



### EXECUTIVE SUMMARY

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#### TEAM

**Hee Cheol Cho, PhD**  
Principal Investigator,  
Emory University

**Philip Santangelo, PhD**  
Principal Investigator,  
Georgia Institute of  
Technology

**Nam Kim, MD**  
Clinical Lead,  
Emory University

**Jonathan Langberg, MD**  
Clinical Advisor

#### FUNDING

\$284K Biolocity Grant  
\$239K GRA Grant

#### INTELLECTUAL PROPERTY

1 issued patent, 2 patents pending

Technology available for licensing and partnership

#### STATUS

Lead Candidate

### TECHNOLOGY

BioPace is a locally delivered mRNA treatment that reestablishes the heart's natural mechanism for electrical pacing. This has the potential to allow for device-free restoration of the stimulation of the heart's own conduction system.

During normal fetal development, TBX18 is required for the formation of the sinoatrial node, a body of specialized cardiac muscle cells that pace the heart. By leveraging the TBX18 protein pathway expressed in utero, the combination mRNA and small molecule gene therapy converts native cardiomyocytes into pacing phenotypes. While the RNA causes expression of the embryonic protein pathway, the small molecule keeps the newly converted pacing cells from migrating once transduced.

BioPacer is designed to be a minimally invasive therapy delivered transcatheterally by local intramuscular injection.

### MARKET NEED

The BioPace technology has the potential to enable better pacing for individuals requiring heart rate management. The initial target market for this technology will depend on the longevity of the therapeutic effect. The technology has the potential to serve as a transient pacing modality all the way to replacing device dependent pacing.

### STATUS

This technology is being jointly developed by Emory University and the Georgia Institute of Technology. To date, delivery of the combination mRNA, small molecule treatment has successfully been delivered in rodent and porcine models of complete heart block. Results demonstrate the technology's ability to create ventricular pacing in both small and large animal models.

For more information on this technology email [biolocity@gatech.edu](mailto:biolocity@gatech.edu) or contact:

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