



Global Center of Excellence (GCOE) Program,  
“International Research Center for Molecular Science  
in Tooth and Bone Diseases”,

Program Leader Masaki Noda

Tokyo Medical and Dental University is a distinguished institute and known as a world center for the study of **"tooth" and "bone" diseases**. Tokyo Medical and Dental University received top class ranking in the “Research Laboratories Ranking of Japan” (given by “Thomson ISI Press Release”) according to the average number of paper citations for the last three years (2005-2007) among universities in Japan. The purpose of this Global COE (G-COE) program is to form a world-top class research center in the field of tooth and bone diseases. This program is a new development as well as succession of currently on going 21st century COE (21COE) program, which will be completed at the end of March 2008. We will promote our cutting-edge studies on tooth and bone diseases, and form a unique **international educational research center** that will nurture young researchers of the next generation who will work globally on **molecular science in "tooth" and "bone" diseases**. This is critical for the future welfare of all human beings, and is of particular importance in Japan, the world's fastest aging society.

In modern developed countries, maintenance of not only life expectancy, but also “health life expectancy” is an important issue, and “tooth” and “bone” diseases are major problems that need to be urgently addressed in this regard. In **the 21st century COE program**, this center has made a **remarkable accomplishment** in clarification of the mechanism of loss of tooth and bone, and in discovery of novel methods for tooth and bone reconstruction by finding “key elements” of the regulatory systems in the function of osteoclasts and osteoblasts, and “key elements” in initiation for clinical medicine. However, identification of individual “key elements” alone is not enough to understand the mechanisms of the comprehensive pathology and onset of the diseases. Thus, in this new proposal of the Global COE center, such “elements” of basic studies and “elements” of clinical research discovered in the previous 21<sup>st</sup> Century COE program will be **integrated** and developed into three areas including (1) elucidation of basic **molecular mechanisms in pathology** of the diseases leading to loss of **tooth and bone**, (2) **fundamental clinical research for diagnosis and therapeutic treatments**, and also (3) advancement of **functional genomic studies on tooth and bone diseases** based on genomic and epigenomic science. Through the research into these three areas, this center will aim to become the highest standard organization in the world in terms of **“integrated research on molecular science for tooth and bone diseases” (“Dento-Medomix”)**. Moreover, we will further develop the “international research network”, which was initiated during 21st century COE program. Through this, we will aim to function as “an intelligence hub” that will create innovative science and lead the research of the world to provide cutting edge information worldwide.