

大学院特別講義のご案内

日時: 12月2日(火) 17時～18時30分

場所: D棟4階 第3講義室

講師: Dr. Boyen Huang (Associate Professor of Paediatric Dentistry, Dentistry Director of International Affairs, James Cook University, Cairns, Australia)

演題: Applications of genetics in paediatric dentistry

要旨: Dental anomalies and craniofacial deformities could result from genetic, behavioural, environmental or idiopathic factors. Among these, genetic factors were most often investigated and some relevant findings have been reported. These included runt-related transcription factor 2 (RUNX2) for cleidocranial dysplasia, adenomatous polyposis coli (APC) for familial adenomatous polyposis, Tenascin XB (TNXB) and Collagen type III alpha 1 (COL3A1) for Type III Ehlers-Danlos syndrome. Earlier researchers and clinicians focused on prevention and treatment of the genetic disorders. Since the past decade, investigations in some genetic defects have shown a potential value of tooth regeneration which may benefit most patients with missing teeth.

Before applying to humans, most medical and genetic approaches were conducted in animal models. Nevertheless, animal models might not appropriately duplicate human conditions. This could be seen in Runx2 deficient mice that did not show any supernumerary teeth. Our recent studies identified prospective signs of cleidocranial dysplasia in CCAAT/enhancer-binding protein beta (Cebpb) deficient mice, including multiple supernumerary teeth, hypoplastic clavicles and craniofacial deformities. These could provide an answer to some cleidocranial dysplasia cases that have no RUNX2 mutation, since RUNX2 and CEBPB work closely in odontogenesis and bone formation.

Because some genetic disorders are not lethal, the process of natural selection preserved the inherited abnormalities that may be beneficial. The risk of genetic applications from these disorders could also be reduced. As paediatric dentists have a higher likelihood to identify genetic disorders relevant to dental and craniofacial development, our roles should not be limited to prevention and treatment of these disorders. Instead, we can work in collaboration with other medical and dental specialists to investigate future applications of these non-lethal genes.

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