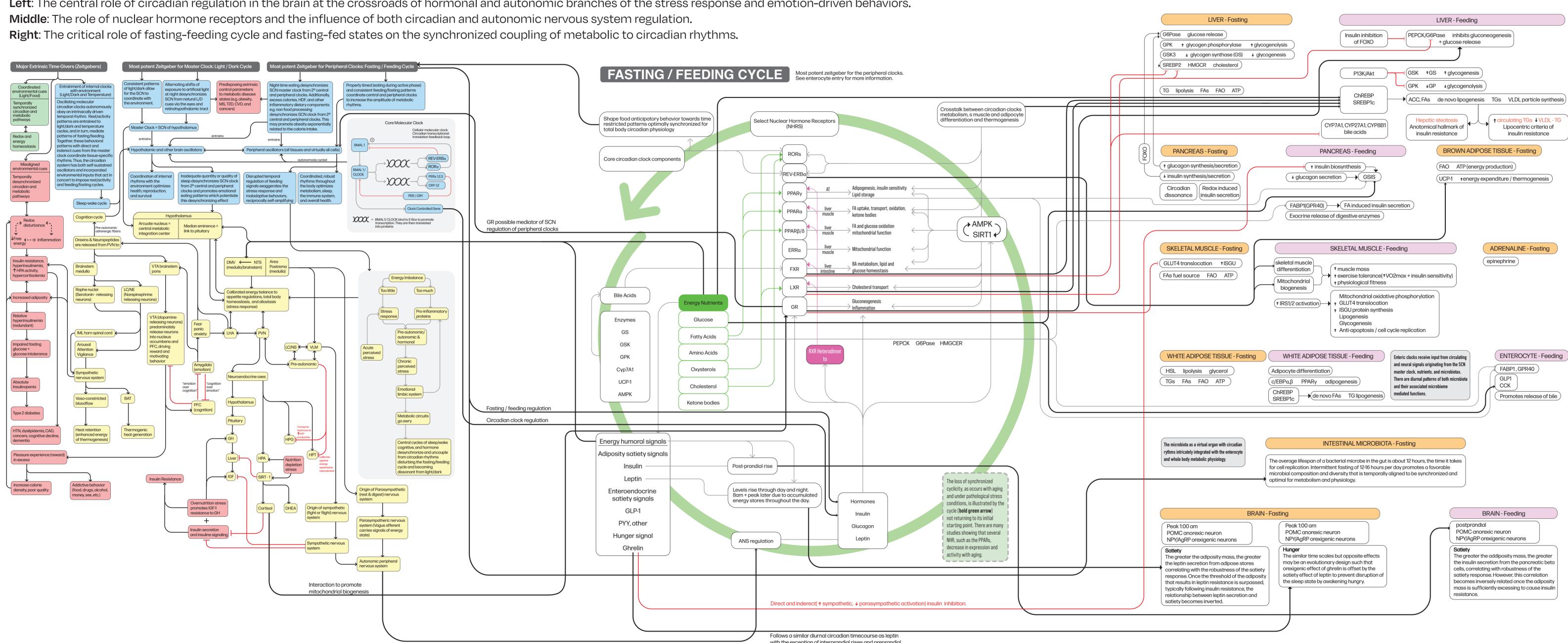
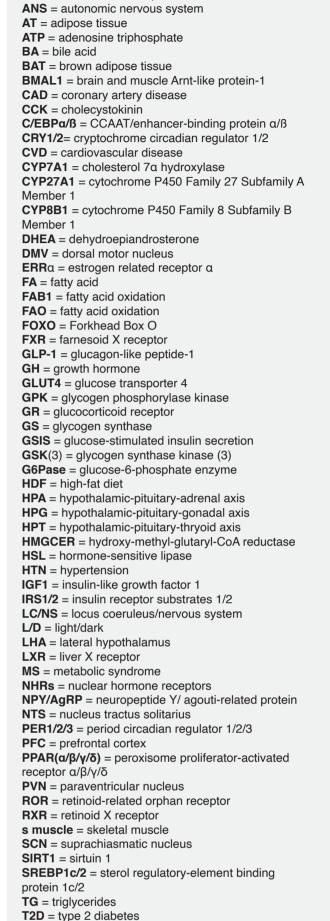
## The Organizing Framework for Synchronizing Circadian Metabolic Rhythms

The coupling and decoupling of circadian metabolic rhythms are critical for human health and the pace of development of chronic diseases of aging, respectively. Left: The central role of circadian regulation in the brain at the crossroads of hormonal and autonomic branches of the stress response and emotion-driven behaviors.



with the exception of interprandial rises and preprandial peaks in the case of ghrelin (perhaps anticipatory in nature)



- **UCP-1** = uncoupling protein-1
- VLDL = very low-density lipoprotein
- **VLM** = ventrolateral medulla
- **VTA** = ventral tegmental area
- VO<sub>2</sub> max = maximal volume of oxygen consumption

## LEGEND

- = time / clock regulation = nervous system regulation = (susceptibility to) disease = health / homeostasis = fasting state = feeding state — = inhibitory pathway  $\longrightarrow$  = primary pathway  $\longrightarrow$  = secondary pathway ------ = energy nutrients connections
- = fasting / feeding cycle

## ABBREVIATIONS

**ACC** = acetyl-CoA carboxylase AMPK = AMP-activated protein kinase