

## Advanced 1D Experiments

- Uses Selective (Shaped) Pulses to Excite One NMR Peak in the  $^1\text{H}$  Spectrum
- Gradients are Used in Conjunction with the Shaped Pulses to Give Very Clean Selectivity: DPFGE
- The Excitation then Moves to Other Protons as Follows:
  - **By NOE:** a Through-Space Direct Interaction for All Protons Within 5 Å Distance of the Selected Proton (Efficiency Depends on  $1 / r^6$ )
  - **By TOCSY:** a Through-Bond Connection Using the J Coupling – This is Repeated in Multiple Jumps (Efficiency of Each Jump Depends on J)
- The Proton Spectrum Shows the Original (Selected) Peak and Other Peaks Resulting from Transfer of Excitation – Peak Intensity Depends on Efficiency of Transfer