“One of the most salient features of our culture is that there is so much bullshit” from On Bullshit, Harry G. Frankfurt, Princeton University Press, 2005, p. 1

Optional Readings
- “Philosophy” from Determination of Organic Reaction Mechanisms, B.K. Carpenter, 1984. Short essay that explains why a mechanism can be suggested but never proven (or, to put it another way, “all mechanisms are bullshit”).

Assignment – Part I

Draw plausible mechanisms for as many of the following reactions as you can. (Note: I will ask you to present your answers (right or wrong) in class for discussion. Feel free to visit me with your ideas, or lack thereof, prior to the due date.)

1.

\[
\begin{align*}
\text{Br} & \quad \text{O} \\
\text{N} & \quad \text{H} \\
\text{NH}_2 & \quad \text{O} \\
\text{H} & \quad \text{N}
\end{align*}
\]

2.

\[
\begin{align*}
\text{O} & \quad \text{COOEt} \\
\text{O} & \quad \text{t-BuONa} \\
\text{EtONa} & \quad \text{Br} \\
\text{Br} & \quad \text{Br}
\end{align*}
\]

3.

\[
\begin{align*}
\text{COOEt} & \quad \text{t-BuOK} \\
\text{EtOOC} & \quad \text{EtOOC}
\end{align*}
\]
Assignment – Part II

Many research teams have weekly information sharing sessions in which team members briefly describe interesting things that they have seen in the latest scientific literature. This assignment will simulate this experience.

1-3 minute oral presentation + drawing on the board. This assignment involves finding a suitable chemical reaction in the literature and then presenting the reaction in class: draw the reaction on the board, give the literature citation, give the yield (if known), and identify the reaction’s most noteworthy feature(s). I expect this will take at least 1 minute to accomplish, but your presentation will be strictly limited to 3 minutes, so practice a couple of times so that it goes smoothly. (If time permits, you might go into additional detail; it’s up to you.)

What is a suitable reaction? For the purpose of this assignment, a “suitable” chemical reaction is defined as any reaction that involves 1) a strong nucleophile and 2) a non-standard leaving group, i.e., something other than a halogen, tosylate, or mesylate. The reaction can be as simple as an SN2 reaction or it can be a complicated metal-catalyzed fragmentation or something in between. Regardless of the type of reaction, the noteworthy feature will be assumed to be the use of a non-standard leaving group, so hunt around until you find a suitable example. If time permits, you might tell us why the researchers decided to use a non-standard leaving group.

Finding a suitable reaction. Page through issues of Organic Letters or the Journal of Organic Chemistry. Look for synthetic schemes that show multiple reactions and try to identify ones that involve strong nucleophiles (if you’re unsure about this, skip the reaction and find another one).