Dopamine plays an important role in the regulation of goal-directed behavior. To ensure energy homeostasis, goal-directed behavior has to be tuned according to physiological needs of the organism. However, despite the wealth of preclinical evidence on the link between disturbed energy homeostasis and altered dopamine signaling, this correspondence is not well understood in humans. In the talk, I will provide an integrative perspective on goal-directed behavior that incorporates energetic demands. Crucially, the emerging evidence on vagal afferent signals in regulating allostasis via changes in monoaminergic signaling suggests that non-invasive electrical stimulation of the vagus nerve may provide a means to perturb homeostatic and motivational circuits in the human brain. Thus, by emulating vagal afferent signals concurrently to fMRI, we can better elucidate the role of interoceptive feedback in regulating goal-directed behavior. Ultimately, this mechanism might help us explain why metabolic and motivational symptoms often co-occur in mental and metabolic disorders.