), PN7 (4) and adult (5) mouse brain. Abbreviations: PeVN, periventricular nucleus; ADPN, anterodorsal preoptic nucleus; BNST, bed nucleus of strial terminalis; VMPO, ventromedial preoptic nucleus; SON, supraoptic nucleus; PVN, paraventricular nucleus; RCH, retrochiasmatic nucleus; AN, accessory nucleus; SCH, suprachiasmatic nucleus.

**File name:** Supplementary Movie 6

**Description: OXT neurons interconnectivity in the RCH nucleus.** Video showing OXT neurons in the RCH area of an adult OXT-tdTomato mouse. Reconstruction of several coronal sections in the z axis revealed two welldifferentiated pools of OXT neurons located at the superficial and internal RCH that exhibit high levels of connectivity.