

# 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

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## Chart of NavAb affinity constants for different ions

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**Table 1:** NavAb affinity constants



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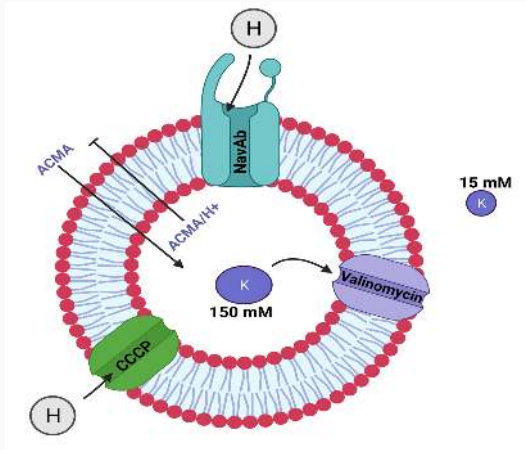
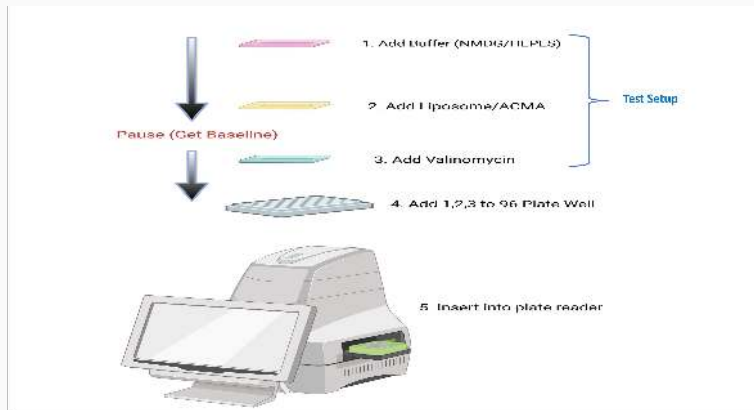


Figure 1: Na<sup>+</sup>-insert liposome

# Practical image of experiment



Created with BioRender.com

Figure 2: experiment

## Diagnostic results in Excel

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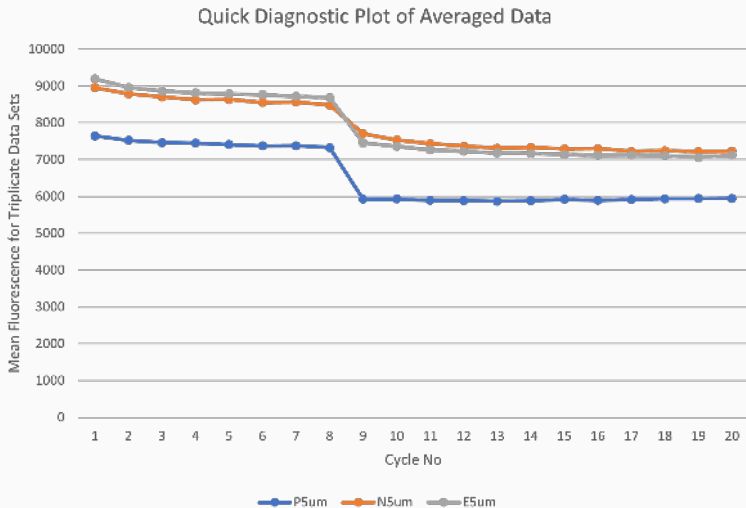


Figure 3: Na<sup>+</sup>-insert liposome

Normalized Results (Makes all the sense in the world)

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# Fluorescence measured at 2,3,5 $\mu\text{M}$

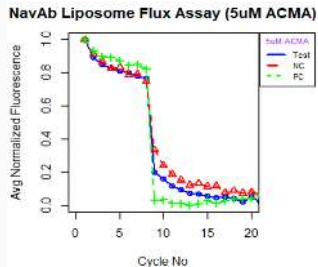
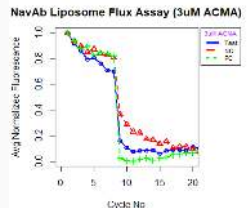
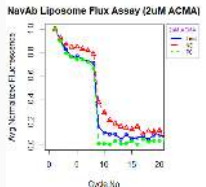
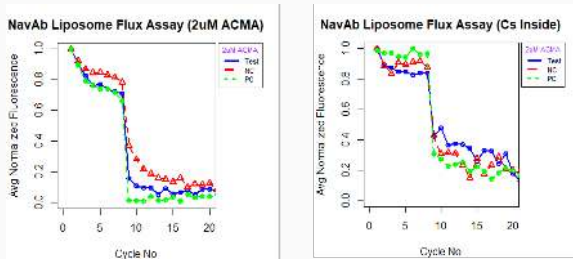


Figure 4: Legend: Normalized fluorescence in R within the signal zone

# Fluorescence measured with $K^+$ vs $Cs^+$ inside the liposome $\mu M$



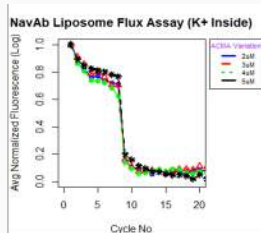
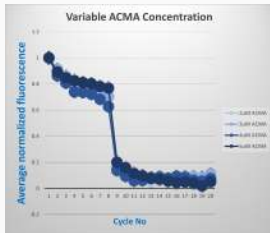
**Figure 5:** NavAb K-conductivity is stronger than Cs-conductivity as indicated by the initial affinity table

# Fluorescence measured with $K^+$ vs $Cs^+$ inside the liposome $\mu M$



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

# ACMA dosage at 2,3,4,5 $\mu\text{M}$



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

## Noise vs Signal

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# Fluorescence measured at 0.2 and 20 $\mu\text{M}$

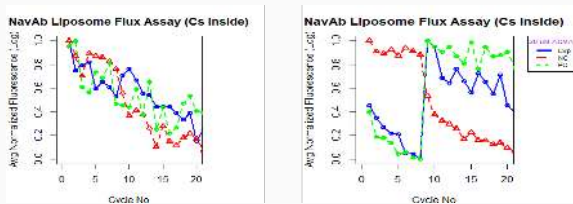


Figure 8: Legend: Normalized fluorescence in R within the signal zone

## Conclusion

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## References

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- [1] Zhenwi. Su. *Novel cell-free high-throughput screening method for pharmacological tools targeting K<sup>+</sup> 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.