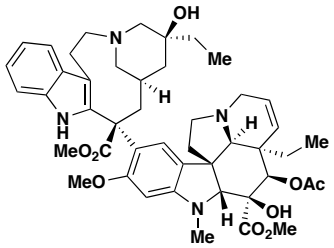
Tuesday, May 24th, 2011

Background music: Arensky's piano trios and Debussy's Claire de lune

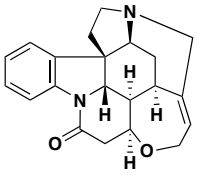
Alkaloids classes discussed: Indole
Isoquinoline
Nicotine and tropane
Lycopodium
Manzamine

Representative structures:

indole

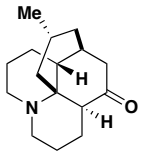


vinblastine



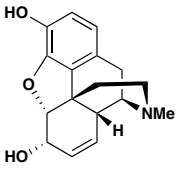
strychnine

lycopodium

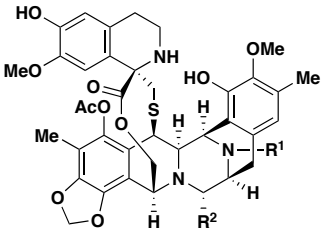


lycopodine

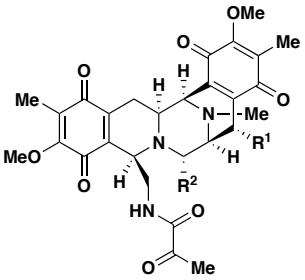
isoquinoline



morphine

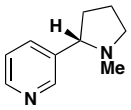


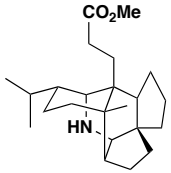
ecteinascidins



safranycins

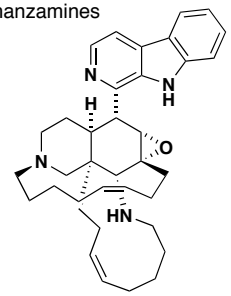
nicotine



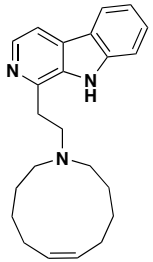


methyl homosecodaphniphyllate
Classics I, chapter 26
Angew. Chem. Int. Ed. **1992**, *31*, 665

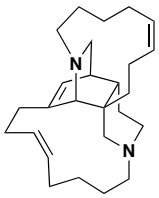
manzamines



manzamine B



manzamine C



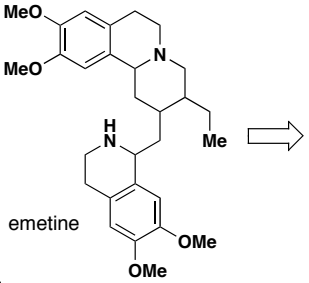
keramaphidin B

Reading assignment: **Handouts**

Partial list of concepts/transforms discussed:
Pictet theory
Woodward "fission"

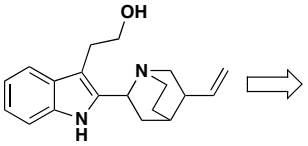
Problems of the Day:

(1) Provide a plausible biosynthetic hypothesis for emetine using the Woodward Fission:



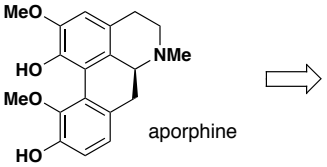
emetine

(2) Provide a plausible biosynthetic hypothesis for cinchonamine using the Woodward Fission:



cinchonamine

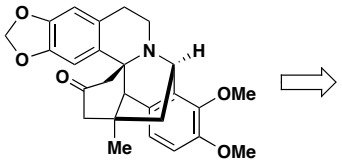
(3) Provide a plausible biosynthetic hypothesis for the aporphine skeleton:



aporphine

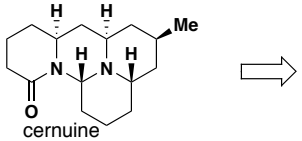
(4) Provide a plausible biosynthetic hypothesis for manzamine C

(5) Provide a plausible biosynthetic hypothesis for karachine:

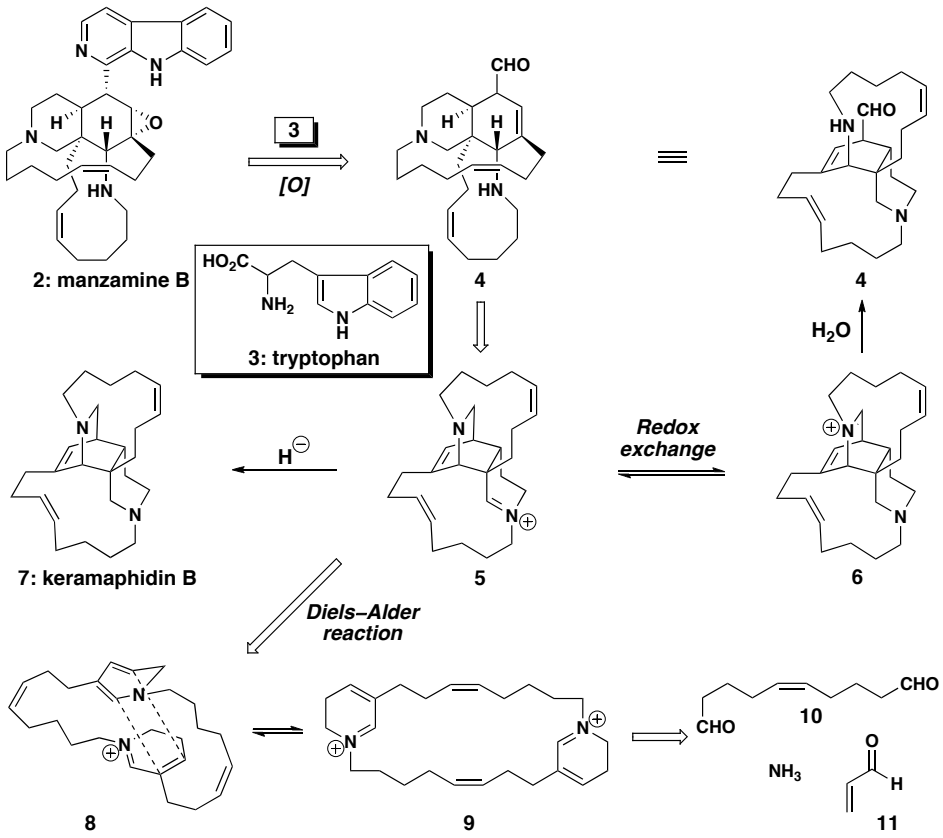


karachine

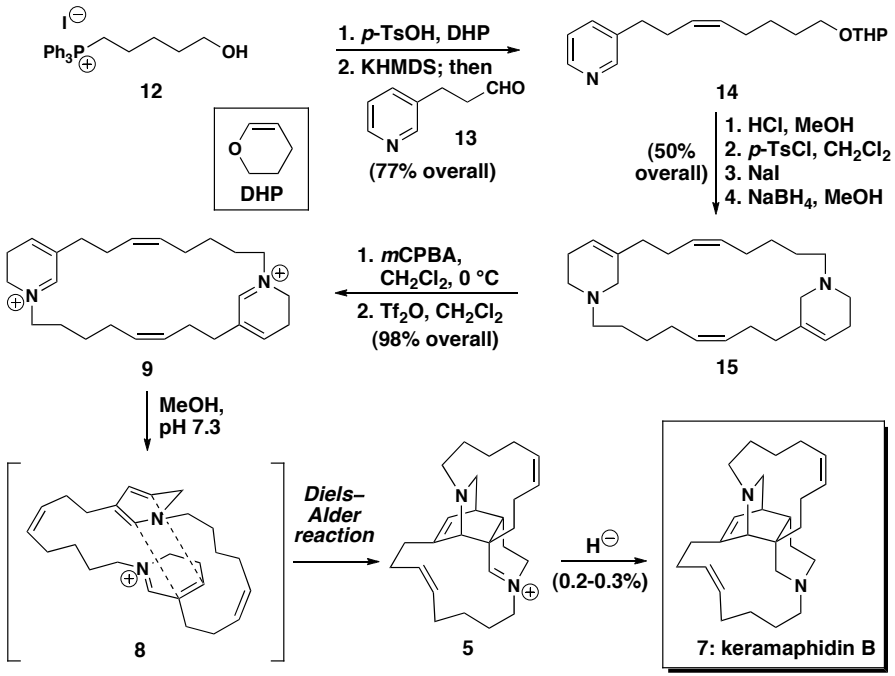
(6) Provide a plausible biosynthetic hypothesis for cernuine:



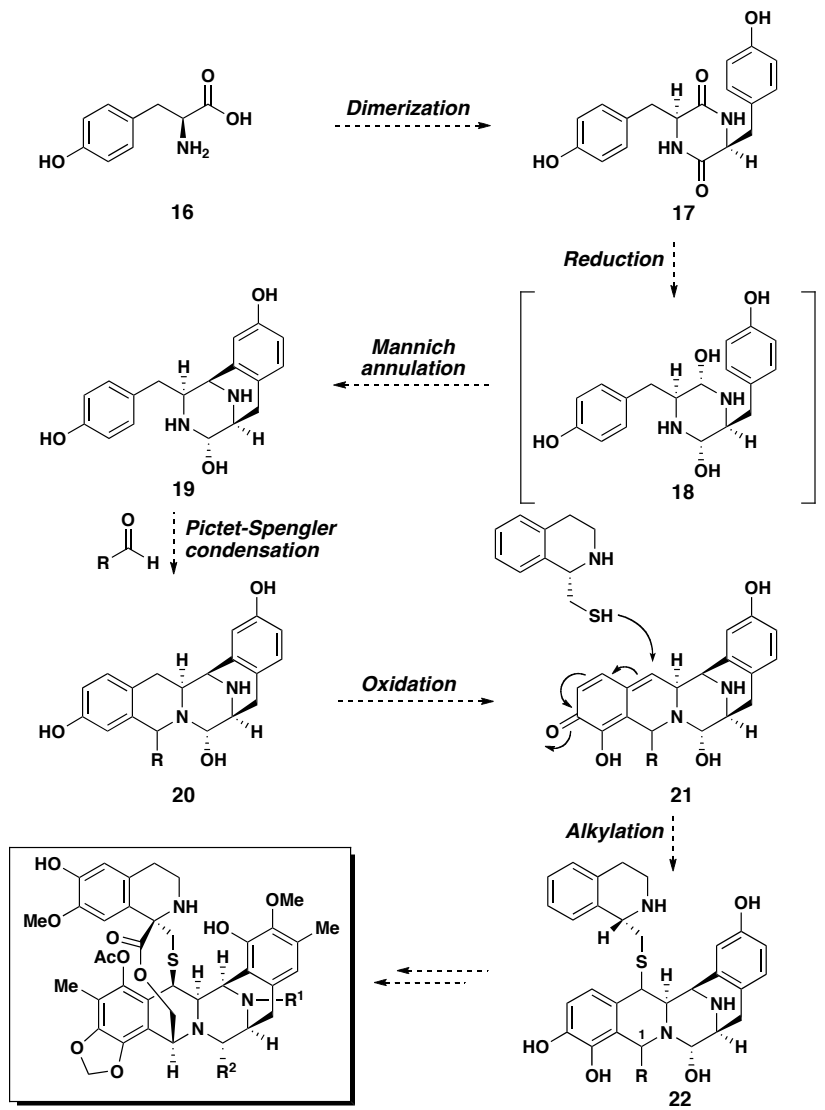
cernuine



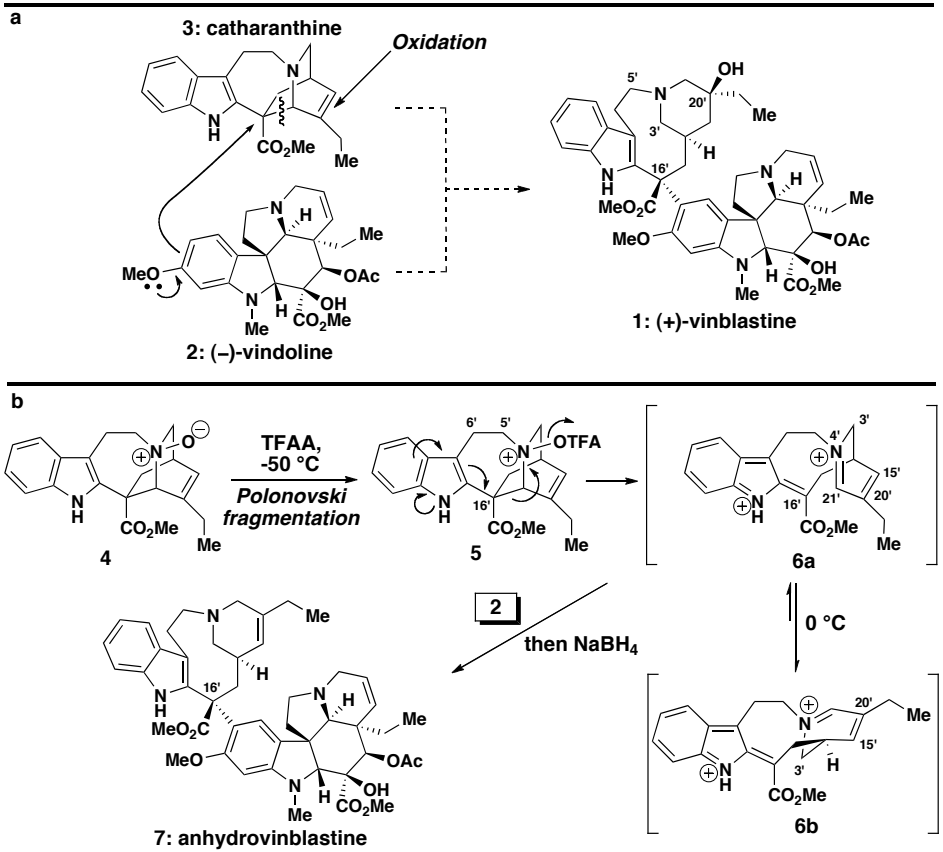
Scheme 1. The Baldwin-Whitehead hypothesis for the biogenesis of manzamine B (2) and related alkaloids.



Scheme 2. Biomimetic total synthesis of keramaphidin B (7). (Baldwin et al., 1999)[5]



Scheme 3. Postulated biosynthesis of the ecteinascidins.



Scheme 1. General biosynthetic pathway (a) for binary indole-indoline alkaloids such as vinblastine (1) and Potier's synthetic approach (b) based on that hypothesis.