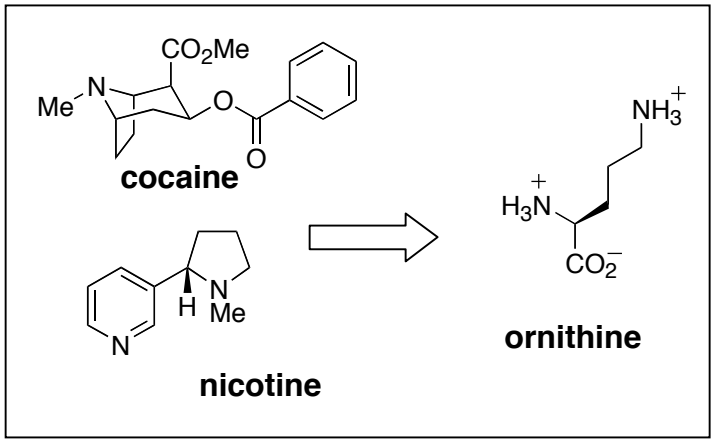
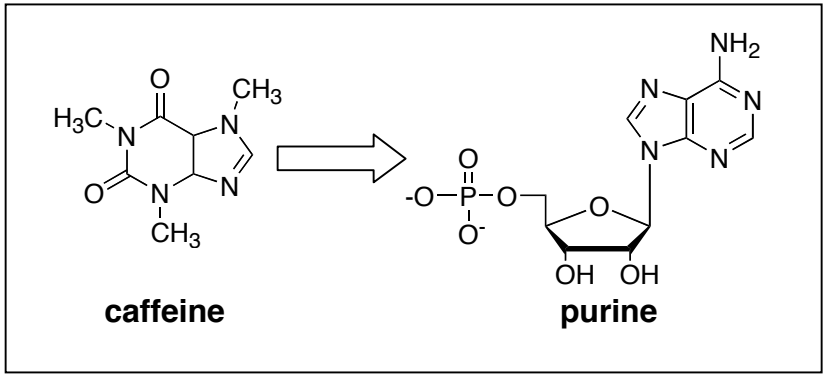
**5.451 F2005**
**Alkaloid Biosynthesis:**
**Nitrogen containing compounds**

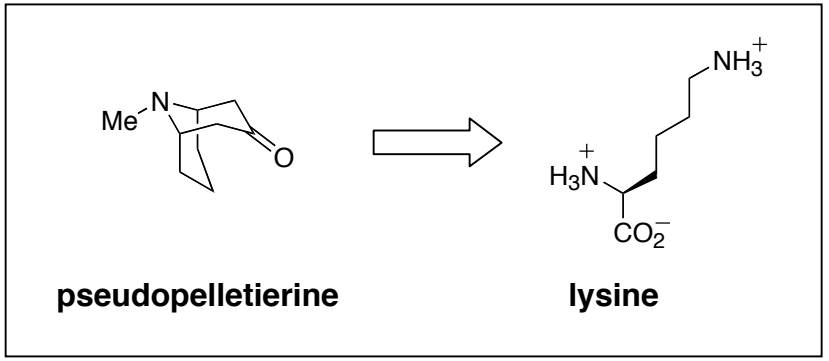
**Starting materials:**
**Amino acids and nucleic acids**

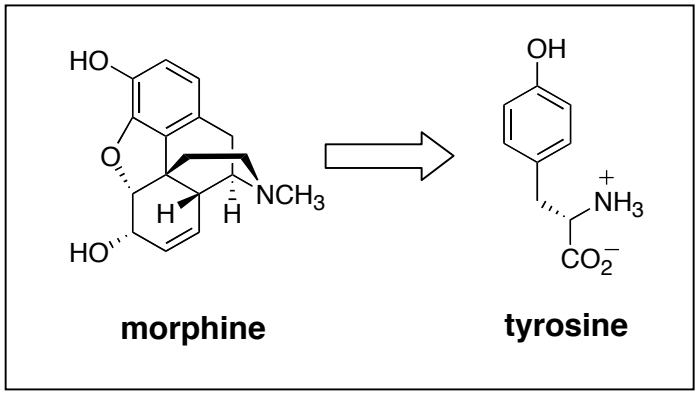
**Amino Acids:**
**Ornithine**
**Lysine**
**Tyrosine**
**Tryptophan**

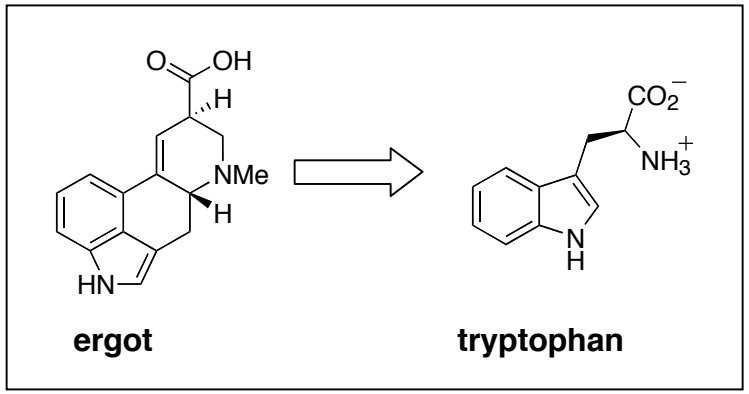
**Purine**



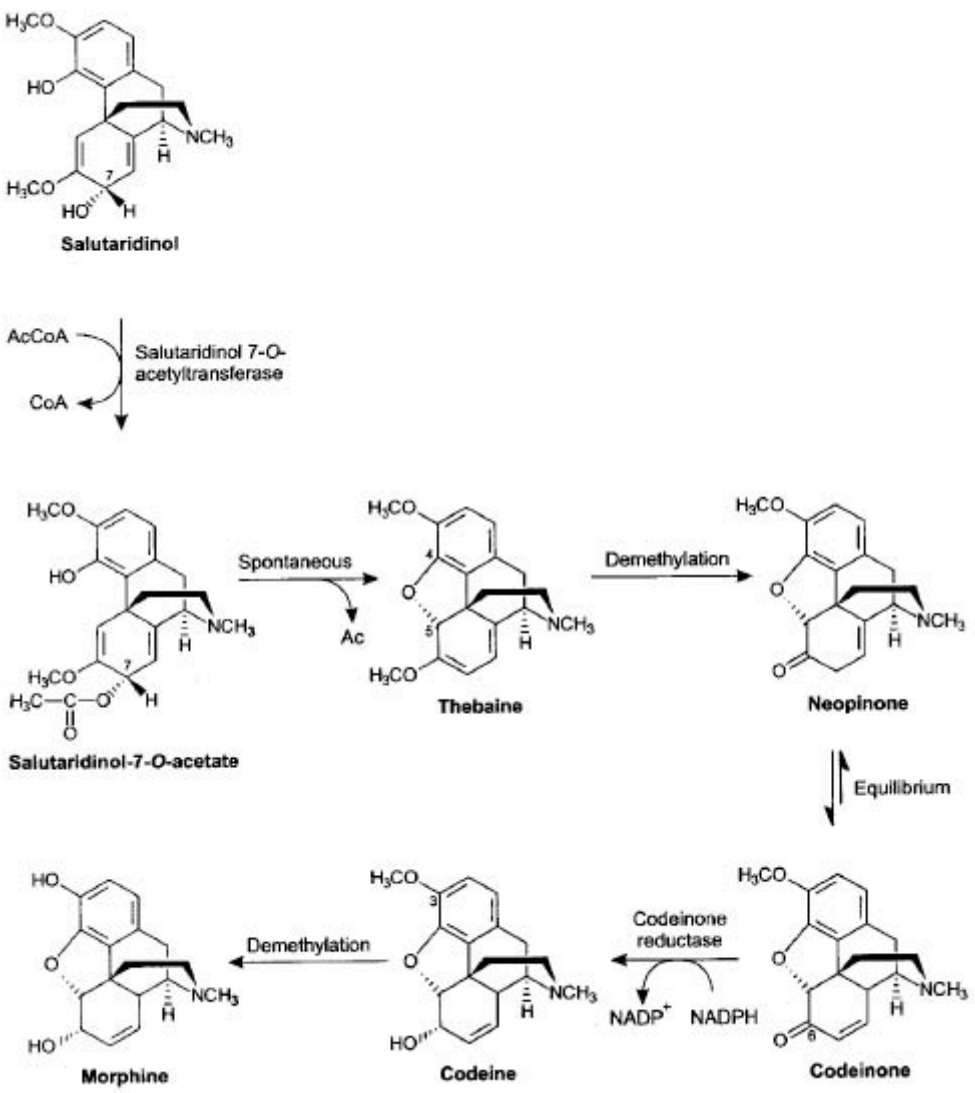



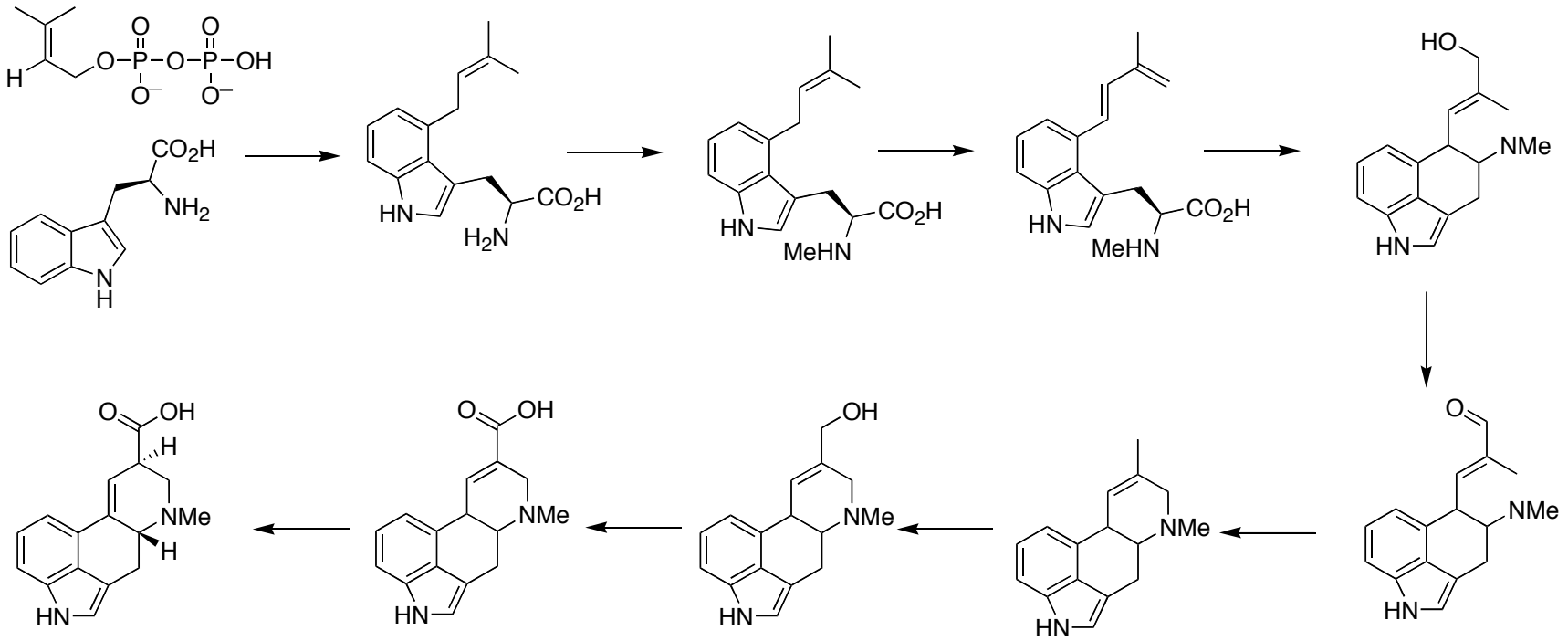



**5.451 F2005**
**Alkaloid Biosynthesis:**
**Tyrosine**
**Late Steps of morphine biosynthesis**

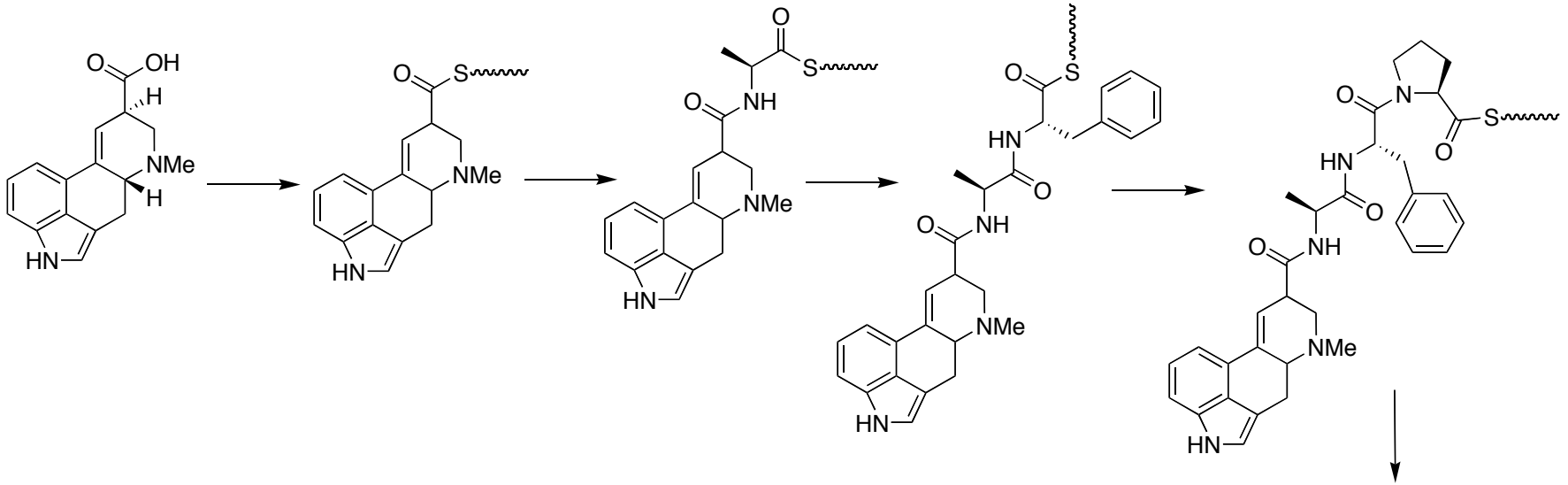


**5.451 F2005**
**Alkaloid Biosynthesis:**
**tryptophan**
**Ergot Alkaloids**



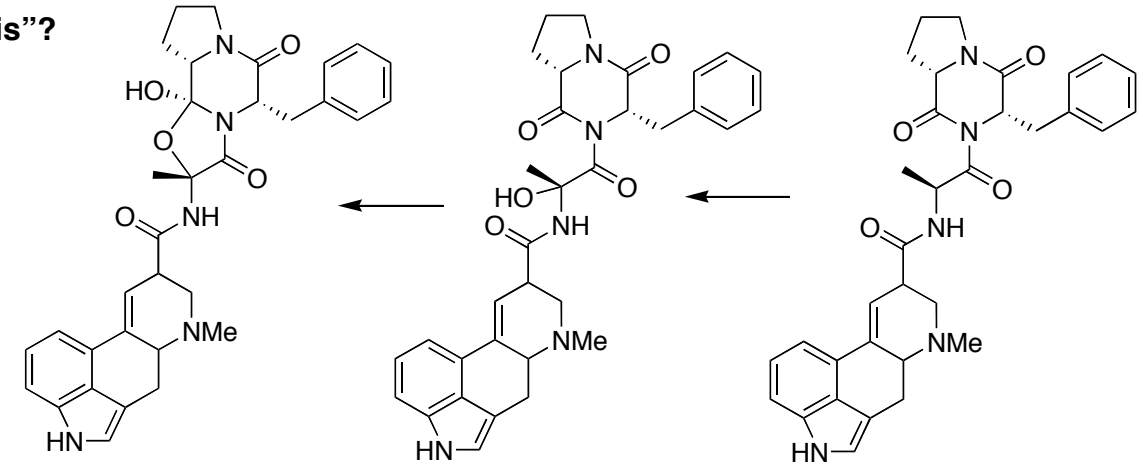
**Mol. Gen. Gen. (1999) 261, 133-141**
**The Alkaloids, G. Cordell pp. 170-218**

**5.451 F2005**
**Alkaloid Biosynthesis:**
**tryptophan**
**Ergot Alkaloids**



**Potential for "combinatorial biosynthesis"?**
**Central amino acid varies**

**Ergovaline eliminated from a strain of symbiant "ryegrass staggers" (PNAS (2001) 98 12820)**



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**Journal of Biological Chemistry (1995), 270(41), 24475-81.**

**Index of figures removed due to copyright reasons**

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