

Minimum chlorine concentration to ensure disinfection

Chlorine inactivation of the mixed
population versus indicator
microorganism

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Introduction

Chlorine experiment

- Minimum free chlorine concentration based on:
 - Mixed microbial population
 - Indicator microorganism

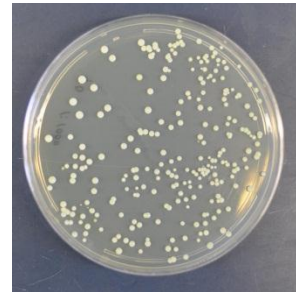
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Methods

Methods

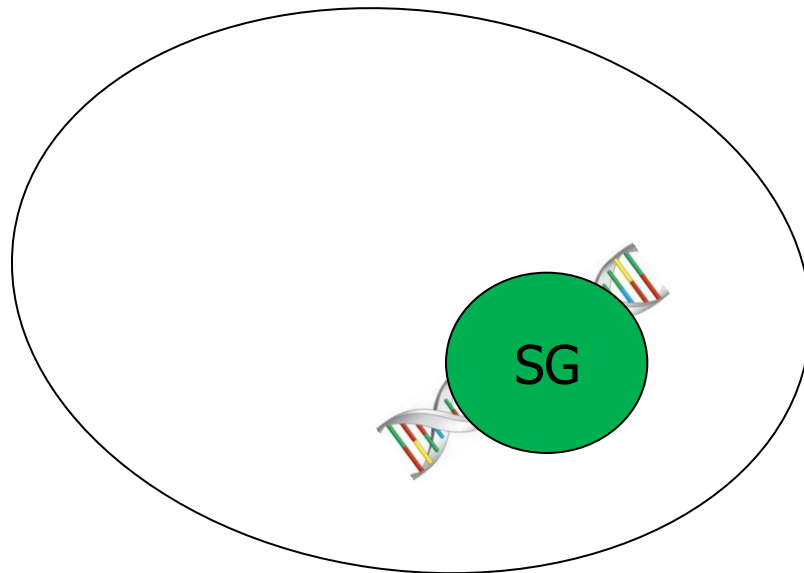
Chlorine experiment

- Non-chlorinated swimming pool water
 - Shower water 1st minute
- Different chlorine concentrations
- Live/dead interpretation of cells
- Same experiments with indicator organism
 - Shower water + *E.coli*
 - Viability of cells

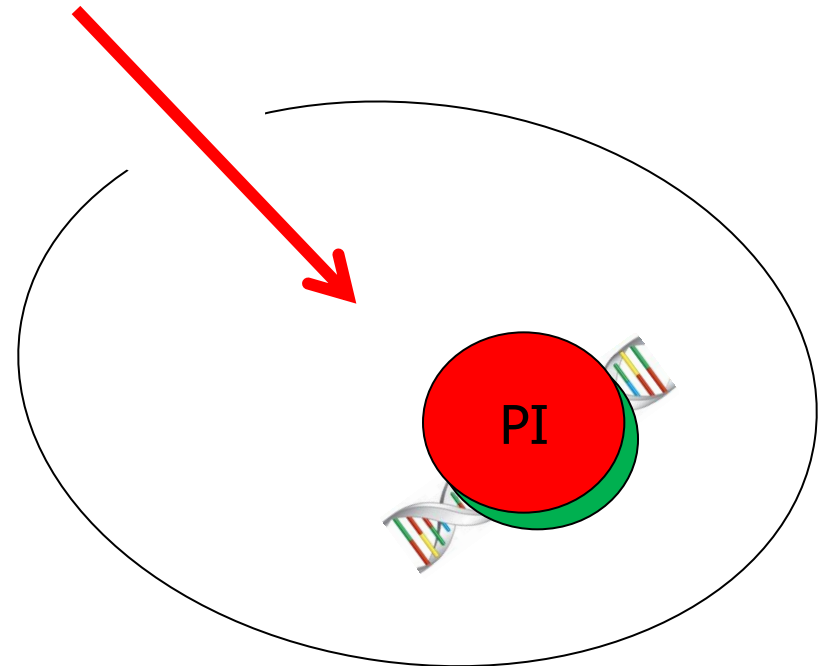


Methods

Flow Cell Cytometry



All cells



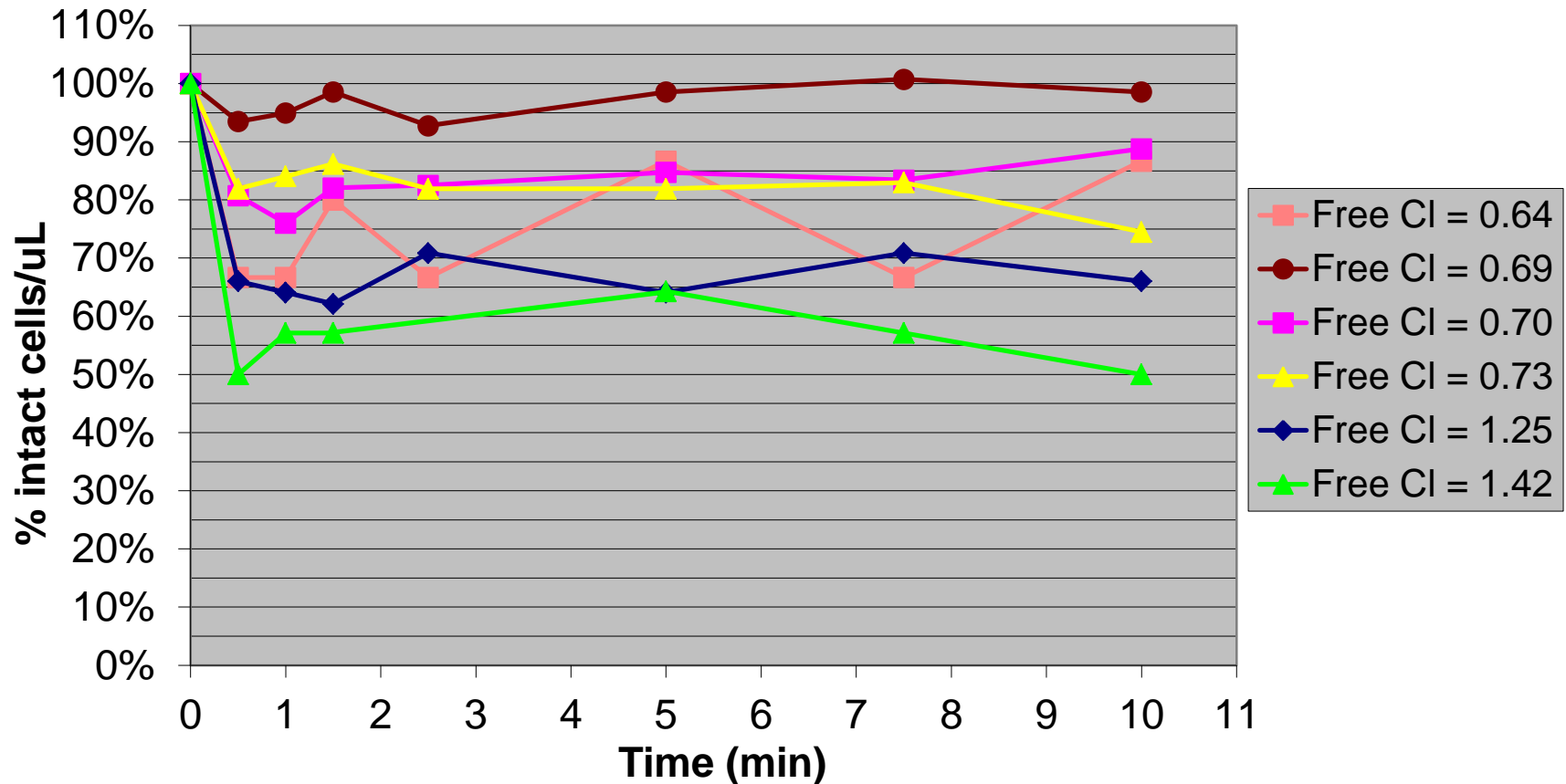
Broken cells
(dead)

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Results

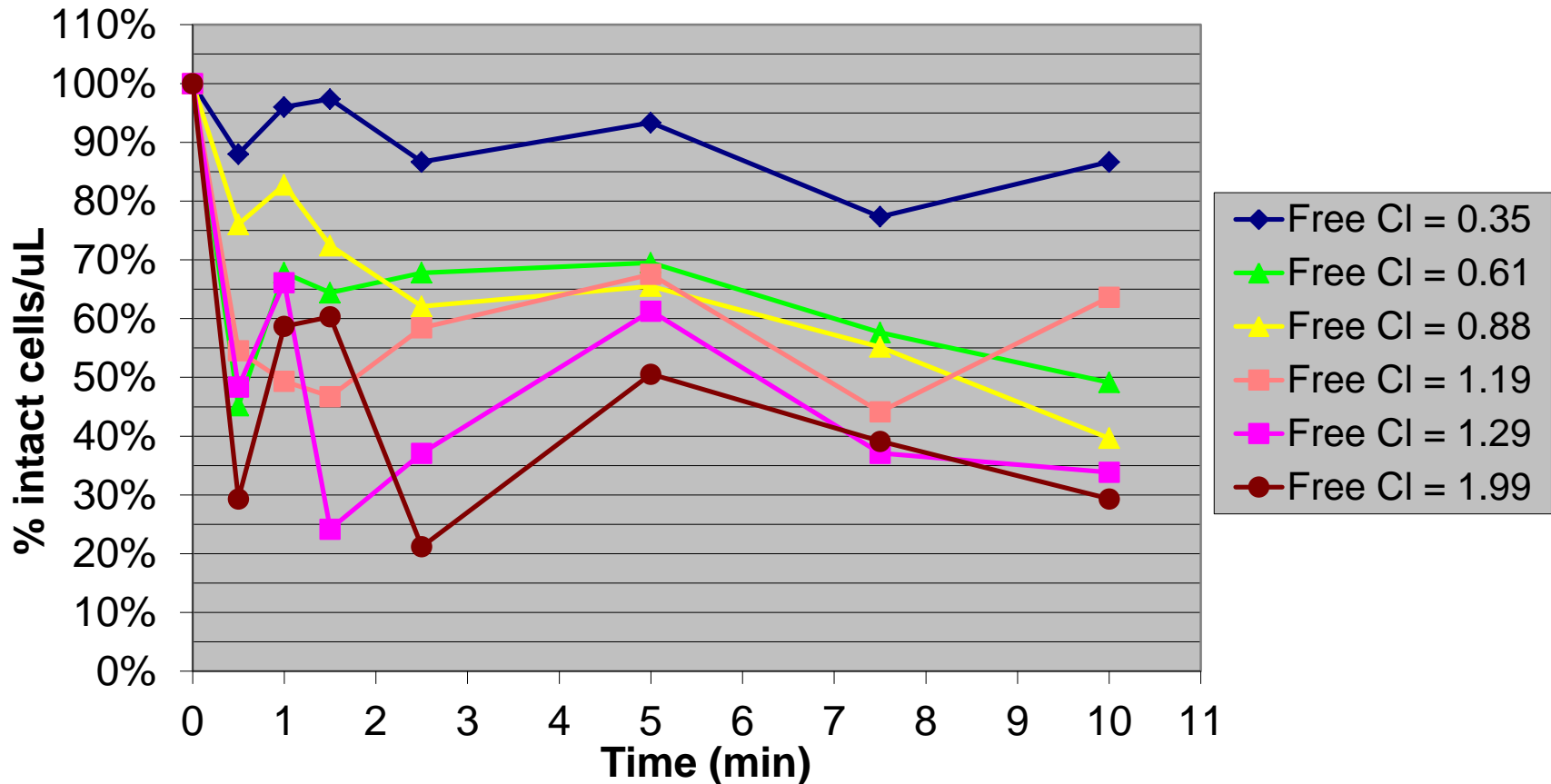
Results

Percentage of intact cells in shower water after exposure of chlorine



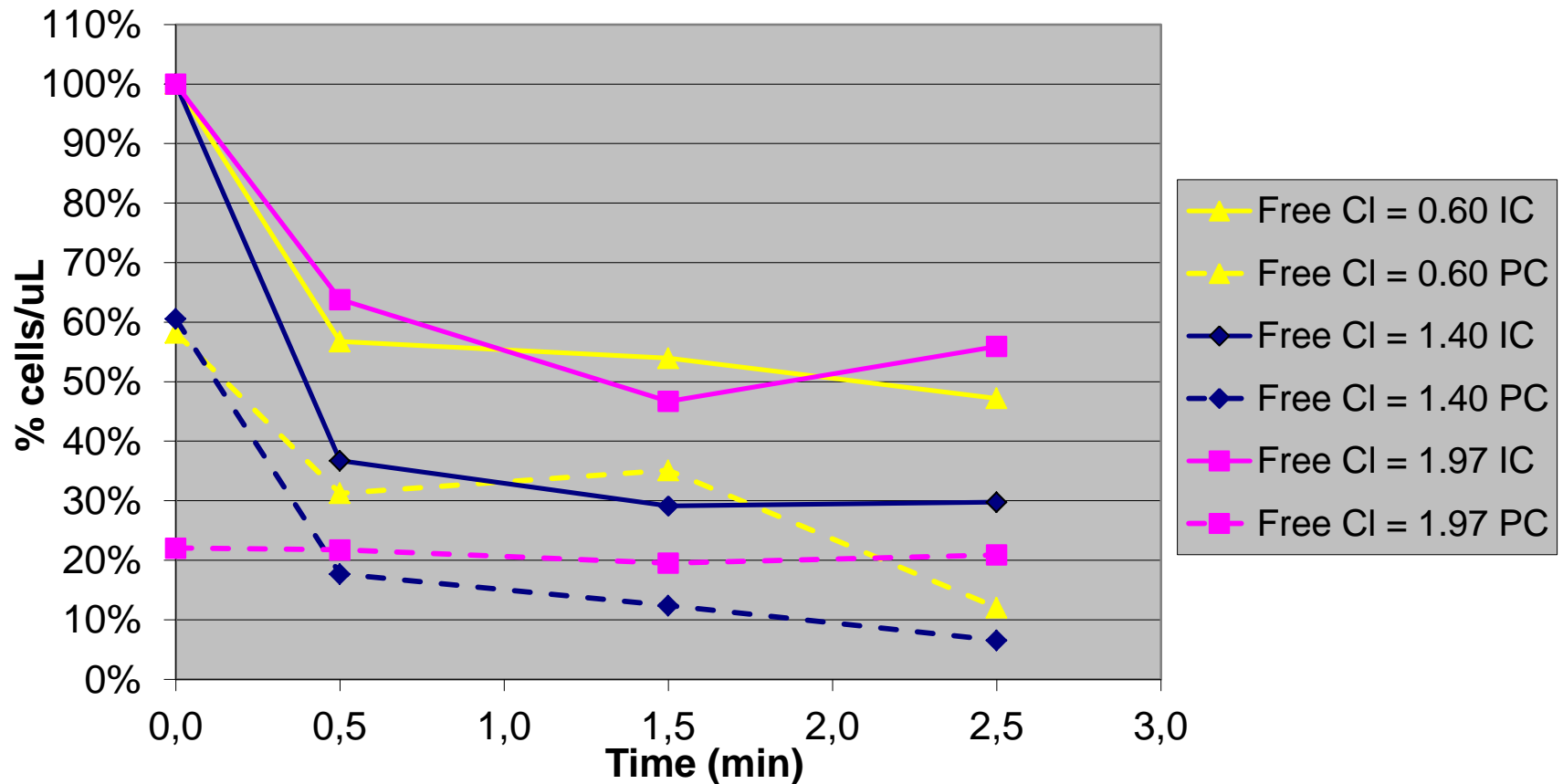
Results

Percentage of intact *E.coli* cells in shower water after exposure to chlorine



Results

Percentage of intact *E.coli* cells (IC) and viable *E.coli* cells (PC) in shower water after exposure to chlorine



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Conclusion

Conclusion

- Intact cell decay depends on free available chlorine concentration
- *E.coli* cells more sensitive to chlorine than mixed population
 - Still no 4-log removal in 30 seconds
- Decay of intact cell show similar graph to viability decay

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Future work

Future work

- Viability tests
 - Shower water
- Microscopy
 - Biofilm protection?
- Pyrosequencing
 - Which organisms survive chlorine?

Thank you for your attention

- Poster 180

