1. Give a plausible mechanism for the following transformation:

\[
\begin{align*}
\text{Ar} & \quad \text{I} \\
\text{4 atm} & \\
\text{NEt}^+ \text{Pr}_2 \\
\text{cat. Pd(PPh}_3 \text{)} \\
\text{MeCN, heat} & \\
\end{align*}
\]


2. Give the structure of the reagent, the active species, the product, and the reaction mechanism.

\[
\begin{align*}
\text{R}_1 \quad \text{R}_2 & \\
\text{Tebbe's reagent, pyridine} & \\
\end{align*}
\]
3. Give the name, mechanism, and product for the following transformation:

![Chemical structure](image1)

4. Provide a name and plausible mechanism for the following transformation (Mo complex can be generalized with $L_n$ representations):

![Chemical structure](image2)

Porée, *JOC*, 2015, 80, 6525–8
5. Provide a plausible mechanism for the following transformation, accounting for the formation of both products, and identify a competing reaction (retaining the alkyne):