

## Maxillofacial Orthognathics

### 1. Staffs and Students (April, 2009)

Professor	Keiji MORIYAMA	
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Junior Associate Professor	Takashi ONO,	Naoto SUDA
Assistant Professor	Yoshiyuki BABA,	Tatsuo KAWAMOTO,
	Michiko TSUJI,	Takuya OGAWA
GCOE Research Associate Professor	Naoto HARUYAMA	
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	Hideki KAMATA,	Hiroyuki SUZUKI,
	Nana OKAMOTO,	Kaori TAKECHI,
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	Yousuke ITO,	Naomi KANNO,
	Jyunpei MORITA,	Yuko YASUDA,
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### 2. Purpose of Education

The goal of the Education program in Maxillofacial Orthognathics is to provide an education related to craniofacial growth and development, and stomatognathic function in order to develop proficiency in improvement of a wide variety of malocclusions and malformations.

Fourth and fifth dental students will attend lectures and clinical laboratories, and fifth and sixth students will participate in the patient care clinic to acquire a broad range of general knowledge of a wide variety of malocclusions and malformations, and involvement of treatment. Tutorial lessons will be also provided for the students as a part of clinical lecture, so that it supports them to understand cleft lip and/or palate and other congenital craniofacial conditions.

The Graduate Program provides the biological science education related to the control mechanism of patterning and morphogenesis in the craniofacial region using molecular genetics and morphological analysis through patients born with cleft lip and/or palate and other congenital craniofacial conditions. It also provides the clinical education of orthodontics necessary support to gain an appreciation of their role in the team approach to comprehensive patient care.

### 3. Research Subjects

- 1) Basic and clinical studies of cleft lip and/or palate and other congenital craniofacial conditions
- 2) Morphological and physiological studies of facial deformity
- 3) Physiological study about control mechanism of stomatognathic function
- 4) Functional MRI study in the craniofacial region
- 5) Evaluate changes in soft tissue following maxillofacial surgery using 3D images

### 4. Clinical Services

In the Clinic, we treat a large number of patients presenting a variety of malocclusions to be assigned to group practice in order to gain valuable experience in diagnosis, treatment planning, orthodontic therapy, and patient management. Especially for patients born with cleft lip and/or palate and who need craniofacial and orthognathic surgery, we have clinical meetings and conferences for the comprehensive care through a team approach with maxillofacial surgeons, maxillofacial prosthodontists and speech therapists. We also provide supportive counseling to families who have members with congenital anomalies before the treatment.

### 5. Publications

#### Original Article

1. Hiasa M, Abe M, Nakano A, Oda A, Amou H, Kido S, Takeuchi K, Kagawa K, Yata, Hashimoto T, Ozaki S, Asaoka K, Tanaka E, Moriyama K, Matsumoto T. GM-CSF and IL-4 induce dendritic cell differentiation and disrupt osteoclastogenesis through M-CSF receptor shedding by up-regulation of TNF- $\alpha$  converting enzyme (TACE). *Blood*, 114(20):4517-26, 2009.
2. Kusumah SW, Suzuki S, Itoh K, Higashino R, Ohbayashi N, Kurabayashi T, Moriyama K. Morphological observation of the medial pterygoid muscle by the superimposition of images obtained by lateral cephalogram and MRI. *J*

- Orthod. 36(4):243-52, 2009.
3. Kondo Y, Takahashi T, Oba Y, Tanaka E, Moriyama K. Blood flow distribution of repaired lip in cleft lip patients. *Angle Orthodont.* 79(6):1182-7, 2009.
  4. Hattori M, Torii C, Yagihashi T, Izumi K, Suda N, Ohyama K, Takahashi T, Moriyama K, Kosaki K. Diagnosis of Russell-Silver syndrome by the combined bisulfite restriction analysis-denaturing high-performance liquid chromatography assay. *Genet Test Mol Biomarkers.* 13(5):623-30, 2009.
  5. Suda N, Kawafuji K, Moriyama K. Multidisciplinary management including endodontics, periodontics, orthodontics, anterior maxillary osteotomy and prosthetics in an adult case with a severe openbite. *Orthod Waves.* 68(1), 42-49, 2009.
  6. Jinno K, Takahashi T, Tsuchida K, Tanaka E, Moriyama K. Acceleration of palatal wound healing in Smad3-deficient mice. *J. Dent. Res.* 88(8):757-61, 2009.
  7. Wang Y, Groppe JC, Wu J, Ogawa T, Mues G, D'Souza RN, Kapadia H. Pathogenic mechanisms of tooth agenesis linked to paired domain mutations in human PAX9. *Hum Mol Genet.* 18(15):2863-74, 2009.
  8. Kitase Y, Yokozeki M, Fujihara S, Izawa T, Kuroda S, Tanimoto K, Moriyama K, Tanaka E. Analysis of gene expression profiles in human periodontal ligament cells under hypoxia: the protective effect of CC chemokine ligand 2 to oxygen shortage. *Arch Oral Biol.* 54(7):618-24, 2009.
  9. Minato A, Ono T, Miyamoto JJ, Honda E, Kurabayashi T, Moriyama K. Preferred chewing side-dependent two-point discrimination and cortical activation pattern of tactile tongue sensation. *Behav Brain Res.* 203(1):118-26, 2009.
  10. Inoue-Arai MS, Ono T, Honda E, Kurabayashi T, Moriyama K. Motor coordination of articulators depends on the place of articulation. *Behav Brain Res.* 16:199(2):307-16, 2009.
  11. Miraoui H, Oudina K, Petite H, Tanimoto Y, Moriyama K, Marie PJ. Fibroblast growth factor receptor 2 promotes osteogenic differentiation in mesenchymal cells via ERK1/2 and protein kinase C signaling. *J Biol Chem.* 284(8):4897-904, 2009.
  12. Yagi Y, Suda N, Yamakoshi Y, Baba O, Moriyama K. In vivo application of amelogenin suppresses root resorption. *J Dent Res.* 88(2):176-81, 2009.
  13. Suzuki S, Sreenath T, Haruyama N, Honeycutt C, Terse A, Cho A, Kohler T, Müller R, Goldberg M, Kulkarni AB. Dentin sialoprotein and dentin phosphoprotein have distinct roles in dentin mineralization. *Matrix Biol.* 28(4):221-9, 2009.
  14. Sato S, Tsuchiya M, Komaki K, Kusunoki S, Tsuchiya S, Haruyama N, Takahashi I, Sasano Y, Watanabe M. Synthesis and intracellular transportation of type I procollagen during functional differentiation of odontoblasts. *Histochem Cell Biol.* 131(5):583-91, 2009.
  15. Haruyama N, Sreenath TL, Suzuki S, Yao X, Wang Z, Wang Y, Honeycutt C, Iozzo RV, Young MF, Kulkarni AB. Genetic evidence for key roles of decorin and biglycan in dentin mineralization. *Matrix Biol.* 28(3):129-136, 2009.
  16. Hatakeyama J, Fukumoto S, Nakamura T, Haruyama N, Suzuki S, Hatakeyama Y, Shum L, Gibson CW, Yamada Y, Kulkarni AB. Synergistic Roles of Amelogenin and Ameloblastin. *J Dent Res.* 88(4):318-322, 2009.

#### Review Article

1. Suda N, Moriyama K. Human diseases accompanied with abnormal tooth roots. *Journal of Oral Biosciences.* 51(4):199-204, 2009.
2. Suda N, Shiga M, Ganburged G, Moriyama K. Marfan syndrome and its disorder in periodontal tissues. *J Exp Zoolog B Mol Dev Evol.* 312B(5):503-9, 2009.