Understanding Liposome Flux Assays in the context of a Bacterial Sodium Voltage Gated Channels (NavAb)

Biological data analysis in R

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Introduction

Chart of NavAb affinity constants for different ions

Ion(s)	Affinity Constant(Ka)
Na^+	1.0

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Table 1: NavAb affinity constants

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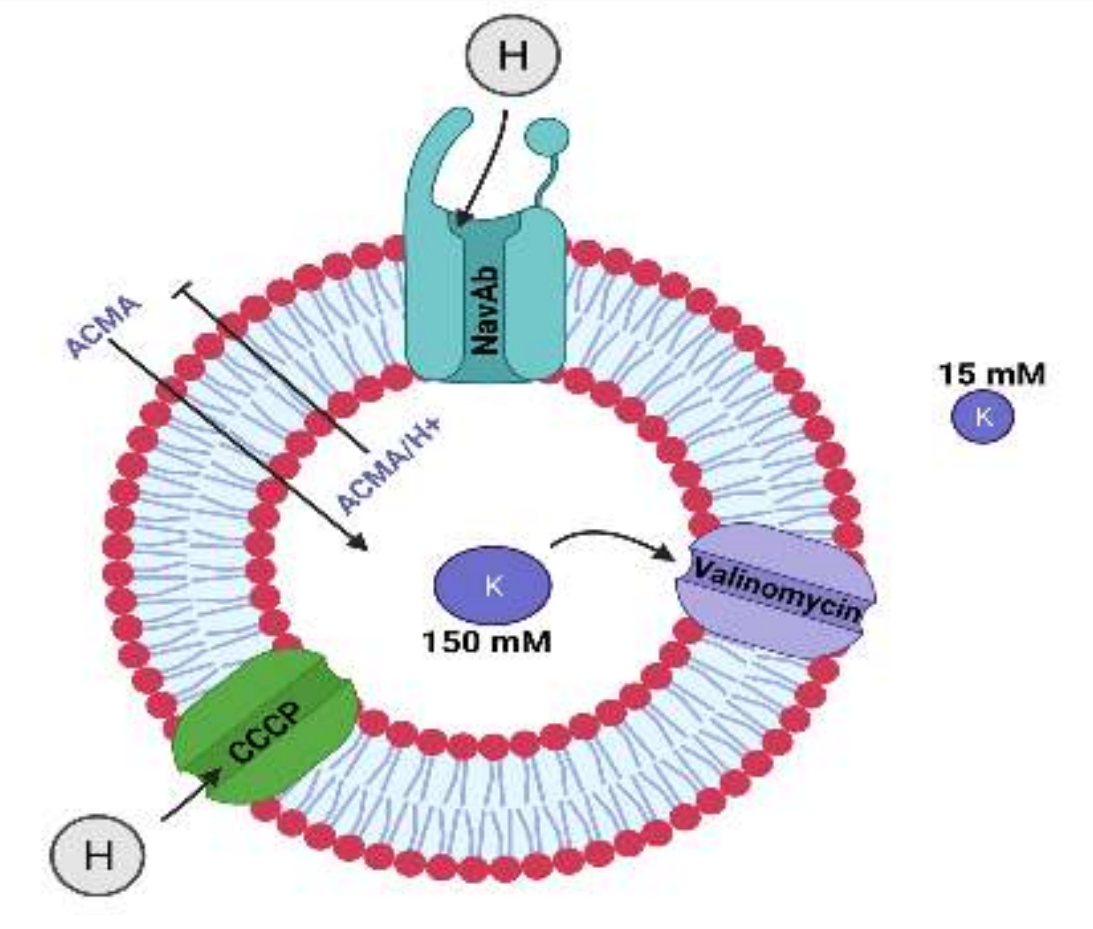


Figure 1: Na^+-insert liposome

Practical image of experiment

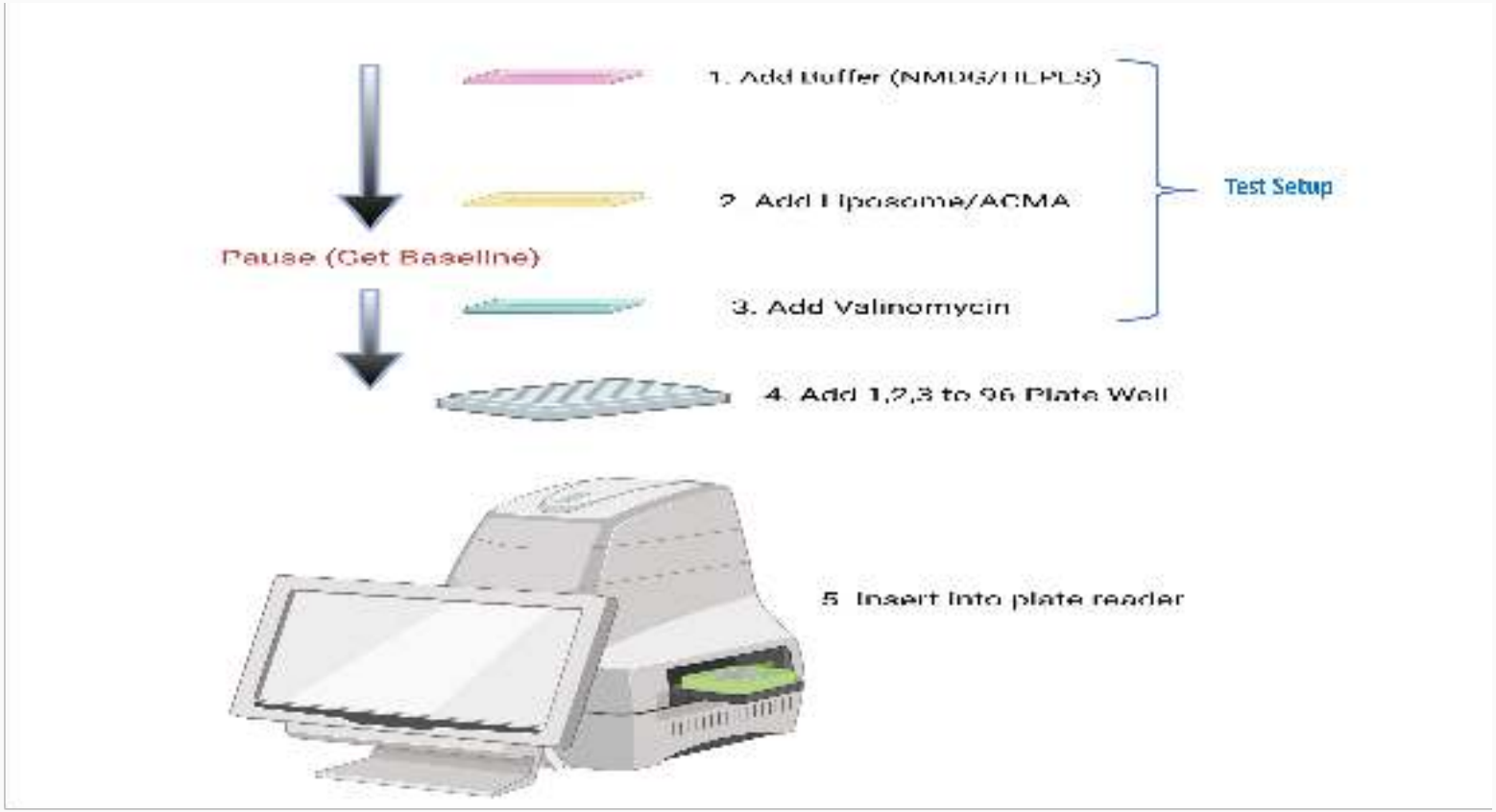


Figure 2: experiment

Diagnostic results in Excel

Characteristics of liposome flux assays (LFAs)

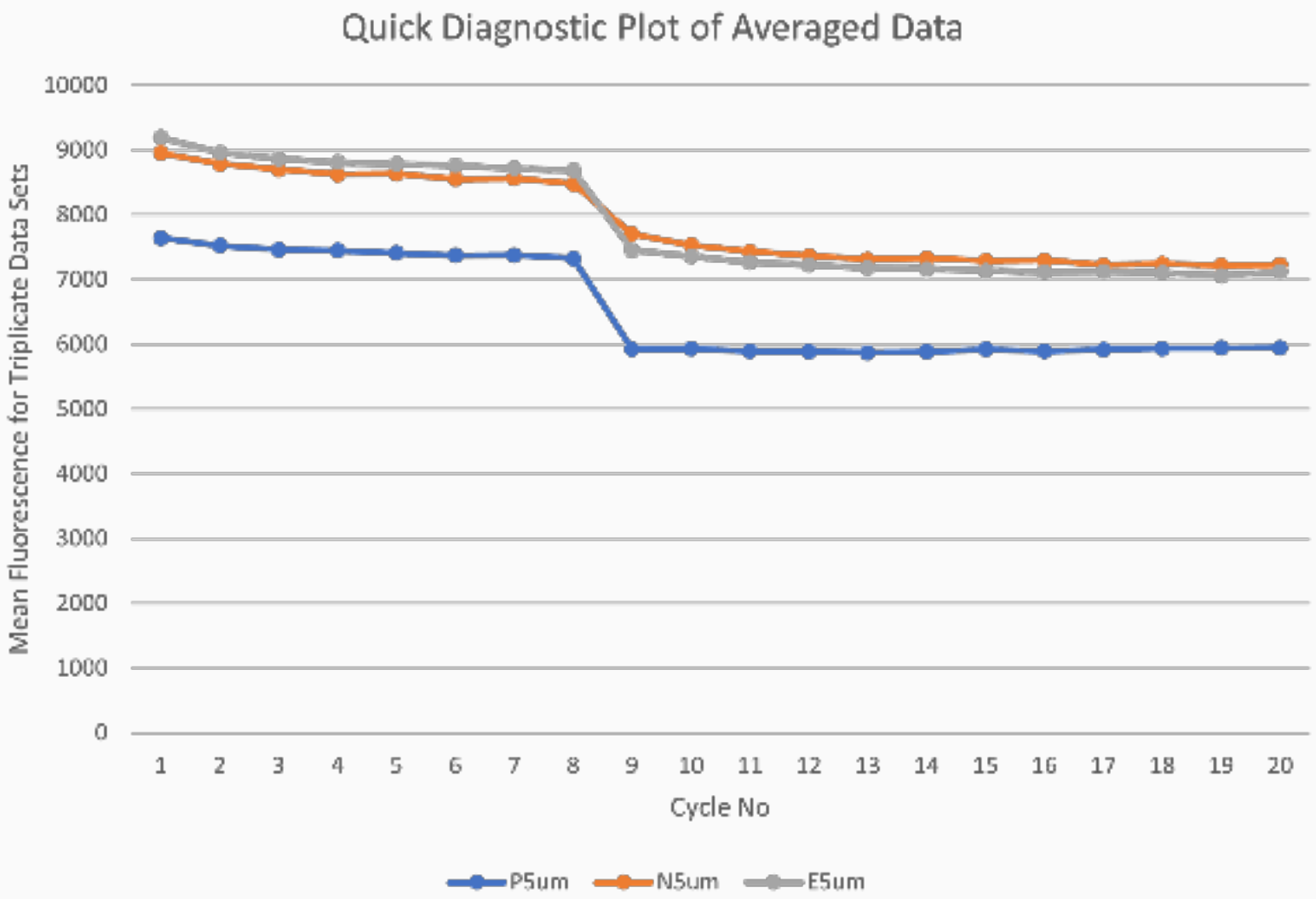
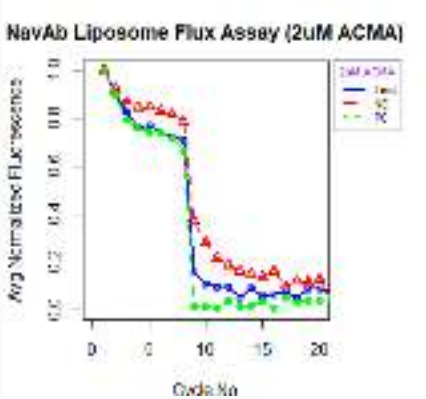
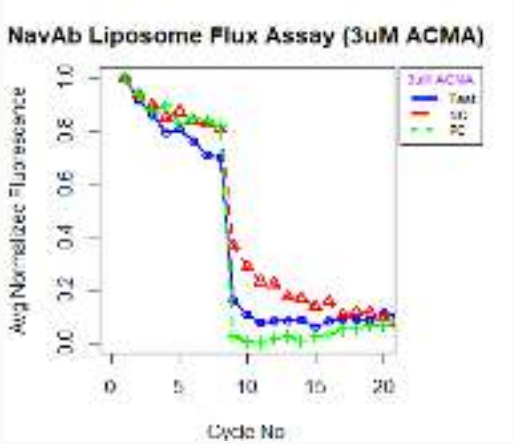


Figure 3: Na^+-insert liposome

Normalized Results (Makes all the sense in the world)

Fluorescence measured at 2,3,5 μM





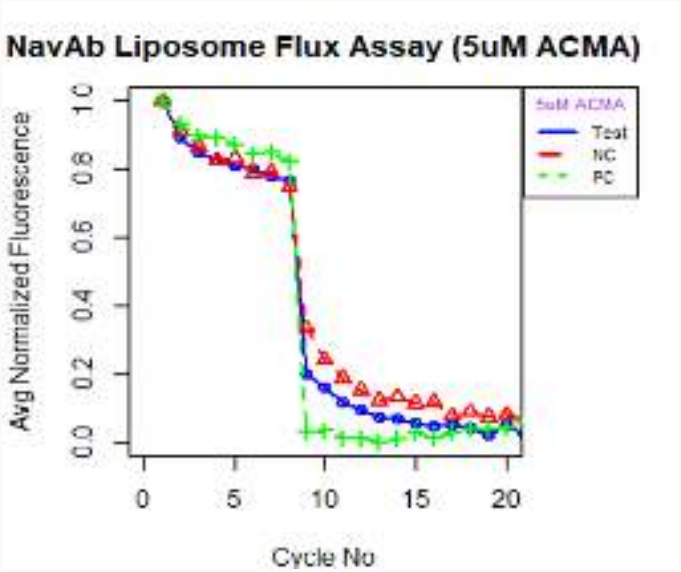


Figure 4: Legend: Noramlized fluorescence in R within the signal zone

Fluorescence measured with K^+ vs Cs^+ inside the liposome μM

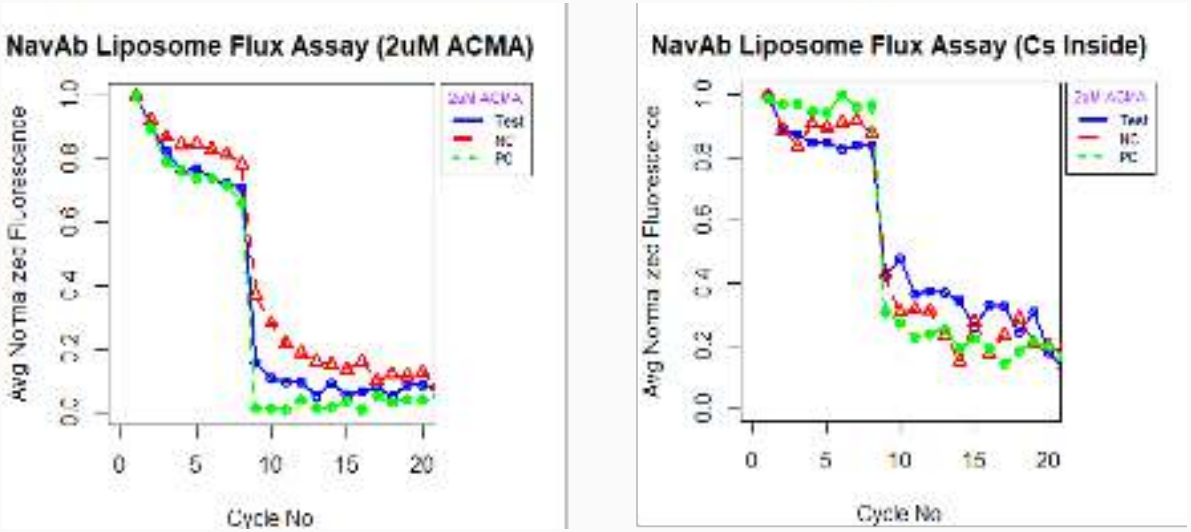


Figure 5: NavAb K-conductivity is stronger than Cs-conductivity as indicated by the initial affinity table

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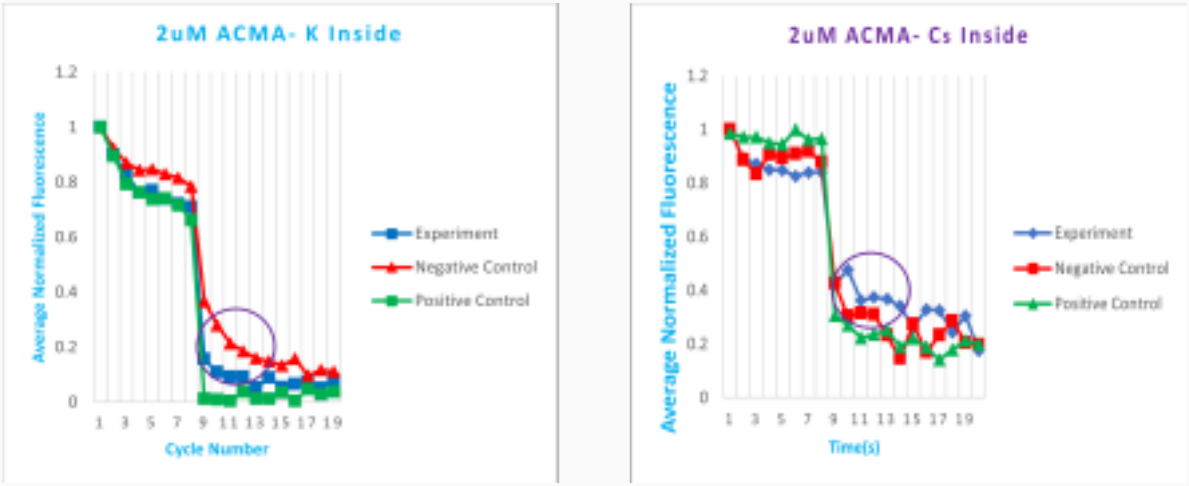


Figure 6: NavAb K-conductivity is stronger than Cs-conductivity as indicated by the initial affinity table

ACMA dosage at 2,3,4,5 μM

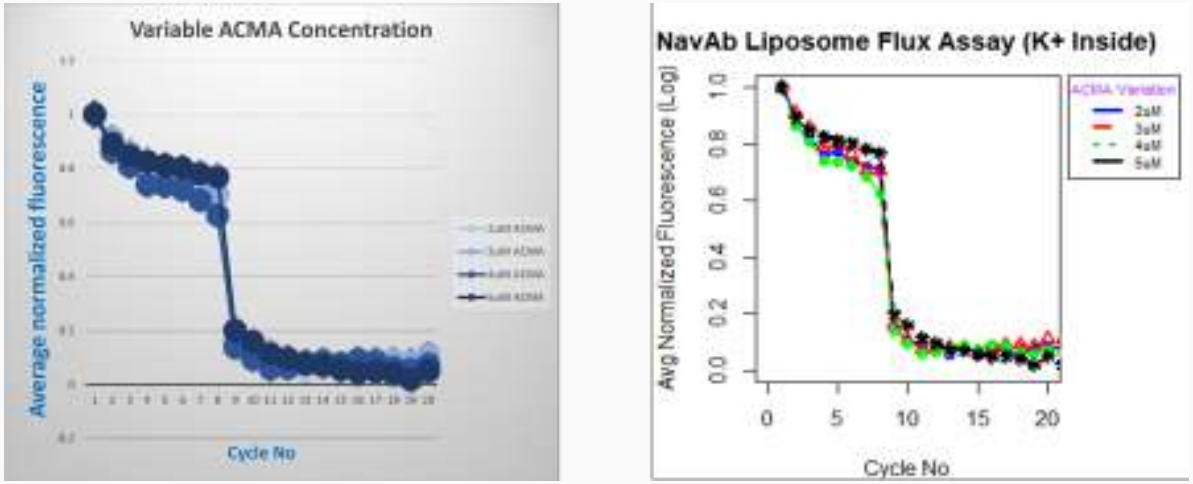
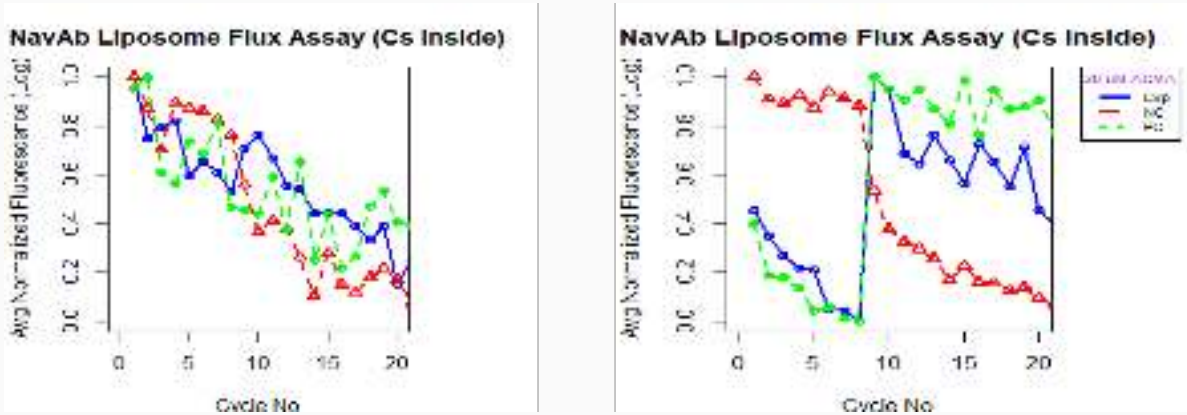


Figure 7: Fluorophore dosage is not a factor in its quenching, rather system properties (Ion conductivity etc.) determine quenching

Noise vs Signal

Fluorescence measured at 0.2 and 20 μM



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References

[1] Zhenwi. Su. *Novel cell-free high-throughput screening method for pharmacological tools targeting K+ channels.* PNAS, 113(5744-5788), 2016.

[2] Joshua V. *A Single Molecule Study on The Structural Basis of Ion Selective Permeation in Voltage-Gated Sodium Channels.* , 2021.