Big Question: We can see rafts in Model Membranes (GUVs or Supported Lipid Bilayers, LM), but how to study in cells? Do rafts really exist in cells? Are they static large structures? Are they small transient structures?

FRET and FRET based Microscopy Techniques

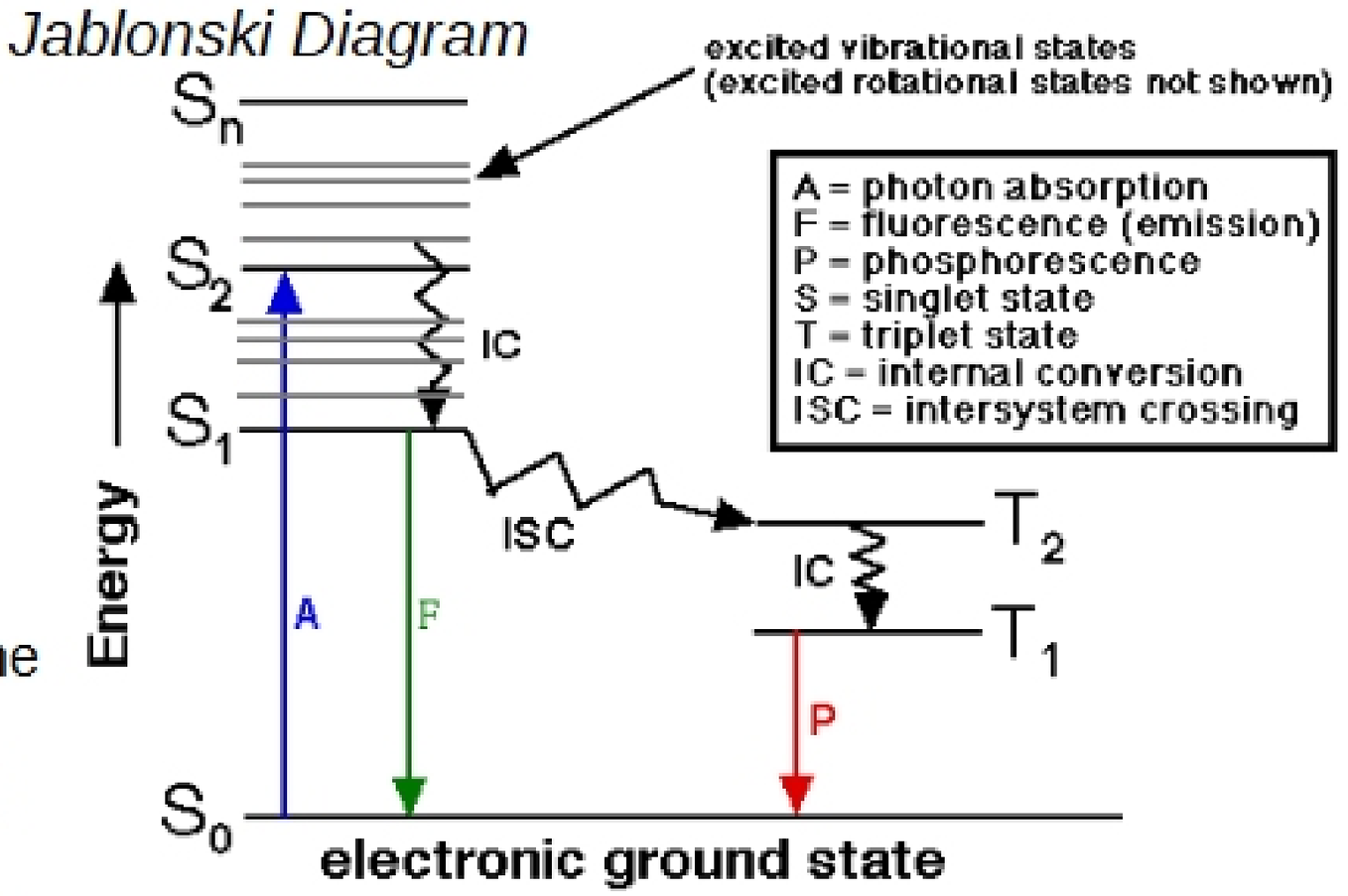
4 basic rules of fluorescence for overview presentation:

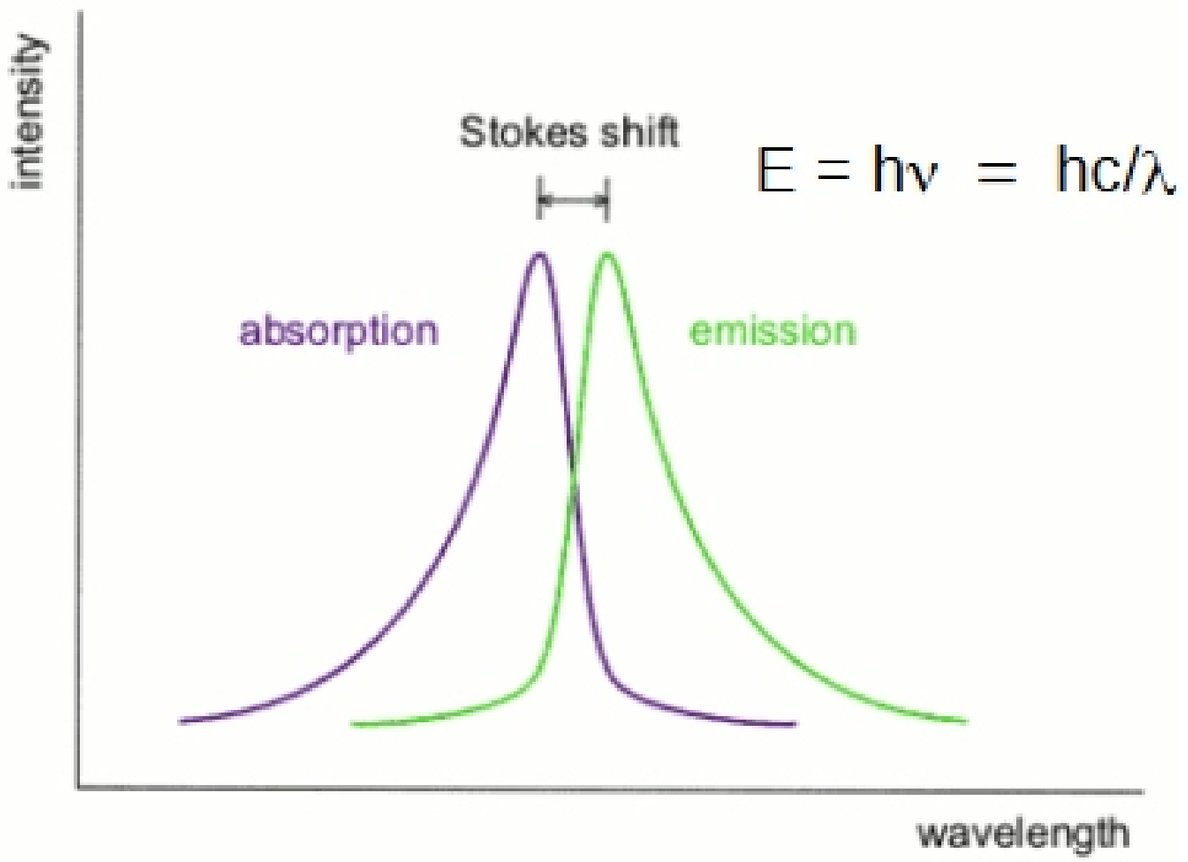
•The Frank-Condon Principle: the nuclei are stationary during the electronic transitions, and so excitation occurs to vibrationally excited electronic states.
•Emission occurs from the lowest vibrational level of the lowest excited singlet state because relaxation from the excited vibrational energy levels is faster than emission
•The Stokes Shift: emission is always of lower energy than absorption due to nuclear relaxation in the excited state
•The mirror image rule: emission spectra are mirror images of the lowest energy absorption

Fluorescence

Stokes shift is the difference (in wavelength or frequency units) between positions of the band maxima of the absorption and luminescence spectra of the same electronic transition.

When a molecule or atom absorbs light, it enters an excited electronic state. The Stokes shift occurs because the molecule loses a small amount of the absorbed energy before re-releasing the rest of the energy as luminescence. This energy is often lost as thermal energy.





$E = h\nu = hc/\lambda$