Stanford University – GTCA Biomanufacturing Workshop

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Constructing Life: Chemistry Assembly within Living Organisms

Imagine a world where we build within biological systems—rather than attaching or inserting our devices. Imagine a bladder that grows its own pressure sensor, or glucose-measuring cells that send instructions directly to an insulin pump, or a nervous system that rewires itself—with wires it makes from conductive polymers. Consider what new functions we could build into life— for sensing, communication, treatment and discovery—if we became true partners with living systems in the art of design and construction. Our vision for future biomanufacturing explores the immense opportunity of building functional materials within, and with, biological life.

In this workshop, we will introduce our recent advancement in the new field of **genetically targeted chemical assembly, or GTCA**. By integrating engineered enzymes and polymer chemistry, we will genetically instruct specific living neurons to guide chemical synthesis of electrically functional polymers at their surface membrane. Participants will be exposed to basic molecular biology, neurobiology, fundamental materials sciences and characterization techniques. Students including high school and community college level, interested in a career in the materials sciences and biotechnology sector may consider attending this workshop.

Workshop Details

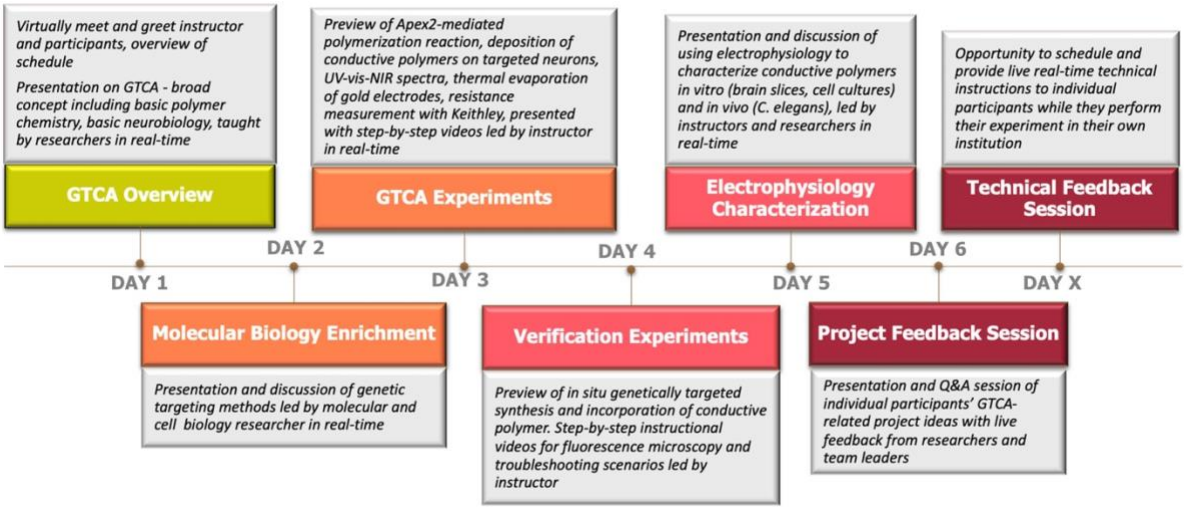
Hosted by members of the **Bao-Bertozzi-Deisseroth Labs**, we will be offering **remote** GTCA training workshops via Zoom and scheduled according to the Pacific Standard Time zone. The workshop will be about a week in length, with daily on-line training sessions lasting 1-2 hours. Training sessions will contain a variety of formats including interactive presentations, recorded video demonstrations and Q&A feedback discussions with lab experts in the field. **All workshops are provided at no cost to the participants**. Preview of the content and schedule for the workshop is outlined below.

Registration Information

Workshop will be scheduled based on demand with an effort to maintain small training groups for a personal experience. To register for a workshop, please email Dr. Maisie Lo: maisielo@stanford.edu, the education manager with **"GTCA workshop", in the subject line**, and include the following information in your email:

- Your name
- Your institute
- Your position (high school, undergraduate, graduate students, post-doc, etc.)
- Your PI's name (if applicable)
- If applicable, please also indicate if you receive financial support through NSF

GTCA Remote Workshop *6-7 days, 1-2 hours per day*



Reference: Liu J, Kim YS, Reference: Richardson CE, Tom A, Ramakrishnan C, Birey F, Katsumata T, Chen S, Wang C, Wang X, Joubert L-M, Jiang Y, Wang H, Fenno LE, Tok JB-H, Paşca, Shen K, Bao Z, Deisseroth K. **Genetically targeted chemical assembly of functional materials in living cells, tissues, and animals.** Science. 2020