# "Sandpit" Update to BIO Advisory Committee

Joanne Tornow
Senior Advisor

September 11, 2009
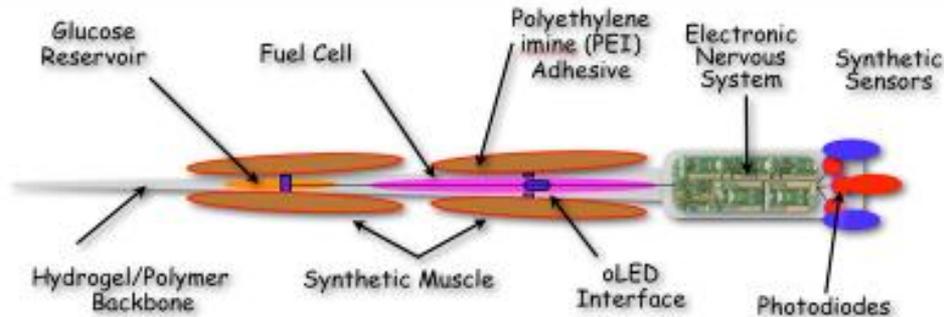
# Joint NSF-EPSRC Sandpit on Synthetic Biology

- March 30-April 3, 2009 at Airlie Conference Center, Warrenton VA
- Ten project ideas developed, five invited back as full proposals
- Awards made by both NSF and EPSRC, start dates of September 1
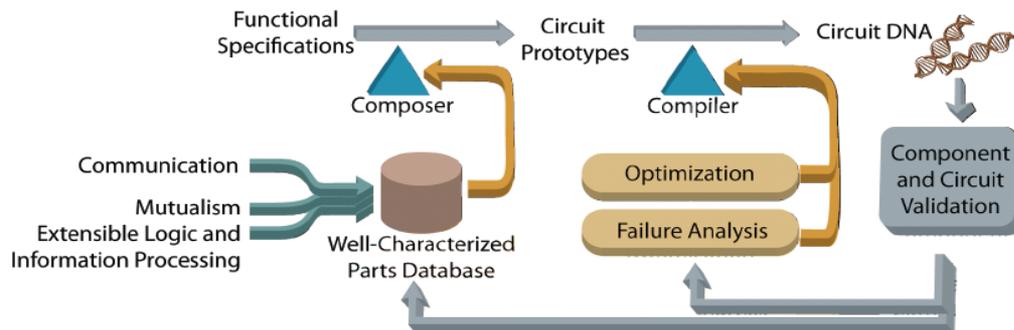- £3M EPSRC, $5.2M NSF (BIO, MPS, ENG, SBE, CISE)

# Sandpit Projects

Cyberplasm: An autonomous micro-robot constructed using synthetic biology

Joseph Ayers (Northeastern),
Daniel Frankel (Newcastle),
Vladimir Parpura (UAB),
Christopher Voigt (UCSF)



Glucose Reservoir · Fuel Cell · Polyethylene imine (PEI) Adhesive · Electronic Nervous System · Synthetic Sensors · Hydrogel/Polymer Backbone · Synthetic Muscle · oLED Interface · Photodiodes



Automated Design of Large Scale Gene Circuits

Functional Specifications → Circuit Prototypes → Circuit DNA
Composer / Compiler
Communication / Mutualism / Extensible Logic and Information Processing → Well-Characterized Parts Database
Optimization / Failure Analysis
Component and Circuit Validation
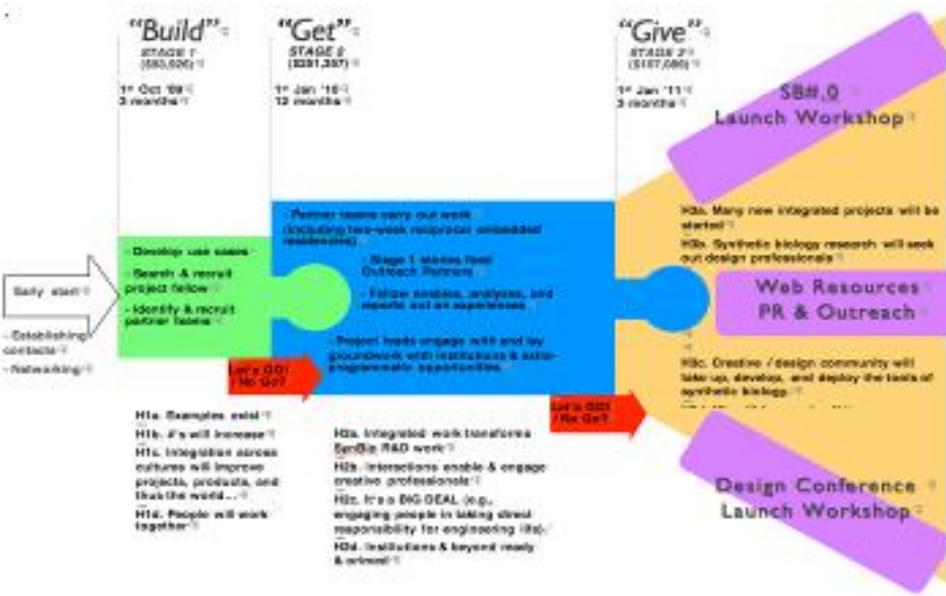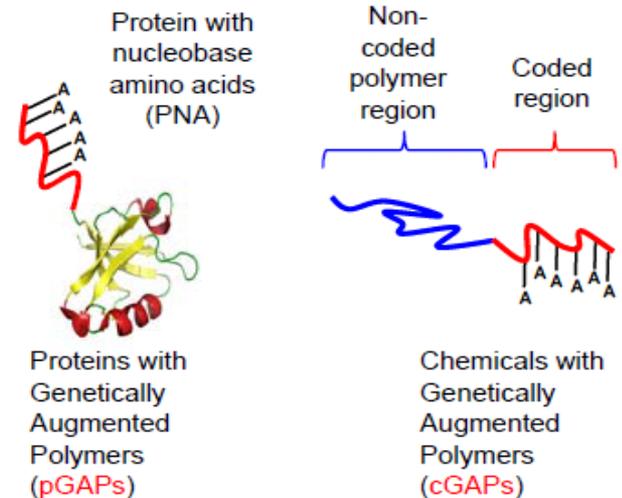
Programmable Rhizosphere

Kaustubh Bhalerao (UIUC), Hana El Samad (UCSF), Jim Haseloff (Cambridge), Christina Smolke (Stanford), Christopher Voigt (UCSF), Neil Wipat (Newcastle)

# Sandpit Projects

Engineering Genetically Augmented Polymers

> Andy Ellington (UT Austin), Paula Booth (Bristol), Rachel O'Reilly (Warwick), Michael Jewett (Northwestern)



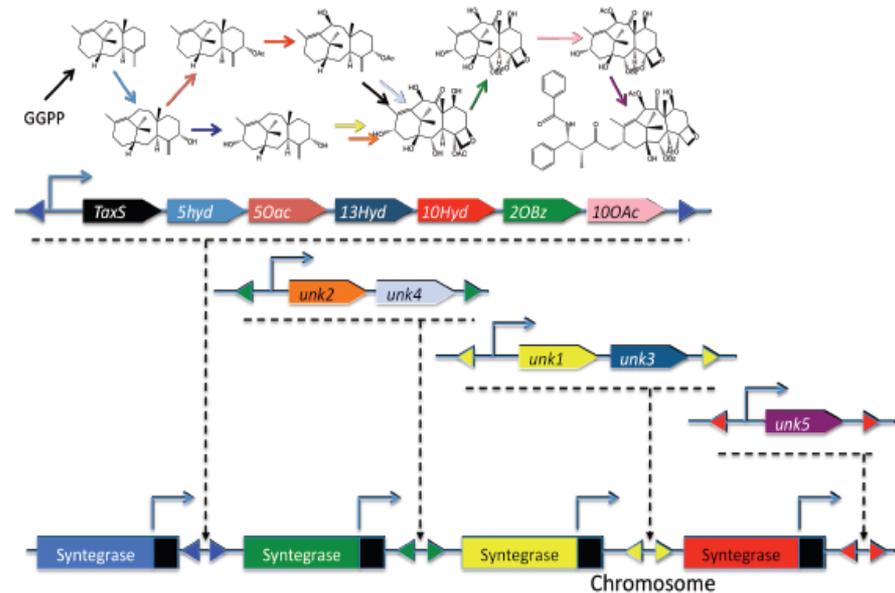Synthetic Aesthetics: Connecting Synthetic Biology and Creative Design

> Drew Endy (Stanford), Jane Calvert (Edinburgh), Alistair Elfick (Edinburgh)

# Sandpit Projects

## Synthetic Integrons for Continuous Directed Evolution of Complex Genetic Ensembles

Joshua Leonard (Northwestern), Jay Keasling (UC Berkeley), Susan Rosser (Glasgow), Paul Freemont (UCL), Anne Osbourn (John Innes Centre), Declan Bates (Leicester)

# Additional Activities

- NSF and EPSRC coordinating oversight, and developing plans to  strengthen collaborations, build network

- UK to host PI meeting in spring 2011

- BIO, ENG, SBE co-funded new EAGER award on using prediction markets for synthetic biology