

Researchers explore function of cancer-causing gene

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Developmental biologists at the University of Georgia are discovering new roles for a specific gene known as Max's Giant Associated protein, or MGA. A little studied protein, MGA appears to control a number of developmental processes, and also may be connected to cancer development.

The researchers detail their findings in a paper published recently in the journal *Developmental Cell*.

"The same genes that are involved in building a person during [embryonic development](#) can mutate and cause cancer later in life," said Scott Dougan the study's principal investigator and Georgia Cancer Coalition Distinguished Cancer Scientist in UGA's Department of Cellular Biology. "No one has done a systematic study of MGA, but now that some studies connect it to cancer, there is tremendous interest."

The most common cancer associated with MGA is chronic lymphocytic leukemia, a blood and [bone marrow disease](#) in which the body produces too many [white blood cells](#). Preliminary tests suggest that this [cancer](#) might develop when MGA does not successfully control the activities of another protein known as MYC, which contributes to tumor growth.

Dougan and his team of researchers used their own methods to change the levels of MGA in the embryos of zebrafish to see if they could discover any other roles for MGA.

They found that MGA also helps control expression of the Bone Morphogenetic Proteins, or BMP, which, as the name implies, are responsible for bone development in the embryo. In adults, however, changes in BMP activity can result in tumor development, and MGA may be part of this detrimental transformation.

"Scientists are only beginning to understand the roles this MGA protein plays, but our tests show that MGA may control many more processes than first imagined," said Dougan, who is also a member of UGA's Developmental Biology Alliance. "MGA may be involved in a number of other cancers, but we need to do more research before we're sure."

In the coming months, Dougan and his research team plan to further examine the roles of MGA to determine when it controls MYC, when it controls BMP and how it is involved in tumor formation.

"This is basic science, and we need investigations like these to understand the fundamentals of our biology," Dougan said. "Once we have this understanding, we can begin to develop new therapies to treat diseases in new, more effective ways."

More information: [http://www.cell.com/developmental-cell/abstract/S1534-5807\(14\)00026-4](http://www.cell.com/developmental-cell/abstract/S1534-5807(14)00026-4)

Provided by University of Georgia

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