

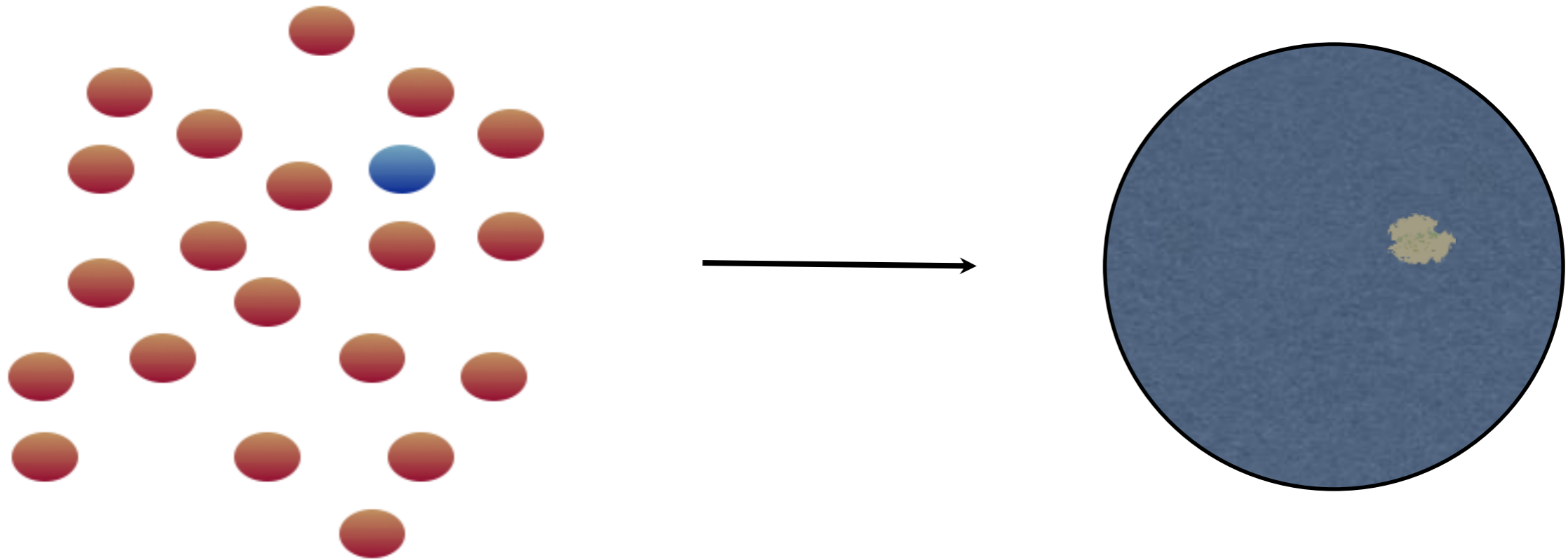
Viability of cells in commercial and home-made probiotic

Sandra M. Buerger, PhD
October 29, 2018

6th Microbiome R&D & Business Collaboration Forum
3rd Probiotics Congress: USA

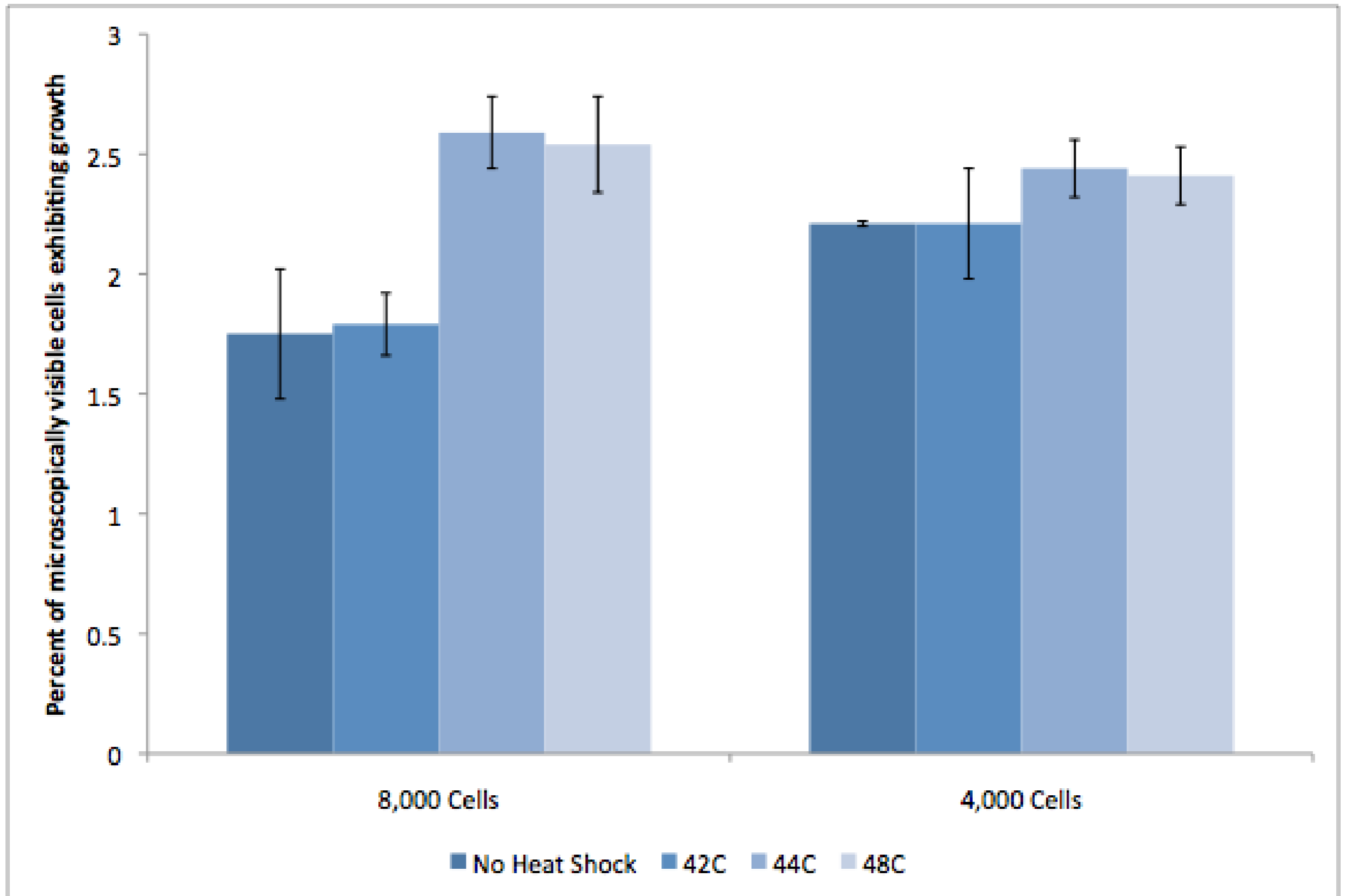
Background: Cell Viability and the Use of Plate Counts to Establish Cell Viability

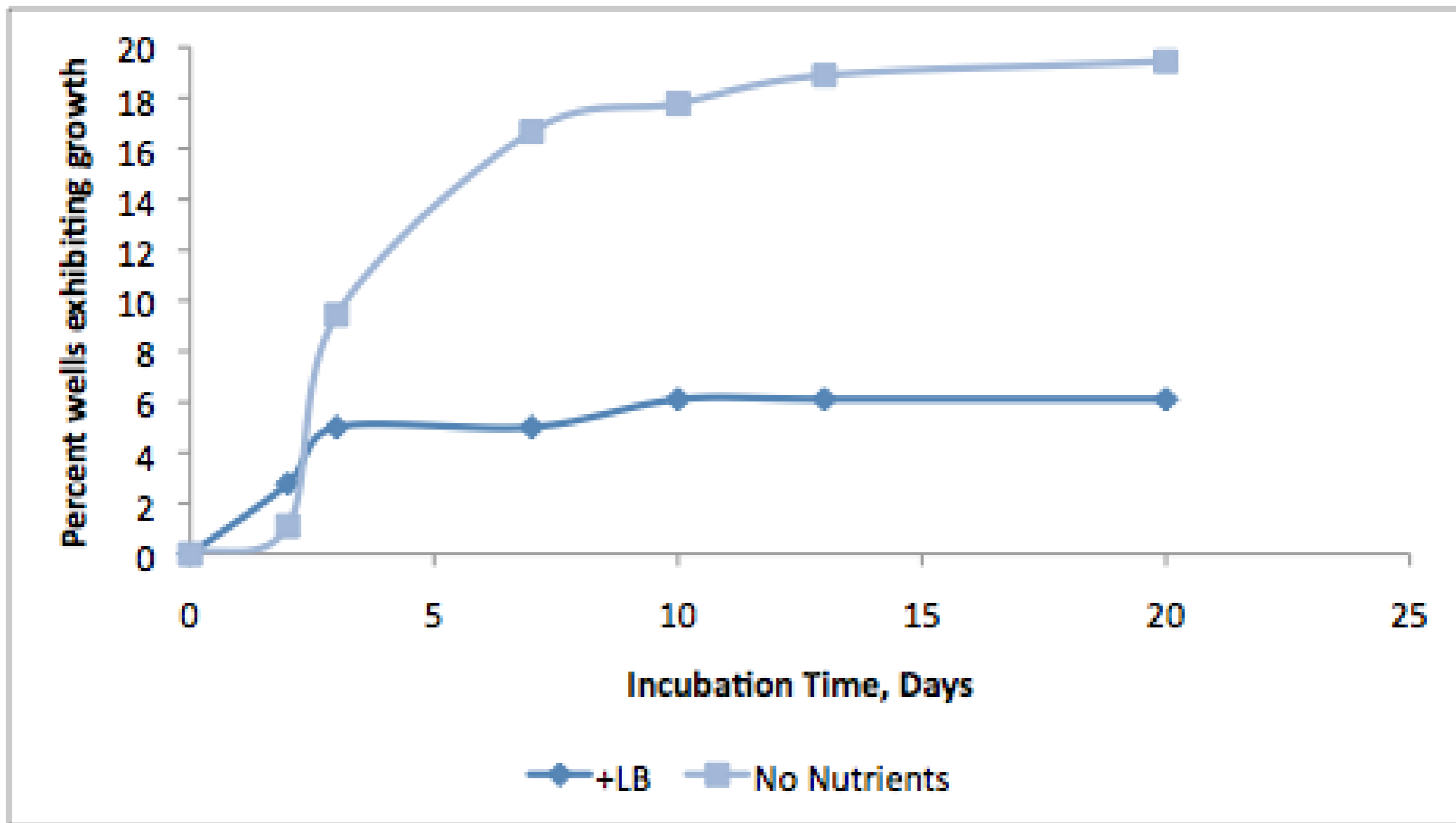
Great Plate Count Anomaly: Majority of microscopically visible cells fail to grow



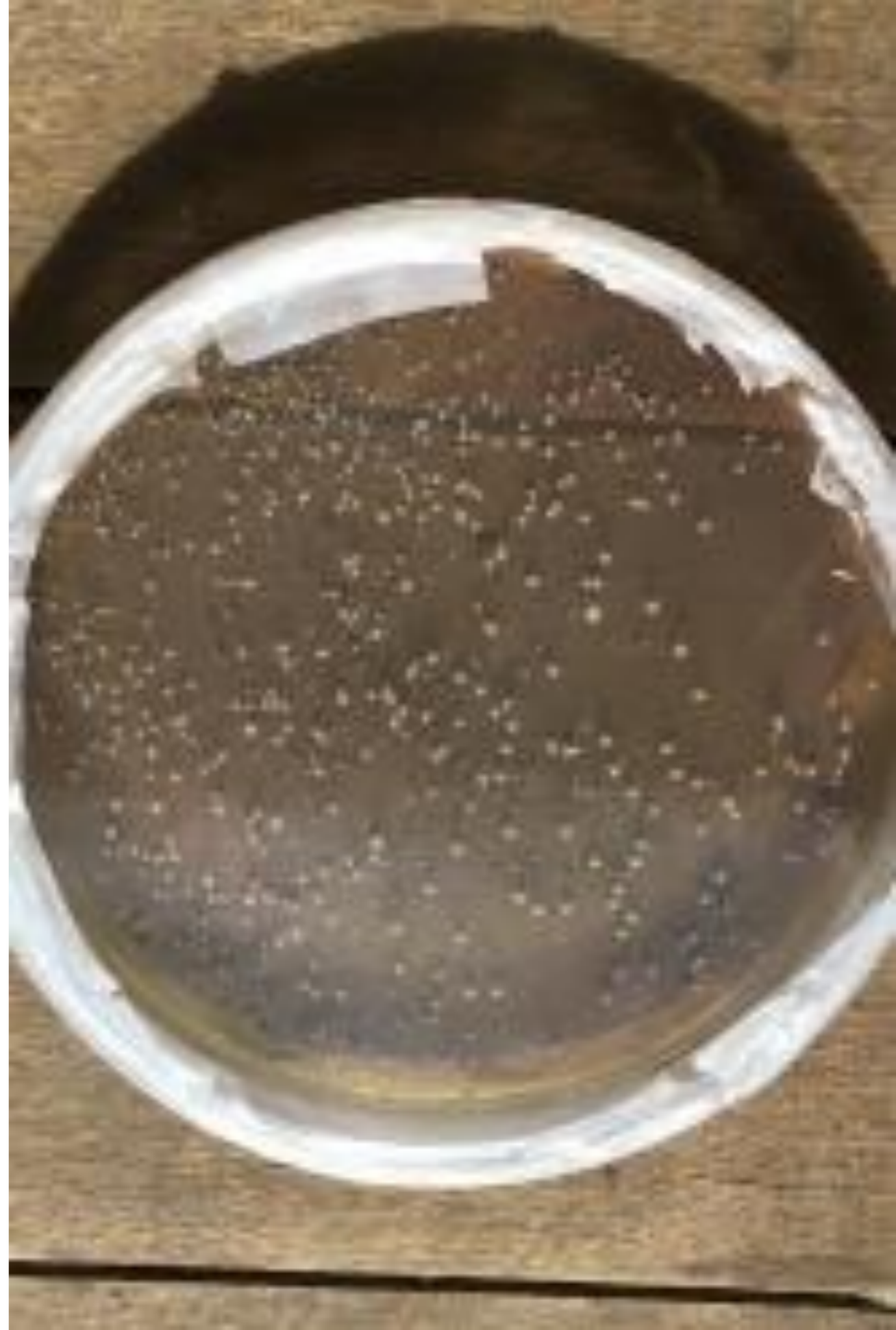
If majority of cells are in non-growing state only those that are waking up at time of plating will exhibit growth

Background: Stress and CFU counts



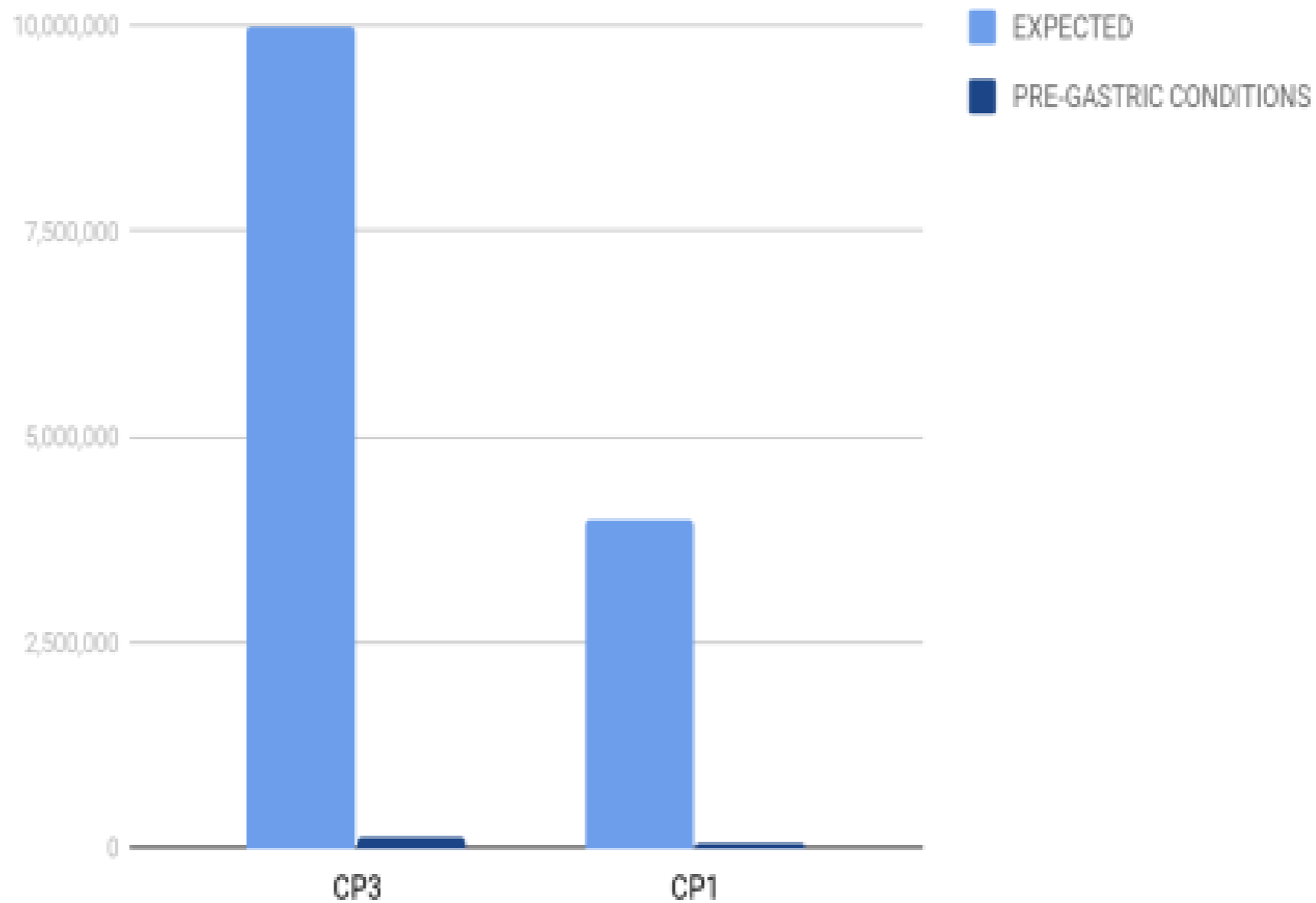


Part 1: Baseline CFU counts for Probiotics



Data: Comparison Expected and Recovered via CFU counts

Expected Values vs. Pre-Gastric Conditions (1:1000)



Diversity of CFUs on Homemade Probiotic Plates

- Compared to commercial probiotics- large diversity of colony types were detected on:
 - Homemade Kombucha
 - Apple Cider Vinegar
 - Miso Soup



Part 2: Exposure to Gastric Conditions

Gastric Conditions

Stomach Acid (composition):

Hydrochloric acid, potassium chloride, sodium chloride

Physical Movement:

Slow speed on shaker

Time of digestion:

2.5 hours

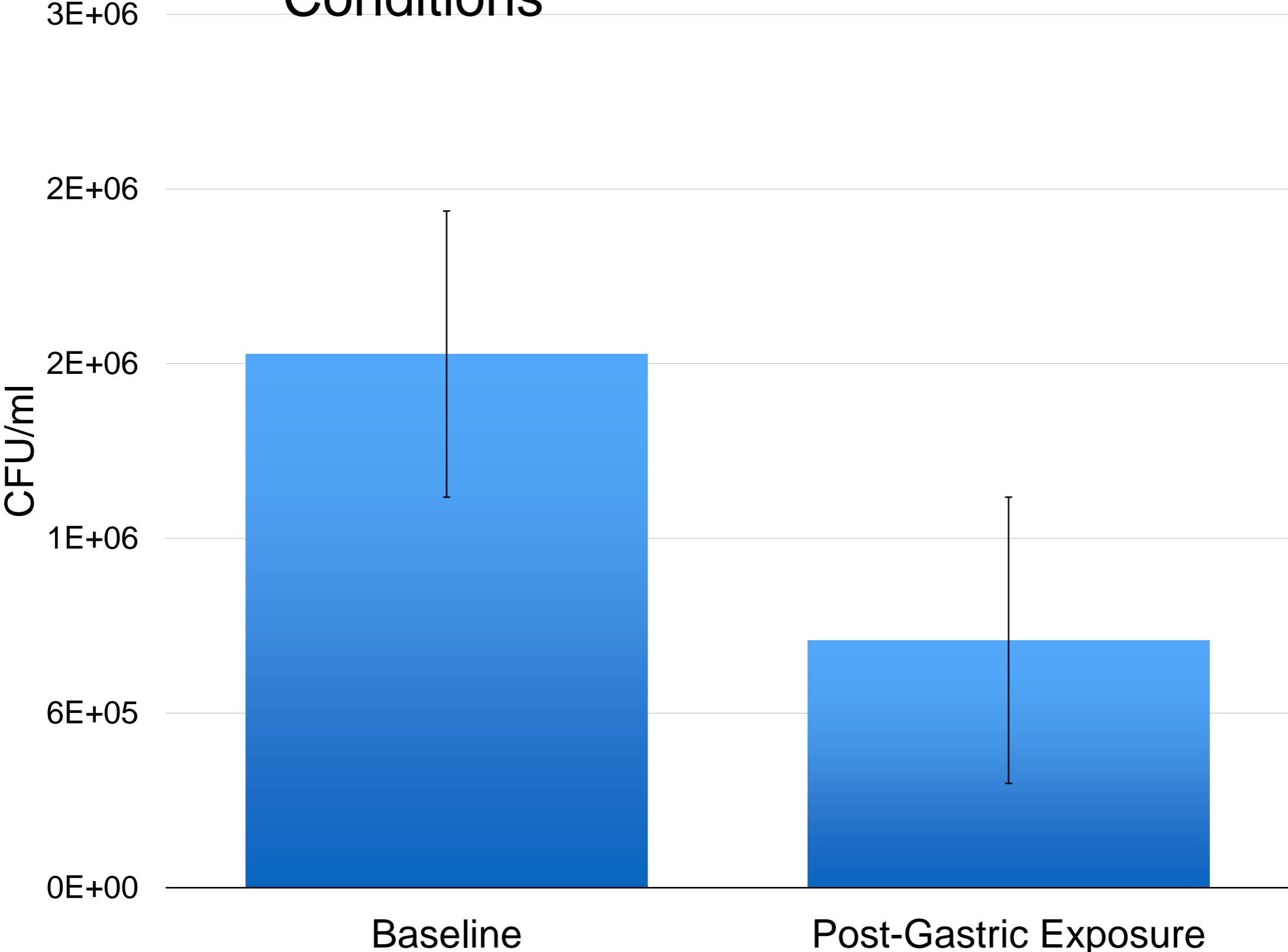
2.5 hours in the stomach
acid

Slow shaking

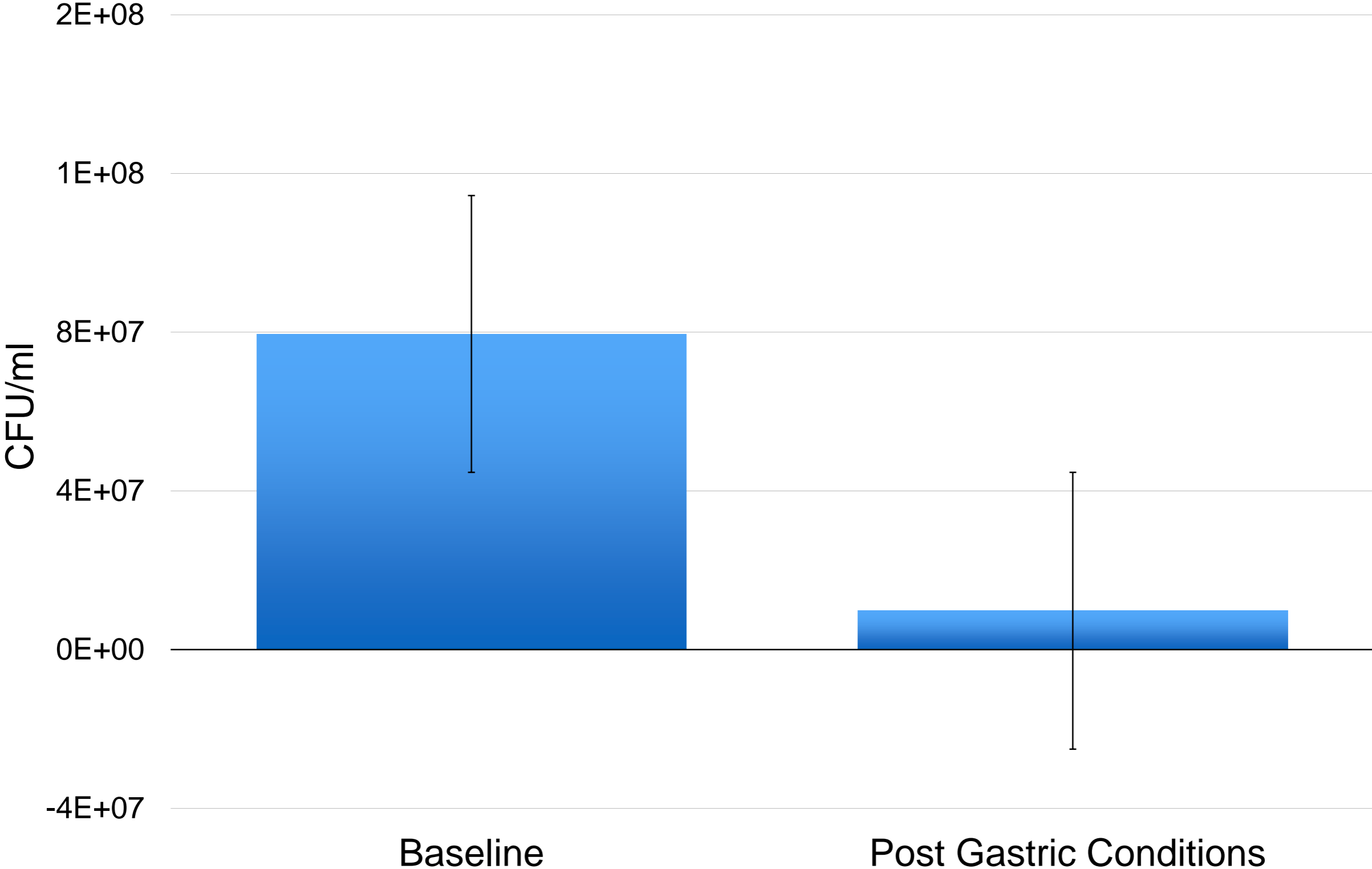
Sequestered in
membrane (.2 pore size)



Commercial Probiotic 1: CFU Counts Before and After Exposure to Gastric Conditions



Commercial Probiotic 2: CFU Counts Before and After Exposure to Gastric Conditions



Conclusions: Reduction in CFU counts

- CFU counts before and after exposure to gastric conditions show reduction in CFU counts
- Both commercial probiotics and homemade probiotics show similar reductions in cells per ml
- Reduction in cells per ml were greater for homemade probiotics

Conclusions: Diversity Reduction in Homemade Probiotics

- Homemade probiotics showed greater diversity in terms of colony type and morphology in pre gastric tests
- Post gastric exposure showed significant reduction in diversity
 - Reduction in diversity was greatest for kombucha samples
 - Reduction in diversity was consistent for all homemade probiotic samples

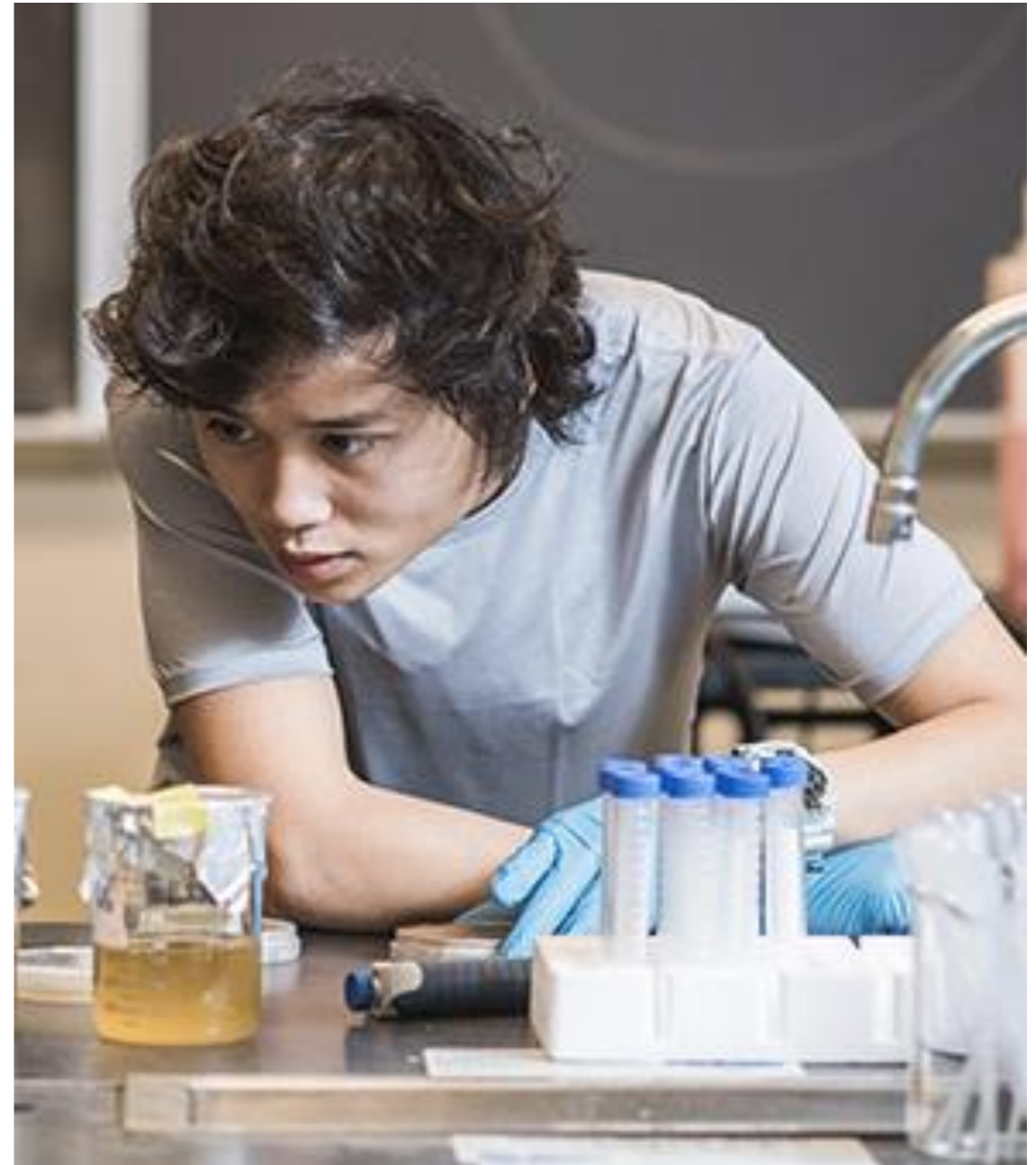
Further Steps: Homemade Probiotics

- Expand kombucha analysis: pre and post gastric conditions
 - Diversity counts pre and post gastric conditions
 - Further analysis of diversity profile for kombucha
 - Genetic Analysis for greater clarity on diversity pre and post gastric conditions

Lab Members



Yemi Osayame



Alexander Smith