

**NO. 65**  
**December 2016**

# 日本獣医生命科学大学研究報告

BULLETIN OF NIPPON VETERINARY AND LIFE SCIENCE UNIVERSITY



日本獣医生命科学大学発行  
**PUBLISHED BY**  
**NIPPON VETERINARY AND**  
**LIFE SCIENCE UNIVERSITY**  
**MUSASHINO, TOKYO, JAPAN**

日本獣医生命科学大学研究報告

第六十五号(二〇一六年)

# The Bulletin

of the

## Nippon Veterinary and Life Science University

Number 65

December 2016

### EDITORIAL BOARD

Masanori MATSUISHI, *PhD, Professor, Chairperson*

Takeharu KANEDA, *DVM, PhD, Associate Professor*

Jun KOBAYASHI, *PhD, Senior Assistant Professor*

Hitoshi USHIJIMA, *PhD, Professor*

Tomohiko FUJISAWA, *PhD, Professor*

*The Bulletin* is the official organ of the Nihon Jui Seimei Kagaku Daigaku, or Nippon Veterinary and Life Science University, formerly known as Nippon Veterinary and Zootechnical College, is published annually by the institution at 1-7-1, Kyonan-cho, Musashino-shi, Tokyo 180-8602, Japan.

It mainly contains articles originally written by the members of the faculty on their scientific and technical research work mostly done during the year concerned. To these are added the summaries of theses submitted to the faculty for partial fulfillment of the requirements for the Doctor's degree in Veterinary Medicine and Applied Life Science, and Master's degree in Veterinary Nursing and Technology, and Applied Life Science, and the list of works in each division of the university which were presented during the previous year.

All communications relating to *The Bulletin* are requested to be addressed to the Editors, Nippon Veterinary and Life Science University.

日獣生大研究報告

Bull. Nippon

Vet. Life Sci.

Univ.

1st December 2016

## OUTLINE OF THE UNIVERSITY

The Nippon Veterinary and Life Science University has its origin in the Civil Veterinary School chartered by the Prefecture of Tokyo and established in 1881. It has remained as a privately supported school since its inauguration, and is now operated by the Nippon Medical School Foundation, Inc., Tokyo.

The University has a faculty of 131 members, of which 43 have a full professorial rank. It consists of the following two faculties: Veterinary Science and Applied Life Science. In the Faculty of Veterinary Science, there are two Schools: Veterinary Medicine, and Veterinary Nursing and Technology. As for the Faculty of Applied Life Science, there are two Schools: Animal Science, and Food Science and Technology.

The academic year starts in April, and is divided into two semesters ending in July and March, respectively. Secondary school graduates who have completed 12 years' school education are admitted as freshmen.

After enrollment, the first two years of school work are mostly devoted for the liberal Arts and sciences, and partly for the paratechnical courses. The students in the School of Veterinary Medicine are required to take another four-year period of professional education, which is one of the requirements for the national veterinary licence and Bachelor of Veterinary Medicine. In the School of Veterinary Nursing and Technology, Animal Science, and Food Science and Technology, the second two years are for the professional education, and successful completion of the four years of study enables the students to be qualified for a Bachelor of Science degree in Veterinary Nursing and Technology, Animal Science or Food Science, respectively.

The University also offers a four-year graduate course in Veterinary Medicine. The completion of the course work and the thesis lead to a doctorate degree in Veterinary Medicine, equivalent to PhD. Moreover, there is a two-year graduate course in Veterinary Nursing and Technology and Applied Life Science. The completion of the course work and the thesis lead to a master's degree in Veterinary Nursing and Technology, and Applied Life Science, equivalent to MS.

As of May 1, 2016, the School of Veterinary Medicine has 5 Divisions, with the Student enrollment of 569, while the School of Veterinary Nursing and Technology has 3 Divisions and 400 students. The School of Animal Science, with 10 Divisions, has the student enrollment of 392, while the School of Food Science and Technology has 11 Divisions and 357 students.

The alumni association has an active membership of approximately 17,700, being one of the largest and oldest of this kind among the veterinary schools totaling throughout the nation.

Postal address: Nippon Veterinary and Life Science University, 1-7-1, Kyonanchō, Musashinoshi,  
Tokyo 180-8602, Japan.  
Tel: +81-422-31-4151  
Fax: +81-422-33-2094

日本獣医生命科学大学 第 65 号

平成 28 年 12 月 1 日発行

編集発行所 180-8602 東京都武蔵野市境南町 1-7-1

日本獣医生命科学大学  
電話 0422-31-4151 (代表)

印刷所 211-0036 神奈川県川崎市中原区井田杉山町 12-2

栄和印刷株式会社  
電話 044-752-8491

# 日本獣医生命科学大学研究報告 第65号

## 目 次

### 梅野信吉賞受賞記念

イヌおよびネコ乳腺腫瘍の癌微小環境に関する病理学的研究	吉村久志	1
-----------------------------	------	---

### 原 著

ICP-MS を用いたペットフード中元素の分析	小林 淳	4
国家試験からみる医学部の学科・職種間にある教育の差	小林 淳	9
飼い主との分離がイヌの行動的、生理的反応に及ぼす影響：年齢による変化	野瀬 出	18
英語の叙事的表現の獲得に関する予備的考察：動詞 <i>have</i> を含む発話文の分析から	松藤薫子	25
後腹膜腔への巨大な転移腫瘍を伴った機能性悪性セルトリ細胞腫の犬の1例	山本昌美	34
口語英語研究 (8) 命令や依頼の表現に関して	木戸 充	39

### 若手研究者支援

平成 27 年度日本獣医生命科学大学若手研究者研究支援経費 (研究成果報告書)		53
---	--	----

### 博士 (獣医学, 獣医保健看護学, 応用生命科学), 修士 (獣医保健看護学, 応用生命科学) 論文の要旨 (英文)

#### 〈博士 (獣医学)〉

VI型コラーゲンの骨形成に対する作用	小原幸弘	56
犬の肥満細胞腫におけるイマチニブ耐性化に関する研究	小林正人	59
犬のクッシング病の診断・治療に関する研究	佐藤朝香	61
ジャンガリアンハムスター ( <i>Phodopus sungorus</i> ) の 皮膚神経節細胞様 (GL) 細胞に関する研究	中平 嶺	64
犬におけるインスリン抵抗性と糖尿病発症に関するメタボローム研究	野澤聡司	66
犬の頸椎における隣接椎間障害に関する研究	箱崎貴治	69
僧帽弁閉鎖不全症犬の血清中脂肪酸組成に関する基礎的研究	吉松宏基	71
Phenylhydrazine 投与ラットにおける急性肺血栓症の形成機序に関する研究	佐藤寛子	74
肥満ネコにおける診断マーカーの変動とその臨床応用	岩崎永治	76

#### 〈博士 (獣医保健看護学)〉

イヌの肥満関連候補遺伝子の探索と遺伝子変異が代謝機能に与える影響	宮部真裕	78
----------------------------------	------	----

#### 〈博士 (応用生命科学)〉

成熟マウスにおける唾液サンプルを用いたストレス評価	野原正勝	81
---------------------------	------	----

#### 〈修士 (獣医保健看護学)〉

脳虚血易発性スナネズミの特性解析	荒井香南	83
イノシシ ( <i>Sus scrofa</i> ) の食性分析における胃内残留澱粉粒子の指標的価値	遠藤友彦	85
小型犬の術後後肢機能回復期における肢底圧測定と看護実践事例の検討	銀 梓	87

健常猫におけるフード中の脂肪の量および成分がインクレチン分泌に与える影響	平松朋子	89
動物看護における犬の口腔ケアに関する研究	蒔田成美	91
〈修士（応用生命科学）〉		
ニワトリにおけるビリベルジンレダクターゼ遺伝子発現の組織特異性	大森 聖	93
ブタ体外成熟時の小胞体局在に影響を及ぼす因子に関する研究	小沢聡恵	95
ニワトリ脳下垂体におけるプロラクチン受容体遺伝子の発現部位と 発現調節機構に関する研究	金田弘実	97
各種リン酸塩の筋原線維およびアクトミオシンへの作用に関する研究	澤田麻紗子	99
プロバイオティクス乳酸菌が大腸発酵における短鎖脂肪酸生成に与える影響	関 真里乃	101
放牧に適した乳牛改良に関する研究 - NZ 輸入精液利用の可能性 -	玉川聡美	103
乳酸菌発現ベクターの調製法と宿主安定性について	對馬健太	105
パパインを用いたオリゴチロシンペプチドの合成	三橋 純	107
成熟雄マウスにおける摂食により誘起されるレプチン分泌を 観察する為の実験条件の確立	茂川拓紀	109
マウスの脳におけるプロラクチン応答性遺伝子の同定	森山雄太	111
食餌アミノ酸の状態が成長中ハタネズミの栄養生理に及ぼす影響	米山 遼	113

**The Bulletin of the Nippon Veterinary and Life Science  
University No. 65  
CONTENTS**

---

**Shinkichi UMENO Winning Research**

---

- Pathological studies on the tumor microenvironment  
of canine and feline mammary tumors ..... Hisashi YOSHIMURA ..... 1

---

**Original Articles**

---

- Determination of Several Elements in Pet Foods by ICP-MS ..... Jun KOBAYASHI ..... 4
- Differences of Education that is Among Departments in Medical School  
and Among Occupations as Seen from the National Examinations ..... Jun KOBAYASHI ..... 9
- Behavioral and Physiological Responses of Domestic Dogs During Separation  
from Their Owners: The Effect of Age ..... Izuru NOSE ..... 18
- Acquisition of Predicative Possessive Expressions  
by English-speaking Children ..... Shigeko MATSUFUJI ..... 25
- Functional Malignant Sertoli Cell Tumor with Massive Metastasis  
in the Retroperitoneum in a Dog ..... Masami YAMAMOTO ..... 34
- Study of Colloquial English (8) :  
Concerning Expressions Showing Orders and Requests ..... Mitsuru KIDO ..... 39

---

**Support for Young Academic Staffs**

---

- Reports of Research Results conducted on a budget for young academic staffs  
from NVLU for the 2015 fiscal year ..... 53

---

**Outline of Doctoral (Veterinary Medicine, Veterinary Nursing and Technology,  
Applied Life Science) and Master's (Veterinary Nursing and Technology,  
Applied Life Science) Theses**

---

- 〈Doctor (Veterinary Medicine)〉
- The effects of type VI collagen on the bone formation ..... Yukihiro KOHARA ..... 56
- Studies on the development of resistance to imatinib  
in canine mast cell tumor ..... Masato KOBAYASHI ..... 59
- Studies on the diagnosis and treatment of canine Cushing's disease ..... Asaka SATO ..... 61
- Studies on ganglion cell-like (GL) cells in the skin  
of Djungarian hamsters (*Phodopus sungorus*) ..... Rei NAKAHIRA ..... 64
- Metabolome study on canine insulin resistance and diabetes onset ..... Satoshi NOZAWA ..... 66
- Studies on the adjacent segment disease of the cervical spine in dogs ..... Takaharu HAKOZAKI ..... 69
- Basic study on serum fatty acid compositions in dogs  
with mitral insufficiency ..... Hiroki YOSHIMATSU ..... 71

Studies on pathogenesis of acute thrombosis in Phenylhydrazine treated rat	·····Hiroko SATO	····· 74
Changes in diagnostic markers and their clinical application to obese cats	····· Eiji IWAZAKI	····· 76
〈Doctor (Veterinary Nursing and Technology)〉		
The search for canine obesity-related genes and the effects		
of genetic mutation on metabolism in dogs	····· Masahiro MIYABE	····· 78
〈Doctor (Applied Life Science)〉		
Evaluation of stress response using saliva sample in adult male mouse	·····Masakatsu NOHARA	····· 81
〈Master (Veterinary Nursing and Technology)〉		
Characterization of cerebral ischemia-prone gerbils		
after unilateral carotid artery occlusion	····· Kana ARAI	····· 83
Starch particles in the stomach contents as an indicator		
of feeding habits of wild boar ( <i>Sus scrofa</i> )	····· Tomohiko ENDO	····· 85
Study in plantar pressure measurement and nursing practice during		
the postoperative recovery periods of hind limbs functions in small dogs	·····Azusa GIN	····· 87
Effect of amount and component of dietary fat on incretin secretion		
in healthy cats	····· Tomoko HIRAMATSU	····· 89
A study on oral care for dogs in veterinary nursing	····· Narumi MAKITA	····· 91
〈Master (Applied Life Science)〉		
Tissue specificity of biliverdin reductase gene expression in chickens	····· Satoshi OHMORI	····· 93
Research for factors which affect distribution		
of endoplasmic reticulum during <i>in vitro</i> maturation in pig	····· Satoe OZAWA	····· 95
Studies on expression site of prolactin receptor gene and regulatory		
mechanism of its expression in the chicken anterior pituitary	····· Hiromi KANEDA	····· 97
Studies on the effect of various phosphates on myofibrils and actomyosin	····· Masako SAWADA	····· 99
Effect of probiotic bacteria on short-chain fatty acid production		
in the large intestinal fermentation	····· Marino SEKI	····· 101
Research on improving Japanese dairy cattle for grazing:		
Possible utilization of imported NZ semen	····· Satomi TAMAGAWA	····· 103
Preparation of a <i>Lactococcus lactis</i> expression vector, pNZ8148,		
and its stability in host cells	····· Kenta TSUSHIMA	····· 105
Papain-catalyzed synthesis of oligo-tyrosine peptides	····· Jun MITSUHASHI	····· 107
Establishment of experimental conditions for leptin secretion induced		
by feeding in adult male mouse	····· Hiroki MOGAWA	····· 109
Identification of prolactin-responsive gene in mouse brain	····· Yuta MORIYAMA	····· 111
Effects of dietary amino acids status on nutritional physiology		
of growing field voles	····· Ryo YONEYAMA	····· 113