Regulatory mechanisms of osmotic stress transcription factor 1 in the Japanese eel (*Anguilla japonica*) gills upon osmotic stress

Cheng-Hao Tang and Tsung-Han Lee
Department of Life Sciences, National Chung-Hsing University, Taiwan

Euryhaline teleosts can survive in environments with acute changes of salinity. Gills of euryhaline teleosts directly contact with aquatic environment and are the important effector organ upon salinity challenge. Therefore, they are excellent models for studies on adaptive mechanisms of osmotic stress. Previous studies illustrated that gill osmotic stress transcription factor (Ostf1) in euryhaline teleosts was a critical element during hypertonic challenge. However, the upstream regulatory mechanisms of gill Ostf1 so far were not identified. The approach of *in vitro* organ culture was used in the present study to explore the potential mechanisms of signal transduction (i.e., MAPKs and cortisol) in regulation of Ostf1 expression when gills were exposed to hypertonic condition. Our results indicated p38 MAPK and cortisol were the essential upstream molecules involved in up-regulation of Ostf1 expression upon hypertonic challenge.