UNIVERSITY OF TEXAS ARLINGTON | OFFICE OF TECHNOLOGY MANAGEMENT

Compositions and methods for inhibiting redox-sensitive GTPases

UTA (11-09)

Technology Need:

RhoC GTPases have increasingly attracted clinical interest because of the emerging evidence of their role in metastatic inflammaroty breast cancer, the most lethal form of locally advanced breast cancer. Thiopurine (TP) prodrugs have been widely used to treat patients with cancer, autoimmune disorders, as well as organ transplant recipients. Recent studies have indicated that TP prodrugs target and inactivate Rho GTPases, which may be attributable to the therapeutic effect of TPs on the immune system as well as on inflammatory bowel disease. Currently, there are no drugs that directly and effectively target the Rho GTPases to treat metastatic tumors. Since early diagnosis and blockage of metastasis are keys to increasing the rate of survival, there is a need for a chemotherapeutic agent targeting and inhibiting Rho GTPase-overexpressed metastatic cancer.

Solution/ Offering:

Researchers at UT Arlington have developed pharmaceutical composition for inhibiting a redox-sensitive RhoC GTPases and methods for treating metastatic inflammatory breast cancer and other conditions associated with redox-sensitive GTPases. These compositions are the combination of TP drugs, selected guanine analogs, with a redox agent that target and inhibit many Rho subfamily GTPases. UT Arlington studies have shown that this drug combination effectively blocks metastasis of inflammatory breast cancer in vitro. These results also deliver the basis for a strategy to develop such agents for immune disorders as well as diseases of the heart, lungs and other organs when such diseases are associated with dysregulation of other GTPases.

Value Proposition:

- ✓ Effective anti-metastasis agents
- ✓ Novel vaso-relaxatioin agents.
- ✓ Minimal cytotoxicity

Industrial application:

- ✓ Anti-metastasis
- ✓ Vaso-relaxation
- ✓ Inflammable Breast Cancer
- ✓ Heart diseases

Patent Status:

- ✓ Patent Application: US 14/227,712

Current Stage:

- ✓ Prototype

Dr. Heo received his Ph.D. in University of Wisconsin-Madison. He is a professor in the department of chemistry and biochemistry in UTA. His research interest is elucidating the mechanism by which (i) redox-active small GTPases, including the photo-oncoprotein p21Ras(Ras), and (ii) redox-active phosphatases are regulated by redox agents.

Contacts:

Sharon Ngwenya, Ph.D.
202 E. Border Street, Suite 101
Arlington, TX 76019

P 817.272.1130
F 817.272.5808
sngwenya@uta.edu
otm@uta.edu