What is our idea?
This proposal aims to utilize preventative measures as a long-term solution to infection, since development of antibiotics is a short-term solution that bacteria quickly develop resistance to. We propose testing vitamin D3 on the immune response to MRSA cultures to see if it has any effect on preventing or counteracting the infection.

Research Question:
How are MRSA levels affected by the increased expression of antimicrobial peptides that are induced by Vitamin D3 supplementation?

Sub Research Question:
How are tissue growth impacted by MRSA levels, and does Vitamin D3 also directly impact MRSA itself?

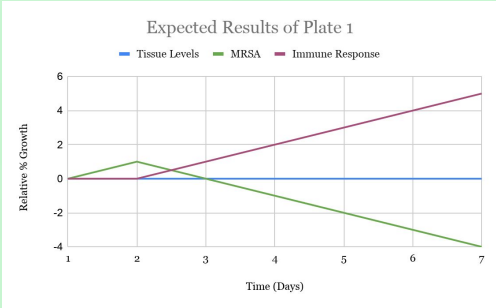
Preventing the War on Superbugs: *The Powers of Vitamin D3*

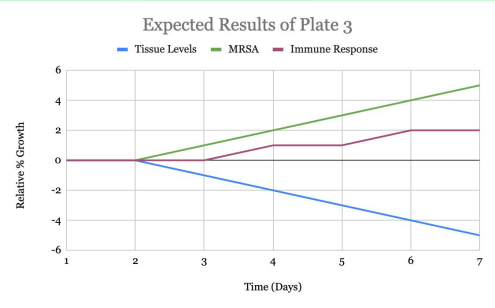
Set Up

	Plate 1	Plate 2	Plate 3	Plate 4	Plate 5	Plate 6
Tissue	+	+	+	-	+	-
Vitamin D3	+	+	-	+	-	-
MRSA	+	-	+	+	-	+
	Experimental				**Control**	

Predicted Results

	Plate 1	Plate 2	Plate 3	Plate 4	Plate 5	Plate 6
Components of the plate	Tissue + VD + MRSA	Tissue + VD	Tissue + MRSA	Vitamin D + MRSA	Tissue	MRSA
MRSA levels	Decrease	-	Increase	Increase	-	Increase
Tissue Growth	Unchanged	Unchanged	Decrease	-	Unchanged	-
Immune response	Strong	Strong (?)	Weak	-	-	-





What informs this project?

1. Stagnant Issue w/ Superbugs (MRSA) and antibiotics

2. Vitamin D3 activates antimicrobial immune response

How will we test it?

1. MRSA Levels:
Matrix-Lysis
2. Tissue Growth:
alamarBlue®
3. Immune Response:
Gene expression of immune proteins

Access full proposal and references here: