Review Topics: Chapters 24, 26, 28

Ch. 24
Basicity of Amines
- Substituent effects
- pK$_A$’s of typical ammonium salts

Preparation of Amines
- Reduction of nitrogen-containing precursors
- S$_{N}2$ routes (3 ways, limitations of direct route)
- Reductive Amination!
- Rearrangement (Curtius, Hoffman)

Reactions of Amines
- Acylation
- Hoffmann elimination (regiochemistry)

Reactions of Arylamines
- Diazonium coupling
- Substitution with diazonium salts (Phenol synthesis!)

Ch. 26
General structure/stereochemistry of Amino Acids
- Zwitterion vs. neutral structure

Synthesis of amino acids
- Hell-Volhard-Zelinskii
- Strecker synthesis
- Amidomalonate route!
- Reductive amination
- Need for resolution of enantiomers

General idea of degradation schemes for peptide sequencing

Peptide synthesis
- Protecting groups (t-BOC, ester)
- DCC coupling
- Solid-phase synthesis

General idea of combinatorial chemistry (see pp. 632 – 633 in McMurry)

Ch. 28
Physical structures and bonding schemes for pyrrole, furan, and thiophene.

Electrophilic substitution reactions on 5-membered ring heterocycles and fused ring compounds

Nucleophilic substitution reactions on pyridines and halopyridines

General idea of alkylation of nucleotides