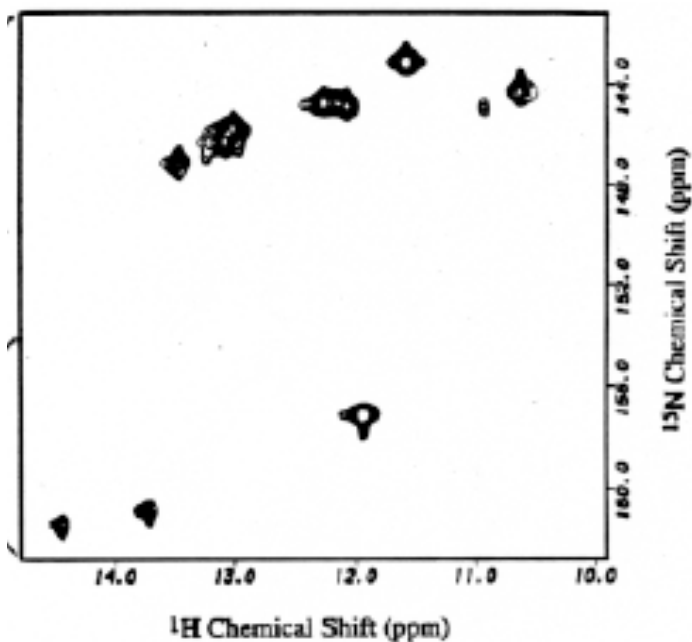
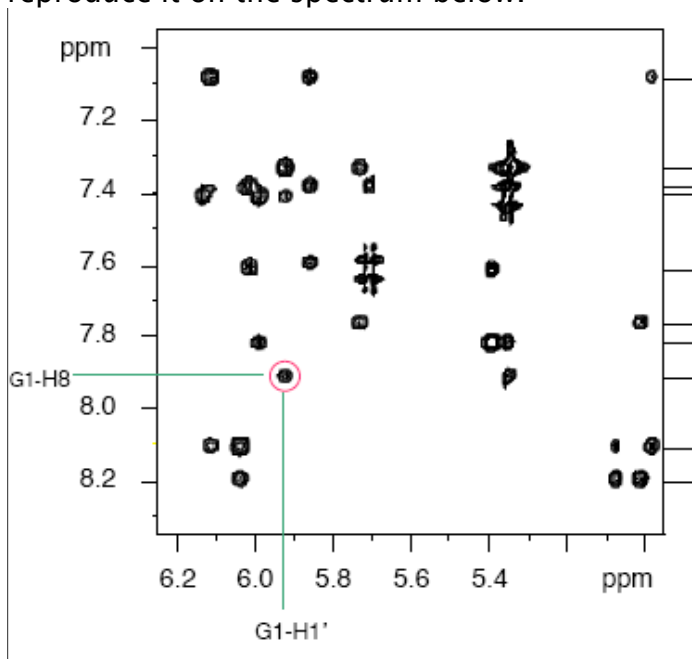


BCMB/CHEM 8190
PROBLEM SET 8

1) Below is a ^{15}N - ^1H HSQC spectrum of an RNA duplex. How many Gs and how many Us are in the molecule?



2) Below is a ^1H - ^1H NOESY spectrum of a self-complementary DNA decamer (GCGAATTCGC). Part of the assignment was done in class. See if you can reproduce it on the spectrum below.



3) The splitting of a doublet for an amide proton – amide nitrogen pair in an HSQC spectrum that is proton coupled in the nitrogen dimension is measured as 94 Hz under isotropic conditions and 73 Hz under aligned conditions. What is the magnitude of the residual dipolar coupling for this pair? What is the sign of the coupling?

4) A solids NMR spectrum is acquired with magic angle spinning to remove the effects of a ^{13}C CSA powder pattern that is 200 ppm wide. However, the magic angle is inadvertently set at 50 degrees instead of the magic angle. How wide would you expect the residual line to be in ppms? How wide in Hz in a spectrometer operating at 500 MHz for protons?