

● Dr. Teguh Bdudipitojo

<Profile>

Nationality: Indonesian

Educational Background in Japan:

September 2000 – March 2004

Graduate school of Education, Gifu University (Doctor)

Major Field: Veterinary Anatomy

Present Institution / Status: Faculty of veterinary medicine, Gadjah Mada University, Yogyakarta, Indonesia/ Teacher



(Image) Dr. Teguh Bdudipitojo

<Follow-up Research Fellowship>

Period: June 1, 2009 – July 30, 2009 (60 days)

Host University: Obihiro University of Agriculture and Veterinary Medicine

Research Topic: Studies on gastrin-releasing peptide receptor (GRP-R) in bovine uterus and placenta

Outline of Research

I. The nature of some aspects of bovine GRP-R remains to be determined.

The study will:

1. Detect the cellular distribution and localization of GRP-R in the uterine tissues of fetal cows
2. Detect the cellular distribution and localization of GRP-R in the uterine tissues of adult non-pregnant cows during estrous cycles
3. Detect the cellular distribution and localization of GRP-R in the placental tissues of cows during pregnancy
4. Detect the cellular colocalization between GRP and GRP-R in the uterine tissues of fetal cows
5. Detect the cellular colocalization between GRP and GRP-R in the uterine tissues of adult non-pregnant cows during estrous cycles

6. Detect the cellular colocalization between GRP and GRP-R in the placental tissues of cows during pregnancy

In the present opportunity, some anatomical aspects of Java porcupine (*Hystrix javanica*) also want to clarify:

II. Clarify the distribution of cytoskeletal proteins immunoreactions in the immature testis of Java porcupine (*Hystrix javanica*).

III. Clarify the distribution of endocrine cells in the stomach of Java porcupine (*Hystrix javanica*).

Results of Research

I. Study on the cellular localization of GRP-R and colocalization of GRP with GRP-R in the uterine and placental tissues of cows showed that:

1. In the uterine tissues of fetal cows, no GRP-R immunoreactivity was detected.
2. In the nonpregnant animals, GRP-R was only weakly immunolocalized in the superficial epithelial cells lining the uterus.
3. In the placental tissues, GRP-R immunoreactivity was detected in the trophoblastic cells lining main stem and branch of chorionic villus of the cotyledon. The distribution of the GRP-R-immunoreactive cells and the intensity of immunoreactivity for GRP-R in each cotyledon area examined were consistent throughout the pregnancy period.
4. In contrast to the GRP immunolocalization pattern of the uterus and placental tissues reported before, there is no GRP-R immunoreactivity was detected in the uterine gland cells of both nonpregnant and pregnant of cows.
5. No colocalization was detected between GRP and GRP-R immunoreactivities both in uterine and placental tissues.

II. The distribution pattern of immunoreactive cytoskeletal proteins in the immature testis of Java porcupine (*Hystrix javanica*) confirmed by this study are as follows:

1. α -actin was found in the peritubular myoid cells, epithelial cells of rete testis, and peritubular cells of epididymis.
2. Vimentin was found in the Sertoli cells, Leydig cells, and epithelial cells of epididymis.
3. Desmin was detected in the peritubular cells of epididymis.
4. Cytokeratin was not detected in the immature testis of Java porcupine.
5. α -tubulin was detected in the Sertoli cells and epithelial cells of epididymis.

III. The distribution of immunoreactive endocrine cells in the stomach of Java porcupine (*Hystrix javanica*) are as follows:

1. In the cardiac gland region, immunoreactive endocrine cells for bovine pancreatic polypeptide, porcine chromogranin, somatostatin, and serotonin were detected.
2. Immunoreactive endocrine cells for bovine pancreatic polypeptide, porcine chromogranin, somatostatin, serotonin, and ghrelin were found in oxyntic gland region.
3. In the pyloric gland region, endocrine cells were immunohistochemically positive for bovine pancreatic polypeptide, porcine chromogranin, somatostatin, serotonin, and gastrin.

Further Research Plan

The manuscript on the data of gastrin-releasing peptide receptor in the uterine and placental tissues has been written and it will be published internationally in the very near future. The number of Java porcupine samples will be increased for collecting of mature testis and stomach. In the sufficient number of samples, all data will be published in international journal.

● Research Advisor: Professor KITAMURA Nobuo

Outline of research

1. Differences in the expression and distribution of gastrin-releasing peptide receptor (GRP-R) in bovine female genital organs during the growth stage (from fetus to adult cows), the estrous cycle and the pregnancy period were investigated.

<Taking advantages of this opportunity, we also investigated the anatomical features of *Hystrix javanica* as below, aiming at the further expansion of joint research.>

2. The expression and distribution of cytoskeletal proteins in the testis
3. The distribution of endocrine cells in the stomach

Research results

1. The expression and distribution of GRP-R in the bovine uterus and placenta were elucidated.
 - 1) No expression or distribution of GRP-R was observed in the uterus of fetal cows.
 - 2) The slight reactivity of GRP-R was observed on the superficial epithelium of the uterus in

non-pregnant cows.

3) The positive reactivity of GRP-R was observed in the placental cytotrophoblasts. GRP-R positive cells were observed in the cotyledons constantly during the pregnancy period.

4) We reported that GRP was locally present in the uterus and placenta, but GRP-R were not present in the uterine gland.

5) GRP and GRP-R did not co-exist.

2. The expression and distribution of cytoskeletal proteins in the testis of *Hystrix javanica* were elucidated.

1) α -actin was present in the testicular peritubular myoid cells, rete testis epithelium and cells surrounding the epididymal duct.

2) Vimentin was present in the Sertoli cells, Leydig cells and epithelial cells of the epididymis.

3) Desmin was present in the cells surrounding the epididymal duct.

4) No cytokeratin was detected.

5) α -tubulin was present in the Sertoli cells and epithelial cells of the epididymis.

3. Six types of endocrine cells were present in the stomach of *Hystrix javanica*.

1) Four types of endocrine cells, namely pancreatic polypeptide, chromogranin, somatostatin and serotonin, were present in the cardiac gland region.

2) Five types of endocrine cells, namely pancreatic polypeptide, chromogranin, somatostatin, serotonin and ghrelin, were present in the proper gastric gland region.

3) Five types of endocrine cells, namely pancreatic polypeptide, chromogranin, somatostatin, serotonin and gastrin, were present in the pyloric gland region.

Further research plans

1. We have just finished drafting a report on the expression and distribution of GRP-R in the bovine uterus and placenta. We plan to submit it to international journals as soon as revisions are made.

2. We plan to investigate sufficient number of *Hystrix javanica* to increase data precision with regards to the expression and distribution of cytoskeletal proteins in the testis, and the distribution of endocrine cells in the stomach of *Hystrix javanica* before reporting the research results.

3. We plan to promote our academic exchanges by continuing the above-mentioned research.

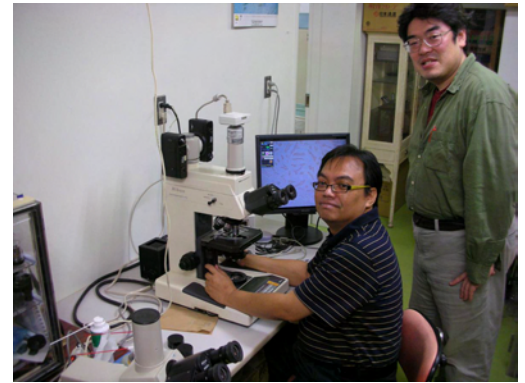
Research activities



Dr. Teguh Bdudipitojo sectioning specimens for microscopy.



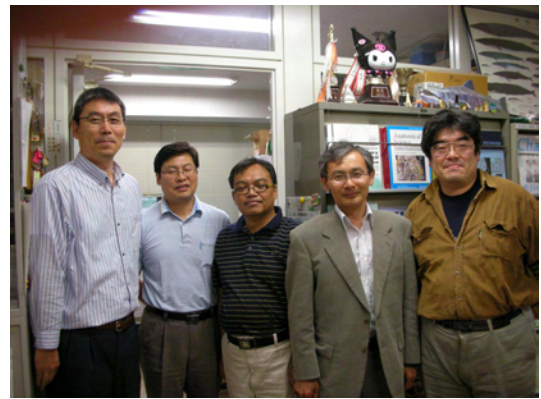
Dr. Teguh Bdudipitojo (right) staining specimens for microscopy.



Associate Professor Motoki Sasaki (right) and Dr. Teguh Bdudipitojo (left) taking and discussing photomicrographs of specimens.



Dr. Teguh Bdudipitojo (second from right) presenting and discussing the research results.



(From left) Professor Nobuo Kitamura, Professor Chang-Hyun Lee (Woosuk University in South Korea), Dr. Teguh Bdudipitojo, Professor Naotaka Ishiguro (Director of the United Graduate School of Veterinary Sciences, Gifu University) and Associate Professor Motoki Sasaki are deepening exchanges by discussing research.