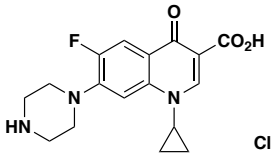
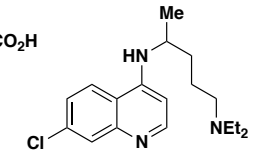
Lectures 9: Quinolines and Isoquinolines

Study music: Copeland and Haydn

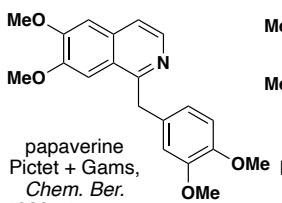
Syntheses discussed:



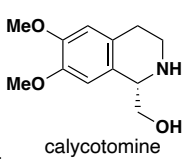
Cipro (ciprofloxacin)
Bayer



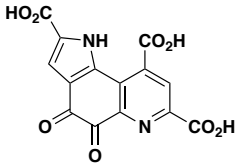
chloroquine
Surrey, *JACS* **1946**, *68*, 113.



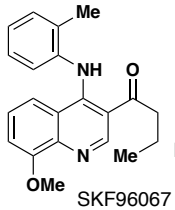
papaverine
Pictet + Gams, *Chem. Ber.* **1909**, *42*, 2943.



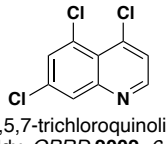
calycotomine
Review: *Synthesis* **2005**, 339.



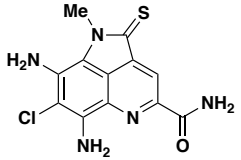
methoxatin
Corey, *JACS* **1981**, *103*, 5599.
Weinreb, *JOC* **1982**, *47*, 2833.



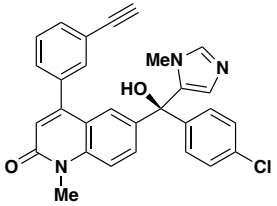
SKF96067
SmithKline, *OPRD* **1997**, *1*, 185.



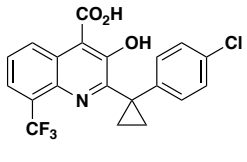
4,5,7-trichloroquinoline
Reddy, *OPRD* **2002**, *6*, 242.



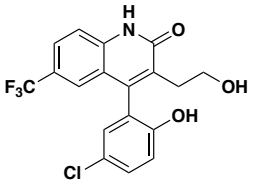
ammosamide A
JACS **2009**, *132*, 2528
OL **2010**, *12*, 3112



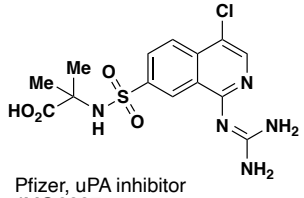
farnesyl transferase inhibitor
Pfizer, *OPRD* **2004**, *8*, 643.



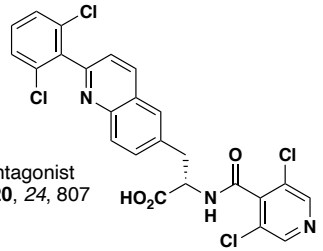
Pfizer, P-Selectin Inhibitor
JMC **2010**, *53*, 5003



BK Channel Activator
JLCR **2010**, *53*, 140



Pfizer, uPA inhibitor
JMC **2007**, *50*, 2341



VLA-4 Antagonist
OPRD **2020**, *24*, 807

Reading assignment: HC - chapter 9, PCC - quinoline chapter,
Essiantals Handout (quinoline/isoquinoline)

Partial list of concepts/transforms discussed:

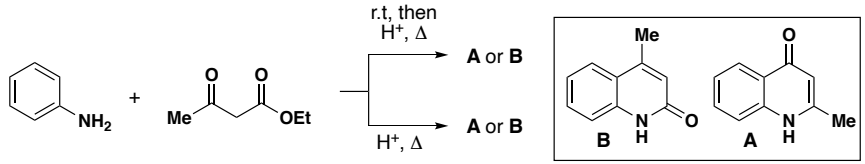
Quinoline ring forming reactions:
- Combes
  - Conrad-Limpach
  - Knorr
  - Gould-Jacobs
- Skraup
- Friedlander
- Pfitzinger
- Doebner
- Meth-Cohn (Vilsmeier approach)
- Camps
- Povarov

Isoquinoline ring forming reactions:
- Bischler-Napieralski
  - Pictet-Gams
  - Pictet-Hubert
  - Pictet-Spengler
- Gabriel-Colman
- Pomeranz-Fritsch

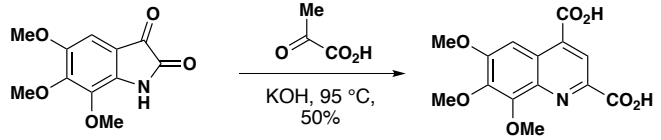
Danishefsky pyridone synthesis

Problems of the day:

1 Which conditions provide A and B?



2 Explain:



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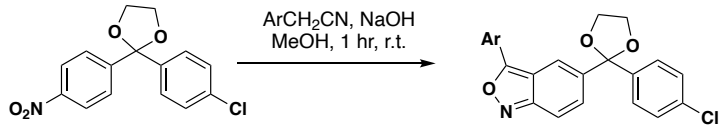
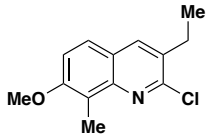


4 Using disconnections B+C, propose a synthesis of the following chloroquinoline:



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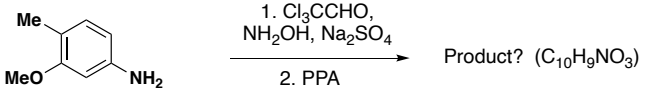

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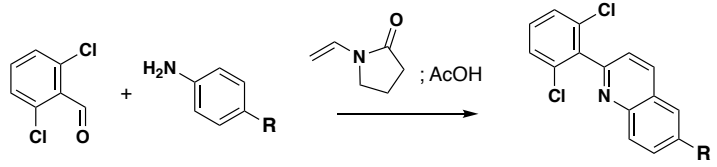

7 Propose syntheses of calycotomine by ring synthesis and ring substitution