# Bioclogging to Prevent $CO_2$ Leakage Pathways

## Scientific Achievement

**Biological experiments demonstrate that microbial biofilm can continue to clog porous media following acidification of groundwater even if significant cell death occurs.**

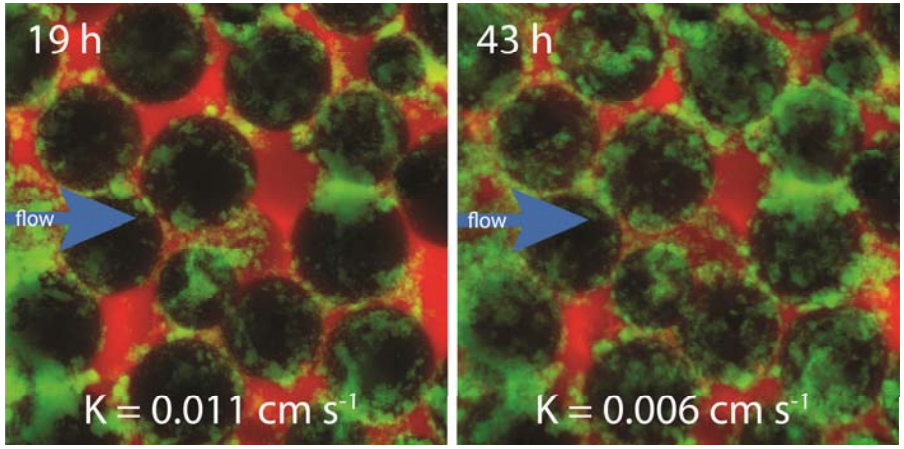
## Significance and Impact

**Promotes development of biological strategies to enhance geological carbon sequestration by clogging $CO_2$ leakage pathways.**

## Publications


Deng, W., B. Cardenas, M. Kirk, S. Altman, and P. Bennett (2013), The effect of permeable biofilm on micro- and macro-scale flow and transport in bioclogged pores, *Environmental Science & Technology*, *47*(19), 11092−11098.

Kirk, M. F., E. F. U. Santillan, L. K. McGrath, and S. J. Altman (2012), Variation in hydraulic conductivity with decreasing pH in a biologically-clogged porous medium, *International Journal of Greenhouse Gas Control*, *11*, 133-140.


Confocal microscope images showing microbial biomass in porous media at two different times for an experiment run at a pH of 7.2. Black is glass beads, green the cells, and red the pore fluid. The growth over the 4 days caused the hydraulic conductivity (K) to decrease 9X on average.

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