

Special Issue on
Energy Sensors in Female and Male Reproduction and Fertility

CALL FOR PAPERS

In vertebrates, nutrition and energy metabolism strongly influence male and female reproduction. They can affect the hypothalamus-pituitary-gonadal axis during the reproductive period of life. Reproduction and metabolism are physiological functions tightly linked to supplying the energetic costs of puberty, gametogenesis, pregnancy, and lactation. Furthermore it is well known that when this balance between reproductive and metabolic functions is disrupted, pathologies occur. For example, in humans, there is an association between insulin resistance, metabolic syndrome, and polycystic ovarian syndrome (PCOS). In agronomic species such dairy cows, strong genetic selection has led to a state of chronic negative energy balance (NEB) and consequently animals must mobilize adipose tissue to provide glucose for milk production. NEB may be a risk factor for ovarian dysfunctions because of the hormonal and metabolic adaptations that occur in response to NEB.

At the organismal level, energy sensors play crucial role in indicating whether energy reserves are abundant (obesity), or poor (in case of food restriction, sports training, etc.). These energy sensors can be hormones, kinases, or nutrients. Given the tight link between energy metabolism and reproduction, in this special issue we propose to discuss the importance of different energy sensors such as insulin/IGF and adipokine pathways and more specifically AMPK, mTor, and PPARs that could regulate fertility in different species including human. More particularly, the role of these energy sensors at different levels of the male and female reproductive tracts (gonad and gamete maturation, pituitary and hypothalamus, placenta, endometrium, etc.) but also at different periods of the life (embryo, fecundation, pregnancy, lactation, etc.) could be reported in different metabolic states (obesity, diabetes, etc.).

Potential topics include but are not limited to the following:

- ▶ Mechanisms linking energy sensors and reproduction
- ▶ Involvement of adipokines on the effects of obesity treatment (or bariatric surgery) on hypothalamic-pituitary gonadal axis
- ▶ Adipokines in female reproductive tractus
- ▶ Involvement of adipokines in PCOS, preeclampsia, and gestational diabetes
- ▶ Adipokines in human plasma seminal and spermatozoa
- ▶ Role of adiponectin in placenta functions
- ▶ Role of hypothalamic mTOR in fertility
- ▶ Role of AMPK in male and female fertility: a transgenic approach
- ▶ Insulin/IGF system in fertility: a review of the different model of transgenic mice and their reproductive phenotypes
- ▶ Involvement of adipokines in the subfertility in high producing dairy cows
- ▶ Role of adipokines in the infertilities or subfertilities associated with environmental pollutants
- ▶ Energy sensors in infertility associated with metabolic syndrome
- ▶ Energy sensors in chicken and fish reproductive functions

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/ije/esf/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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