



25 Breakthroughs in Georgia



NO. 5:

How cancer manipulates the body's immune system

What allows a mother's body to accept a growing fetus, rather than attack it as a foreign entity?

That very question led two Georgia Regents University scientists to uncover a potentially revolutionary way to fight cancer.

It all hinges on a small enzyme with a long name: indoleamine 2,3-dioxygenase, or IDO. The enzyme is important in a healthy pregnancy because it alerts the mother's immune system that the fetus "belongs."

But IDO's signaling system can also be hijacked. GRU's Andrew Mellor, a GRA Eminent Scholar, and his colleague David Munn discovered that cancerous cells use IDO to disarm the immune system's natural defenses — that is, they exploit the same mechanism designed to protect a fetus.

They were the first to identify IDO's manipulating role in cancer, and their discovery represents a sea change in understanding how the immune system works. The breakthrough also has the potential to improve treatments for infections, autoimmune diseases and other clinical syndromes.

In partnership with publicly traded NewLink Genetics, Mellor, Munn, and their fellow GRU researchers have developed drugs to inhibit IDO, so the immune system can fight back against cancer. For patients, this may mean lower doses of radiation and chemotherapy and a smoother road to recovery.

Clinical trials are underway at GRU and elsewhere to test the effects of IDO-inhibitor drugs in treatment for glioblastoma, melanoma and a host of other cancers — therapies that could aid in the battle against cancer.

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