

EXECUTIVE SUMMARY: *(State in layman's terms the application's broad, long-term objectives and specific aims, making reference to the potential public benefits of the project for California.)*

The sequential exposure of neural circuits to estradiol and progesterone is important for coordinating reproductive physiology and behavior. The proposed study is at the basic level, and seeks to provide an integrated model for the actions of estradiol and progesterone on the activity of opioid circuits to understand the mechanisms that integrate and transduce ovarian hormonal information to regulate sexual behavior. Our studies on the ovarian steroid modulation of opioid circuit may be part of the generalized mechanism for coordinating sexual behavior, ovulation and uterine development that underlie levels of fertility and may apply to aid in discovering new drug treatments to regulate fertility and treat infertility. A significant proportion of child bearing age women in the United States report infertility problems that are associated with ovarian dysfunction and altered ovarian steroid hormone pattern. These unusual patterns of steroid hormone production desynchronize reproductive physiology producing infertility and can be responsible for other neuroendocrine related issues such as irregular vaginal bleeding, polycystic ovary syndrome, nutritional and metabolic disorders, and possibly cancer.