

## 2D-NOESY (Nuclear Overhauser Effect Spectroscopy)

- $^1\text{H}$  to  $^1\text{H}$  Correlation via NOE: Through-Space Proximity
- For Organic Molecules, Crosspeaks are Weak and Negative Relative to Positive Diagonal
- For Biomolecules, Crosspeaks are Weak and Positive Relative to Positive Diagonal
- COSY Artifacts Are Common For J-Coupled Protons (Positive and Negative Fine Structure)
- Weak Crosspeaks Require Very Careful Phase Correction and Baseline Correction
- Transient NOE: Optimal Mixing Time Decreases with Increasing Molecular Weight
- Useful for Stereochemistry (Small, Rigid Molecules) and Conformation (Large, Folded Biopolymers)
- Chemical Exchange Leads to Strong Positive Crosspeaks
- Limit of 5 Å Distance, Roughly  $1/r^6$  Dependence of Crosspeak Intensity