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**A new preclinical human cancer model demonstrates successful growth of solid tumors of diverse tissue origins in unfertilized avian eggs**

Sarah Crawford, Brielle Hayward, Paulina Mrowiec, Llarisa Juchniewich, Alexandre Byer-Alcorace, Sara Skrabi and Latrice Grant  
Southern Connecticut State University, USA

A novel pre-clinical approach developed in this laboratory for the first time demonstrates the successful growth of human solid tumors of the brain, breast, colon and pancreas in unfertilized chick eggs. The research suggests that the avian system is a suitable and in many ways more advantageous culture system for the growth of human tumors than current *in vitro* and mouse model systems. Growth advantages offered by the avian system include:

- High success transfer rate (at least 80%) from *in vitro* spheroid culture to avian culture.
- Rapid establishment within days of solid tumor growth.
- Broad spectrum application to tumors of diverse tumor type grown successfully in this system, including tumor spheroids of the brain (glioblastoma), pancreas (ductal adenocarcinoma), colon, and breast (primary and metastatic origins).
- Capacity for long-term cultivation not possible in fertilized chick eggs by serial transfer.
- Avian embryonic environment affords biochemical, biophysical parameters and determinants of growth properties difficult to achieve in adult animal models or *in vitro* systems.
- Ease of culture manipulation and tumor growth assessment.
- Tumor growth in avian eggs displays heterogeneous growth parameters more similar to *in vivo* growth than spheroid cultures, including clear distinctions between necrotic tumor centers and active growth zones, increased invasiveness compared to traditional spheroid growth models and histological heterogeneity similar to that observed in human tumor specimens observed surgically and histologically. In summary, research demonstrating the simplicity, efficacy and greater similarity in tumor growth properties in the avian system as compared to *in vitro* spheroid culture methods will be presented, including data showing the use of this model system to assess the potential efficacy of novel therapeutic approaches and as a comparative tool for assessing pre-clinical versus patient treatment responses.

[crawfords2@southernct.edu](mailto:crawfords2@southernct.edu)