

# 大学院特別講義のご案内

日時: 2015年12月11日(金) 16:35 ~ 18:05

場所: 口腔科学研究棟5F 弓倉記念ホール

International Symposium 2015

## Oral and Craniofacial Development and Diseases

Plenary lectures

Session Chair: **Takashi Yamashiro** (Osaka Univ.)

### "Making Faces: The role of Cranial Neural Crest Cells in Neurocristopathies and Ribosomopathies"

**Paul Trainor** (Stowers Institute for Medical Research)

Craniofacial anomalies account for approximately one-third of congenital defects. The majority of the bone, cartilage, connective and peripheral nerve tissues in the head and face are derived from a transient progenitor cell population called the neural crest. Consequently, defects in neural crest cell patterning are thought to underlie most congenital craniofacial anomalies. Understanding the etiology and pathogenesis of craniofacial malformations therefore is dependent upon a thorough knowledge of the mechanisms that govern neural crest cell formation, migration, survival and differentiation. Ribosome biogenesis is integral to cell growth and proliferation through its roles in translating mRNAs and building proteins. Disruption of any step in the process of ribosome biogenesis can lead to congenital disorders termed ribosomopathies. Given the ribosome's importance in all cell types, it is remarkable that disruptions in the global process of ribosome biogenesis leads to congenital anomalies with specific phenotypes including defects in the craniofacial, axial and limb skeleton. This is exemplified in conditions such as Treacher Collins syndrome and Acrofacial dysostosis, Cincinnati type, which are associated with mutations in TCOF1, POLR1C or POLR1D, and POLR1A respectively. Our research on the etiology and pathogenesis of Treacher Collins syndrome and Acrofacial dysostosis, Cincinnati type, has revealed the critical role of rDNA transcription, one of the rate-limiting steps of ribosome biogenesis, in neural crest cell development. Furthermore, we have determined that the spatiotemporal regulation of rRNA transcription can mechanistically underlie the phenotypic specificity of each ribosomopathy. Thus integrating ribosome biogenesis with regulators of neural crest cell, cartilage and bone development serves growth and differentiation during skeletal development, the perturbation of which results in congenital neurocristopathies and ribosomopathies. Furthermore, our work is facilitating the development of therapeutic approaches to prevent the pathogenesis of craniofacial malformation syndromes, which has broad implications for other congenital birth defects of similar etiology to Treacher Collins syndrome.

※「口の難病」セミナーを兼ねております。

(問い合わせ先: 「口の難病」プロジェクト・水引・内線2704)