Emerging membrane proteins for targeted therapies in urinary bladder urothelial carcinoma

Shirley Shiue 薛佑玲, PhD

Institute of Precision Medicine/Institute of Biomedical Sciences

National Sun Yat-sen University, Kaohsiung, Taiwan

Although the mortality of urinary bladder urothelial carcinoma is below average among solid tumors, frequent recurrence casts heavy economic burden for the National Health Insurance. Membrane proteins account for approximately 1/3 of the protein encoded by the human genome and play versatile functions including cell-to-cell communication, receptor-mediated signal transduction, selective transport and pharmacological actions. The success of Herceptin in combination with chemotherapy in erb-b2 receptor tyrosine kinase 2 (*ERBB2*)-positive breast cancer is a role-model of immunotherapy. We recently focus on the studies of the underlying molecular mechanisms of several novel membrane proteins. In a series of clinical specimens, in vitro and in vivo studies, we found that epithelial membrane protein 2 (*EMP2*), transmembrane and coiled-coil domains 1 (*TMCO1*) and gremlin 1, DAN family BMP antagonist (*GREM1*) are critical tumor suppressors while cell migration inducing hyaluronidase 2 (*CEMIP2*), transmembrane protein 158 (*TMEM158*) and receptor tyrosine kinase like orphan receptor 2 (*ROR2*) are notorious oncogenes in urinary bladder urothelial carcinoma. We are currently developing agonists for the former ones and antagonists as well as humanized antibodies for the latter ones.

**Keywords**: urinary bladder urothelial carcinoma, membrane proteins, targeted therapies