**GC program**

An Agilent 7820A gas chromatograph equipped with an Agilent HP-5 30m x 0.320mm x 0.25 µm column was used for detection of ethylene and ethylene oxide in the headspace of sealed culture vials. For quantitation, 500 µL of headspace was manually injected. An injector temperature of 105 °C and a split ratio of 50:1 were used, and oven temperature was held at 30 °C for 5 min, and flame ionization detector was held at 200 °C. Our lower limit of detection from a 0.5mL culture in a 2mL vial was 3.5µM.

**Supplemental figure 1.** Example set of GC-FID traces illustrating a negative control (cells only), a positive control (cells spiked with 100 µM oxirane, Sigma part #48838, transfer done in cold room), and a product response. Retention times are in minutes.