# Dorsomedial hypothalamic nucleus

Dorsomedial nucleus: this is an emotional response center. Stimulation of this nucleus, in animal experiments, produced aggressive behavior that lasts only as long as the stimulus is applied. It is also involved with blood pressure, heart rate, and gastrointestinal stimulation [1].

It has been implicated in the integrative control of feeding, energy homeostasis, and circadian rhythms, but the underlying cell types are unknown.

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Faber et al. identified a role for DMH leptin receptor-expressing neurons (DMHLepR) in this integrative control. Using a viral approach, they showed that silencing neurotransmission in DMHLepR neurons in adult mice not only increases body weight and adiposity but also phase-advances diurnal rhythms of feeding and metabolism into the light-cycle and abolishes the normal increase in dark-cycle locomotor activity (LMA) characteristic of nocturnal rodents. Finally, DMHLepR-silenced mice fail to entrain to a restrictive change in food availability. Together, these findings identify DMHLepR neurons as critical determinants of the daily time of feeding and associated metabolic rhythms [2].

1)
Sanchez Jimenez JG, De Jesus O. Hypothalamic Dysfunction. 2020 Nov 14. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2020 Jan–. PMID: 32809578.
2)
Faber CL, Deem JD, Phan BA, Doan TP, Ogimoto K, Mirzadeh Z, Schwartz MW, Morton GJ. Leptin-receptor neurons in the dorsomedial hypothalamus regulate diurnal patterns of feeding, locomotion, and metabolism. Elife. 2021 Feb 2;10:e63671. doi: 10.7554/eLife.63671. Epub ahead of print. PMID: 33527893.