

## Translational research on novel peptides in veterinary and livestock science

**Noboru Murakami**

(University of Miyazaki, Department of Veterinary Physiology, Professor)

### 【Outline of survey】

Recently, several peptides have been discovered consecutively with the use of reverse pharmacological techniques. Clarifying the physiological roles of these newly discovered peptides can lead to the development of new drugs. For this reason our work has focused on delineating the physiological roles of novel peptides, and we have been successful in identifying various important functions. For example, we showed that ghrelin, a peptide secreted in the stomach, plays an important role in causing appetite. In addition, we showed that ghrelin promotes fetal development through direct action on cell proliferation. We also found that the newly discovered neuromedin S and U act as an anorexic hormone and play an important role in the regulation of the biological clock. Our present project focuses on the application of the physiological roles of newly discovered peptides in basic veterinary and livestock research. Through preliminary work we already showed that ghrelin aids post-surgical recovery in dogs and cats by stimulating food-intake. The search for physiological functions of novel peptides is a highly competitive area in international research, and by combining a basic with an applied approach we are planning to play a leading role in this field.

### 【Expected results】

In the present project we plan to perform basic and applied research concurrently. We expect to discover additional functions of novel peptides and analyze how they relate to the physiological mechanisms underlying obesity and diabetes. We will use our newly developed mouse model of obesity ('Daruma') for this purpose. This mouse model incorporates the basic characteristics of metabolic syndrome, including hyperglycaemia, hyperphagia, hypertension and diabetes. Our applied research will focus on developing the use of ghrelin and neuromedin in eating disorder therapy (hyperphagia; anorexia) for companion as well as domestic animals.

### 【References by the principal investigator】

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- K Nakahara, Y Nakagawa, N Murakami. Maternal ghrelin plays an important role in fetal development during pregnancy. **Endocrinology** 147(3):1333-1342, 2006
- M Sato, K Nakahara, N Murakami. Effects of ghrelin and des-acylghrelin on neurogenesis of the rat fetal spinal cord. **Biochem Biophys Res Commun** 350:598-603, 2006

【Term of project】 FY2007—2011

【Budget allocation】 21,200,000 yen

(2007 direct cost)

【Homepage address】 [http://www.agr.miyazaki-u.ac.jp/~vet/vet\\_phy/index.htm](http://www.agr.miyazaki-u.ac.jp/~vet/vet_phy/index.htm)