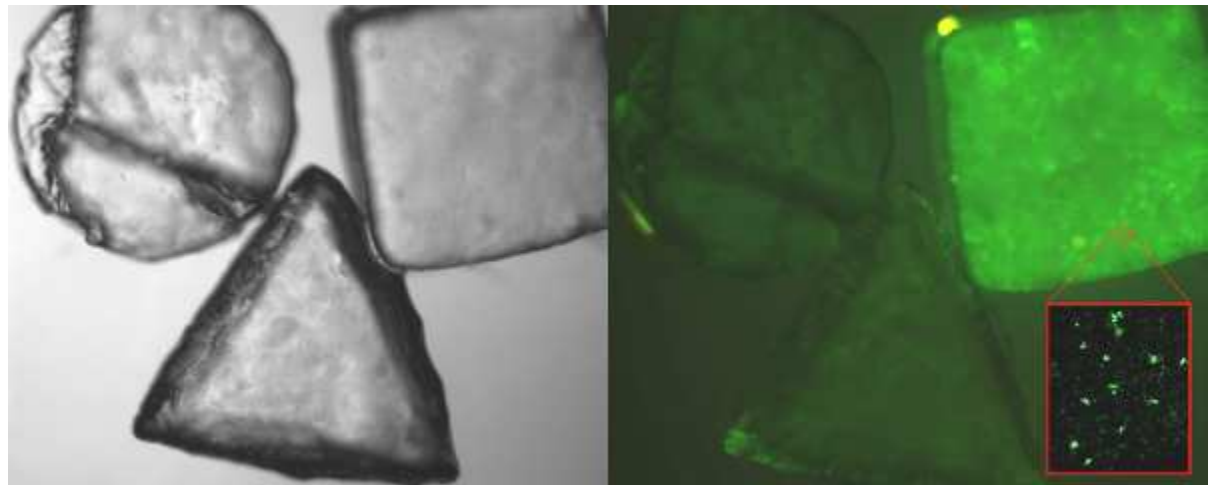


Antibody Based Sensing¹

- Control w/o cells
- ▲ Control w/ E. coli
- Test w/ E. coli with anti-digoxin scFv



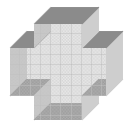
Exploded view of cells
fluorescing within the hydrogel ↑

- Single-chain variable fragment (scFv) antibodies are present at E. coli cell surfaces
- Fluorescently labeled digoxin binds only to cells expressing antibodies
- *Cells are destroyed during polymerization*

¹Hayhurst, A. Improved expression characteristics of single-chain Fv fragments when fused downstream of the escherichia coli maltose-binding protein or upstream of a single immunoglobulin-constant domain. *Protein Express. Purif.* **18**, 1–10 (2000).



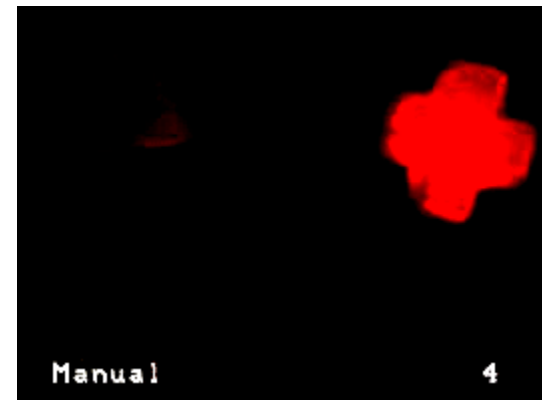
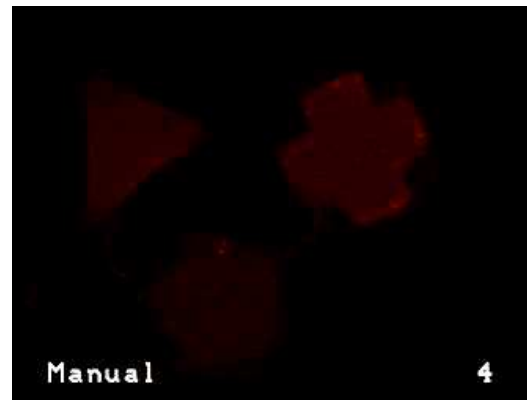
Enzyme Sensing



Urease

Before addition of Urea

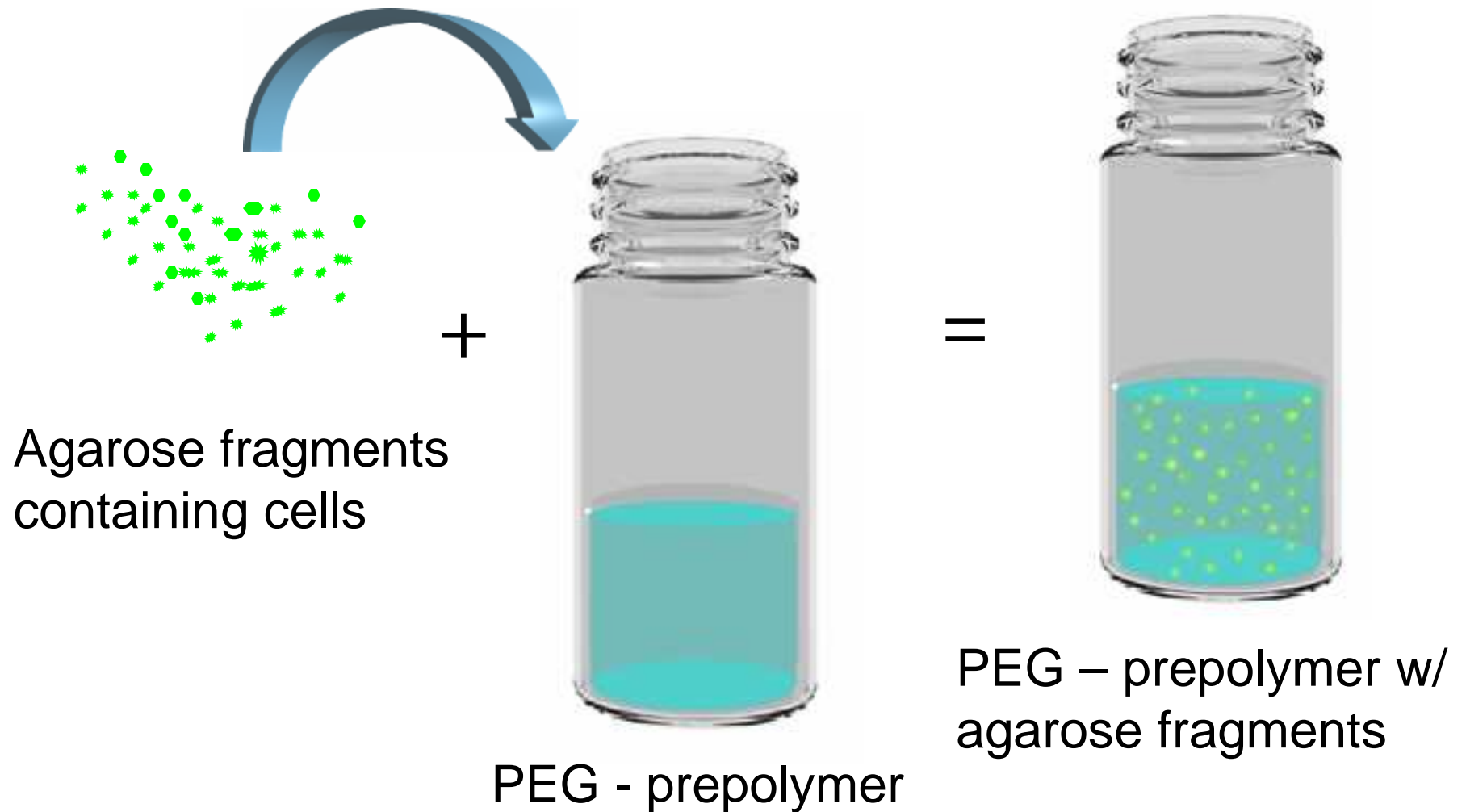
After addition of Urea



SNAFL-1 pH dependent fluorescence



Live Cell Encapsulation



The Living MUFFIN

- Cells produce green fluorescent protein (GFP) only upon exposure to arabinose
- Incubate in glucose = no fluorescence
- Incubate in arabinose = fluorescence
- Therefore, cells are metabolizing arabinose and must be alive

