

# Synopsis of Experiments # 1-5 and Report Due Dates

Chemistry 2312  
Honors Organic Chemistry Laboratory

Tuesday, September 6, 2022  
T. R. Hoye

## Course Outline: Experiments # 1-5.

1. Ketone Reduction by Sodium Borohydride:  
*3-Nitroacetophenone to 1-(3-Nitrophenyl)-1-ethanol and 9H-Fluoren-9-one to 9H-Fluoren-9-ol*
2. Ozonolysis and Hydrogenation of Naturally Occurring Alkenes (Terpenes):  
*Nopinone from  $\beta$ -Pinene and Menthone from Pulegone*
3. Reactions of Carboxylic Acid Derivatives:  
*Enolate Alkylation, Ester Hydrolysis, and DCC-Coupling with (R)-1-(1-naphthyl)ethylamine*
4. Catalysis: *Palladium(0) Coupling of an Alkyne with an Aryl Halide, Enzymatic Kinetic Resolution of a Chiral Alcohol, and Mosher Ester Analysis of Absolute Configuration*
5. Diels-Alder Cycloaddition Reaction,\* Photochemical 2+2 Cycloaddition, and Diketone Reduction: *\*Preparation of a Starting Material for Synthesis of Análogos of Otteliones A and B, Natural Antitumor Agents*

|               |                |                 |
|---------------|----------------|-----------------|
| <b>Points</b> | Experiment 1   | 110 points      |
|               | Experiment 2   | 220 points      |
|               | Experiment 3–5 | 330 points each |

**Due Dates** (all due **by lab closing time** in a collection box in the 491 Kolthoff lab)

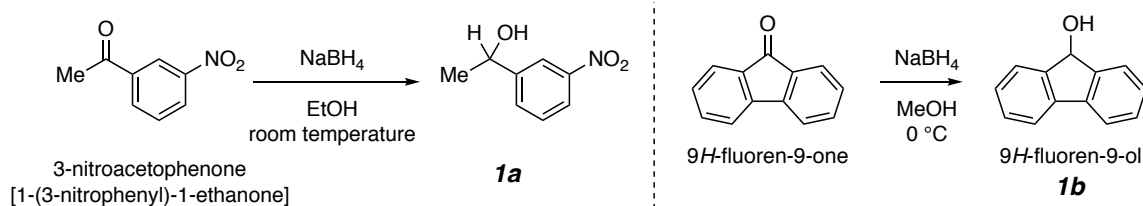
|                  |                          |   |
|------------------|--------------------------|---|
| <b>Report 1.</b> | Experiment 1             | Thursday, September 22, 2021                                      |
| <b>Report 2.</b> | Experiment 2             | Saturday, October 8, 2021   |
| <b>Report 3.</b> | Experiment 3 (or 4 or 5) | Saturday, October 29, 2021  |
| <b>Report 4.</b> | Experiment 4 (or 5 or 3) | Saturday, November 19, 2021                                       |
| <b>Report 5.</b> | Experiment 5 (or 3 or 4) | Wednesday, December 14, 2021<br>(last day of classes/instruction) |

**Late Penalty** *A 10% penalty will be assessed for each week (or portion thereof) that a report is turned in late.*

## Graphical Synopsis of Experiments # 1-5

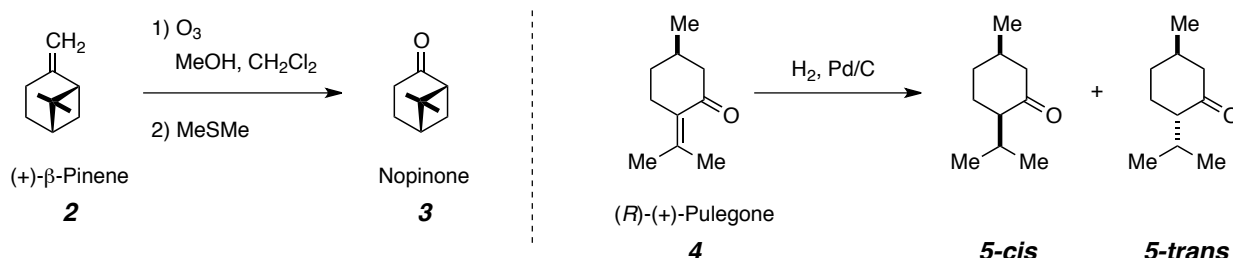
### 1. Ketone Reduction by Sodium Borohydride:

*1-(3-Nitrophenyl)-1-ethanol (1a) and 9H-Fluoren-9-ol (1b)*

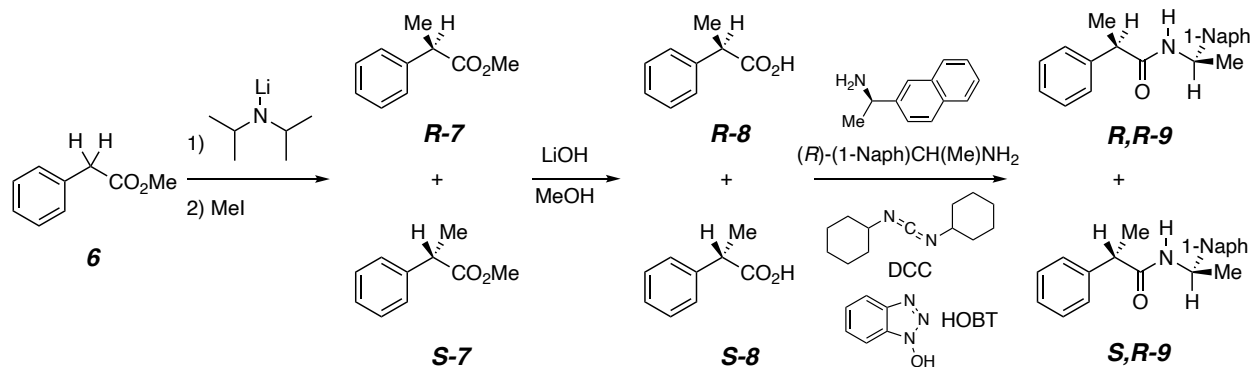


### 2. Ozonolysis and Hydrogenation of Naturally Occurring Alkenes (Terpenes):

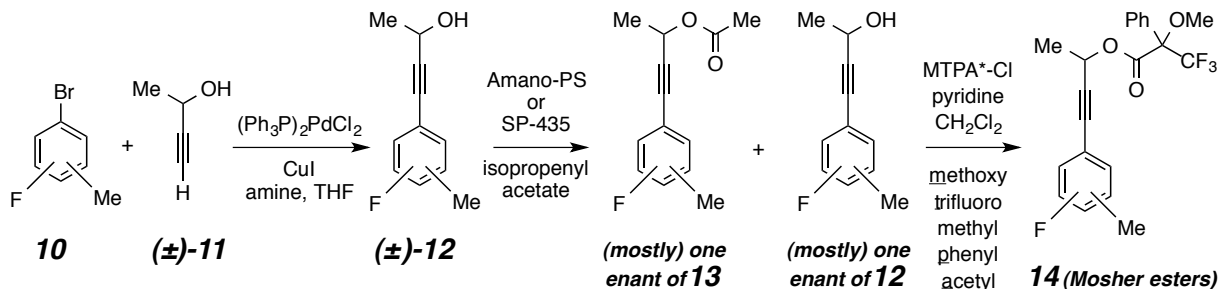
*Nopinone (3) from β-Pinene (2) and Menthone Diastereomers (5) from Pulegone (4)*



### 3. Reactions Relevant to Bioorganic Chemistry: Enolate Alkylation, Ester Hydrolysis, and DCC-Coupling in the Preparation of Phenyl-N-(1-naphthylethyl)propanamide (9)



### 4. Catalysis: Palladium Coupling of an Alkyne (11) with an Aryl Halide (10), Enzymatic Kinetic Resolution of a Chiral Alcohol (12 to 13), and Mosher Ester Analysis of Absolute Configuration



### 5. Diels-Alder Cycloaddition, Photochemical 2+2 Cycloaddition, and Diketone Reduction

