New therapeutic target may improve treatment for brain cancer

Preliminary evidence shows that inhibition of a specific protein decreases cell proliferation

Boston (March 29, 2015) – “Glioblastoma Multiforme (GBM) is the most common primary brain tumor in adults and among the most deadly. Unfortunately, after standard care treatment, patients have an approximate survival of one year. Cancer is a complex disease that can morph in order to adapt to new environments and because of this, achieving effective treatments is extremely difficult,” said Alina Monteagudo, a graduate student at the University of Rochester who conducted the research.

The research will be presented at the American Society for Pharmacology and Experimental Therapeutics (ASPET) Annual Meeting during Experimental Biology 2015.

Monteagudo’s research indicates a new possible chemotherapeutic target for treating GBM: transglutaminase 2 (TG2), a multifunctional protein that can regulate cell adhesion and motility. Given these documented functions of TG2, Monteagudo and her colleagues in the laboratory of Gail Johnson, Ph.D., at the University of Rochester, were interested in determining if TG2 played an important role in GBM cell growth. Based on previous research, Monteagudo and colleagues hypothesized that inhibition of TG2 would decrease GBM cell growth and survival. In order to test their hypothesis, they used primary GBM human-derived cells in the form of 3D spheres. The spheres retain the molecular integrity of the primary tumor to better mimic what is actually happening in the brain. Additionally, the study used two different established GBM cell lines to also look at proliferation using different techniques.

The researchers found that NC9, a novel drug specific for transglutaminases that was made by a collaborator, Jeffrey Keillor, Ph.D., at the University of Ottawa, effectively inhibited TG2 and decreased GBM cell growth and survival. These data indicate that TG2 is a possible chemotherapeutic target for GBM treatment.

The next step for this study will be to test the inhibitor in mice. The researchers will need to establish which route of administration will be more efficient for NC9’s delivery. Additionally, they need to recapitulate GBM in a mouse model to see if inhibition of TG2 will decrease tumor formation. Results from these studies will indicate the clinical impact of the research. Potentially this could offer a more specific and effective treatment for GBM patients.
Alina Monteagudo will present the findings during the Experimental Biology 2015 meeting on Sunday, March 29, from 12:30-2:30 p.m. at the poster session in Exhibit Hall AB, Boston Convention & Exhibition Center.

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**About Experimental Biology 2015**
Experimental Biology is an annual meeting comprised of more than 14,000 scientists and exhibitors from six sponsoring societies and multiple guest societies. With a mission to share the newest scientific concepts and research findings shaping clinical advances, the meeting offers an unparalleled opportunity for exchange among scientists from across the United States and the world who represent dozens of scientific areas, from laboratory to translational to clinical research. [www.experimentalbiology.org](http://www.experimentalbiology.org)

**About the American Society for Pharmacology and Experimental Therapeutics (ASPET)**
ASPET is a 5,100 member scientific society whose members conduct basic and clinical pharmacological research within the academic, industrial and government sectors. Our members discover and develop new medicines and therapeutic agents that fight existing and emerging diseases, as well as increase our knowledge regarding how therapeutics affects humans. [www.aspet.org](http://www.aspet.org)

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**MEDIA CONTACT**
Anne Johnson
571-271-1986
media@faseb.org

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