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### Curriculum Vitae

- 1987 D.D.S., Graduate of Matsumoto Dental University, Japan
- 1996 Ph. D, title by School of Dentistry, Aichi-Gakuin University, Japan
- 2002 Associate Professor, Department of Orthodontics, Matsumoto Dental University
- 2002.12.-2003.11. Research Fellow of Department of Orthodontics, University of Washington, Seattle, Washington, USA
- 2006 Specialist appointed by Japanese Orthodontics Society (No.136)
- 2008 Certified physician of Japan Association of Dental Traumatology (No.67)
- 2007 Professor, School of Dentistry, Matsumoto Dental University  
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## SL-6

# Bone Marrow Stromal Cells Recovering the Periodontal Ligament in Mouse Experimental Occlusal Trauma Model

It is known that traumatic occlusion in the presence of periodontal tissues along with plaque-induced inflammation may have an important contributory role in the progression of periodontal disease. The periodontal ligament and histopathology-like consideration is mostly experimental of rats, macaque monkeys and beagle dogs as seen in animal experiments performed so far. However, the report did not find a focus point at cytological kinetics of periodontal ligament due to excessive occlusal loading. Thus, we focused the cytological kinetics in the periodontal tissues by excessive occlusal loading. In this study, we established an experimental model of occlusal trauma in mice, and analyzed histopathological

and immunohistochemical changes of cytological kinetics in periodontal ligament of the lower left first molar. Using a model of experimental occlusal trauma in mice, we investigated cytological kinetics of periodontal ligament by means of histopathological, immunohistochemical, and photographic analysis methods. Periodontal ligament cells at furcation areas of molar teeth in the experimental group on day 4 showed a proliferation tendency of periodontal ligament cells. The cells with a round-shaped nucleus deeply stained the hematoxylin and increased within the day 4 specimens. Ki67 positive nuclei showed prominent increase in the group on days 4 and 7. Green Fluorescent Protein (GFP) positivity also revealed cell

movement but was slightly slow compared to Ki67. It indicated that restoration of mechanism seemed conspicuous by osteoclasts and macrophages from bone-marrow-derived cells for the periodontal ligament at the furcation area. It was suggested that the remodeling of periodontal ligament with cell acceleration was evoked from the experiment for the group on day 4 and after day 7. Periodontal ligament at the furcation area of the molar teeth in this experimental model recovered using the cells in situ and the bone-marrow-derived cells.

**Keywords:** GFP, Ki67, Mouse, Occlusal trauma, Periodontal ligament