



SRF VACATION SCHOLARSHIP REPORT 2017

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| Student's Name: | Federico Caso | Student's Institution/University: | University of Aberdeen |
| Degree Title and year of study: | BSc Biology 4 th Year | | |
| Supervisor's Name: | Dr Tyler Stevenson | Supervisor's Department and Institution: | |
| Project Title: | Expression of hypothalamic DNA methyltransferase (DNMT3B) decreases across the female reproductive cycle in Siberian hamsters (<i>Phodopus sungorus</i>). | | |

Briefly outline the background and aims of the project (max 200 words)

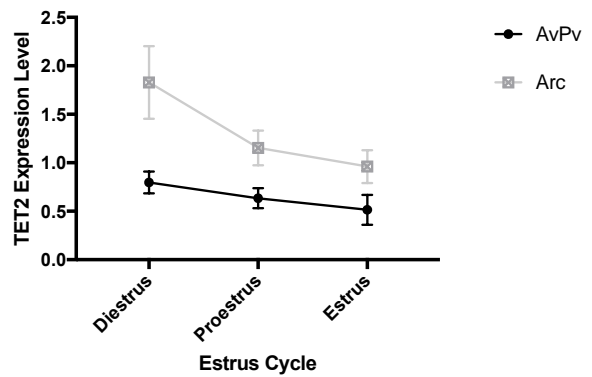
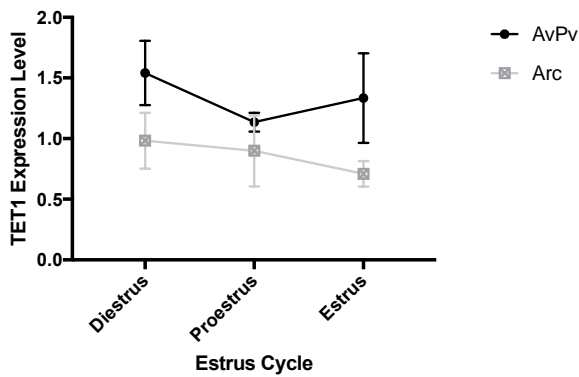
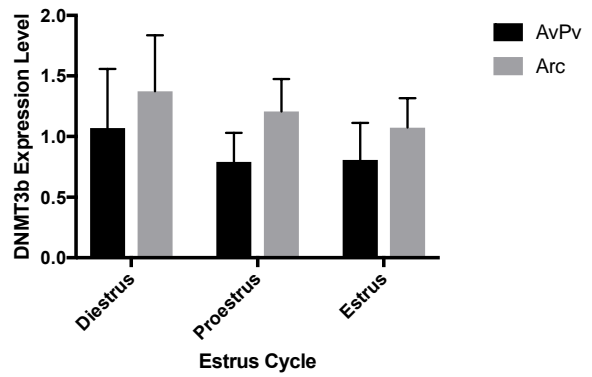
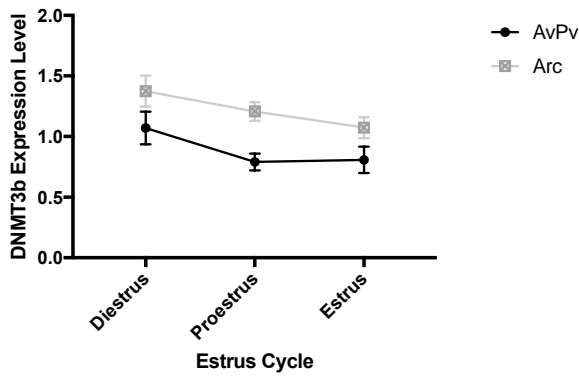
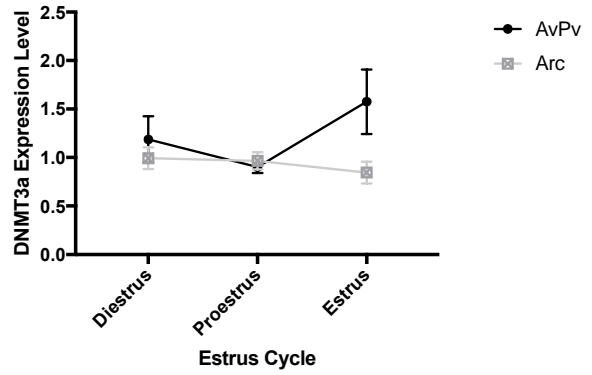
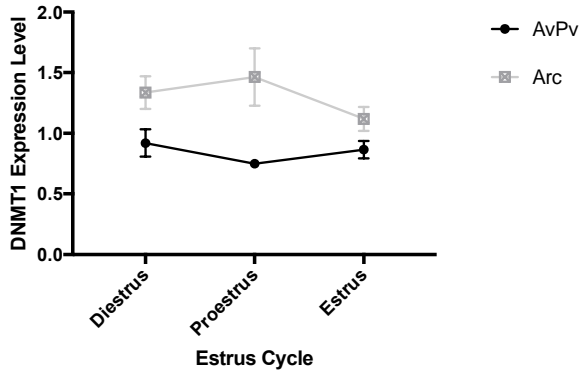
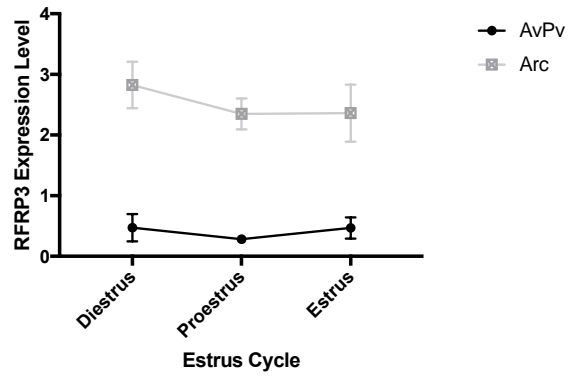
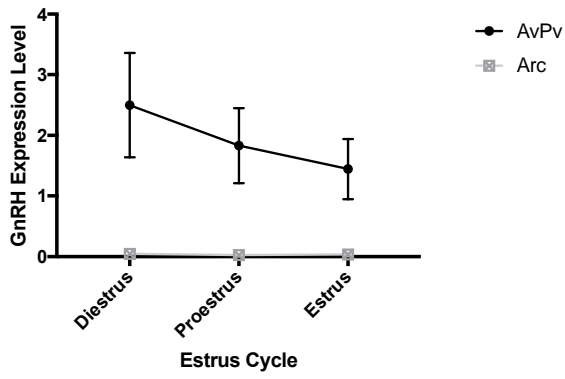
The aim of the project was to examine the level of expression of epigenetic enzymes across the estrous cycle in distinct regions of the hypothalamus in order to assess the possibility of epigenetic modifications in the regulation of the estrous cycle.

Did the project change from that proposed in the application? If so, what changes were made and why? (max 100 words)

The project did not change from what had been proposed at the beginning of the year. However, as it can be seen from the variation in the title, the results of the study produced a directional outcome.

What were the main results/findings of the project? (max 300 words)

The analysis on GnRH and RFRP3 expression levels confirmed the specificity of the tissue punches for the two hypothalamic regions, anterior and posterior, defined by the AvPv and Arc nuclei (Fig. 1, Fig. 2). Furthermore, the results showed that *dnmt1* and *dnmt3a* did not vary across the estrus cycle (*dnmt1* P=0.6; *dnmt3a* P= 0.3) (Fig. 3, Fig. 4). However, *dnmt3b* exhibited a significant reduction during proestrus and estrus compared to diestrus (P<0.05) (Fig. 5). TET2 expression exhibited a significant decrease in expression in the Arc during proestrus stage (P<0.05) (Fig. 6). TET1 on the other hand, did not show any significant variation (P=0.8) (Fig. 7).



What do you conclude from your findings? (max 150 words)

These data indicate that the enzyme *dnmt3b* could have a role in the regulation of the transcription of neuropeptides across the estrus cycle. Further analysis is required to clarify the role and the neuropeptides affected.

How has this experience influenced your thinking regarding your future/ongoing studies, and/or career choice? (max 150 words)

The opportunity to work on my own research has allowed me to gain both a much deeper knowledge of the practical laboratory skills and a clearer idea of my career after graduation. As I found working in research very rewarding I understood to be interested in pursuing a career in this field. Thanks to the Scholarship I have gained invaluable skills that can be an important to help me achieve a First Class in my degree. A top grade in my Undergraduate degree would most definitely allow me to be accepted in a high level University for my Master degree. As I am aiming to specialize on a more genetic field, hopefully the Master will allow me to become a suitable candidate for a PhD on the same field in two years' time.

Please use the space below to add any other comments/thoughts about the SRF Vacation Scholarship (max 100 words)

Student: Federico Caso

The Scholarship has facilitated the ability to pursue an academic career. Thanks to it I have had the opportunity to determine my passion for a more molecular and genetic laboratory research. This is going to be substantial influence for my prospect career.

Supervisor: Tyler Stevenson

The scholarship has provided Mr Federico Caso with the valuable opportunity to conduct independent research on a project of high relevance to reproductive health. The results produced from this project are publishable and will be coupled with other findings that will lead to a high impact publication. Federico has gained a number of methodological skills that will serve him well for his pursuit of a research career.