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**Figure 2. Schematic diagram summarizing the effects of prenatal and early postnatal nutrition on the development of the neuroendocrine system in heifers. Changes in the nutritional and metabolic status occurring at any developmental period between fetal life and puberty can impact the development of hypothalamic pathways that control GnRH secretion and pubertal maturation. Adequate maternal nutrition during gestation in conjunction with elevated rates of body weight gain during early postnatal development result in several endocrine and neuroendocrine changes that promote early puberty. These include: 1) increased circulating concentrations of leptin, insulin, and IGF1; 2) reduced *NPY* mRNA abundance and NPY (inhibitory) inputs to GnRH neurons; 3) increased *POMC* mRNA levels and α-MSH (excitatory) inputs to kisspeptin neurons; and 4) increased pulsatile secretion of GnRH and LH.**