

Department of Psychology

Allison Foilb

Mentor: Russell Romeo

## Maturation of Hormonal Stress Responses through Adolescence

Though adolescent development is often marked by increases in stress-related disorders, such as anxiety, depression, and drug abuse, we know relatively little about how stress reactivity changes during this crucial period of maturation. Interestingly, we have previously reported that prepubertal rats display a prolonged hormonal stress response compared to adult rats. The levels of adrenocorticotrophic hormone (ACTH) and corticosterone (CORT), in particular, take twice as long (40-60 minutes) to return to baseline level in prepubertal animals compared to adults. However, when this change in hormonal stress responsiveness occurs between the onset of puberty and adulthood has not been described. To examine this, we measured plasma levels of CORT and ACTH in male Sprague Dawley rats at 30, 40, 50, 60, and 70 days of age (i.e., spanning the adolescent stage of development in rats) at a basal time point, and immediately (time 0), 30, and 60 minutes after a 30 minutes of restraint stress. Plasma ACTH levels were significantly higher in 30-50 day old animals than 60 or 70 day old animals at immediately upon termination of the stressor, indicating that there is a sudden change at this level of the hormonal response between 50 and 60 days of age. Conversely, CORT levels displayed a dramatic shift between 30 and 40 days of age. Together, these data show that the maturation of the stress responsiveness of the pituitary and adrenal glands occurs at different times or rates.