An exopolysaccharide tale

M. Gohar

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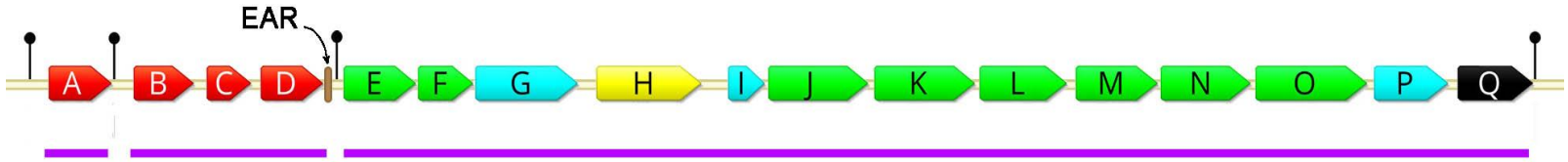
The case of *Bacillus thuringiensis strain* 407

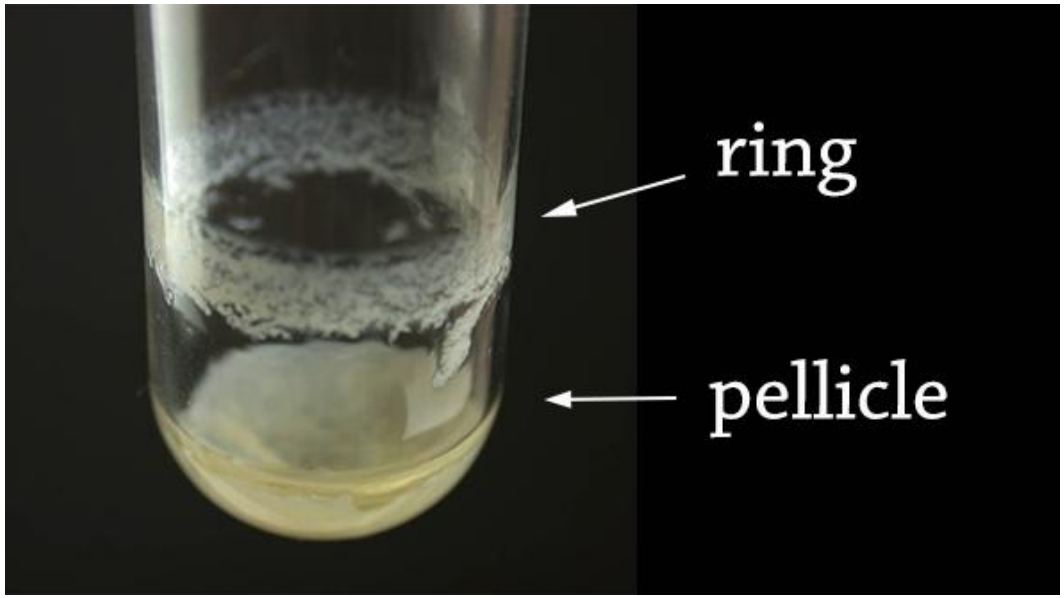
Michel GOHAR

The 407 *exopolysaccharides* chromosomal *loci*

cps



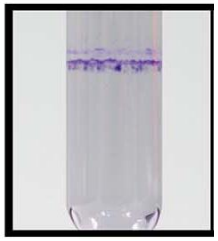
The *Bt* floating biofilm in glass tubes



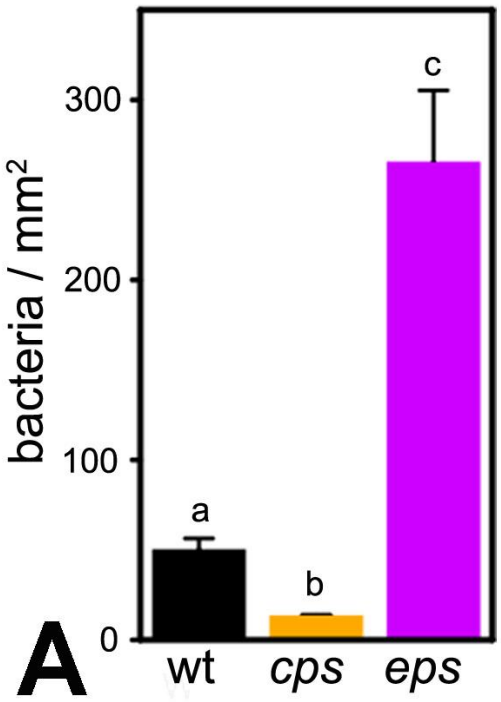
Biofilm assays in glass tubes: top and lateral views

wt

wt

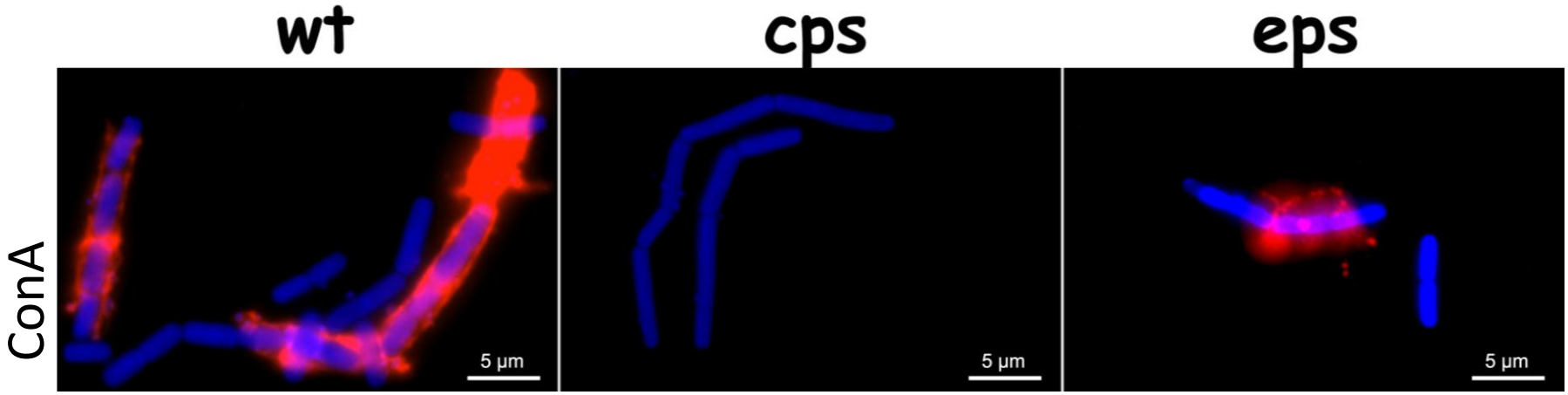


Adhesion assays



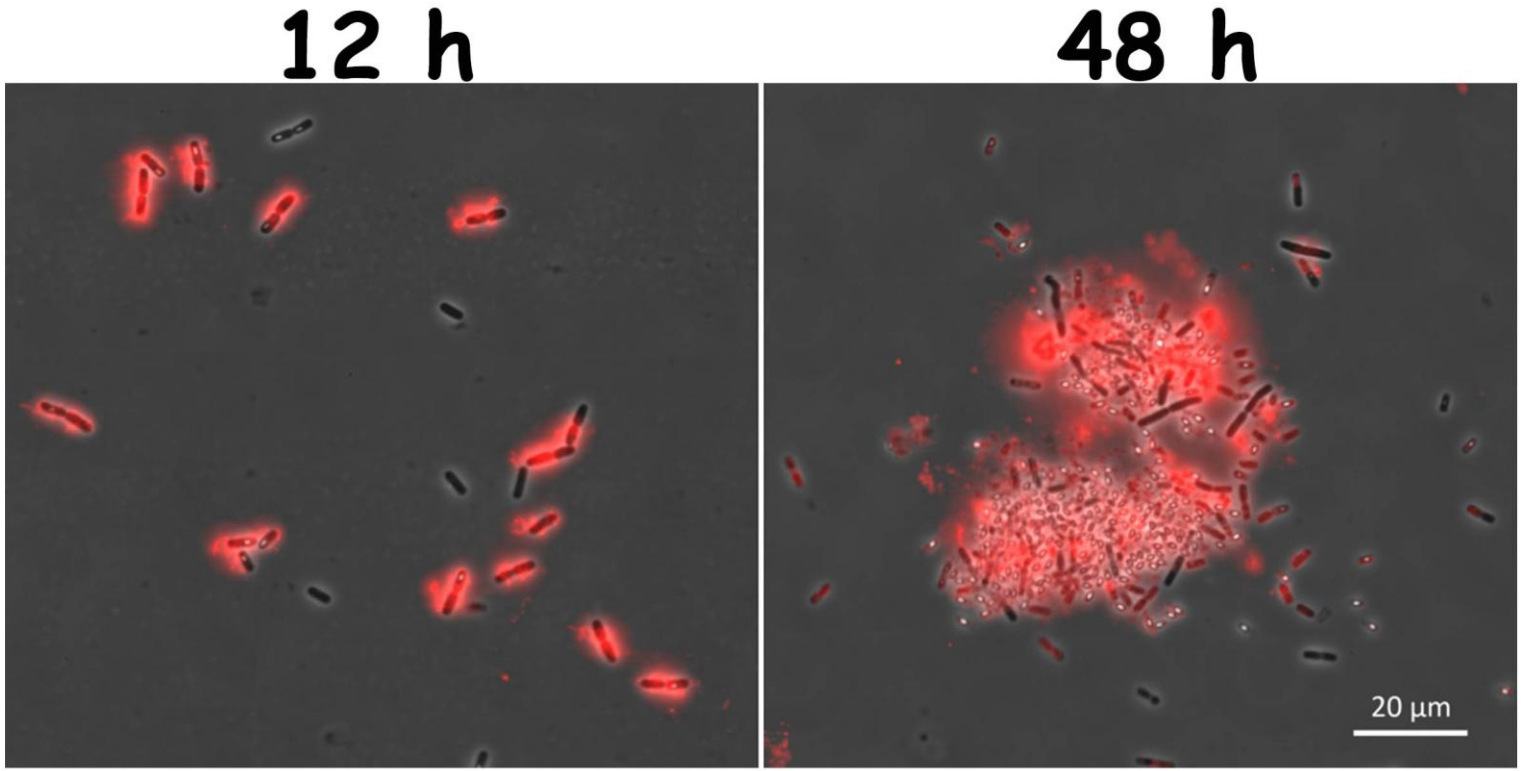
Bars and error bars represent means & standard errors of the means. Bars with different letters (a, b, c) on their top indicate significant differences in their mean values ($P < 0.05$, Wilcoxon test)

Capsule determination



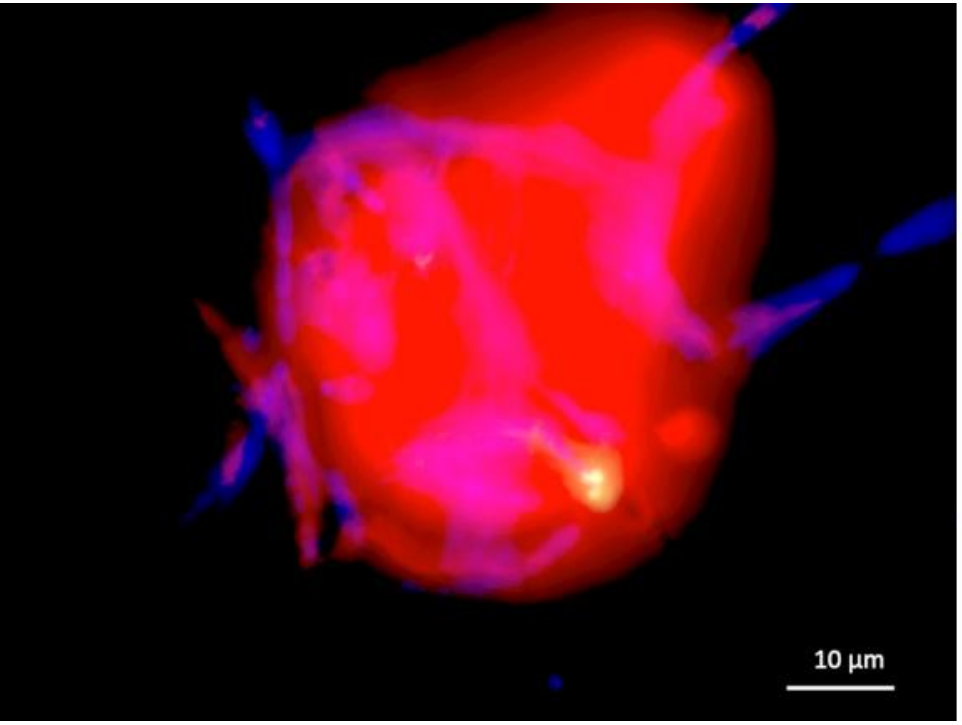
Planktonic cultures of the wild type strain and the Δ*esp1* mutant strain were harvested at an OD_{600} of 6.0 and were kept on the bench (at room temperature) with no agitation for one hour. Cultures were subsequently stained with the Alexa595-labelled lectin Concanavalin A (red) and with DAPI (blue) and observed with a fluorescence microscope or stained with Ruthenium Red and observed in TEM

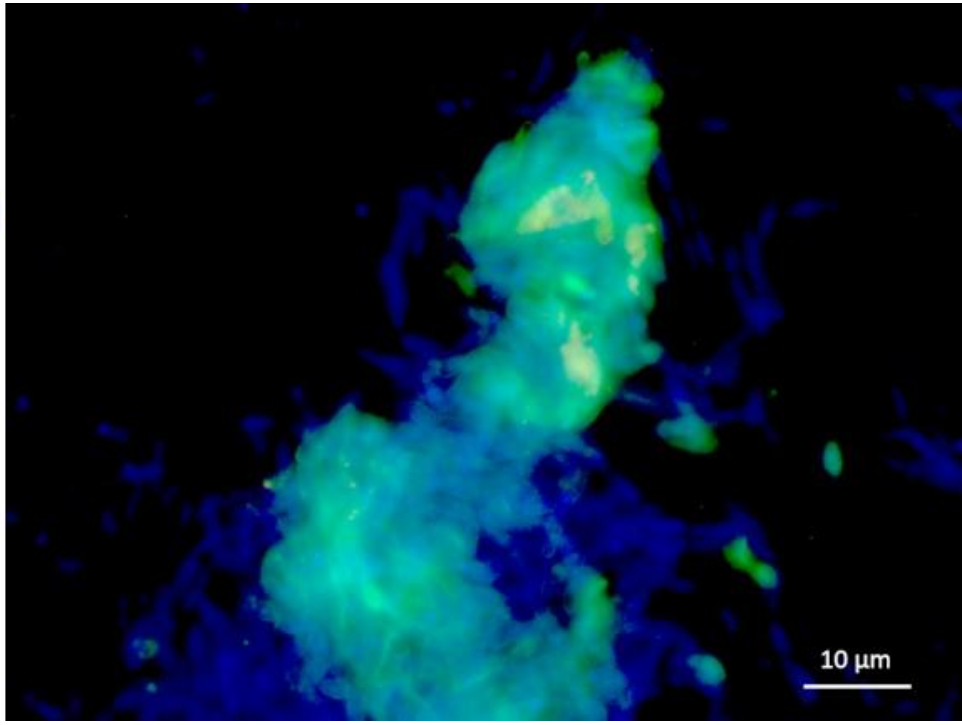
Cps polysaccharide distribution in planktonic cultures



A planktonic cultures of the wild type strain was harvested after 12 h (left) or 48 h (right) of culture, stained with Alexa595-labelled ConA, and observed in phase-contrast microscopy.

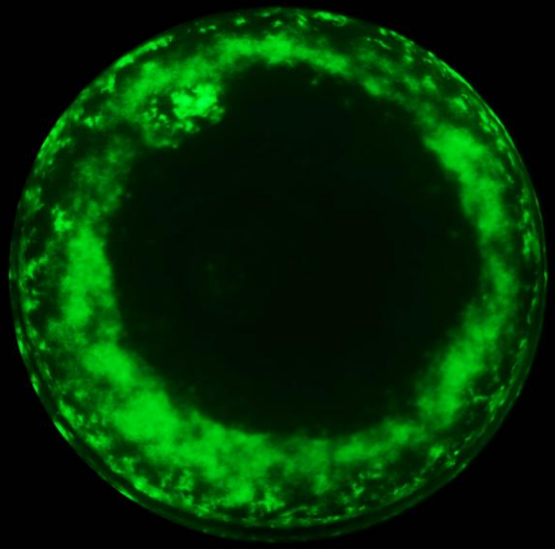
Cps and eps polysaccharide distribution in biofilm



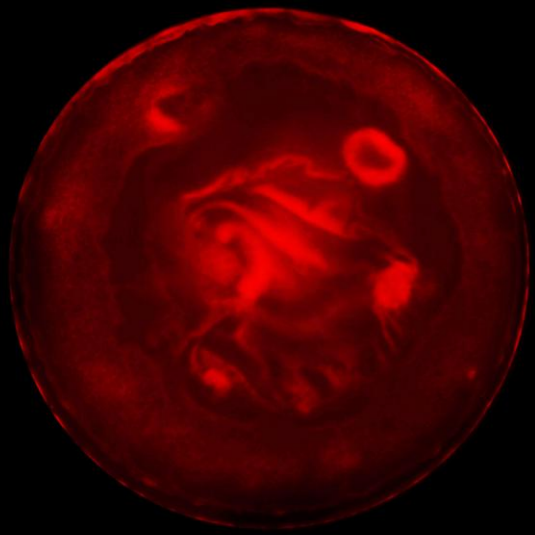


The ring and the pellicle of a 48 h-aged biofilm produced the wild type strain in glass tubes in HCT medium at 30°C were harvested separately, stained with Alexa595-labelled ConA, FITC-labelled Datura lectin and DAPI, and observed with a fluorescence microscope.

Mutants co-cultures : time course



48 h



Δeps

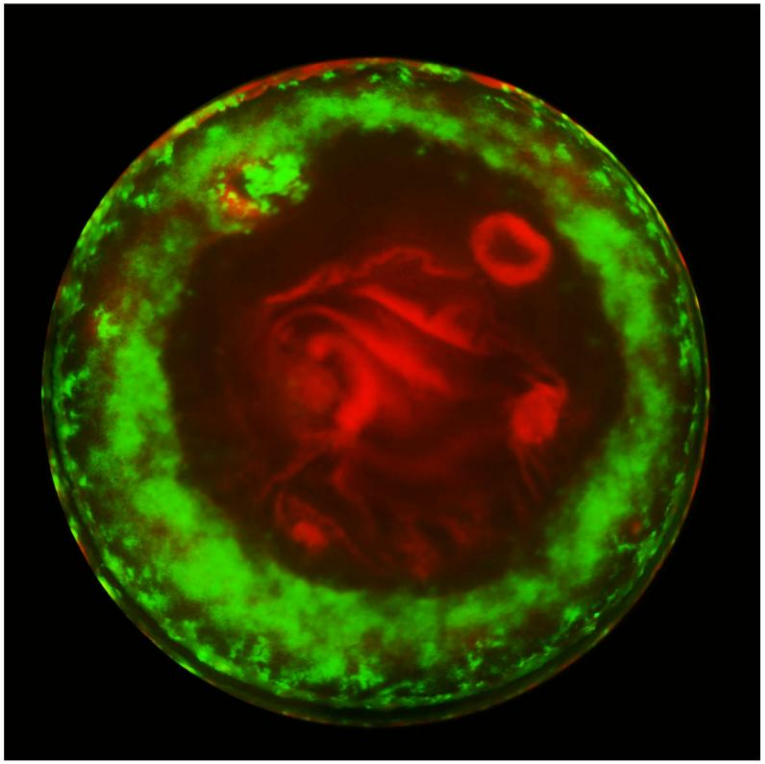
Δcps

The Δ*cps* strain, producing only Eps, was tagged with mCherry (in red) while the Δ*eps* strain, producing only Cps, was tagged with GFP (in green). Both strains were mixed in a 1:1 ratio and grown in biofilm in 48-wells polystyrene microtiter plate in HCT media at 30˚C, and observed in top-view with a fluorescence stereomicroscope.

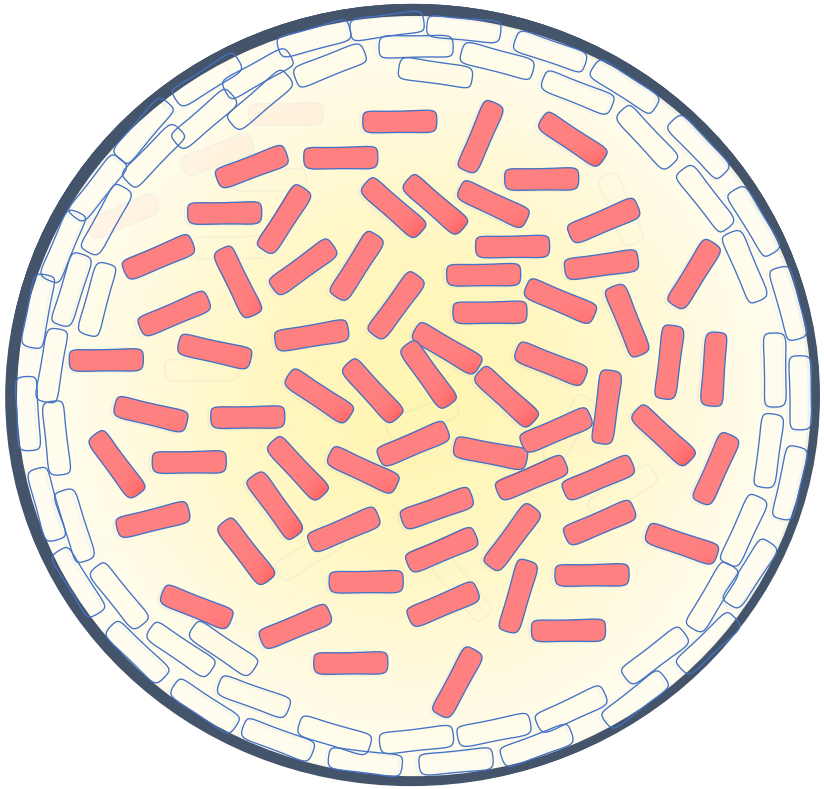
Mutants co-cultures : relative distribution

white light

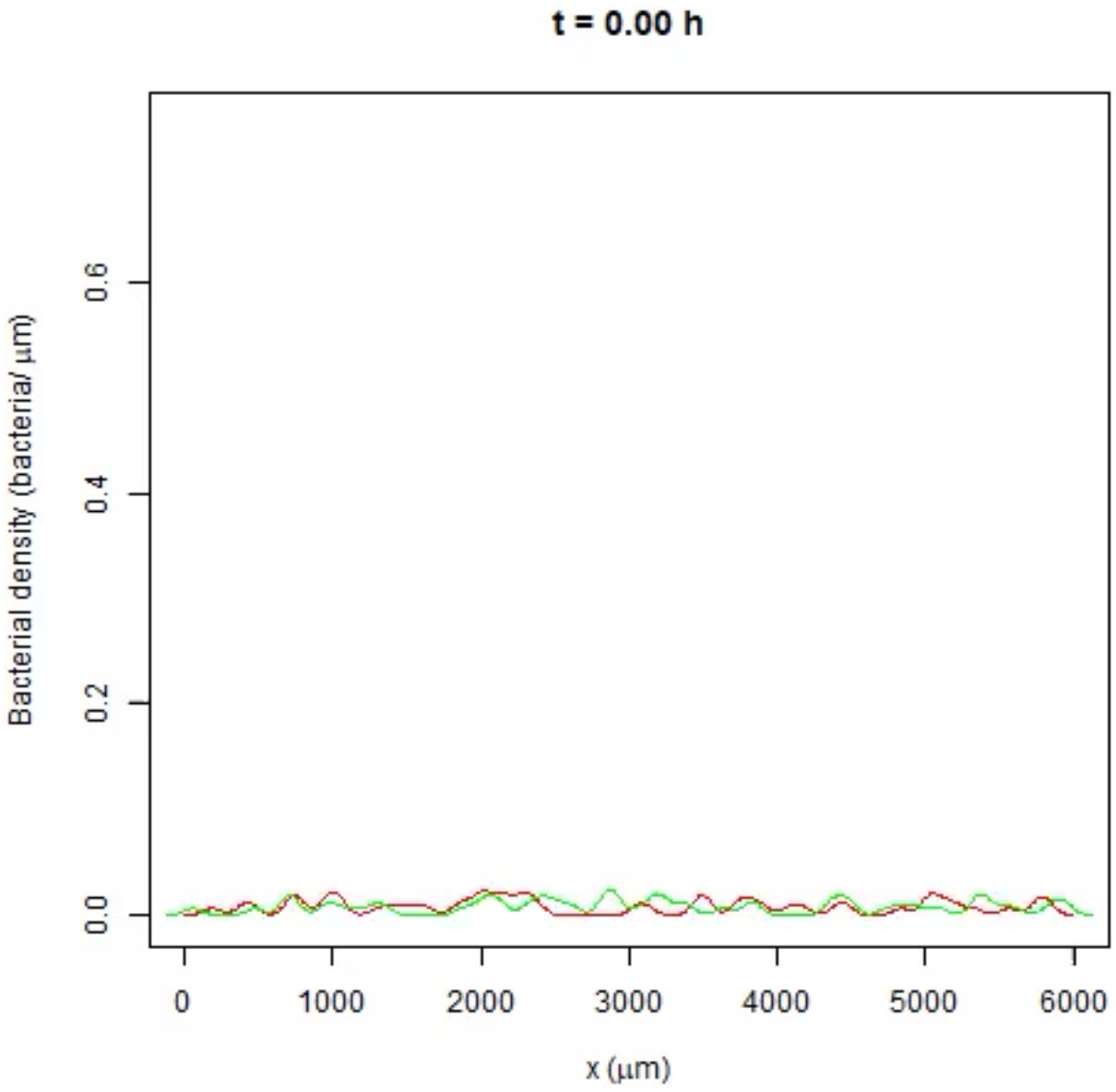
fluorescence



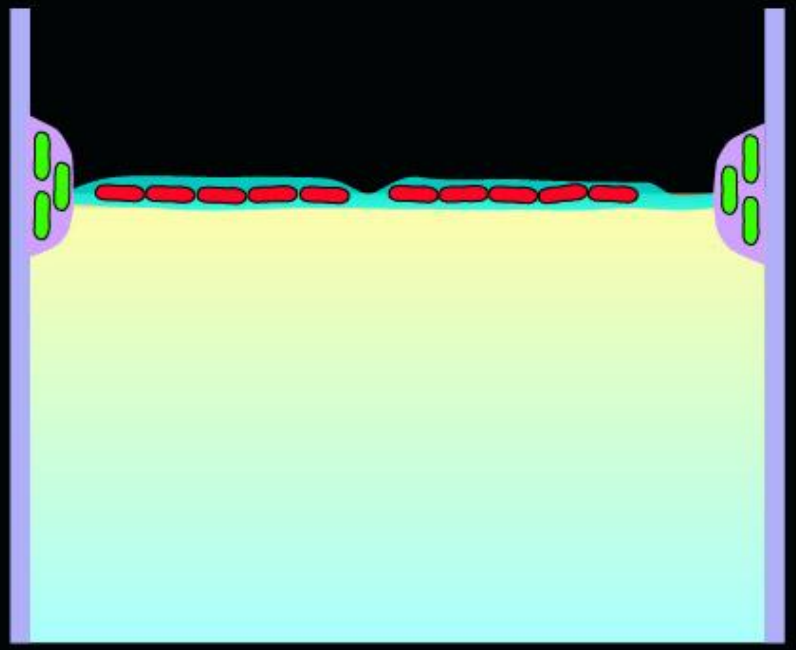
Hypothesis to explain the subpopulations separation



Hypothesis to explain the mutants sorting



A model of Cps and Eps roles in biofilm formation



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