Fibroblast Migration Increased by PEG-EGF in Hydrogels

Student Name

Date

Objective

- Does epidermal growth factor (EGF) tethered to PEG increase cell number and migration of fibroblasts in hydrogels?

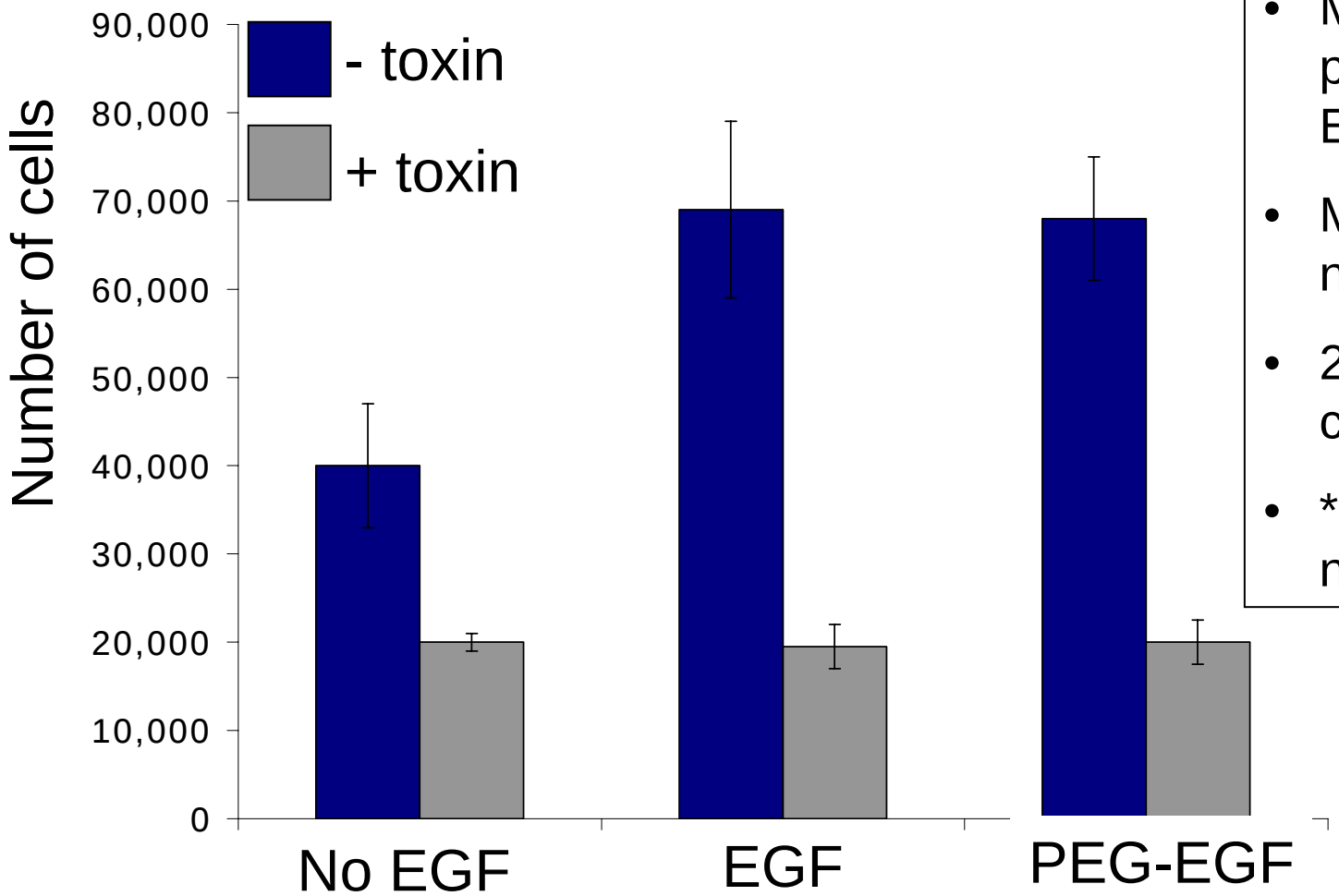
Measuring Cell Proliferation

- Hydrogels with GGLG-PAGGK-PEG were prepared with or without PEG-EGF
- 20,000 cells placed on media-soaked gel and incubated 48 hours
- PCNA stained cells were counted
- Control performed similarly with liquid media and cell number determined with Coulter Counter

Measuring Cell Migration

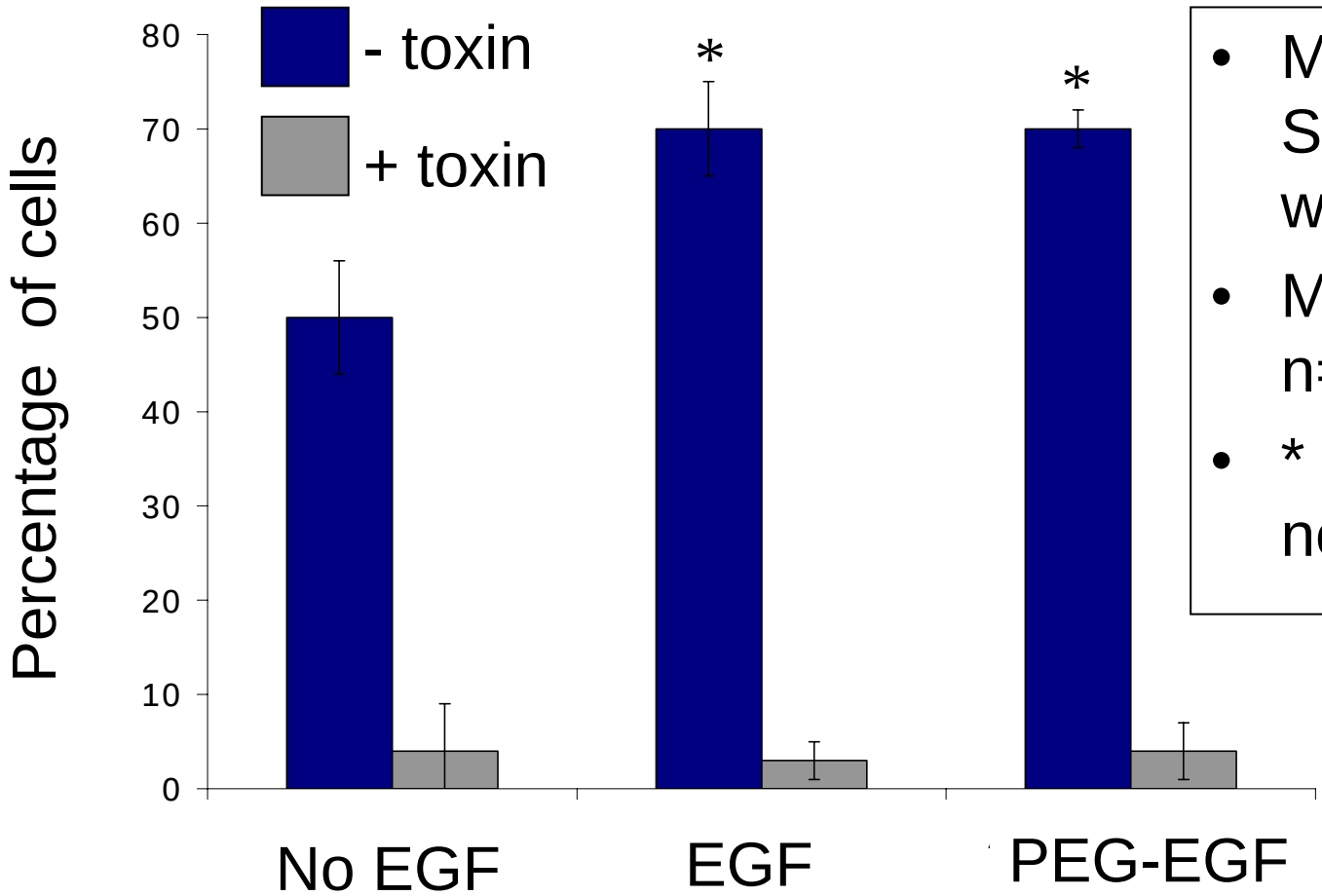
- Hydrogels on membranes were prepared containing either PEG-EGF or PEG-RGDS, both PEG-EGF and PEG-RGDS, or neither
- 50,000 cells were added and incubated for 7 days
- Calculated migration index as % of cells that move through membrane as determined by Coulter Counter

EGF Increases Cell Number



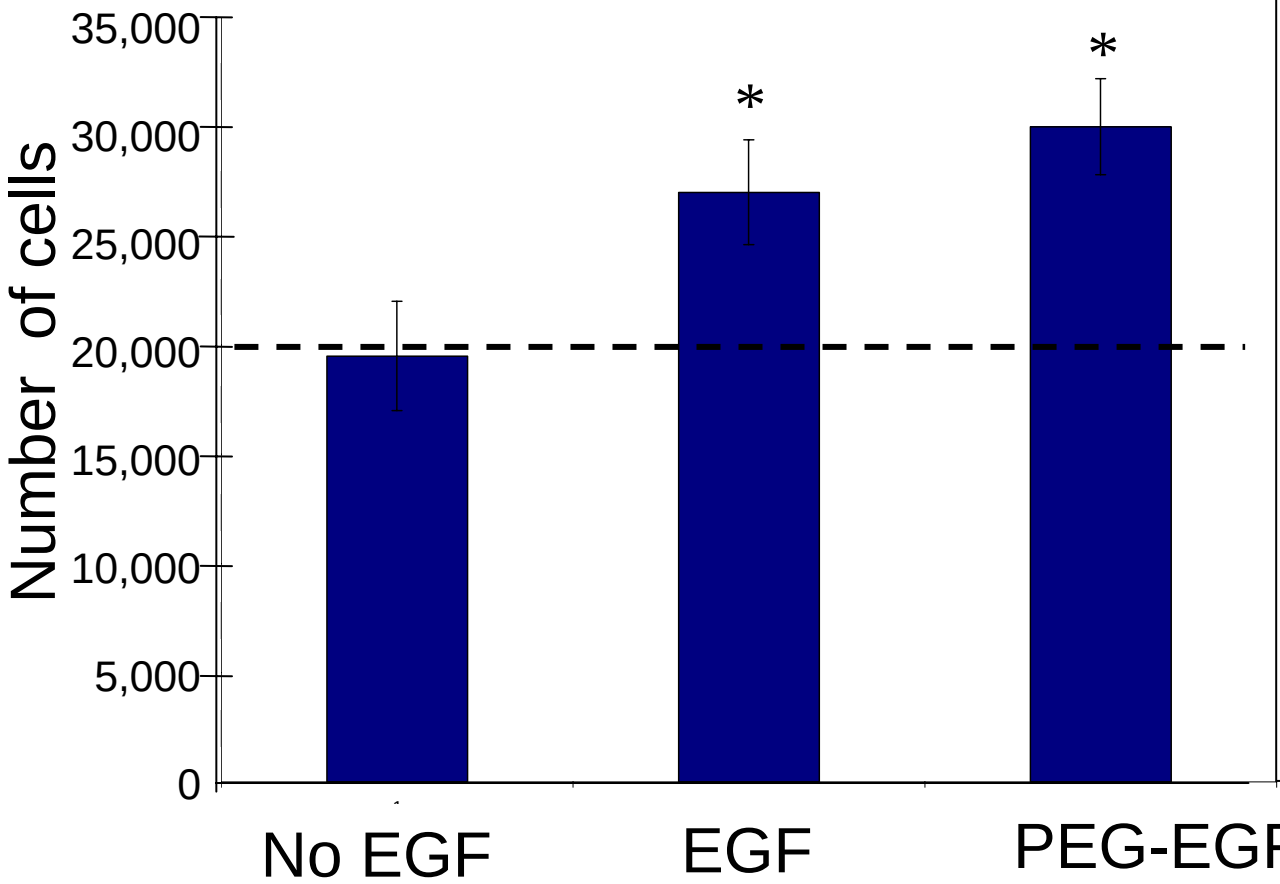
- More cells in presence of EGF
- Mean+/-s.d.; n=6
- 20,000 initial cell number
- * p=0.07 vs. no EGF

EGF Increases Number of Cells in S-Phase



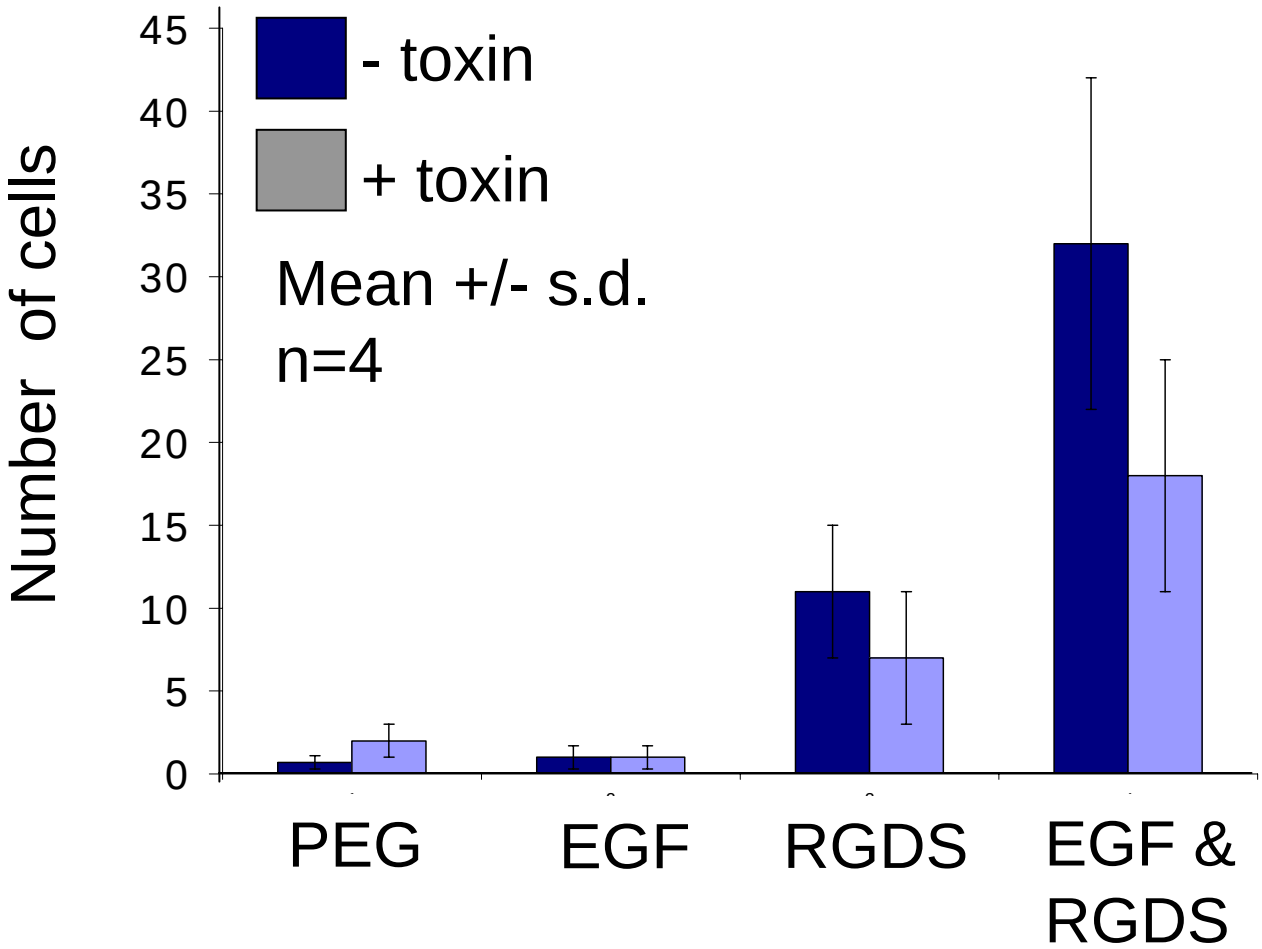
- More cells in S-phase with EGF
- Mean+/-s.d.; n=6
- * p=0.05 vs. no EGF

EGF in Hydrogels



- EGF increases number of cells above 20,000 initial cell number (shown as dashed line)
- Mean+/-s.d.; n=7
- * p=0.05 vs. no EGF

Migration occurs with RGDS and EGF+RGDS



- Migration occurs with RGDS and RGDS+EGF
- Migration doesn't occur with EGF alone
- Migration occurs in presence of toxin

Fibroblast Migration Increased by PEG-EGF

- PEG-EGF increases cell number and percent of S-phase cells
- PEG-EGF with PEG-RGDS causes migration through hydrogel

Data and results taken from the paper Effects of Epidermal Growth Factor on Fibroblast Migration through Biomimetic Hydrogels, A.S. Gobin, J.L. West, Biotechnol. Prog. 2003, 19, 1781-1785.

Dr. A. Saterbak accepts all responsibility for any misrepresentation of any part of the paper. Poster developed entirely for pedagogical purpose for BIOE342.