

## **Heiti á bacheloruppgávu**

Døgnrytmens effekt på koncentrationen af stresshormoner og deres indflydelse på deklarativ hukommelse

### **Abstract**

The aim of this bachelor thesis is to explore the effects of glucocorticoids on declarative memory as a function of circadian rhythm. Findings from the diverse literature within stress and memory research are inevitably complex and often contradictory, but some generalities do emerge. It is well known that adrenal glucocorticoids secreted during stress modulate human memory, but less clear is the exact nature of these effects. Empirical evidence has yielded support for both enhancing as well as impairing effects of stress on memory, and one of the main findings is that these conflicting results are partly due to the nature (neutral versus emotional) and timing of the stressor in the memory formation process. One other important, confounding factor may be that glucocorticoid secretion exhibits a 24-hour circadian profile in which glucocorticoid concentrations reach a maximum in the morning, and slowly decline in the late afternoon, evening, and nocturnal period. This variation of endogenous glucocorticoid levels throughout the day may interact with the effects of exogenous stressors on human memory in line with an inverted U-shaped relationship. According to this relationship, memory performance is impaired at very low as well as very high levels of glucocorticoids, but not at intermediate levels. This relationship may originate from different roles of the mineralocorticoid (type I) and glucocorticoid receptors (type II) that bind glucocorticoids with different affinity. Many studies have reported that the ratio of type I/type II occupation is a major determinant of the direction of glucocorticoid-induced cognitive changes, including declarative memory. This ratio of type I/type II occupation also varies throughout the circadian rhythm, which further indicates the importance of considering the time of day as a variable in experimental designs that investigate the effects of stress on declarative memory.