TMCO1 is a novel target for cancer chemotherapy

Ashley Przybylowicz
*Cleveland State University*

Ruhan Wei
*Cleveland State University*

Qiaoyun Zheng
*Cleveland State University*

Follow this and additional works at: https://engagedscholarship.csuohio.edu/u_poster_2018

How does access to this work benefit you? Let us know!

Recommended Citation
Przybylowicz, Ashley; Wei, Ruhan; and Zheng, Qiaoyun, "TMCO1 is a novel target for cancer chemotherapy" (2018). *Undergraduate Research Posters 2018*. 32.
https://engagedscholarship.csuohio.edu/u_poster_2018/32
**TMCO1 is a novel target for cancer chemotherapy**

College of Sciences and Health Professions

**Student Researchers:** Ashley Przybylowicz, Ruhan Wei, and Qiaoyun Zheng

**Faculty Advisor:** Aimin Zhou

**Abstract**

Transmembrane and coiled-coil domains 1 (TMCO1) is a protein of 22 KDa highly conserved in amino acid sequence among mammalian species and functions as an endoplasmic reticulum (ER) Ca\(^{2+}\)-load-activated Ca\(^{2+}\) channel. Homozygous frameshift mutation in TMCO1 causes distinctive craniofacial dysmorphism, skeletal anomalies, and mental retardation. However, its physiological functions are largely unknown. In this study, we found that TMCO1 was co-localized with microtubules as determined by immunohistostaining and a co-sedimentation assay. Interestingly, TMCO1 was highly expressed in the invasive front of high grade lung cancer and metastatic cancer cells of clinical specimens. To further investigate the biological role of TMCO1 in lung cancer, we knocked it down in A549 cells, a human lung adenocarcinoma cell line, by using shRNA lentiviral particles. Disruption of TMCO1 in the cells resulted in delayed microtubule polymerization and remarkably increased acetylation of \(\alpha\)-tubulin. In addition, A549 cells lacking of TMCO1 grew significantly slower than the control cells. Taken together, our findings suggest that TMCO1 may be a therapeutic target for lung cancer treatment.