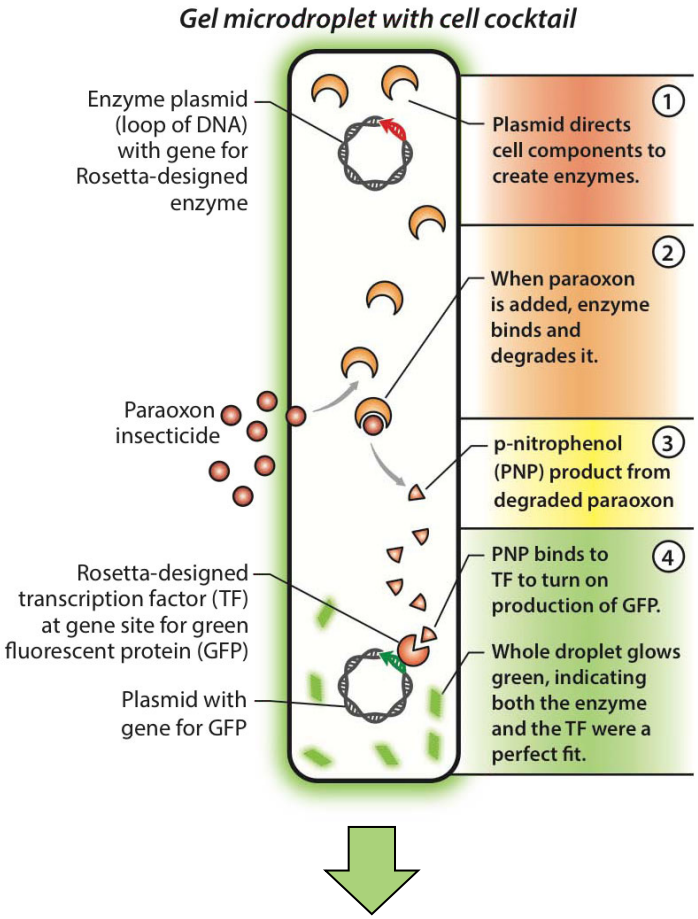
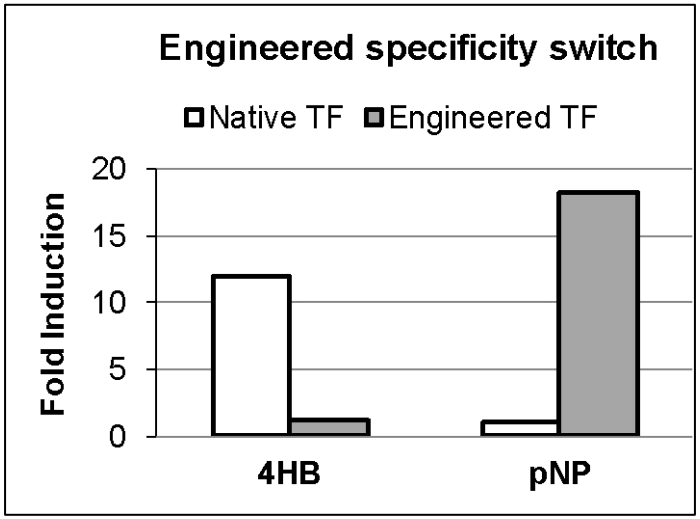
Sensors Caged in Droplets for Cell-free Synthetic Biology



High throughput sorting



Novel sensors engineered from native Transcription factors

Fluorescence of the droplet correlates with enzyme activity

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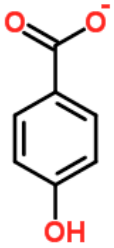
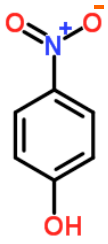
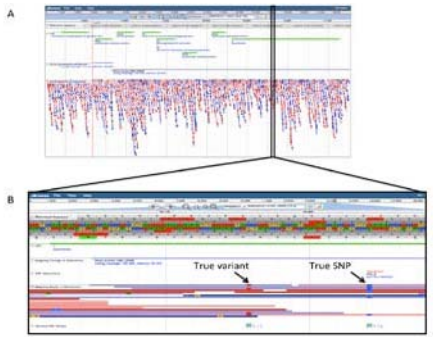


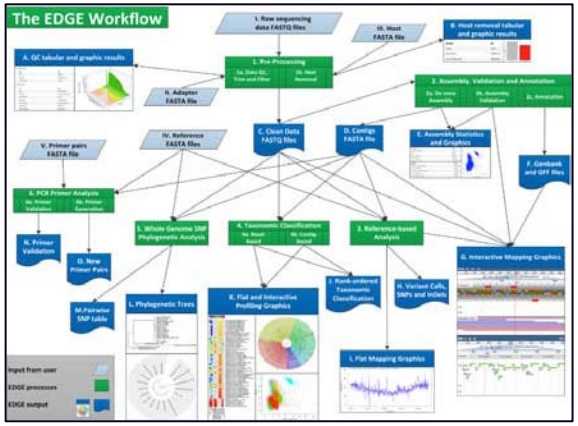
4HB
(Native inducer of PobR TF)



pNP
(Target)

Genome Science @ LANL





Sample → Sequence → Answer

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LANL Core Catalysis Capabilities

Catalytic Carbon Chain Extension

- Developed routes to use small bio-derived building blocks to make CI and SI fuels and high-value chemicals.
- Virtually any carbon scaffold can be synthesized
- *This approach should be general to any alcohol, ketone or aldehyde.*

Selective Oxygen Removal & Derivatization

- Selective stepwise conversions with > 98 % carbon yield
- Hydrodeoxygenation (HDO) has been improved significantly with very mild conditions in 10 mins using a Ni catalyst - cheaper *&* faster!
- In house catalysis development, synthesis and testing capabilities

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ChemSusChem, **2016,** *9*, 2298.
ChemSusChem., **2016**, *9*, 3382.
Green Chem., **2017**, *19*, 169.
ChemCatChem., **2017**, *Online Accepted Article.*