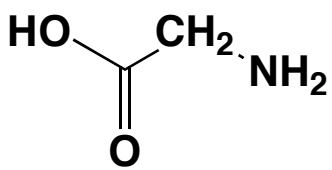
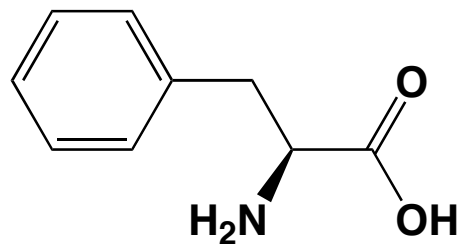
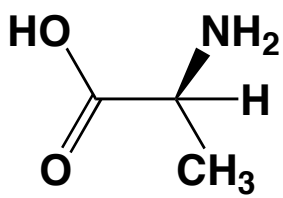
1H and 12C NMR spectra of some amino acids



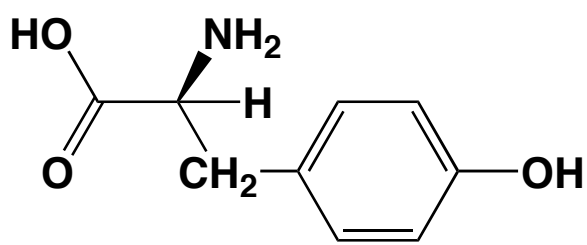
glycine



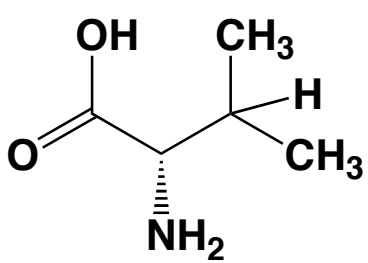
phenylalanine



alanine

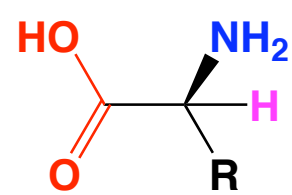


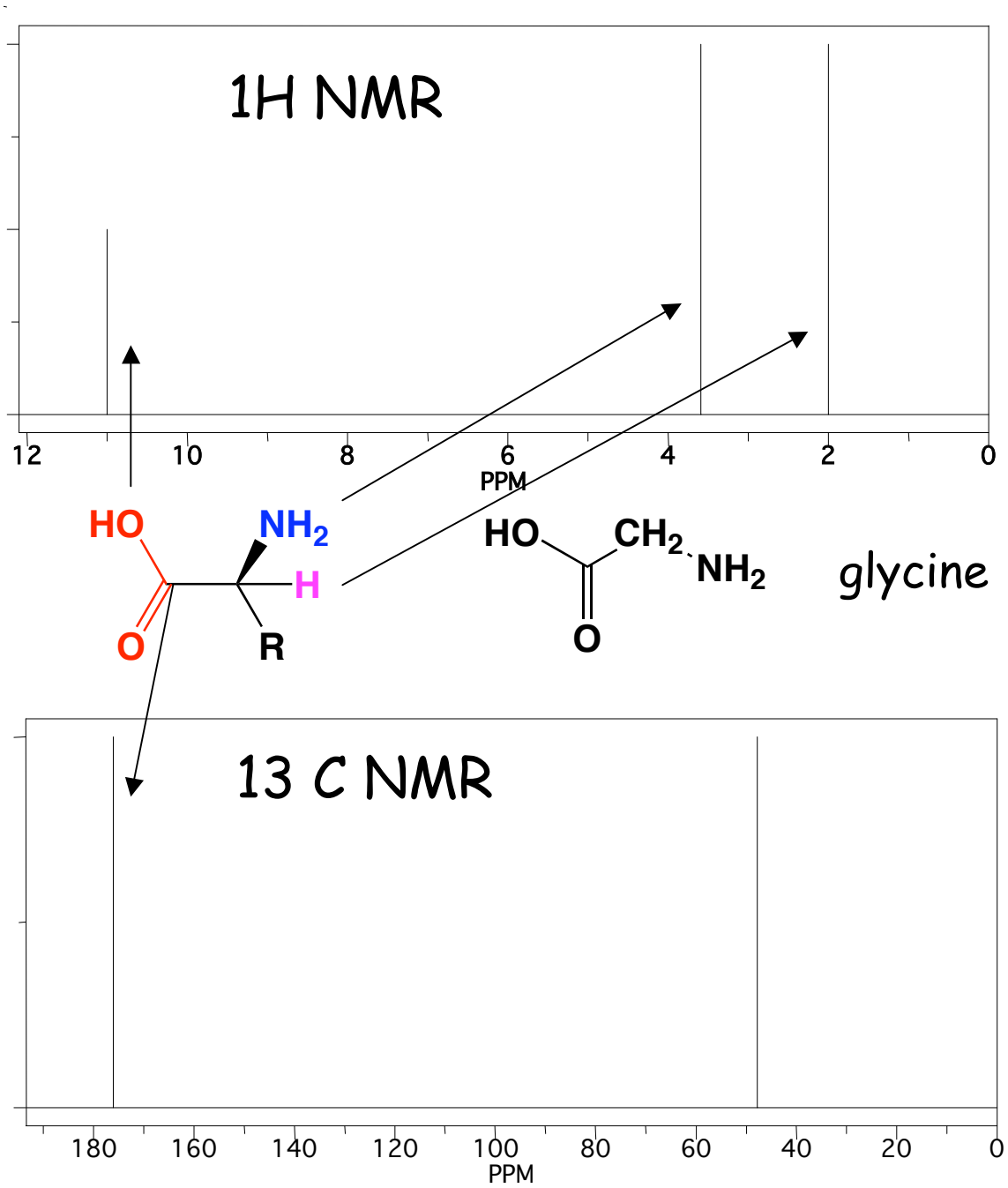
tyrosine

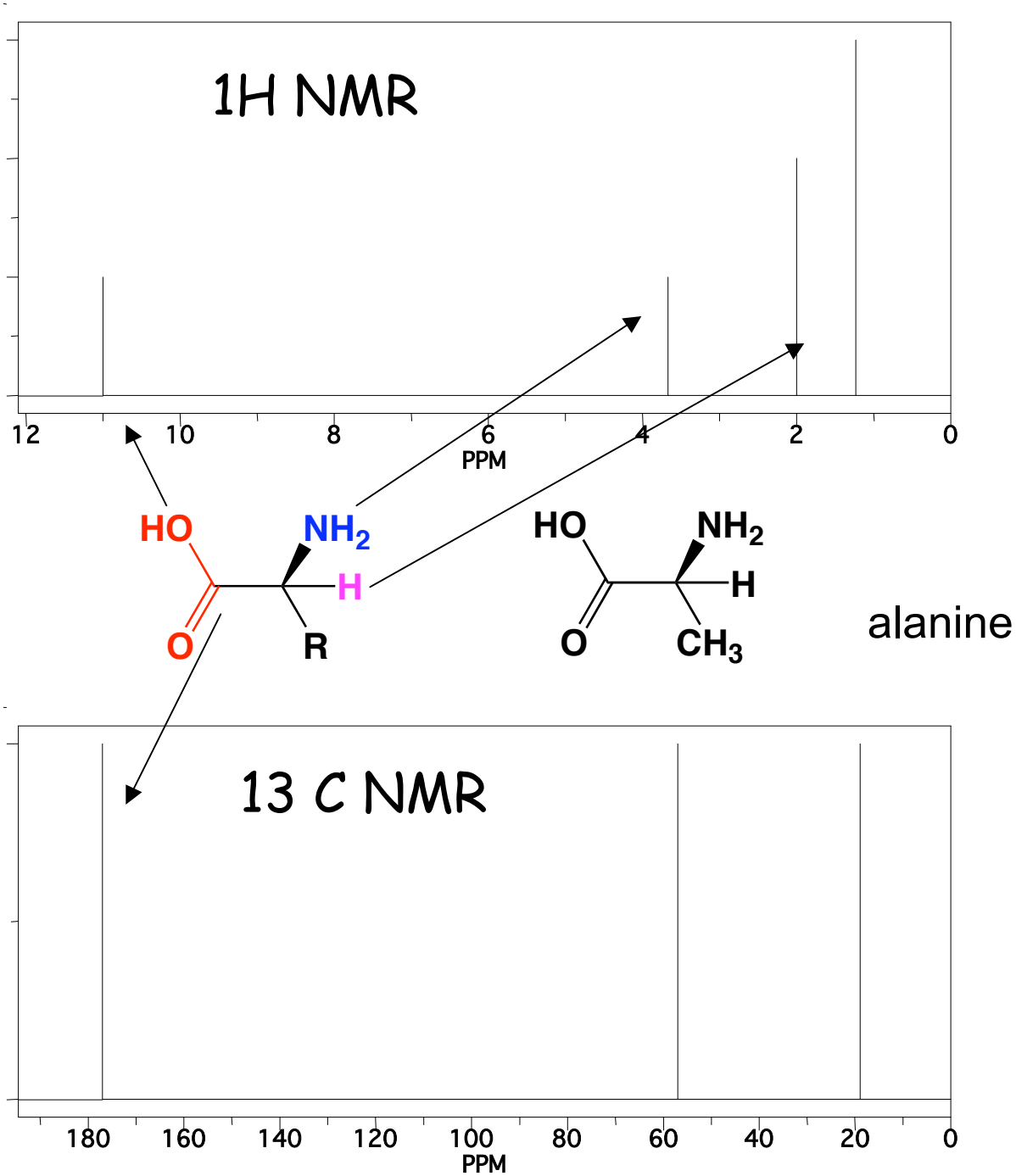


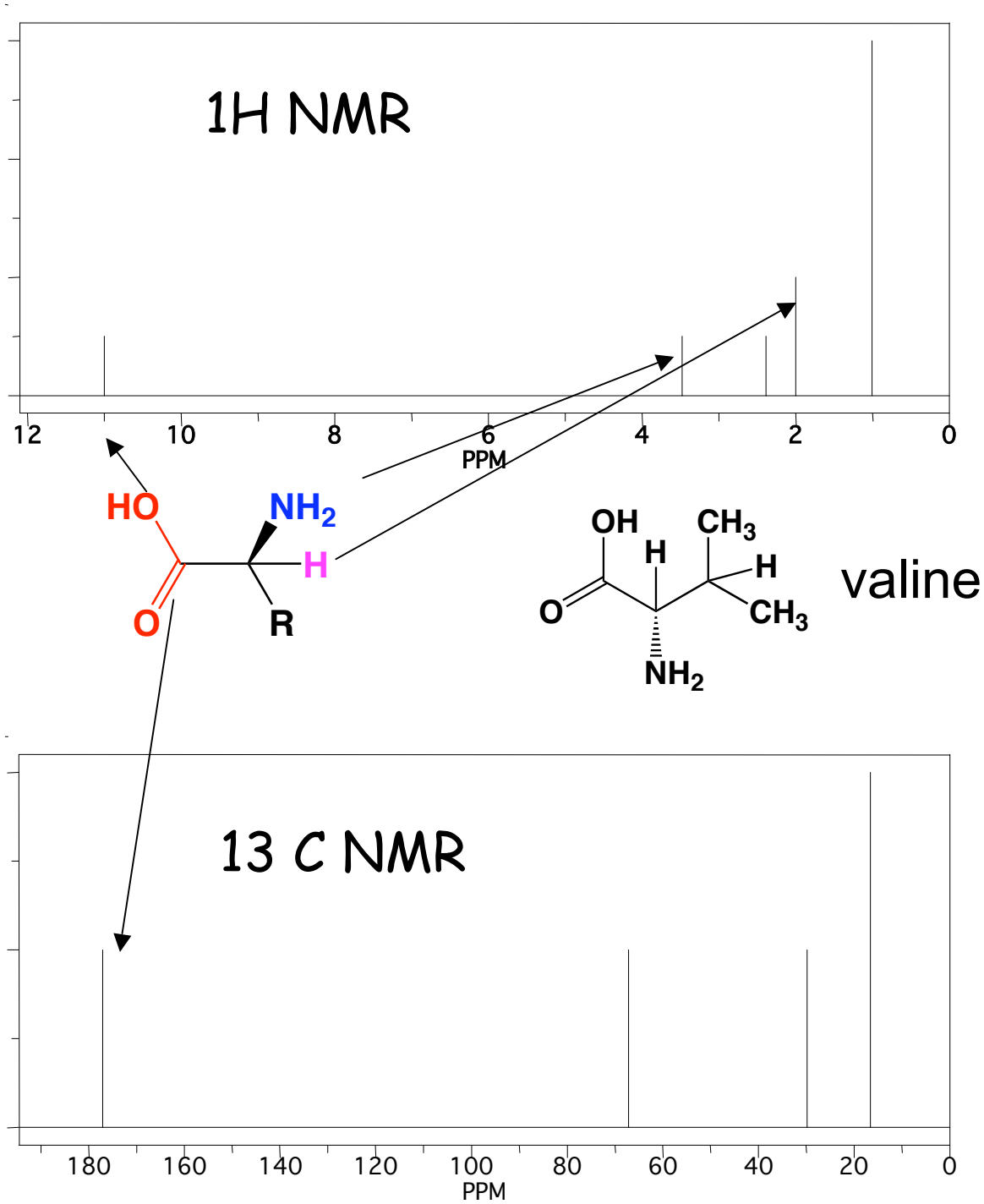
valine

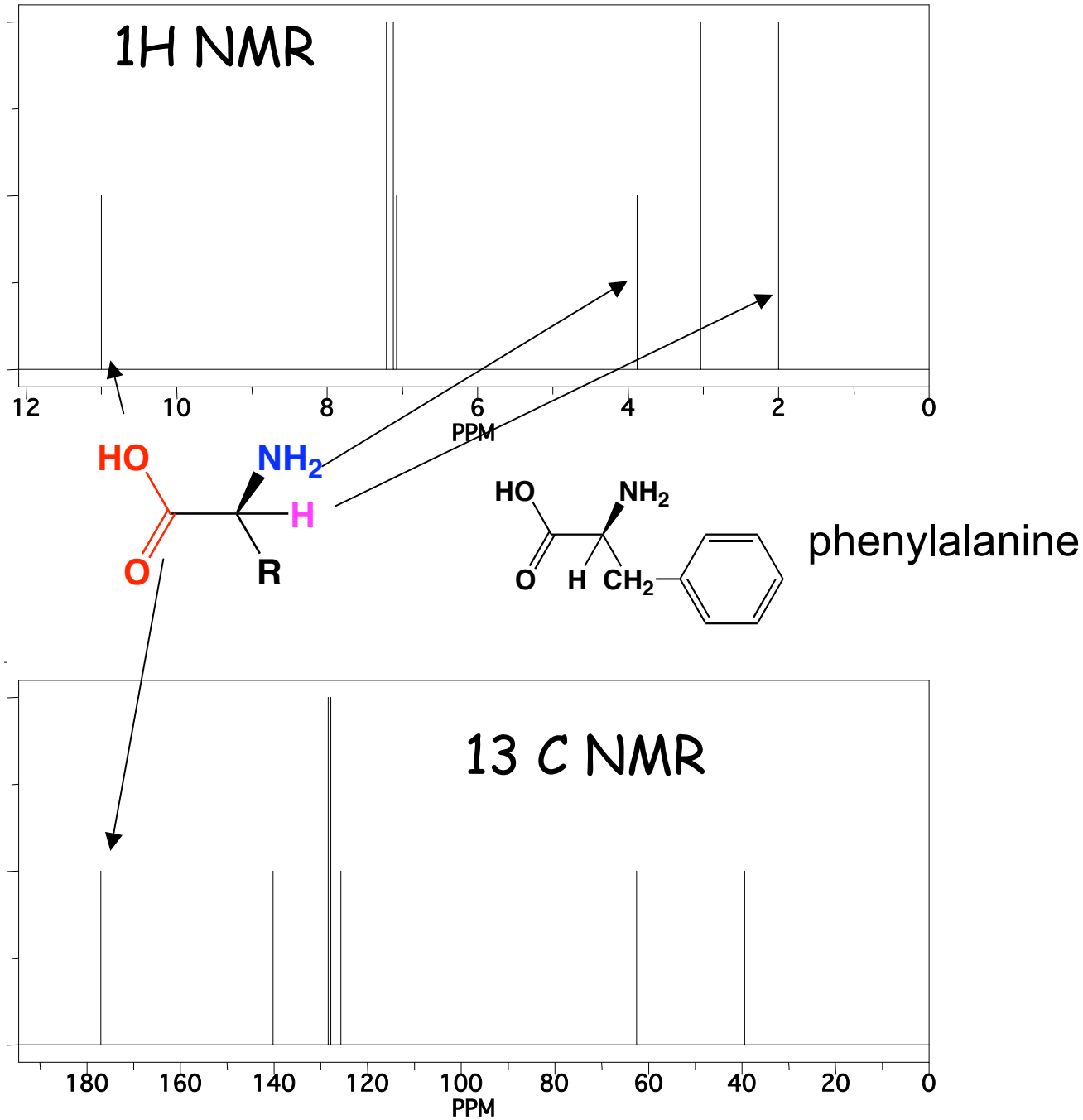
What are the common groups of all amino acids?

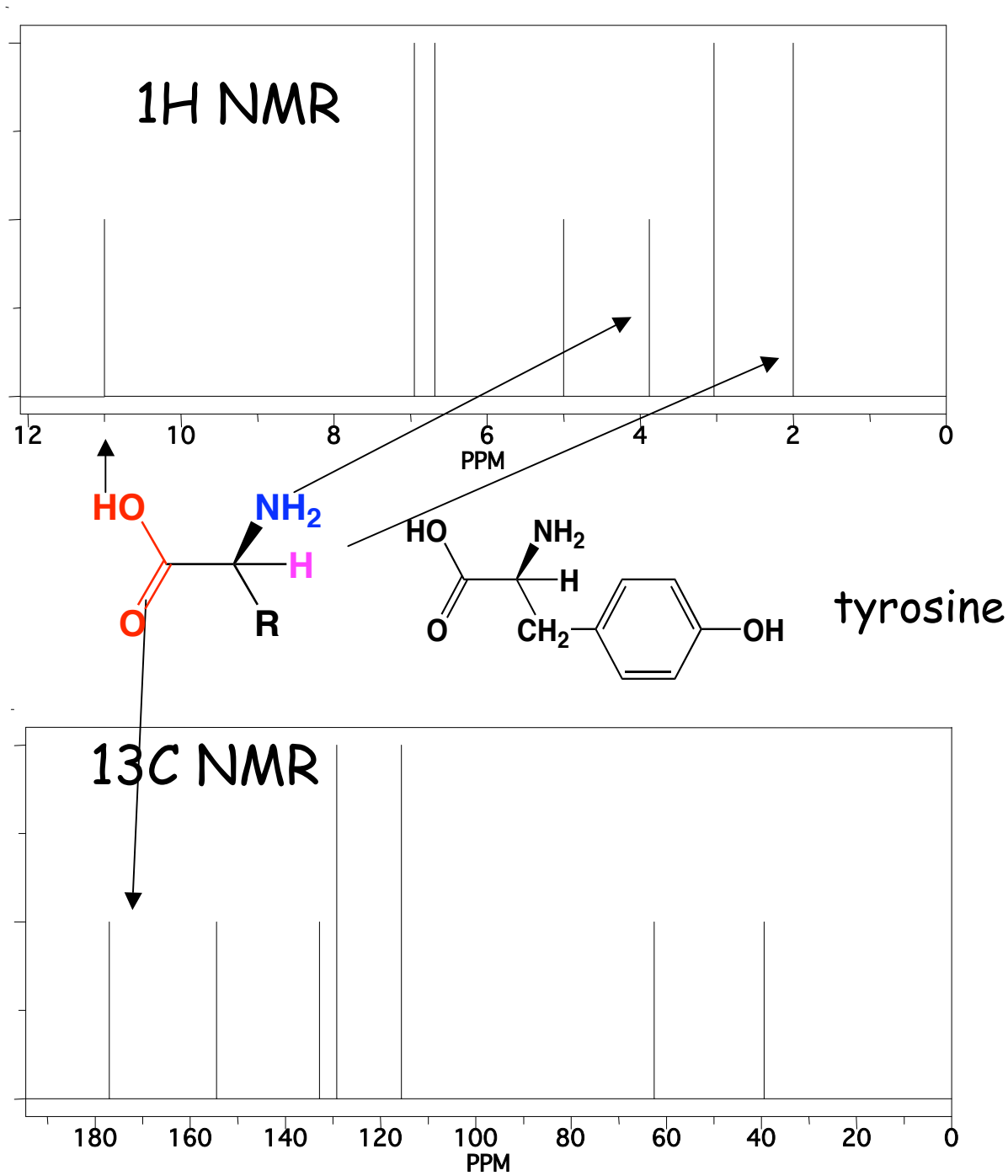



1H NMR
12
10
8
6
4
2
0
PPM
HO
NH2
H
O
R
HO
CH2
NH2
O
glycine
13 C NMR
180
160
140
120
100
80
60
40
20
0
PPM


1H NMR
12
10
8
6
4
2
0
PPM
HO
NH2
H
O
R
HO
NH2
H
O
CH3
alanine
13 C NMR
180
160
140
120
100
80
60
40
20
0
PPM


1H NMR
12
10
8
6
4
2
0
PPM
HO
NH2
H
O
R
OH
CH3
H
H
O
CH3
NH2
valine
13 C NMR
180
160
140
120
100
80
60
40
20
0
PPM


1H NMR
12
10
8
6
4
2
0
PPM
HO
NH2
H
O
R
HO
NH2
O
H
CH2
phenylalanine
13 C NMR
180
160
140
120
100
80
60
40
20
0
PPM


1H NMR
12
10
8
6
4
2
0
PPM
HO
NH2
H
O
R
HO
NH2
H
O
CH2
OH
tyrosine
13C NMR
180
160
140
120
100
80
60
40
20
0
PPM