

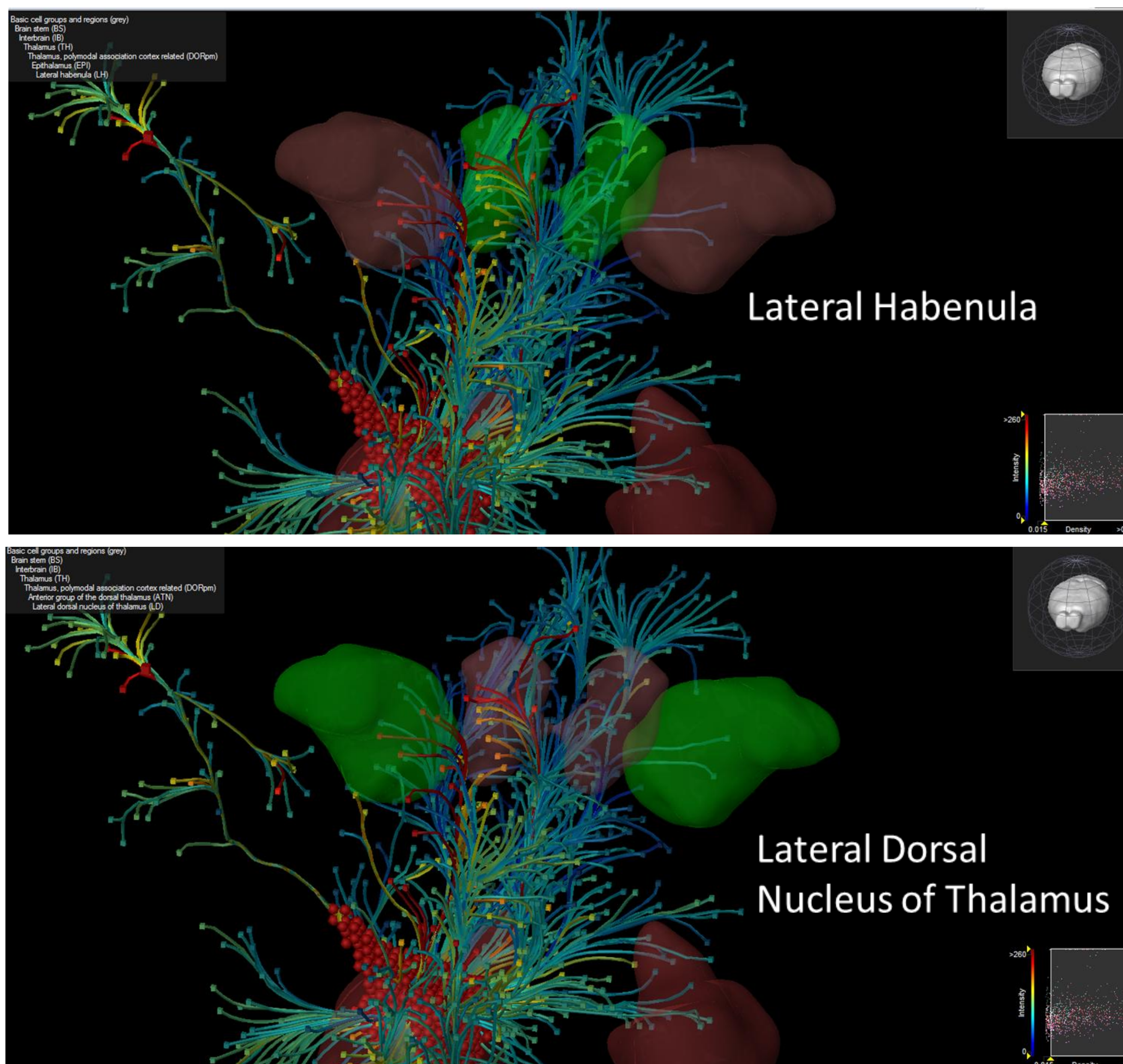
Narcolepsy – a developmental investigation of Hypocretin’s role

Conclusions

Integrity of Hypocretin (HCRT) neurons is vital since disruption (mutation) or degeneration can cause chronic sleep disorder, observed in different species and at all ages.

Connectivity analysis shows possible pathways leading to neural networks associated to some of the clinical symptoms manifested in patients.

Difussion Tensor Imaging could be used to validate these findings in humans.



Lateral Habenula or a 'reward-negative' site is activated by stimulus derived from unpleasant events.
Lateral Dorsal Nucleus of Thalamus seems to play a role in the modulation of alertness.

Introduction

Hypocretin (also known as Orexin) and the associated receptors HCRT receptor I and receptor II, have been associated in the regulation of arousal, wakefulness and appetite. Hypocretin is produced by around 10,000-20,000 neurons localized in the hypothalamus.

Aim

Investigate the profile of Hypocretin expression during development.

Materials and Methods

Allen’s Brain Institute resources used:

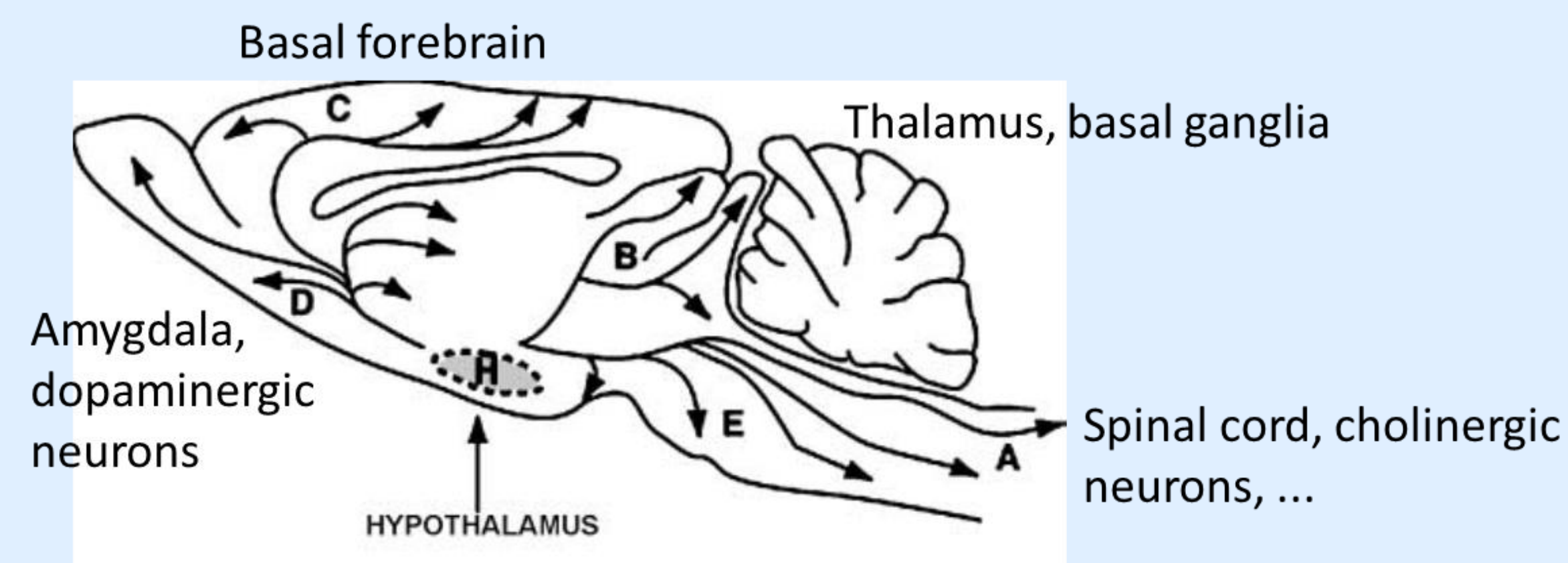
Developing Mouse: ISH data

Adult Mouse : ISH data

Mouse Connectivity Atlas

Developing Human: LMD Microarray data

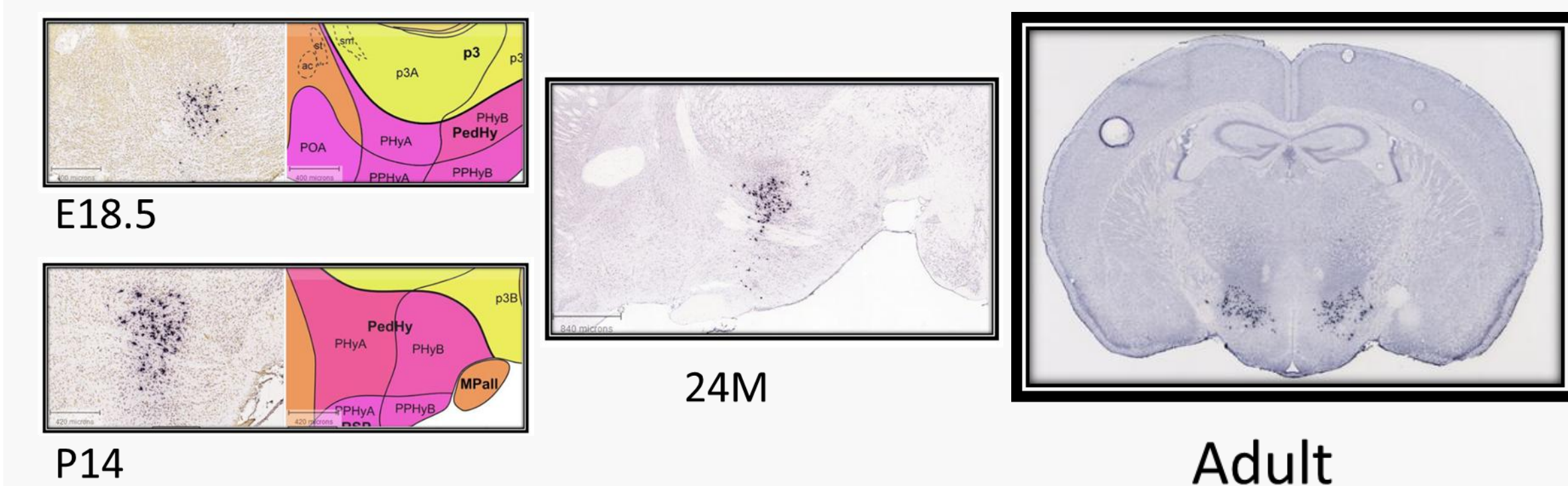
Adult Human: Microarray data.



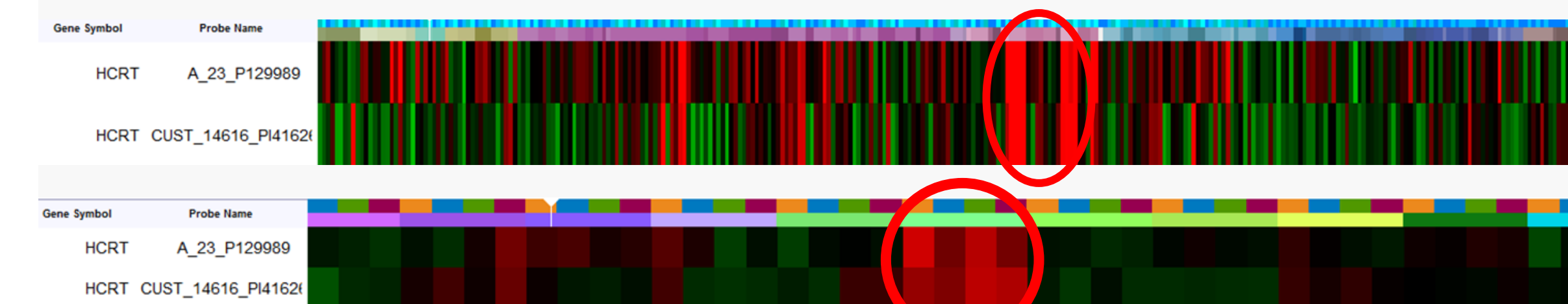
Hypocretin is highly expressed in the Hypothalamus, which has extensive projections throughout the nervous system.

Results

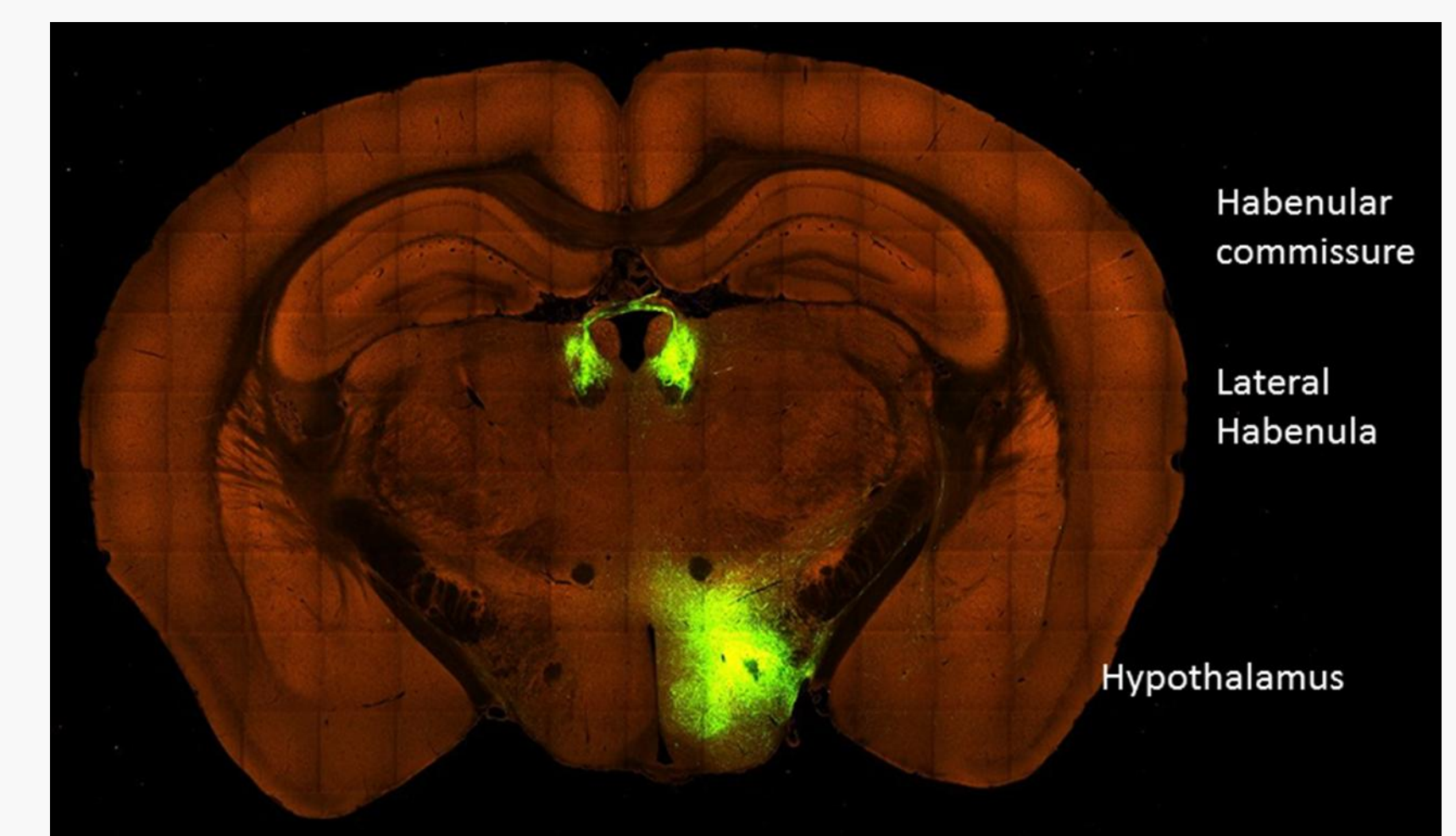
HCRT is uniquely expressed in the hypothalamic area through the whole life span (prenatal – adult). Particularly, in the alar part of the peduncular hypothalamus (Hy), prethalamus and anteroventral part of alar thalamus.



In-situ hybridization profiles for developmental and adult mouse.



Prenatal human microarray (15, 16 and 21 pcw); and adult human microarray (24, 34, 39 and 57 yo) showing expression in Hy nuclei.



Injection site: lateral hypothalamic area.

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