Ginkgo Bioworks and Transcriptic selected by DARPA to leverage robotic cloud lab and foundry automation to accelerate biological design with $9.5 M award

Synergistic Discovery and Design Program to facilitate creation of a cloud-based experimental design platform and open data exchange

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Ginkgo Bioworks, the organism company, and Transcriptic, the first robotic cloud laboratory platform, have been awarded a joint $9.5 M contract as part of the Defense Advanced Research Projects Agency (DARPA) Synergistic Discovery and Design Program (SD2). The program is managed by DARPA's Information Innovation Office (I2O), with the goal of improving experimental design across disciplines by combining computational, analytical and domain-specific expertise with the generation and integration of terabytes of data. As part of the program, Ginkgo and Transcriptic will use machine learning, closed loop biology, and automated execution of protocols toward the goal of advancing biological experimentation and accelerating iterative testing for synthetic biology.

Design in biology has largely been driven by trial-and-error experimentation. Biological modeling has been hampered by imprecise measurement technologies and a lack of scalable experimental infrastructure making the exploration of complex cellular systems difficult. Under SD2, the large-scale collaboration between Ginkgo and Transcriptic will work to address this shortcoming by bringing engineering principles to the design of experimentation so that geographically dispersed teams can collaborate and leverage automation in the lab.

Using machine learning tools to analyze massive amounts of data, Transcriptic and Ginkgo, along with other collaborators, will work to develop new platforms to accelerate discovery and design, as well as produce a cloud-based open data exchange to benefit research and academic communities in other scientific domains. Transcriptic and Ginkgo will each run automated experimental facilities to enable cross-site validation and the development of reproducible experiments.

As part of this ambitious program, the vast, automated experimental capabilities from Ginkgo Bioworks and Transcriptic will be programmatically connected to machine learning-driven design and analysis algorithms. Ginkgo's foundry generates terabytes of biological data, including genome sequences and transcriptomic, metabolomic, and proteomic data. This data will be analyzed using advanced artificial intelligence to design experiments performed on Transcriptic's cloud lab capable of 24/7 automated execution.

"Ginkgo's founding mission is to make biology easier to engineer, and our comprehensive measurement of relatively simple systems — genome, transcript, proteome, and metabolome — provides us with the essential basis for creating predictive models of biology," said Tom Knight, co-founder of Ginkgo Bioworks. "Only with this depth of knowledge will we have the ability to rationally engineer biology. We're thrilled to collaborate with Transcriptic in automating high-throughput production and interpretation of this data."

"We're honored to be chosen by DARPA to participate in the SD2 program, which brings together some of the best minds in

the field, deepens our relationship with Ginkgo, and aims to revolutionize science," said Yvonne Linney, Transcriptic Chief Executive Officer. "The goal of creating a closed loop AI-driven experimentation platform is aligned with our mission and expertise. By computationally controlling Transcriptic's core automated biological platform, we hope to accelerate science by rapidly and efficiently converting scientific findings into reliable processes and outcomes."

This award expands Ginkgo and Transcriptic's existing collaboration on automation in organism design, first initiated in October of 2017.

About Transcriptic Inc.

Transcriptic has developed the first robotic cloud laboratory platform to accelerate scientific discovery. Powered by the Transcriptic Common Lab Environment (TCLE), it integrates laboratory processes and instruments with IoT technologies through a single user interface. Researchers can carry out reproducible and rapid experimentation remotely, from their laptop. Top Ten pharmaceutical companies as well as growing biotech can access the power of a programmatic lab – whether in their own labs through an on premise deployment of TCLE or through Transcriptic's Bioassays Services. The company is based in the San Francisco Bay Area. For more information, visit www.transcriptic.com.

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About Ginkgo Bioworks

Headquartered in Boston, Ginkgo Bioworks uses the most advanced technology on the planet – biology - to grow products instead of manufacture them. The company's technology platform is bringing biotechnology into consumer goods markets, enabling fragrance, cosmetic, nutrition, and food companies to make better products. For more information, visit www.ginkgobioworks.com.