**For immediate release:** Thursday, Feb. 20, 2014

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**MIT’s Synthetic Biology Center collaborates with Pfizer to advance synthetic biology research in drug discovery and development**

(CAMBRIDGE, Mass.) – Today, MIT’s Synthetic Biology Center (MIT SBC) announced a collaboration with Pfizer Inc. that is designed to translate leading discoveries in synthetic biology to advance drug discovery and development technologies. This three-year research collaboration spans multiple therapeutic areas at Pfizer and involves several core investigators within the MIT SBC. The MIT SBC is an interdisciplinary research and educational initiative of the Department of Biological Engineering, which integrates faculty from other MIT departments.

In its first 30 years, biotechnology has provided the basic methodology for producing life-saving protein medicines in cells. However, the bio-manufacturing process can be time-consuming and costly, and has remained largely unchanged since the earliest product approvals. There is an opportunity to re-evaluate standard operations, identify areas for improvement, and develop methodologies that potentially may make the biopharmaceutical value chain more cost-efficient.

The emerging field of synthetic biology leverages current biotech efforts and integrates them with systems biology theory to establish a new paradigm of engineering biopharmaceuticals with a computational system. By applying computer science and design engineering concepts to biological systems, synthetic biologists are creating molecular and computational tools that enable precise regulation of cellular and genetic processes. The ability to use synthetic biology parts as “programmable entities” presents an opportunity to potentially create a new biotechnology process that is more likely to promote innovation, accelerate discovery, reduce clinical failures, and ultimately be more cost-efficient. The synthetic biology technologies anticipated for development in this collaboration between the MIT SBC and Pfizer include methods for cellular genome engineering to support next-generation protein expression systems.

“We look forward to expanding our relationship with Pfizer to advance research in synthetic biology,” says Doug Lauffenburger, the Ford Professor of Bioengineering and Chemical Engineering and head of MIT’s Department of Biological Engineering. “This collaboration supports our goal to develop sophisticated synthetic biological systems from standardized, well-characterized modular parts for useful application in multiple fields, including biopharmaceutical molecular and bioprocess design.”

“Biologics based in recombinant DNA technology have transformed the treatment of many diseases over the last few decades,” said Jose Carlos Gutierrez-Ramos, group senior vice president and head of Pfizer’s BioTherapeutics Research and Development. “We are reaching a key inflection point where advances in synthetic biology have the potential to rapidly accelerate and improve biotherapeutics drug discovery and development, from early-stage candidate discovery through product supply, which could bring better, more effective therapies to patients more rapidly.”

The goal of synthetic biology is to make the design and construction of novel biological systems into a practical and useful professional engineering discipline. Key to this is the development of an engineering methodology based on systems biology theory and the use of standardized and well-characterized interchangeable parts.

The range of potential applications for synthetic biology is significant, and may encompass diagnostics, therapeutics, sensors, environmental remediation, energy production, and other biomolecular and chemical manufacturing outputs. Synthetic biology may also provide insight into fundamental biological principles and improve quantitative understanding of the living world.

The mission of the MIT SBC is to develop and advance the engineering discipline for this emerging field, and train its future leaders.

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**RELATED LINKS**

MIT Synthetic Biology Center: <http://synbio.mit.edu>

Prof. Douglas Lauffenburger: <http://web.mit.edu/dallab/>

Department of Biological Engineering: <http://web.mit.edu/be/index.shtml>