

Novel Biomarker Necessary for Survival of Pre-cancer and Cancer Cells

Medicine has made a clear shift away from acute crisis intervention toward disease mitigation prior to presentation. This shift has allowed for an increase of therapeutic interventions, such as colonoscopies and mammograms, with a focus on prognosis. A novel technology developed at WPI has been used to identify a biomarker associated with *pre*-cancerous cells – cells that have defining characteristics typical of cancer cells, but that do not yet form tumors. The revolutionary potential of this research is the link between the biomarker and cells in a *pre*-cancer state, allowing for development of prognostic screens and therapeutics that target cells associated with a disease that patients have yet to develop.

Experimentally, this biomarker has been shown to be necessary for survival of both pre-cancer and cancer cells using knockdown techniques. Knockdown of the biomarker within the highly aggressive brain cancer cells, glioblastomas, causes complete cell death after only 6 days. This highly aggressive brain cancer, with a 5-year survival of only 18%, currently has no cure and the only treatment options are invasive surgery and chemotherapy. Testing for the presence of the biomarker described here could offer early, pre-disease treatment strategies for highly aggressive cancers to increase patient survival, treatment efficacy, and improve overall quality of life.

Benefits

- Identified a specific biomarker that both pre-cancer and cancer cells need to survive
- Ability to identify and diagnose cells in a *pre*-cancer state, before a disease has even developed
- Potential to treat pre-cancer cells, before patients ever develop cancer

Inventors

Sarah Hernandez
Tanja Dominko

USPTO Number

62/090,591

Contact

Todd Keiller, Director
Office of Intellectual Property
and Innovation
tkeiller@wpi.edu
+1 508 831 4970



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