

ANNUAL PUBLICATIONS

Department of Maxillofacial Biology Molecular Neurobiology

1993.1.-2000.3.

I. Staffs and Students (April, 1999)

Professor	Shuichi Nozaki
Lecturer	Kumiko Sugimoto
Research Associate	Midori Kagino
Research Technician	Hachiro Iseki
	Toshimitu Yamamoto
Graduate Student	Kirio Kawai

II. Educational Outline of Graduate Course

Our major goal is to elucidate anatomically and physiologically the neural and molecular mechanisms underlying the sensory and motor functions in the maxillofacial and oral areas, which play important roles in feeding behavior. In addition to these research activities, this section provides the educational programs for graduate students to learn wide and basic knowledge of anatomy and physiology and to acquire various techniques of histological and electrophysiological researches. The students are also guided to find out their research subject and to develop their ability to read and write scientific papers with logical thinking in order to carry out their own research projects in the future.

III. Research Subjects

- 1) Role of the mesencephalic reticular formation as the integration center responsible for the practice of mastication
- 2) Neural mechanisms involved in the cooperative jaw and tongue movement during chewing
- 3) Structure, function and development of tactile reception mechanisms especially in the Eimer's organ and the Merkel cell
- 4) Transduction mechanisms in mammalian taste receptor cells
- 5) Changes in taste sensitivities related to aging

IV. Publications (January, 1993-March, 2000)

A. Original Articles

- 1) Nozaki S., Iriki A., Nakamura Y.: Trigeminal premotor neurons in the bulbar parvocellular formation participating in induction of rhythmical activity of trigeminal motoneurons by repetitive stimulation of the cerebral cortex in the guinea pig. *J. Neurophysiol.* 69(2): 595-608, 1993.
- 2) Odagiri N., Shibanaï S., Kubota K.: Density of muscle spindle in the jaw muscles of the Japanese flying squirrel and the guinea pig. *Ann. Anat., Jena* 175(3): 263-270, 1993.
- 3) Yasui K., Ninomiya Y., Osumi-Yamashita N., Shibanaï S., Eto K.: Apical cell escape from the neuroepithelium and cell transformation during terminal lip fusion in the gouse shrew embryo. *Anat. Embryol.* 189(6): 463-473, 1994.
- 4) Sugimoto K., Iseki H.: Morphological characteristics of taste buds in aged mice. *J. Jpn. Taste Smell* 1(3): S101-S103 , 1994. (in Japanese)
- 5) Sato T., Sugimoto K.: Quinine-HCl-induced modification of receptor potentials for taste stimuli in frog taste cells. *Zool. Sci.*, 12: 45-52, 1995.
- 6) Sato T., Sugimoto K.: Off-depolarization and off-hyperpolarization after termination of quinine-HCl stimulation in frog taste cells. *Zool. Sci.*, 13: 63-67, 1996.
- 7) Sugimoto K.: Receptor mechanisms for amino acids in mouse taste bud cells. *Jpn. J. Taste Smell Res.* 3(2): 145-147 , 1996. (in Japanese)
- 8) Sugimoto K.: Influences of cyclic nucleotides on taste bud cells in mice. *Jpn. J. Taste Smell Res.* 3(3): 384-386, 1996. (in Japanese)
- 9) Ikeda K., Miwa Z., Ohma N., Iijima H., Sugimoto K.: Taste sensitivity of children-comparison with adults-. *Jpn. J. Oral Biol.*, 39: 665-669, 1997.
- 10) Sasaki F., Nishikawa S., Hirata J., Iseki H., Takahashi Y.: Electron microscopic observation of the lung and the tail skin of adult newts (*Cynops pyrrhogaster*) after spaceflight. *Tsurumi Univ. Dent. J.* 23: 377-388, 1997.
- 11) Tachibana T., Yamamoto H., Takahashi N., Kamegai T., Shibanaï S., Iseki H., Nawa T.: Polymorphism of Merkel cells in the

rodent palatine mucosa. Immunohistochemical and ultrastructural studies. Arch. Histol. Cytol., 60: 379-389, 1997.

- 12) Sugimoto K., Kawai K., Nakashima K., Kobayashi H. and Ninomiya Y.: Regulation of the peripheral taste responses by leptin - in respect with the taste receptor sensitivities for sweet stimuli in the diabetic model (*db/db*) mouse-. Jpn. J. Taste Smell Res. 5(3): 229-232, 1998. (in Japanese)
- 13) Kawai K., Sugimoto K.: Relationships between electrophysiological properties and expression of gustducin or ultrastructural features of the taste bud cells in the rat. Jpn. J. Taste Smell Res. 5(3): 607-608, 1998. (in Japanese)
- 14) Sugimoto K., Kawai K.: Investigation of the relationship between response type to membrane-permeable cyclic nucleotides and expression of gustducin in rat taste cells. Jpn. J. Taste Smell Res. 6(3): 541-544, 1999. (in Japanese)

B. Books

- 1) Shibanaï S.: Evolution of temporomandibular joint and dietary behavior. Temporomandibular Mini Dictionary II, Nihon Shika Hyouron, pp.20-25, 1993. (in Japanese)
- 2) Sugimoto, K.: Electrophysiological properties and chemically-induced responses of mammalian taste bud cells. In: Olfaction and taste XI, Ed. Kurihara, K. et al., Springer-Verlag, Tokyo, p.111, 1994.
- 3) Shibanaï S.: Sensory organ located at the tip of nose in the mole. Nihon Doubutu Daihyakka, Vol.1, Heibonsya, Tokyo, pp.26-27, 1995. (in Japanese)
- 4) Shibanaï S., Iseki H., Ishikawa K., Saito T.: A cytochemical investigation of the cyclic nucleotide metabolizing enzymes in the Eimer's organ of the mole. Proceedings of the 10th International Congress on Histochemistry and Cytochemistry, pp.1022-1023, 1996.
- 5) Iseki H., Shibanaï S., Ishikawa K., Saito T.: A cytochemical study on the enzyme activity in the mole's Eimer's organ. Proceedings of the 10th International Congress on Histochemistry and Cytochemistry, pp.1024-1025, 1996.
- 6) Sugimoto K.: Taste disorders. In: General Diagnosis, Ed. Masuda T., Suna Shobo, Tokyo, pp.325-334, 1996. (in Japanese)
- 7) Sugimoto K.: Role of second messenger system in taste transduction process. In: Science of Taste, New Edition, Ed. Sato M., Ogawa H., Asakura Shoten, Tokyo, pp.116-124, 1997. (in Japanese)
- 8) Ninomiya Y., Kawai K., Nakashima K., Kobayashi H., Sugimoto K.: Modification of responsiveness of taste receptor cells to sweeteners by the action of the mouse diabetic *db* gene. In: Progress in Obesity Research 8 (Ailhaud G and Guy-Grand B, Eds.), John Libbey & Co. Ltd., London, pp.161-166, 1999.
- 9) Sugimoto K.: Physiology for oral health care. -Facial expression. Sensory function. Secretory function. In: The First Study of Dental and Oral Care, Ed. Arai S., Ogura H., Takarada H., Urasawa K., Ishiyaku Syuppan, Tokyo, pp.85-94, 2000. (in Japanese)

C. Review Articles

- 1) Sugimoto K.: Taste reception mechanisms. Adv. Neurol. Sci. 37(5): 775-787, 1993 (in Japanese).
- 2) Sugimoto K.: Taste transduction mechanisms. J. Stomatol. Soc., Jpn. 61(3): 469, 1994 (in Japanese).
- 3) Sugimoto K., Iseki H.: Aging and taste sensation. J. Stomatol. Soc., Jpn. 63(4): 632, 1996 (in Japanese).
- 4) Nozaki S.: Generation and control of masticatory rhythms. Jpn. J. Masticat. Health Soc. 7(2): 16-33, 1997 (in Japanese).
- 5) Nozaki S.: Neural mechanisms involved in the regulation of feeding behavior. J. Stomatol. Soc., Jpn. 65(4): 391, 1998 (in Japanese).
- 6) Ninomiya Y., Nakashima K., Kobayashi K., Kawai K., Sugimoto K.: Diabetes and taste. Chemist. Biol. 37(2): 43-46, 1999 (in Japanese).