XV. HMBC – 2d Long-Range Heterocorrelation Spec. (inverse detection)  
(4-Aug-98)

A. Discussion
• HMBC and gHMBC are powerful assignment techniques

B. Critical Parameters
• $pw$ – $^1H$ 90° pulse width at power $tpwr$
• $pwx$ – $X$ 90° pulse width at power $pwxlvl$
• $j$ – J-coupling for one-bond couplings (these will be suppressed; ~140 Hz)
• $taumb$ – 0.5-0.6 for $^{13}C$ experiments ($=1/2J_{long-range}$); use ~ 0.1 for $^{15}N$

C. HMBC Acquisition
• the macro should setup the following:
  – $dm$='n' ; HMBC cannot be acquired with $^{13}C$ decoupling
  – $null$=0 ; BIRD suppression cannot be performed (so gHMBC should be superior)
  – increase $at$ = 0.3 to 0.4 s
  – increase $nt$ = 8×$nt$ from HMQ experiment
  – $ss$ = -4 ; steady-state pulses before every increment
  – $mbond$='y' ; defines sequence as HMQC
  – always perform linear prediction (use button under UWMACROS MORE) in F1 on HMQC and HMBC

D. Calibration
• excellent calibrations of both $^1H$ pw90/tpwr (should always be done before acquiring an HMBC) and $^{13}C$ pwx/pwxvl (calibration should be recent) are required

E. Data Workup and Plotting
• HMBC is often worked in av $ph1$ mode even though both dimensions are acquired phase-sensitive; gaussian filters are typically applied in both dimensions
• linear prediction in F1 to 4×ni is recommended; resolution and sensitivity should increase by roughly a factor of 2
XVI. Other Heteronuclear Correlation Experiments

A. Discussion
• section not ready yet

B. Critical Parameters
• section not ready yet

C. DEPT Acquisition
• section not ready yet

D. Calibration
• section not ready yet

E. Data Workup and Plotting
• section not ready yet