KNDy neurons modulates metabolism, glucose homeostasis, and feeding behavior, illustrating a novel mechanism for E2 and ghrelin to synergistically control KNDy neuronal output and their subsequent behavioral and physiological outcomes.

## Neuroendocrinology and Pituitary

### NEUROENDOCRINOLOGY AND PITUITARY BASIC RESEARCH ADVANCES

***The Cell Fate Determinant Musashi Is Controlled Through Dynamic Protein:Protein Interactions***

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The Musashi RNA-binding protein functions as a gatekeeper of cell maturation and plasticity through the control of target mRNA translation. It is understood that Musashi promotes stem cell self-renewal and opposes differentiation. While Musashi is best characterized as a repressor of target mRNA translation, we have shown that Musashi can activate target mRNA translation in a cell context specific manner *via* regulatory phosphorylation on two evolutionarily conserved C-terminal serine residues. Our recent work has found that Musashi is expressed in pituitary stem cells as well as in differentiated hormone producing cell lineages in the adult pituitary. We hypothesize that Musashi maintains cell fate plasticity in the adult pituitary to allow the gland to modulate hormone production in response to changing organismal needs. Here, we seek to understand the regulation of Musashi function. Both Musashi isoforms (Musashi1 and Musashi2) contain two RNA-recognition motifs (RRMs) that bind to specific sequences in the 3'-UTR of target mRNA transcripts; however, neither isoform has enzymatic properties and thus functions through interactions with other proteins to regulate translational outcomes, but the identity and role of Musashi partner proteins is largely unknown. In this study, we have identified co-associated partner proteins that functionally contribute to Musashi-dependent mRNA translational activation during the maturation of Xenopus oocytes. Using mass spectrometry, we identified 29 co-associated proteins that interact specifically with Musashi1 during oocyte maturation and determined that the Musashi co-associated proteins ePABP, PABP4, LSM14A/B, CELF2, PUM1, ELAV1, ELAV2, and DDX6 attenuated oocyte maturation through individual antisense DNA oligo knockdowns. An assessment of the role of these cofactors in the control of Musashi-dependent target mRNA translation is in progress. In addition to studying co-associated proteins, we have created a computational 3D model of the Musashi1 molecule to assist in our investigation Musashi dimerization. This model has indicated that both Musashi1 dimerization and Musashi1:Musashi2 heterodimerization are energetically favorable, and co-pulldown studies have verified both Musashi1 homo-dimerization and Musashi1:Musashi2 heterodimerization in vivo. Computational modeling of Musashi dimer complexes has also identified the key amino acids necessary for these interactions. The contribution of each co-associated protein's influence on Musashi-dependent translation, relative to the requirement for Musashi:Musashi dimerization, is expected to provide unparalleled insight into regulation of Musashi action. Moreover, cell type specific regulation of association of Musashi co-factors would directly influence Musashi target mRNA translation in oocyte maturation and during pituitary cell plasticity.

## Neuroendocrinology and Pituitary

### NEUROENDOCRINOLOGY AND PITUITARY BASIC RESEARCH ADVANCES

***The Effect of the Synergy Between Opiates and Prolactin on the Growth of Chickens***

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It is generally admitted that opioids can stimulate the release of both prolactin (PRL), the opiates induced hyperprolactinemia via dopamine receptor blockade. Prolactin hormone (PRL) plays an important role in conjunction with some hormones such as GH, PTH, ACTH, and T4 to stimulating body growth. The prolactin hormone has an important role in feeding behavior, as its role is evidenced by its effect on metabolism. In migratory birds, fat is stored in its body before migration, and the hormone prolactin activates the process of building and storing fats lipogenesis and Deposition of Fats. The hypothesis of this study is to investigate the role of natural stimuli such as sound in stimulating peptide hormones in the body and thus weight gain in chickens. 100 birds of 1 day old were used it was divided into two treatments, each treatment with 5 replications. The chicks heard different sounds and it was as follows: the first the control without sound CS, the second hen sound (mother sound) HS. The sound was heard from the one old day to 14 days, at a rate of 3 times a day, in the morning, in the afternoon and at night, for an hour each time. Chicks were raising to 42 day. The hormone was estimated in three stages, before exposure to sound 30 minutes during exposure directly after exposure for 30 minutes, and the prolactin hormone concentration was calculated each time, the results show: Significant increase ($P<0.05$) in live body weight cumulative, weight gain cumulative, relative growth rate cumulative, and total feed conversion ratio to HS compared with CS. Significant improvement ($P<0.05$) in the concentration of the hormone prolactin of HS in the period after exposure to sound 30 minutes during exposure directly after exposure for 30 minutes at the age of 14 days (the end of the exposure to the sound of the period). As mentioned above, the opioids stimulate prolactin, but the question here who is responsible for stimulating the opioids? Opioids secretion is linked to the body's sense of well-being and well-being, as it is secreted naturally to aid in rest and relaxation, and this is often noticed on the organism when it feels safe and comfortable. Chicks, when it hearing her mother's sound, gives it a powerful stimulus, and they become more active and more and less fearful and amazement. This will release the opioid, which in turn stimulates prolactin. PRL and GH are secreted from the anterior pituitary gland and affect a wide variety of physiological functions in birds. Similarly, a relationship between plasma GH concentration and body growth is well documented. There is a chemical similarity between