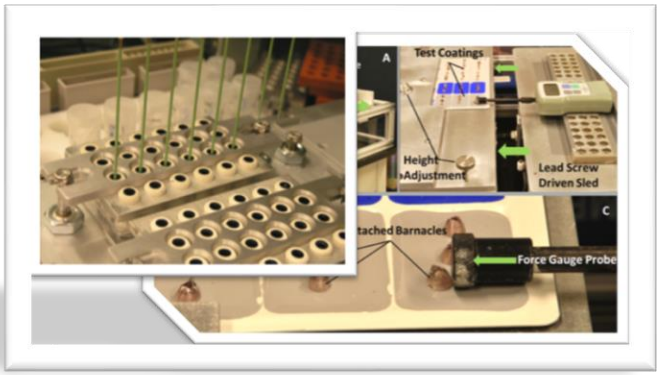
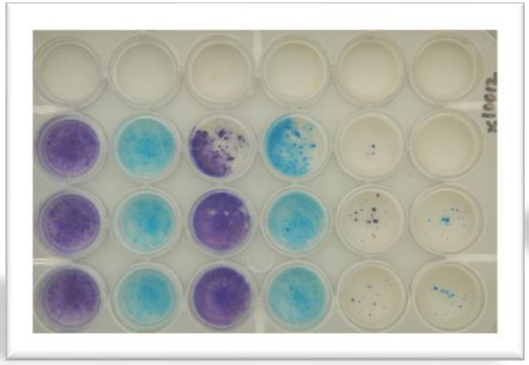
Antimicrobial Evaluation of Coatings

Stuart Helgason
Pioneer Technology Solutions

Report by: Shane Stafslien

Department of Coatings & Polymeric Materials
North Dakota State University
Fargo, ND 58102





Evaluation of 1 Experimental Coating

Diamon Fusion 1&2

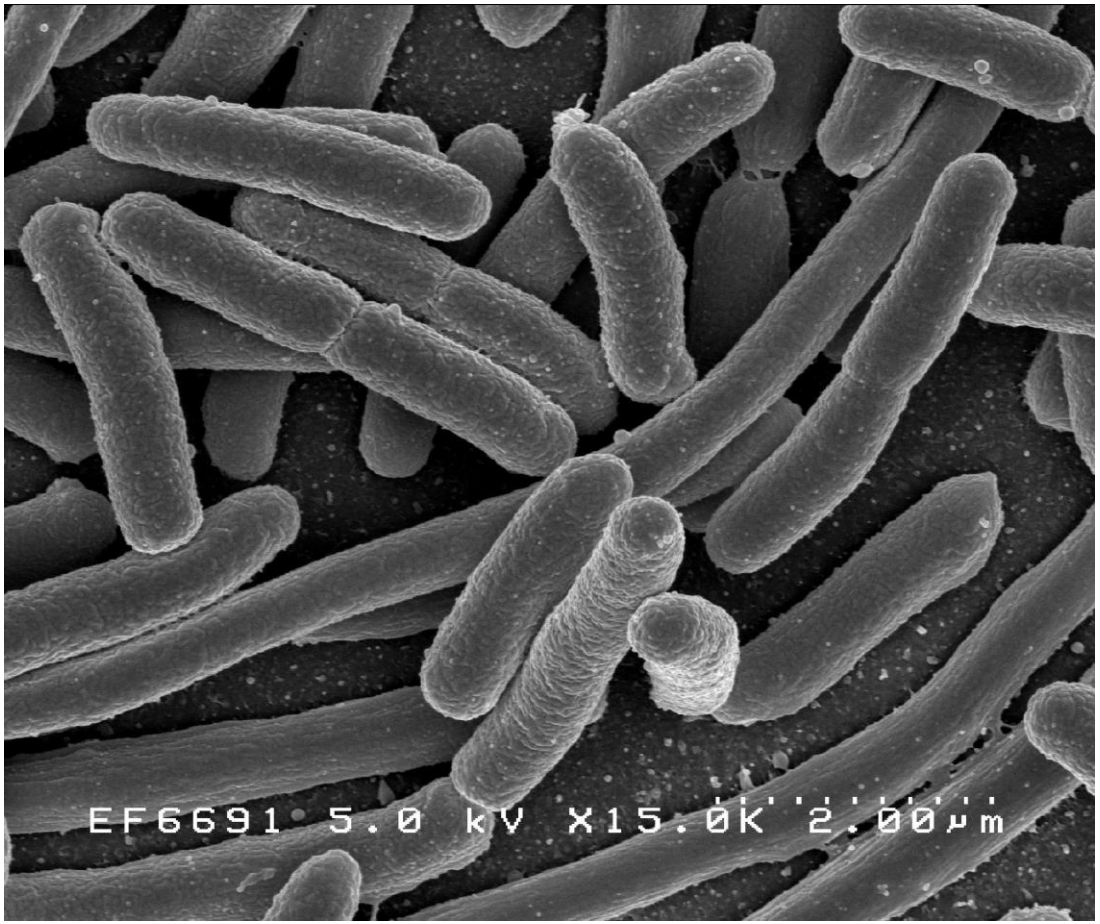
Internal Control Coatings

A series of standard coatings were utilized in this study to gauge performance of experimental coatings:

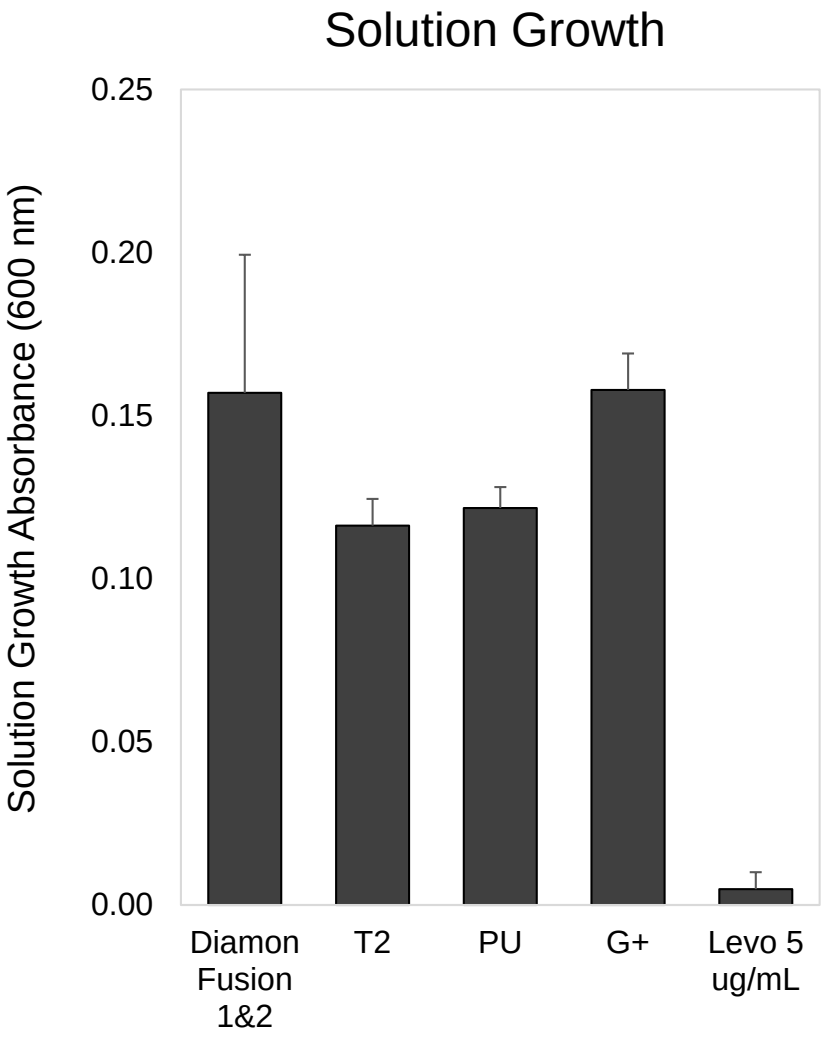
PU - Polyurethane - NDSU formulation

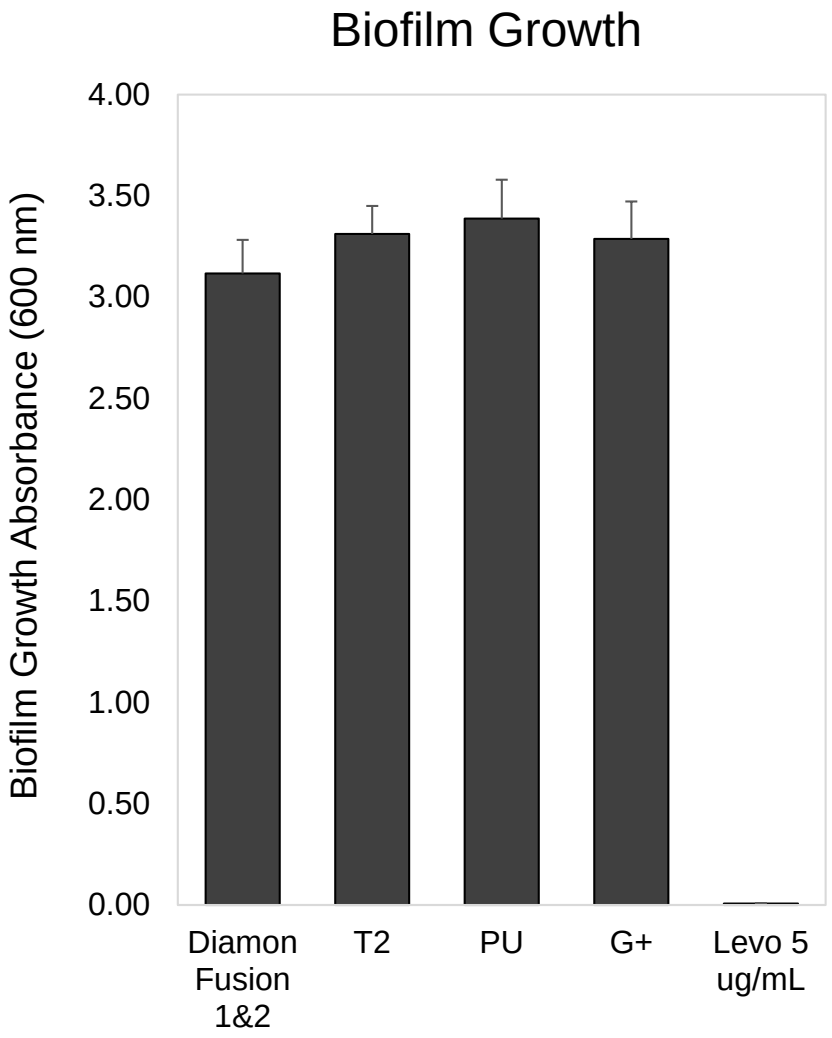
T2 - Dow Corning Silastic-T2

Evaluation with the Gram-negative Bacterium, *Escherichia coli*



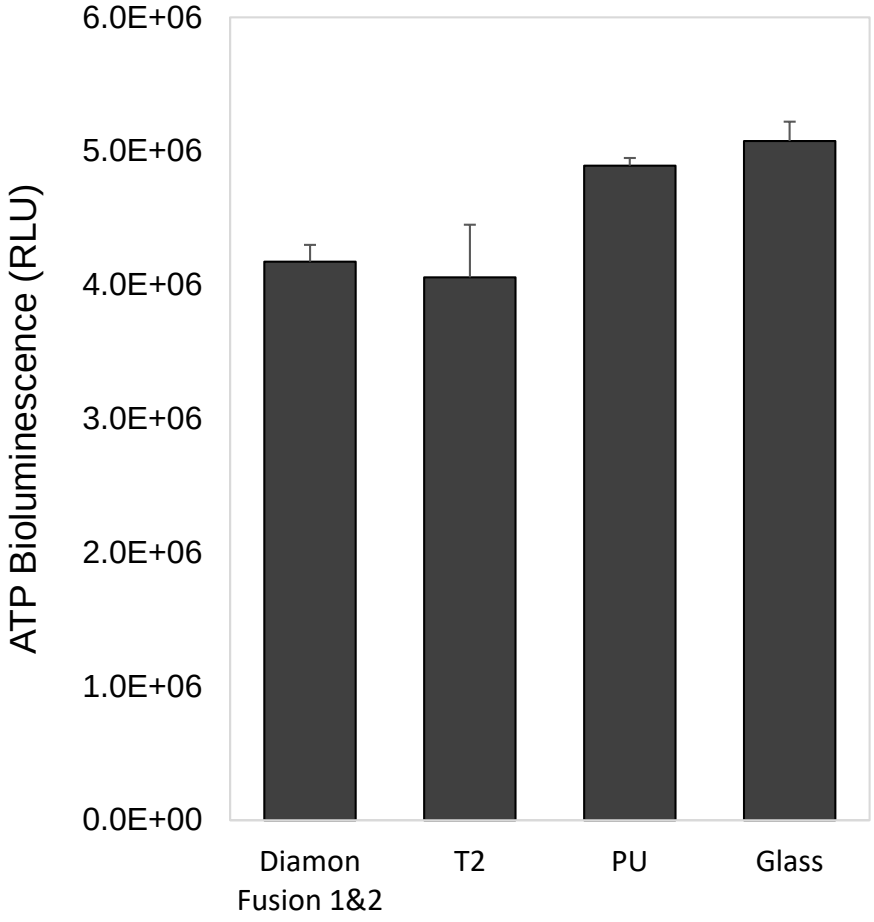
Leachate Toxicity (24 hr Growth)





G+ = growth positive control (i.e. fresh growth medium)
Levo = Levofloxacin

Cell Viability on Coating Surface (24 hr)

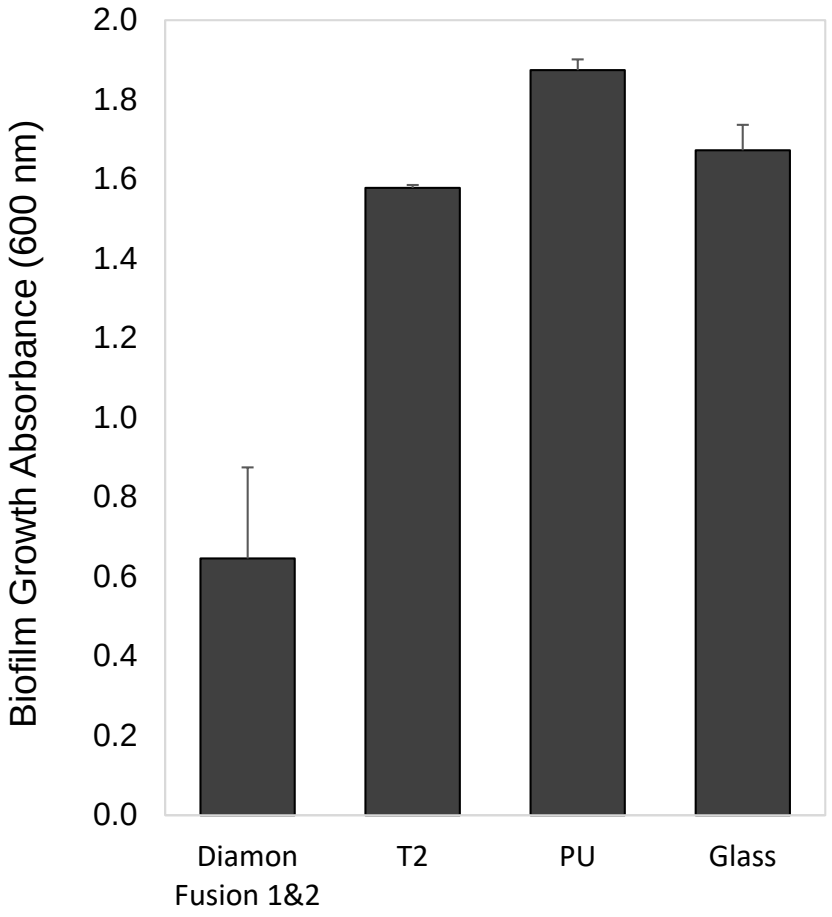


Cell Viability Relative to T2 & PU Standards

	T2	PU	Glass
Diamon Fusion 1&2	2.9	14.7	17.8

Percent reduction
Percent increase

Biofilm Growth on Coating Surface (24 hr)

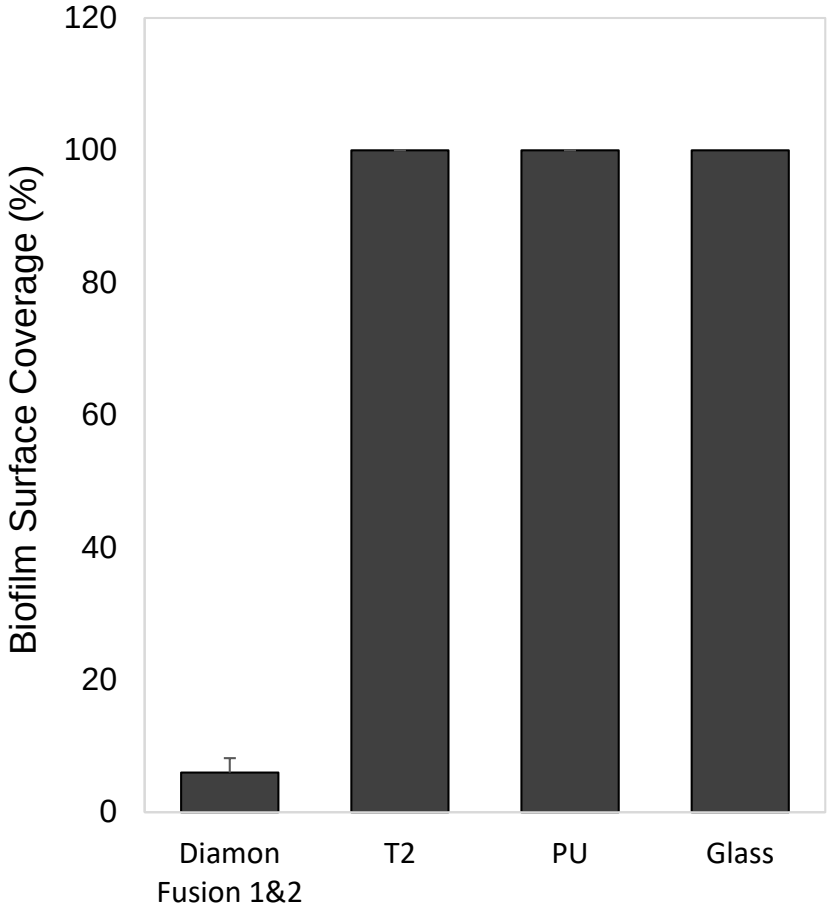


Biofilm Growth Relative to T2 & PU Standards

	T2	PU	Glass
Diamon Fusion 1&2	59.1	65.5	61.4

Percent reduction
Percent increase

Biofilm Surface Coverage on Coating Surface (24 hr)



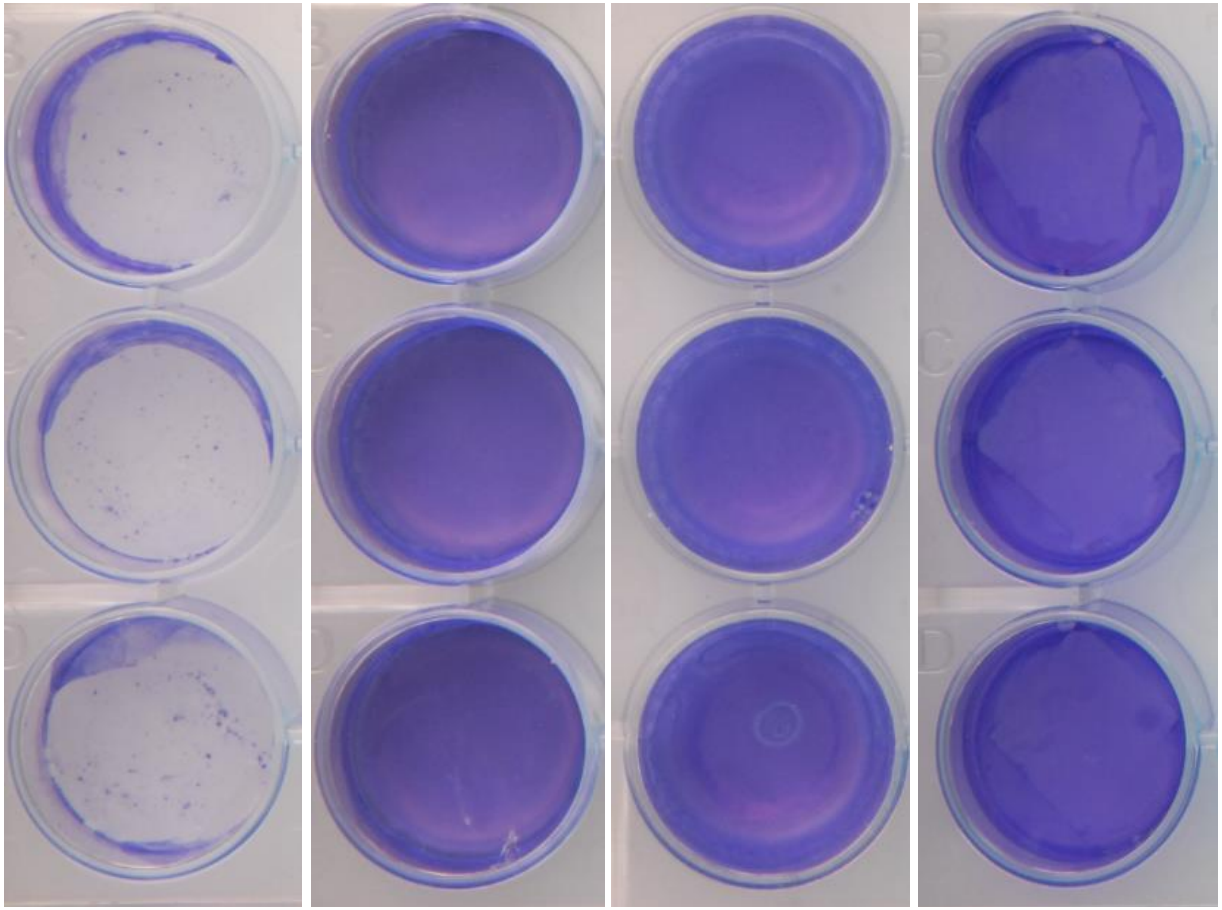
Biofilm Surface Coverage Relative to T2 & PU Standards

	T2	PU	Glass
Diamon Fusion 1&2	94.0	94.0	94.0

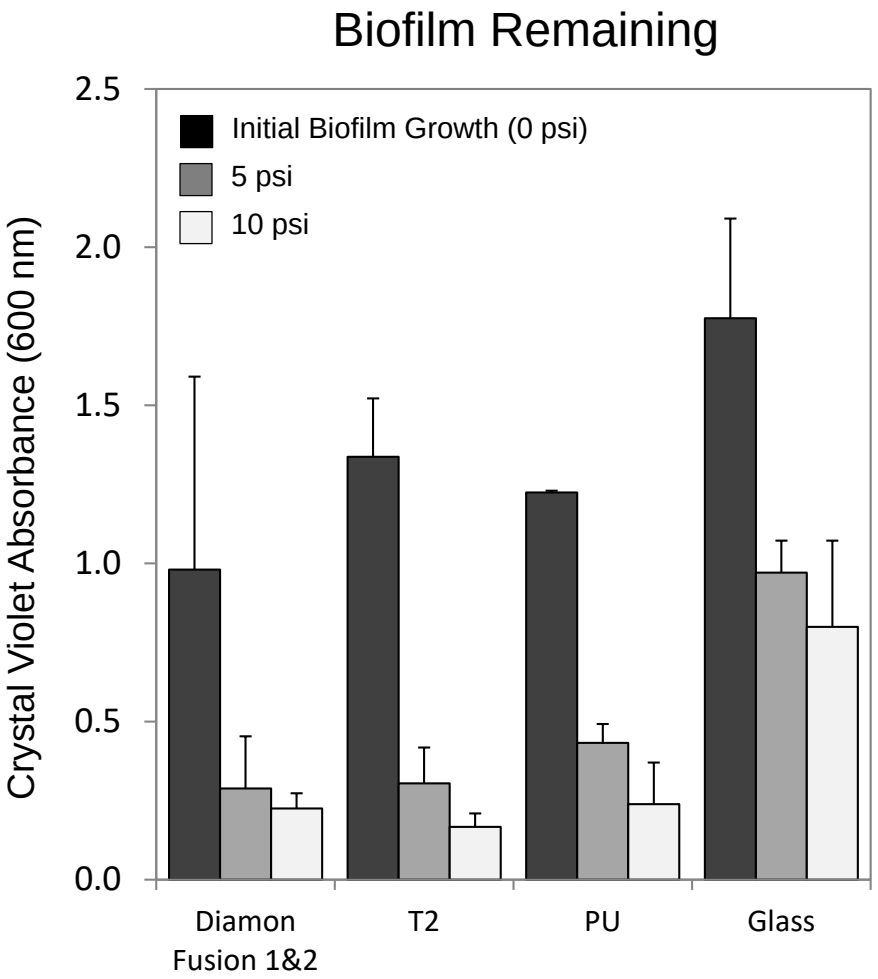
Percent reduction
Percent increase

Image of Biofilm Growth on Coating Surface (24 hr) – Crystal Violet Staining

Diamon Fusion 1 & 2 T2 PU Glass



Biofilm Growth & Adhesion (24 hr) – Water-Jet Removal

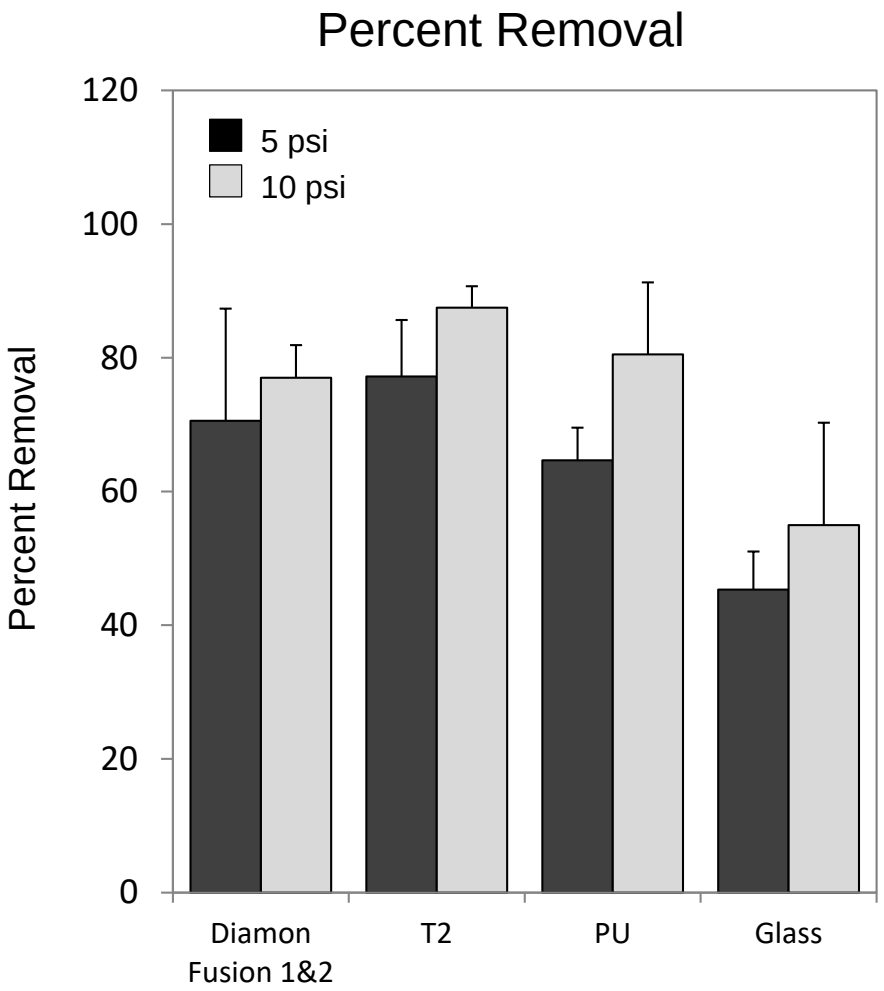


Biofilm Remaining Relative to T2 & PU Standards

	0 psi			5 psi			10 psi		
	T2	PU	Glass	T2	PU	Glass	T2	PU	Glass
Diamon Fusion 1&2	26.7	19.9	44.8	5.3	33.3	70.3	35.0	5.5	71.8

Percent reduction
Percent increase

Biofilm Growth & Adhesion (24 hr) – Water-Jet Removal



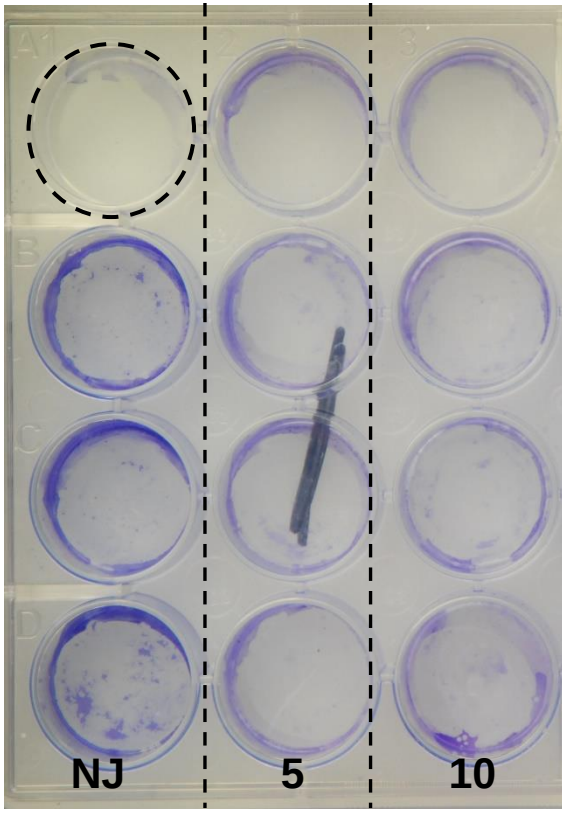
Percent Removal Relative to T2 & PU Standards

	5 psi			10 psi		
	T2	PU	Glass	T2	PU	Glass
Diamon Fusion 1&2	6.6	5.9	25.3	10.5	3.5	22.0

More removal
Less removal

Plate Image of Bacterial Biofilm Adhesion Evaluation

Diamon Fusion 1 & 2

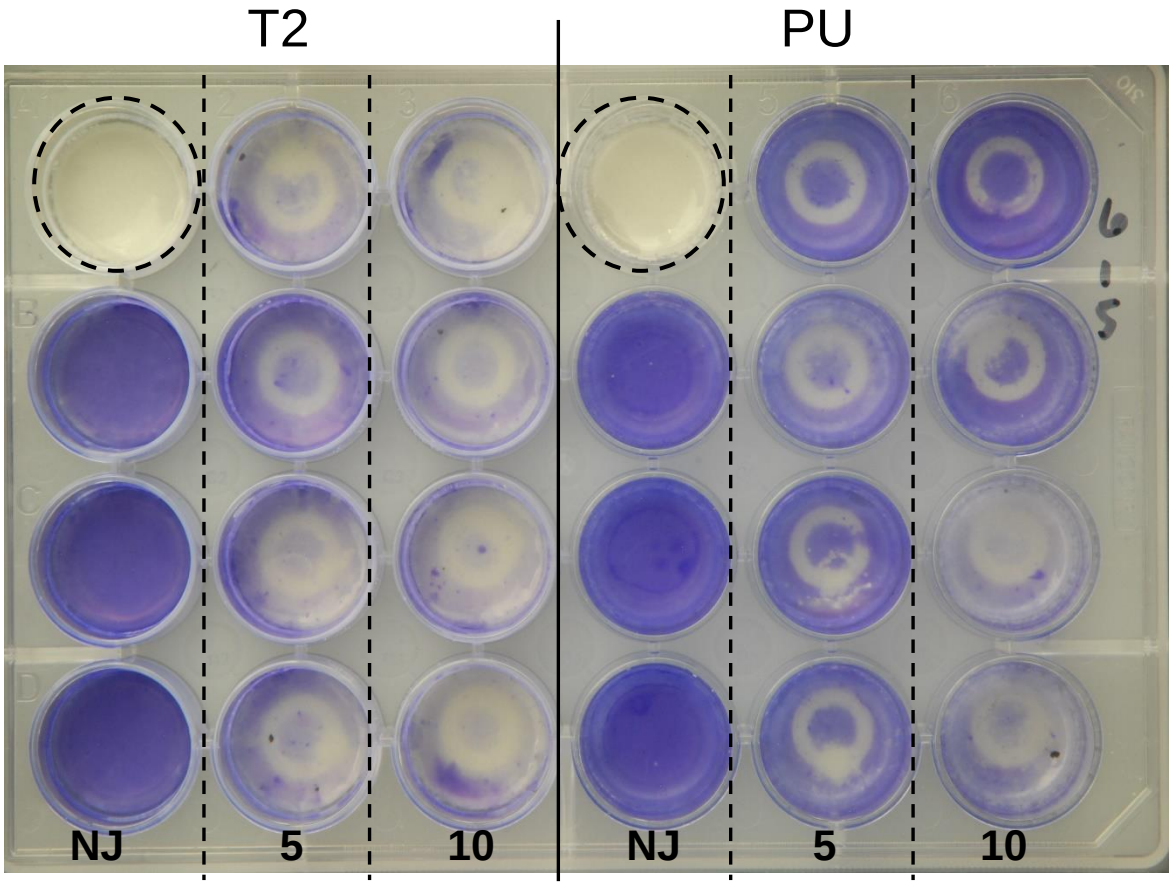


NJ = Non-jet (0 psi)
5 = 5 psi
10 = 10 psi

= Assay Control
(no bacteria)

Images collected after staining with Crystal Violet biofilm indicator dye

Plate Image of Bacterial Biofilm Adhesion Evaluation



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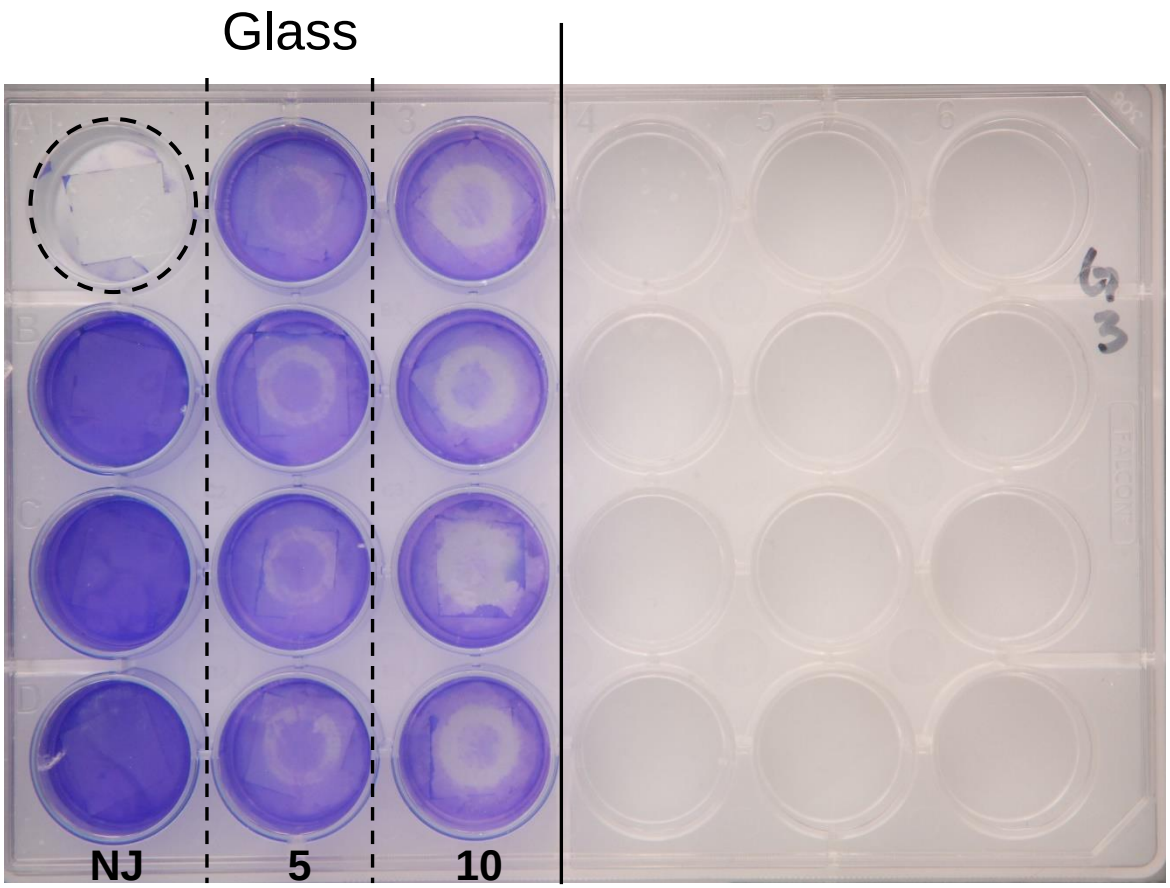

NJ = Non-jet (0 psi)
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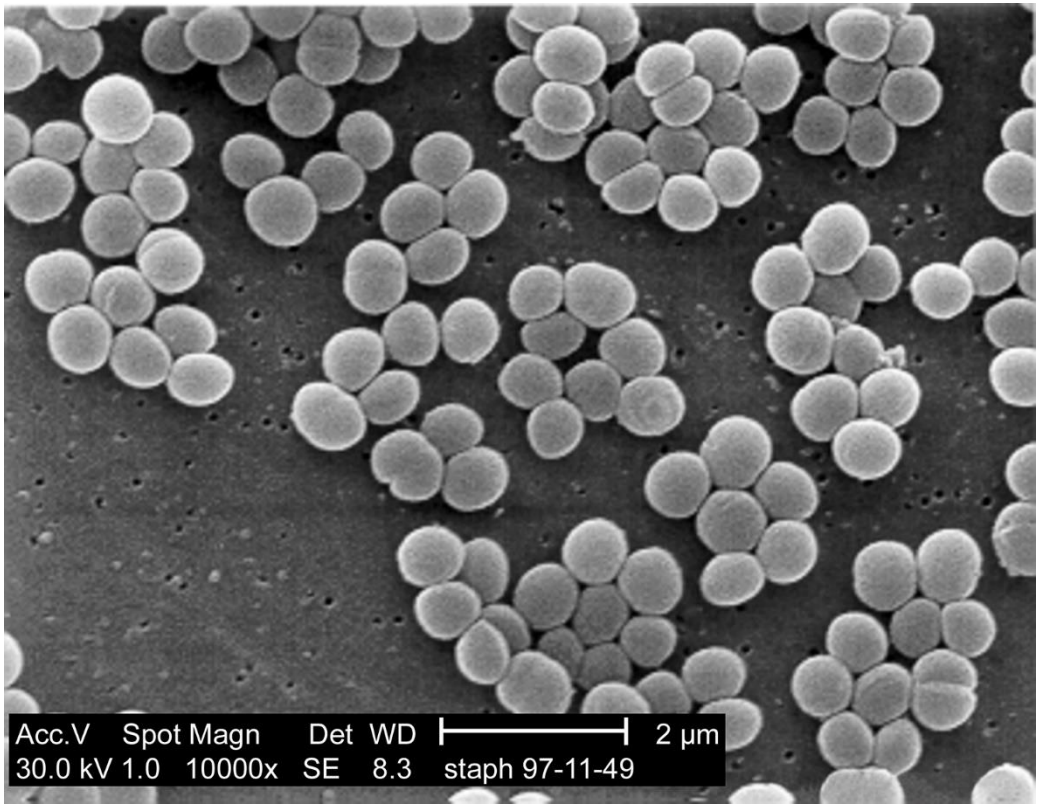
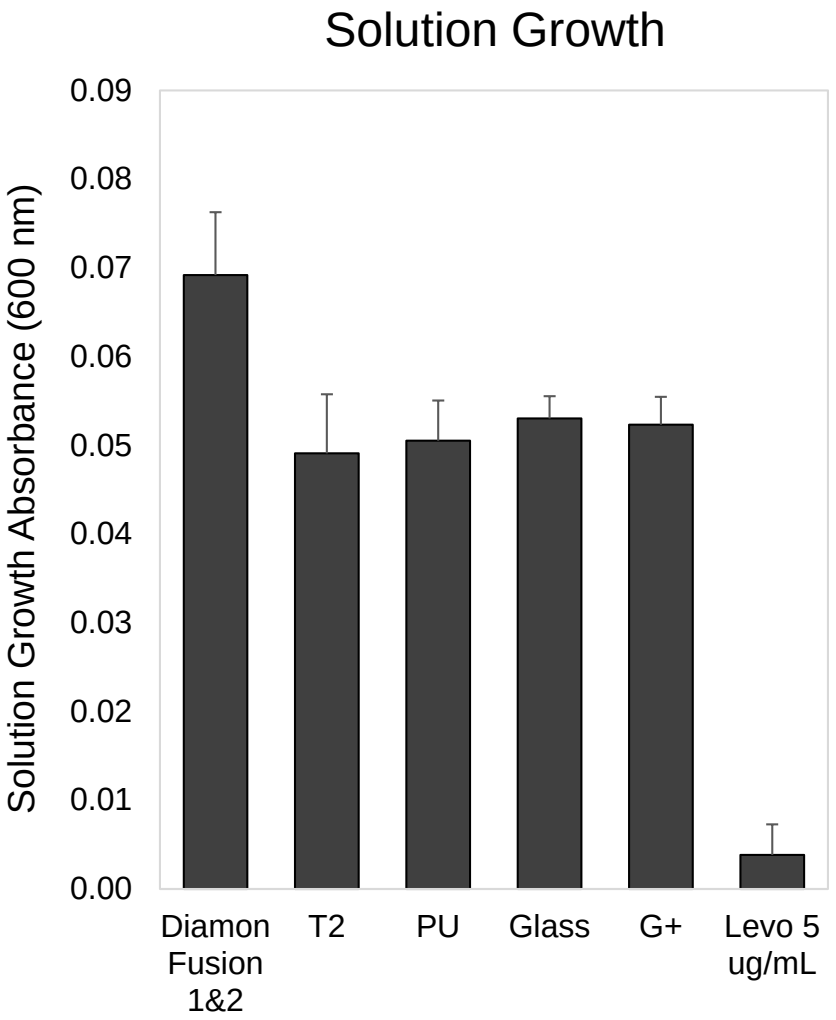
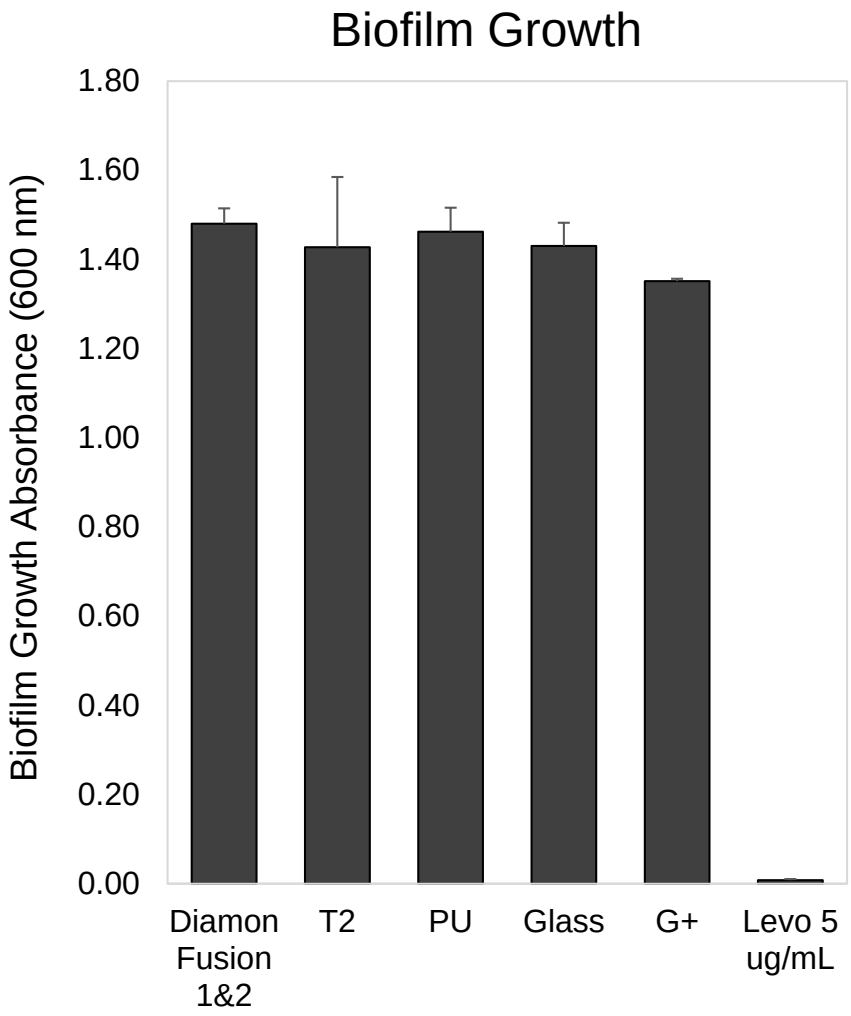
Images collected after staining with Crystal Violet biofilm indicator dye

Evaluation with the Gram-positive Bacterium, *Staphylococcus epidermidis*



Leachate Toxicity (72 hr Growth)





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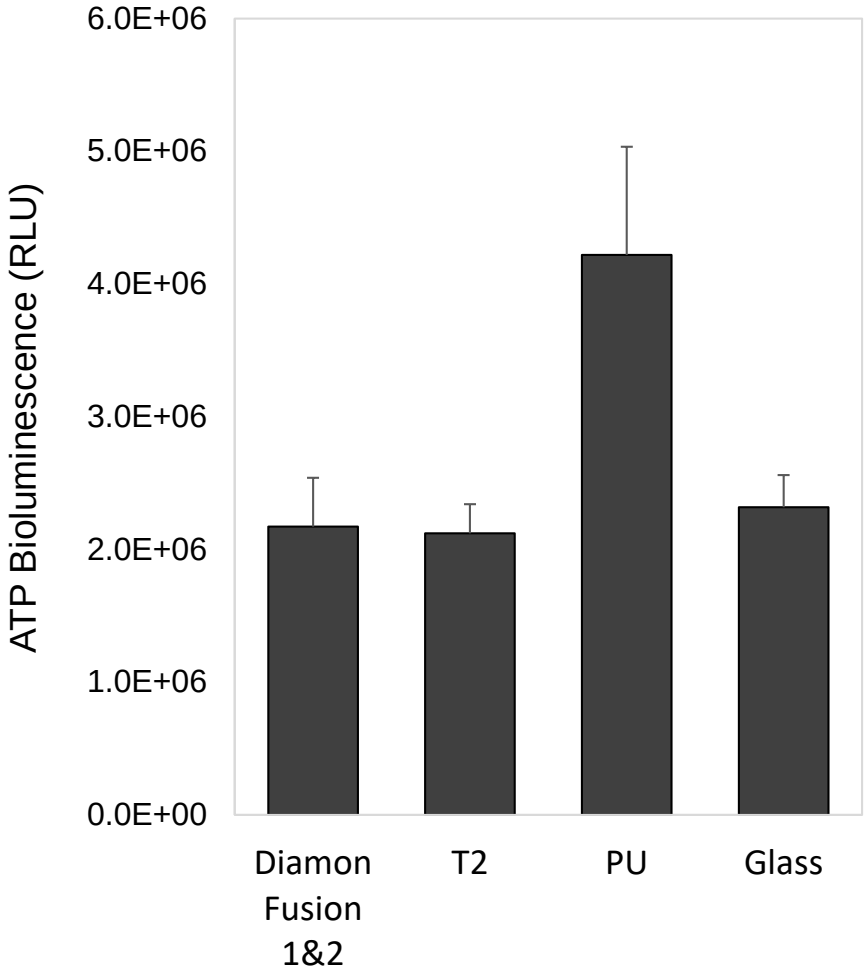
Cell Viability on Coating Surface (72 hr)

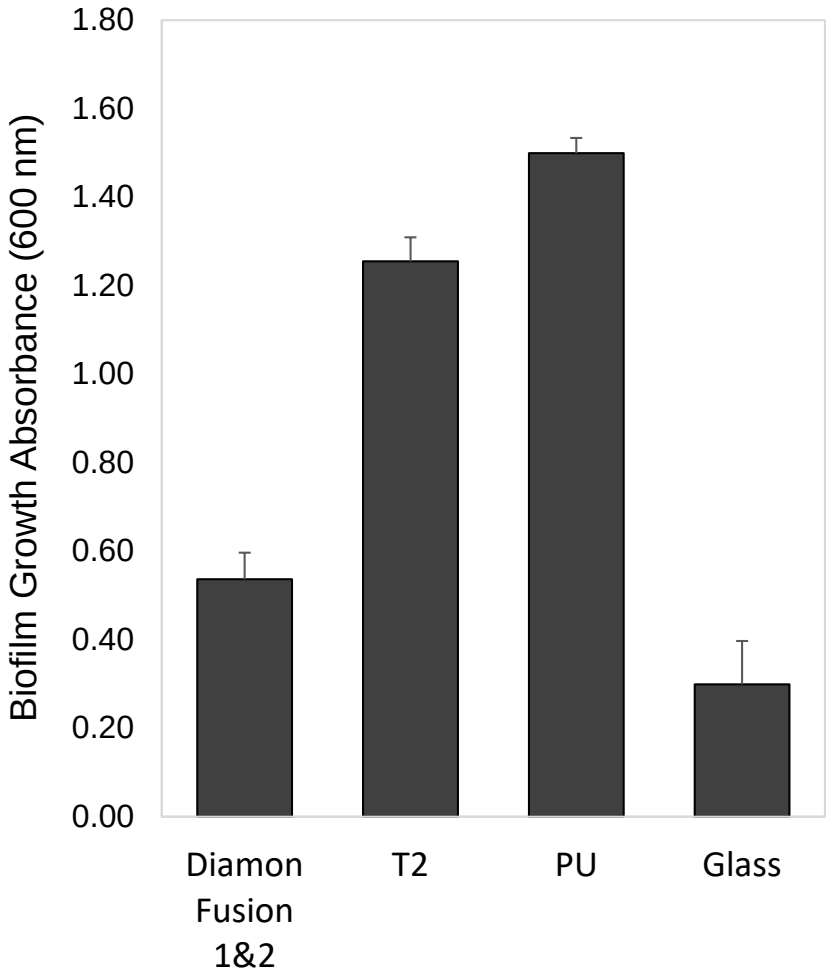


Cell Viability Relative to T2 & PU Standards

	T2	PU	Glass
Diamon Fusion 1&2	2.4	48.5	6.3

Percent reduction
Percent increase

Biofilm Growth on Coating Surface (72 hr)

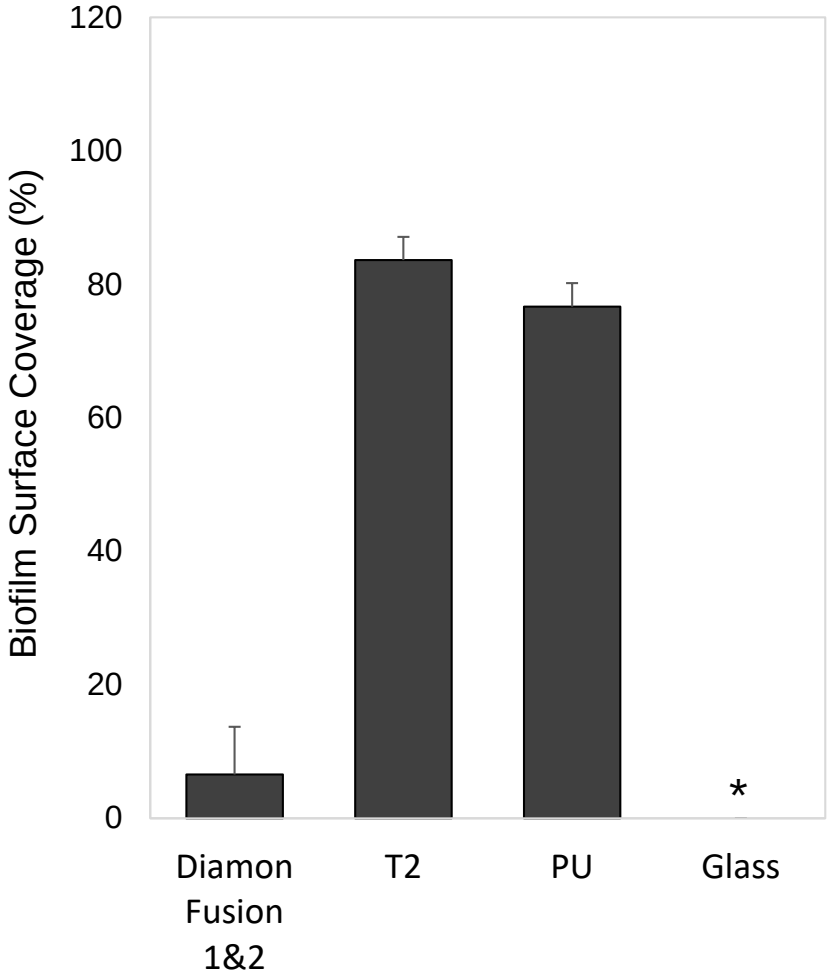


Biofilm Growth Relative to T2 & PU Standards

	T2	PU	Glass
Diamon Fusion 1&2	57.2	64.1	79.4

Percent reduction
Percent increase

Biofilm Surface Coverage on Coating Surface (72 hr)



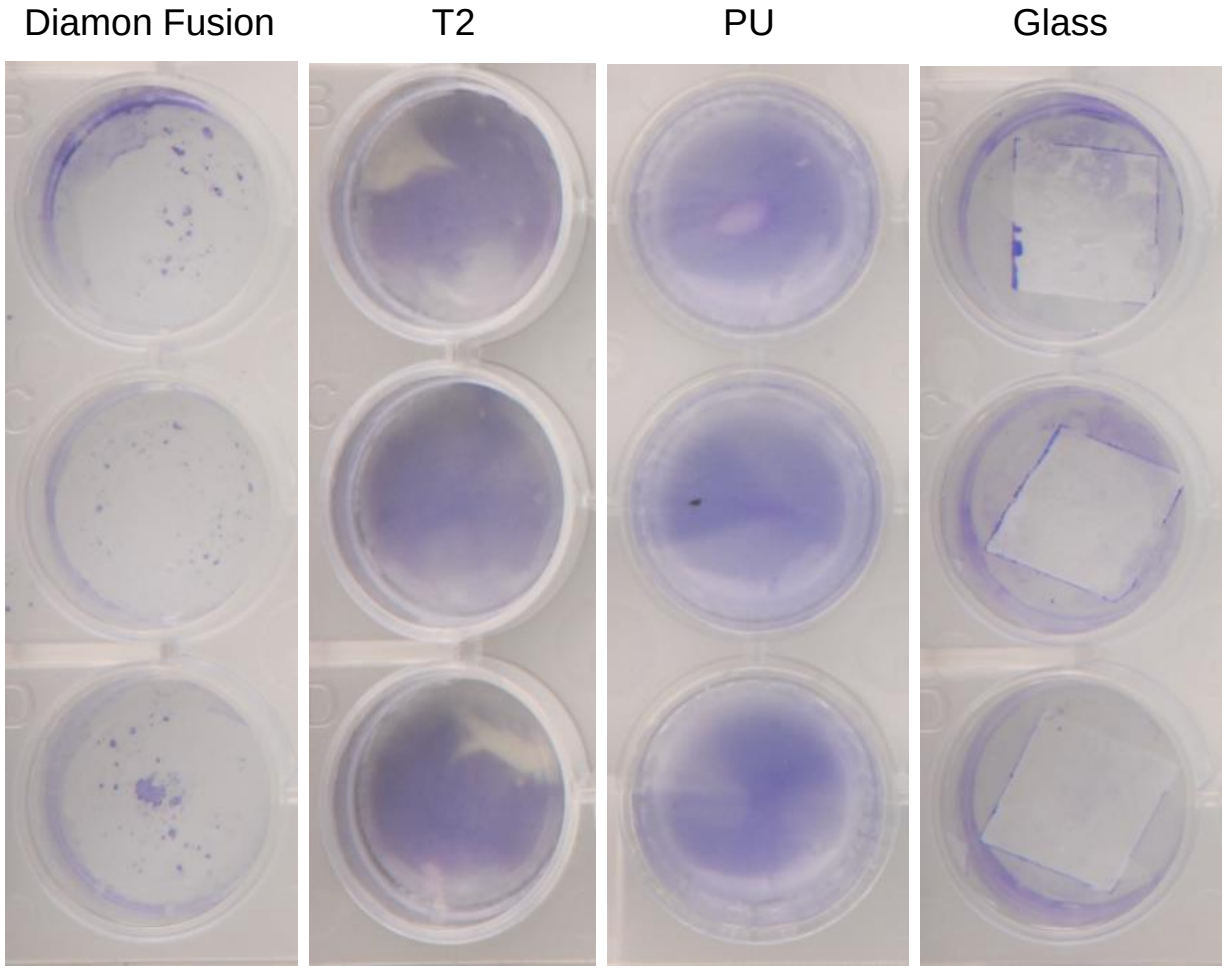
Biofilm Surface Coverage Relative to T2 & PU Standards

	T2	PU
Diamon Fusion 1&2	92.1	91.4

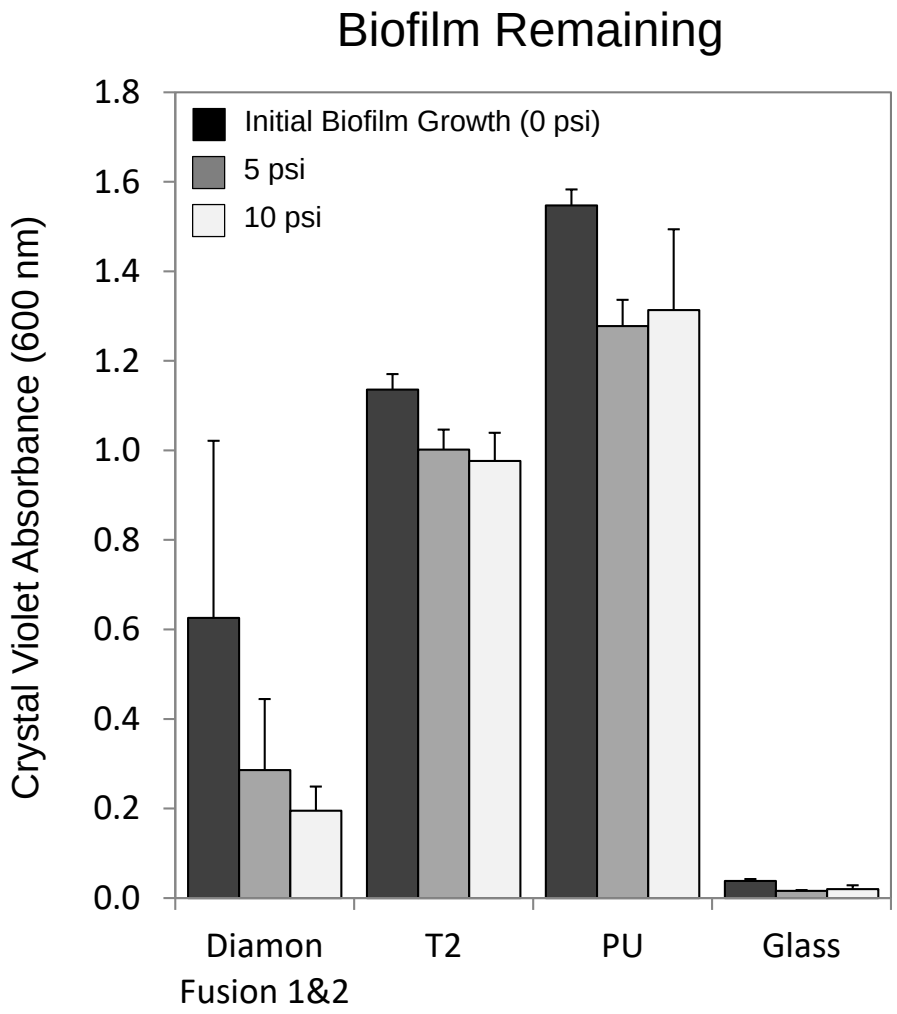
Percent reduction
Percent increase

* Percent coverage could not be measured due to background interference of double sided adhesive tape.

Image of Biofilm Growth on Coating Surface (72 hr) – Crystal Violet Staining



Biofilm Growth & Adhesion (72 hr) – Water-Jet Removal

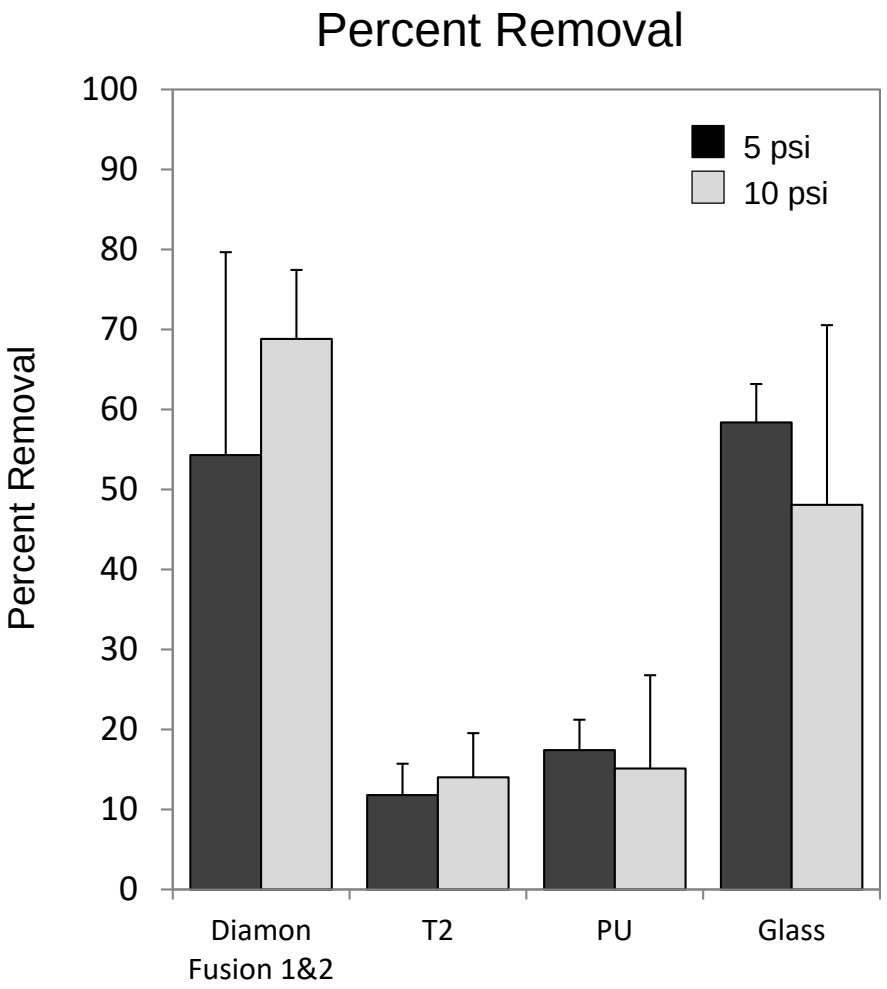


Biofilm Remaining Relative to T2 & PU Standards

	0 psi			5 psi			10 psi		
	T2	PU	Glass	T2	PU	Glass	T2	PU	Glass
Diamon Fusion 1&2	44.9	59.6	1538.0	71.5	77.6	1698.0	80.0	85.2	883.0

Percent reduction
Percent increase

Biofilm Growth & Adhesion (72 hr) – Water-Jet Removal



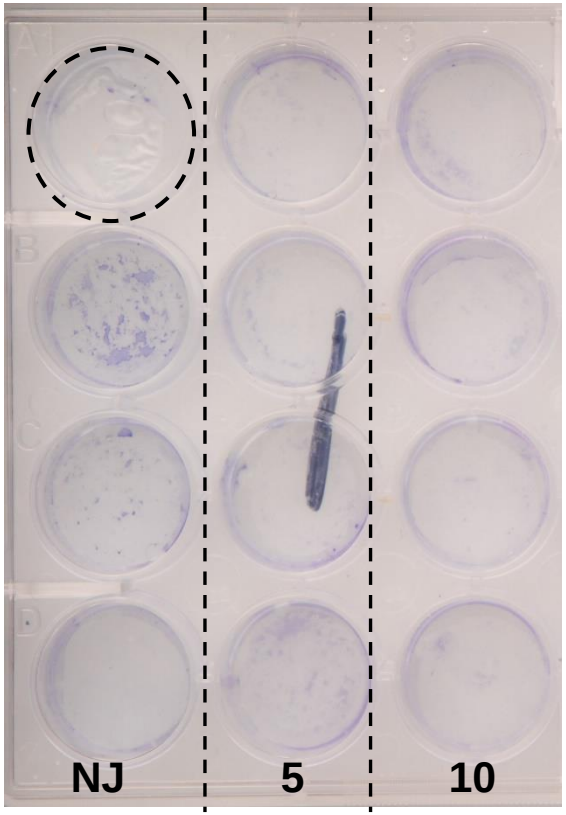
Percent Removal Relative to T2 & PU Standards

	5 psi			10 psi		
	T2	PU	Glass	T2	PU	Glass
Diamon Fusion 1&2	42.5	36.9	4.1	54.8	53.7	20.1

More removal
Less removal

Plate Image of Bacterial Biofilm Adhesion Evaluation

Diamon Fusion



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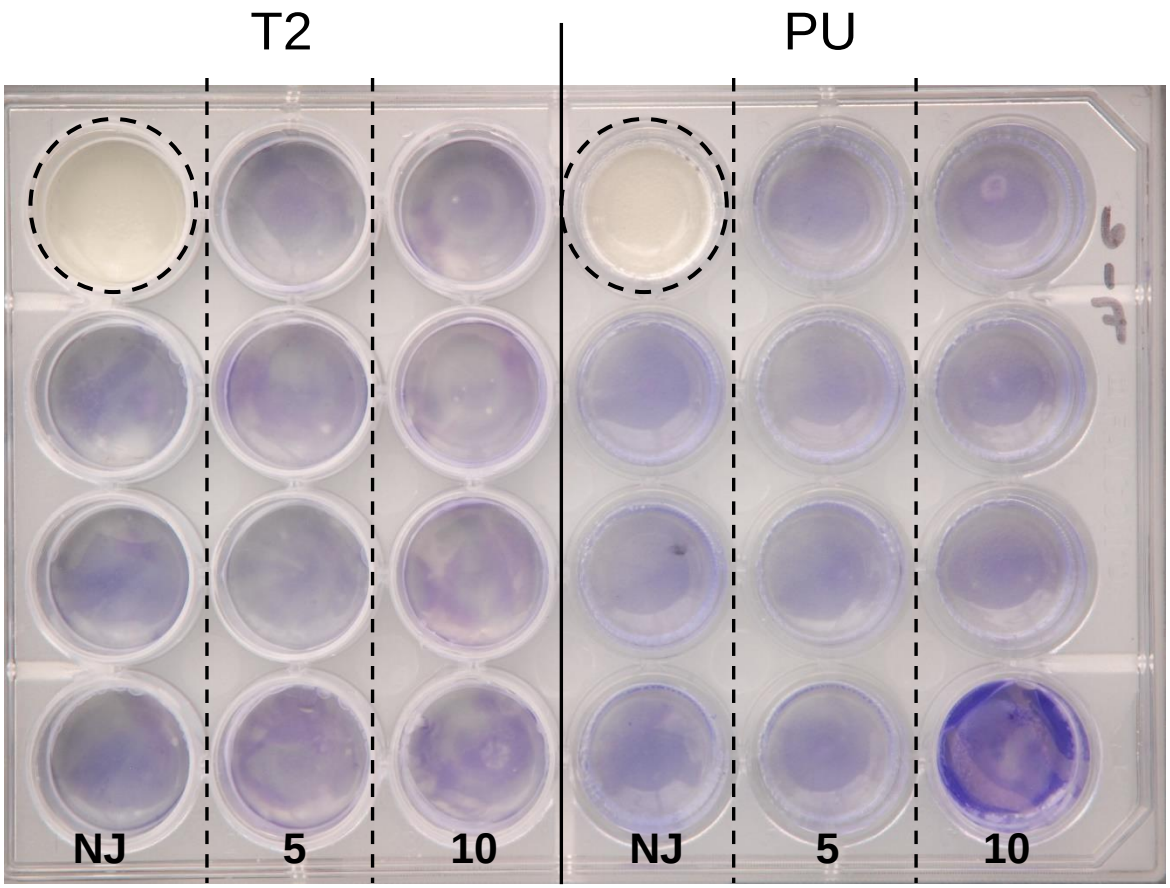

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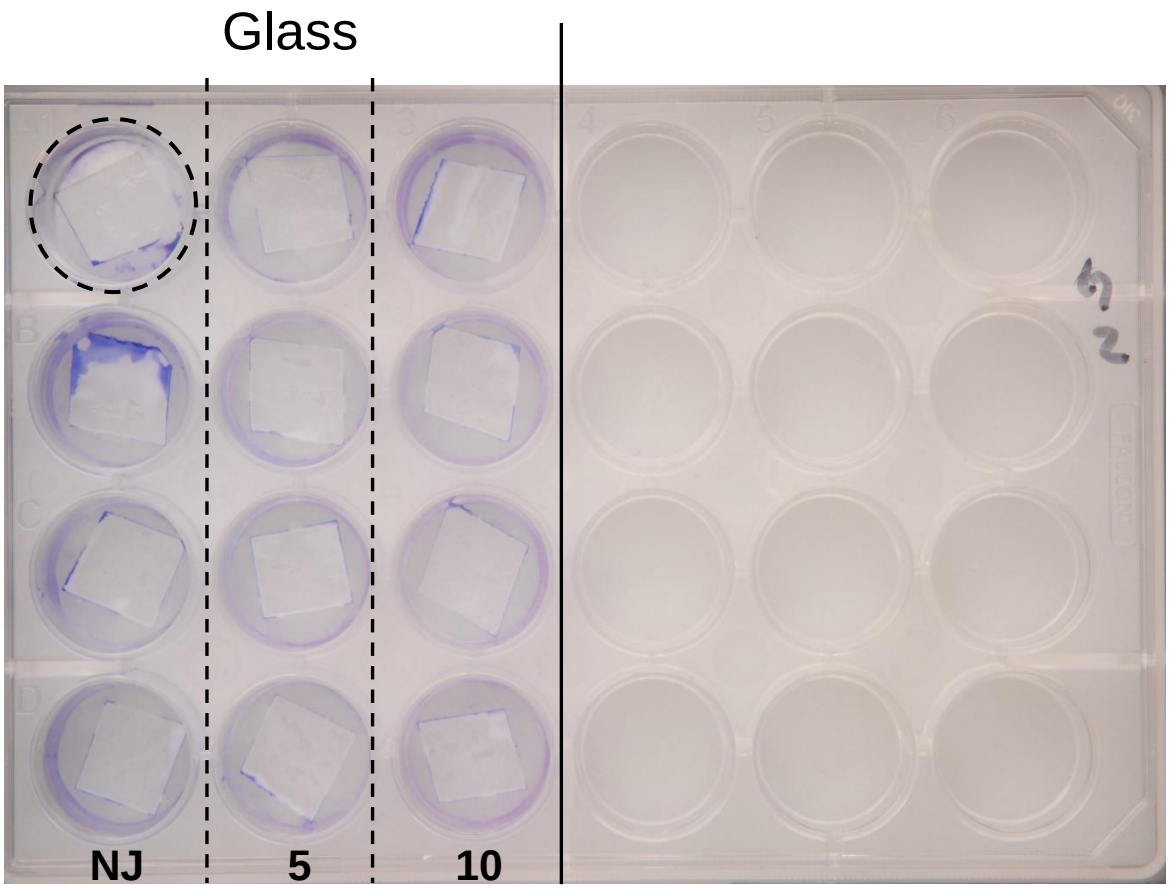

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