D118 Carboxyl Terminal Part of Frog Gonadotropin-Releasing Hormone Receptor Type-I and II is Responsible for Gq/11-mediated Signaling Pathway

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Recently, we have cloned three distinct gonadotropin-releasing hormone receptors from bullfrog (bfGnRHRs) and *Rana dybowskii* (dyGnRHRs). All dyGnRHRs exhibit high amino acid identity (>95%) and similar tissue distribution with the corresponding bfGnRHRs. However, surprisingly dyGnRHR-1 and dyGnRHR-2 could not produce inositol phosphate (IP) in response to GnRH and showed lower ligand sensitivity than their bfGnRHR counterparts. To identify the potential regions in the receptor structure responsible for such differential behavior, we constructed a number of chimeric receptors. Interestingly, substitution of the C-terminal part (that includes intracellular loop 3, transmembrane domain 6/7, and C-terminal tail) of both dyGnRHR-1 and 2 with those of bfGnRHRs significantly enhanced the GnRH mediated IP production. Taken together, this study provides important information that the C-terminal part of GnRHRs is critical for determining the Gq/11-mediated signaling pathway.

D119 Influence of Photoperiod on Reproductive Activity in Male Golden Hamsters

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Photoperiod (length of light per day) is a major factor in determining reproductive activity in golden hamsters. Long photoperiod (LP, =12.5 hours of light per day) maintains the sexual activities whereas short photoperiod (SP, 12 hours of light per day) suppresses them. The information of photoperiod is transmitted to the reproductive system by melatonin that is secreted from the pineal gland. Thus reproductive hormones are investigated in male golden hamsters that are housed in LP or SP and that are injected daily with melatonin in the morning or evening. Reproductive functions are active in the animals housed in LP and injected with melatonin in the morning and inactive in the animals housed in SP and injected with the evening injections. Paired testicular weights were markedly reduced in the reproductively inactive animals. Serum FSH and LH levels were also lower in the sexually inactive animals than in the sexually active animals. When the reproductive hormones were measured in the serum taken continuously for 90 minutes, both LH and FSH displayed pulsatile pattern in sexually active animals, but the pulsation was disappeared in sexually inactive animals. Moreover, the mean values of FSH and LH in regressed animals were much less. The gonadal regression was abolished in the pinealectomized animals. The concentration of melatonin was higher at night than at day. The pinealectomized animals showed even less levels of melatonin than the day time levels. The histological examination of regressed testes showed reduction of tubular lumen diameter, interstitial space, and Leydig cell number. Taken together, the effects of photoperiod and melatonin treatment were reflected in reproductive endocrine system. The results suggest that their influence may be mediated by gonadotropin releasing hormone. Therefore, the impact of photoperiod (via melatonin) on GnRH neuronal system needs to be investigated.

D120 Transcriptional Activation of the Human Resistin Gene by ADD1/SREBP1c

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Resistin, a 12.5-kDa cystein-rich protein, is recently postulated to be an important link between obesity and insulin resistance. Although it has been reported that resistin is mainly expressed and secreted by adipocytes, it has not been understood which transcription factors are involved in this gene regulation. To investigate the molecular mechanism of resistin gene expression, we cloned human resistin promoter by use of PCR. Sequence analysis of 5'-UTR of resistin promoter reveals that there are putative binding sites for several transcriptional factors including SREBP, C/EBP, P300 and Sp1 (GC box). Gel mobility shift assays showed that ADD1/SREBP1c binds to the SRE region in the resistin promoter. In order to study the transcriptional regulation of the human resistin gene, we constructed luciferase reporter containing resistin promoter (-816~+89). With this construct, we found that ADD1/SREBP1c transactivates the promoter of human resistin via SRE dependent manner. These results clearly demonstrated that ADD1/SREBP1c is required for the expression of resistin gene during adipogenesis.

D121 Expressin Pattern of Runt Domain Transcription Factor, run, in Caenorhabditis elegans

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The *C. elegans* run gene encodes a Runt domain factor. Runx1, Runx2, and Runx3*Runx1, Runx2, Runx3* are three known mammalian homologs of *run*. *Runx1* has been identified at the breakpoint of chromosome translocations responsible for human leukemia and plays an essential role in hematopoiesis. *Runx2* plays an essential role in osteogenesis and cleidocranial dysplasia. To understand possible role of Run in *C. elegans*, we used GFP reporter constructs and ds RNAi. The expression of run was detected as early as bean stage exclusively in the nuclei of seam cells and lasted until L3 stage. At larval stage, expression of run was additionally detected in intestinal cells. The stage and and cell type specific expression was regulated by 7.2 kb long intron located between exon 3 and 4. ds RNAi analysis to target run gene showed early larval lethal phenotype with apparent malformation or degeneration of hypodermis and intestine. These results suggests that run is involved in hypodermis and gut development.

D122 HSP16-1, a small heat shock protein in C. elegans, is strongly induced by hypoxia stress

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Many heat shock proteins (HSPs) are induced by various stresses. We found that the expressions of the HSP16 family proteins were up-regulated by ethanol in a microarray analysis of ethanol-treated *C. elegans* animals. In this report, we characterized HSP16-1, one of the small HSP proteins. We found that HSP16-1 is a chaperone that responds to general stresses. Furthermore, we found that HSP16-1 protein is the only HSP16 protein to be significantly induced by hypoxia. We found that induction of HSP16-1 by hypoxia required the distal heat shock responsive elements (HSE) and its neighboring region, while heat shock induction of HSP16-1 needs only one of the two HSEs existing in the promoter. The induction of HSP16-1 by hypoxia was independent of the conventional HIF-1/HRE, indicating that the hypoxia response of HSP16-1 protein may be mediated by a new mechanism.