

New Small Molecule Inhibitors of ACK1 for Treating Cancer and Dyskinesia in Parkinson's Disease

(FCCC Ref. 264-JP)

Background

Protein kinases are among the most important classes of therapeutic targets because of their central roles in cell signaling pathways and the presence of a highly conserved ATP-binding pocket that can be exploited by synthetic chemical compounds. However, achieving highly selective kinase inhibition is a significant challenge. Activated Cdc42-associated Kinase 1 (ACK1) is a non-receptor tyrosine kinase whose abnormal activation has been confirmed to promote the occurrence and development of many cancers. ACK1 is frequently overexpressed in various aggressive tumors, making ACK1 a promising potential antitumor target. Blockage of ACK1 has been proven to inhibit cancer cell survival, proliferation, migration, and radiation resistance. Despite many efforts to develop ACK1 inhibitors, to date, no specific small molecule inhibitors are in clinical trials.

Summary of the Invention

Renown scientists from Fox Chase Cancer Center and Reaction Biology Corporation described a class of chemical compounds that inhibit selectively ACK1 and proposed their utility in the treatment of cancer and L-dopa induced dyskinesia in Parkinson's disease.

Reference: Anastassiadis, T., *et al.*, Comprehensive assay of kinase catalytic activity reveals features of kinase inhibitor selectivity. *Nat Biotechnol* 29, 1039–1045 (2011). <https://doi.org/10.1038/nbt.2017>

Advantages

- Selective inhibition of anti-tumor target ACK1.
- New small molecule inhibitors for treating ACK1-associated diseases like breast, ovarian, pancreatic, lung and prostate cancers, and L-dopa induced dyskinesia.

IP Status

Patent [US 8,658,655](#) issued on February 25, 2014.

For Partnering/Licensing information, please contact:

Inna Khartchenko, MS, MBA
Director, Technology Transfer and New Ventures
Fox Chase Cancer Center
Inna.Khartchenko@fcc.edu