Lab Quiz #2 → Merrifield resin synthesis
- df-tert-buty1 dicarbonate
- DCC

Exam #3 - Amino acids
- D vs L amino acids
- PI + acid/base properties
- Electrophoresis
- Ion exchange chromatography, N,N-Hydrind
- Synthesis of amino acids
- Protein structure
- Sequencing - Edman degradation, methionine

A few more amino acids:

\[
\text{L-methionine, L-tyrosine, indole, L-tryptophan}
\]

Synthesis of amino acids

**Strecker Synthesis**

\[
\begin{align*}
R-C=O + H^+ + \text{NH}_3 & \rightarrow R-\text{H} + N-H \\
\text{NaCN} & \rightarrow \text{R-CH(N_C=O)} \\
\Delta, \text{HCl} & \rightarrow \text{R-CH(NH}_3\text{)}
\end{align*}
\]

Separating chiralomers

\[
\text{amino acid} \rightarrow \text{chiral auxiliary} \rightarrow \text{complex}
\]

Presence of a stereocenter
Since amino acids are enantiomers, they cannot be easily separated since their physical properties are identical (except optical rotation, which cannot be used to separate the compounds). If a mixture of enantiomeric amino acids is reacted with some other compound that has one stereocenter, diastereomers are produced. Since diastereomers have different physical properties, they can be separated. If the amino acid can be released from the complex it forms, the enantiomeric amino acids can then be separated.

**Protein structure:** 10, 20, 30, 40

10 - sequence - order of amino acids

**:Br-C≡N:** cyanogen bromide

leaving group + H₂N-R

chain is disconnected upon hydrolysis
2° structure - features of a protein caused by H-bonding interactions

α-helix - clockwise helix for L-amino acids

β-pleated sheets

Coils

3° structure - Protein attempts to adopt a lowest-energy structure. Aside from hydrogen bonding, the conformation of a protein is caused by hydrophobic/hydrophilic or lipophilic/lipophobic interactions of the amino acid side chains with their surrounding environment.

Denaturing - destroying the 3° structure of a protein

4° structure - macromolecular structure - the assembly of large protein units into a complex. → hemoglobin