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## Oral Cancer-induced regulatory T cells (Tregs) suppress osteoclast differentiation

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**Objective:** Regulatory T cells (Tregs) have been demonstrated to inhibit inflammatory bone destruction through suppressing osteoclast differentiation in the bone microenvironment of inflammatory diseases. However, very little work has been done to characterize Tregs in the microenvironment of cancer bone invasion. We herein demonstrate the mechanism of interaction between Tregs and osteoclasts in a murine model of oral cancer to elucidate the role of Tregs in the bone invasion of oral cancer.

**Methods:** SCCVII mouse oral squamous cell carcinoma cells were administered into the right masseter region of a C3H/HeN mouse. After 14 days of tumor inoculation, mice were sacrificed and Tregs were purified from the tumors. Tregs were then co-cultured with bone marrow CD11b+ cells in the absence or presence of RANKL and M-CSF for 4 days. Secreted tartrate-resistant acid phosphatase (TRACP) 5b was determined as a marker of osteoclast number.

**Results:** Attenuation of osteoclast-derived TRACP5b was observed in the co-culture of tumor derived Tregs and bone marrow CD11b positive cells, and this attenuation of TRACP5b was ameliorated by neutralization of cytotoxic T-lymphocyte-associated antigens-4 (CTLA-4).

**Conclusions:** These results indicate that Tregs may play a protective role in bone invasion of oral cancer via suppression of osteoclast differentiation, and CTLA-4 may be a key regulator for the suppression of osteoclasts by Tregs in oral cancer.

### Biography

Makoto Noguchi has started his career as a Technical Officer, the Department of Oral Surgery, National Medical Center in Tokyo (1983-87). He headed the Department of Oral & Maxillofacial Surgery, Sapporo Medical University School of Medicine (1987-2005), where he had pursued his career as an Oncological Surgeon for Oral Cancer: Resident (1987-88), Assistant 1988-1997), Assistant Professor (1997-2002) and Associate Professor (2002-2005). During that time, he received a PhD degree from Sapporo Medical University by working on Oral Cancer (1993). He served as a professional Oral and Maxillofacial Surgeon (1994) and Diplomate (Consultant) of Oral and Maxillofacial Surgeon, Board Certified of Japanese Society of Oral and Maxillofacial Surgeons (1999). He has currently organized the Department of Oral & Maxillofacial Surgery, Graduate School of Medicine and Pharmaceutical Sciences for Research, University of Toyama as a Professor and Chair since 2007.

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