

Biological Radio Frequency Receiver

- Want to make cells controllable using radio frequencies

Bioelectromagnetics 21:312–324 (2000)

Zeeman–Stark Modeling of the RF EMF Interaction With Ligand Binding

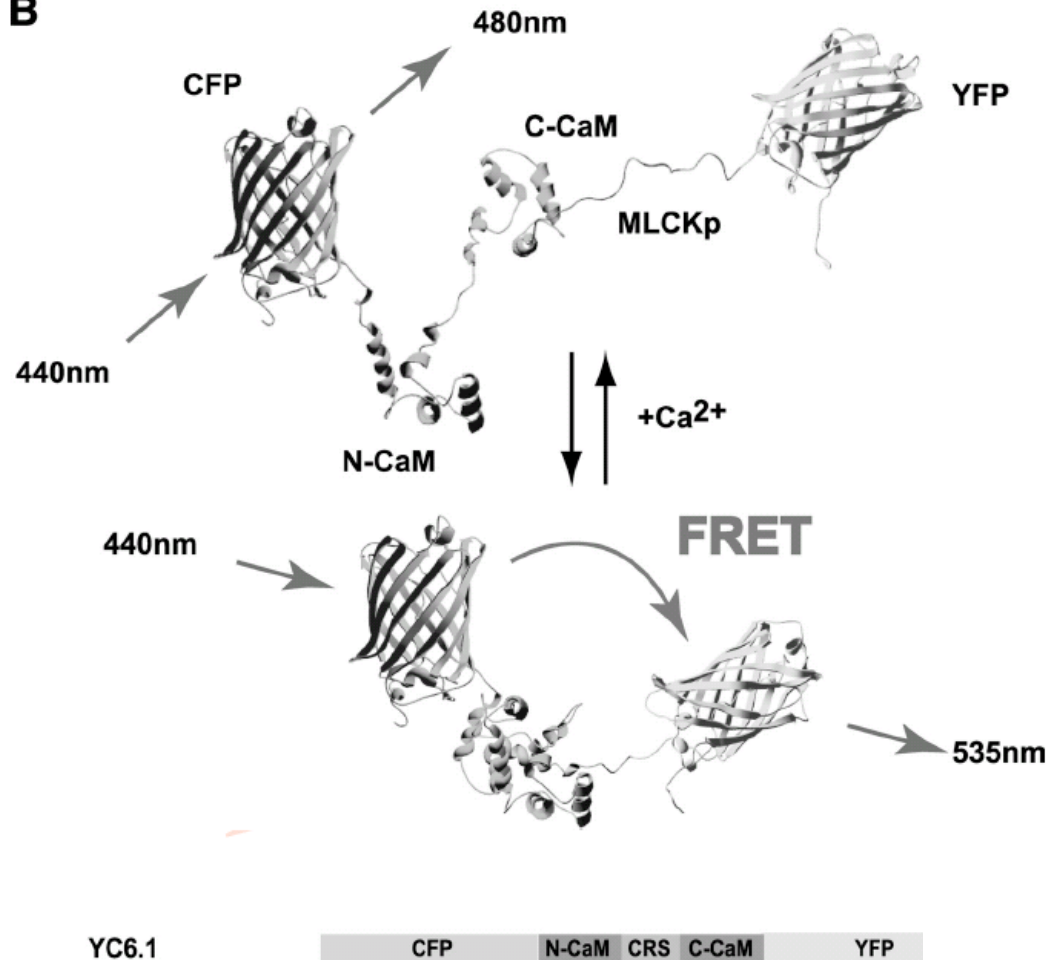
A. Chiabrera,^{1†} B. Bianco,¹ E. Moggia,¹ and J.J. Kaufman^{2*}

- Shows in theory radiofrequencies can induce calcium binding to a hydrophobic crevice of a protein
- Can we use this induced binding of ca^{2+} to cause a conformational change in a protein
- Can just do a proof of concept, but work can be extended by linking it up to some interesting effect

Calcium Indicators Based on Calmodulin–Fluorescent Protein Fusions

Kevin Truong, Asako Sawano, Atsushi Miyawaki, and Mitsuhiro Ikura

B



YC6.1

- Ca^{2+} not bound
- absorbance at 440nm, emittance at 480nm
- Ca^{2+} bound
- Causes conformational change of CaM which then binds CRS
- Light sensitive proteins brought together
- light emitted 535nm
- Main point can show if ca^{2+} is bound

- Need to modify the calcium binding domain of CaM to increase the probability of Ca^{2+} binding under RF.

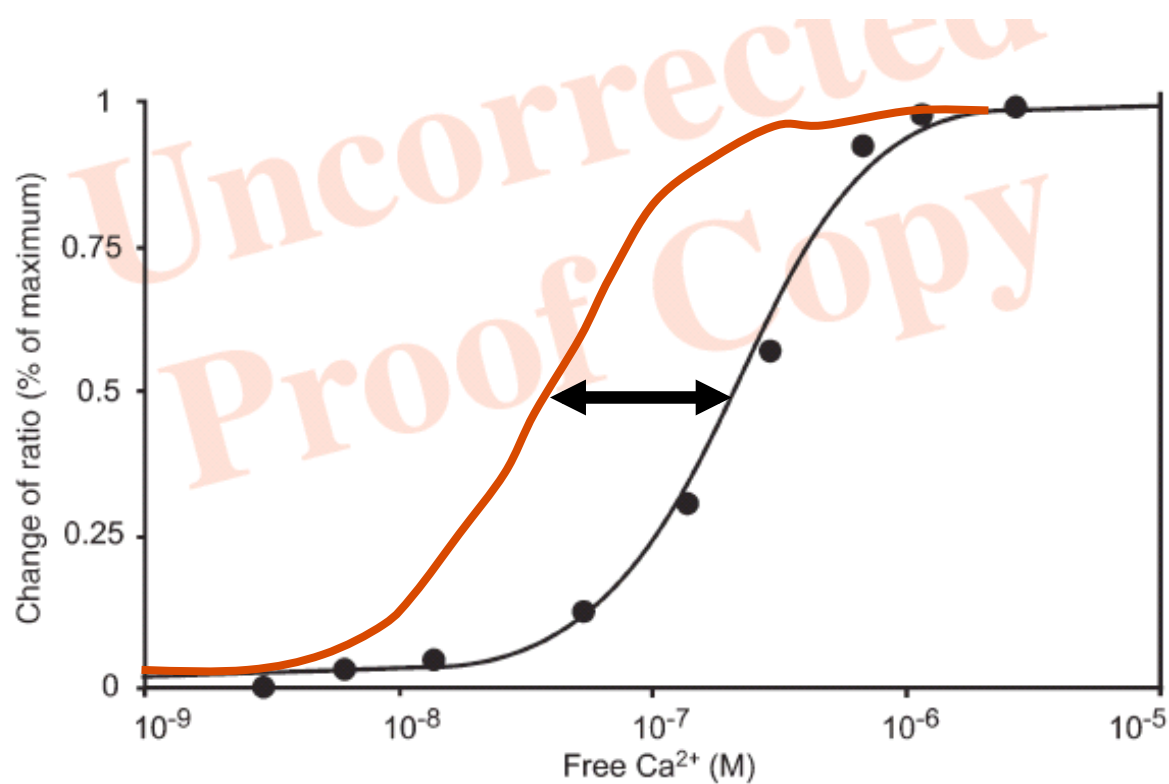


Fig. 4. Example Ca^{2+} -binding curve of YC6.1.

- How to do this - Large scale mutagenic screening?