Your assignment is to present to the class the following paper: “Palladium-catalyzed coupling of optically active amines with aryl bromides” (<https://pubs.acs.org/doi/10.1021/ja971583o>). You are provided the manuscript. Below are questions similar to those you are used to from literature discussions this semester. You should use these to guide the construction of your presentation. Make sure that you provide a background on the field generally. The questions below are useful for guiding this, may not be comprehensive (i.e., you may delve into areas not directly addressed by the questions). Questions may not necessarily be in the order in which topics should be presented. When a technique that is new to you is employed, you should assume that it is new to the rest of the class as well, and briefly explain it. You are encouraged to use figures. You may copy/paste figures from the materials provided, or from other sources in the interest of time. Ensure that any figure not generated by you or from this manuscript has a citation. You are encouraged to reach out to Profs. Farrell and MacArthur for help. However, you should first put a reasonable amount of effort into answering your questions yourself by doing your own research.

The objective of this assignment is to enhance your skills of reading and digesting scientific literature, as well as exposing the class to an area of research we are not able to cover in one semester of this course.

1. Give some background:
   1. What is catalysis?
   2. What type of compounds are the authors attempting to make here, and why are they useful?
   3. What is meant by “enantiometically enriched”? What is “ee” and how is it determined?
   4. What is cross-coupling? What is the difference between intermolecular and intramolecular cross-coupling?
   5. The authors prepare one of their substrates with a Heck coupling. What is that, and how is it similar to the reaction involved in this paper?
2. Catalysis:
   1. Present the reactions performed, and the results. Include those in the table, but also summarized those described in the text.
   2. What happens with the various catalysts used in terms of ee? Look up ligands for which the structures are not obvious to you, and explain what may be occurring to cause these differences in observations.
      1. Include mechanisms in this portion.
      2. Discuss experiments performed from which the authors draw their conclusions.
      3. Discuss how the active catalyst is generated *in situ*.
      4. What is β-hydride elimination? How does it play a role here?
      5. What are oxidative addition and reductive elimination? How do they play roles here?
      6. Mention valence electron counts and dn for the compounds in the catalytic cycle. How do they affect the propensity for various reactions to occur in the catalytic cycle?
   3. Why does the (o-tolyl)phosphine catalyst do intramolecular coupling with enantioretention, but not intermolecular coupling?
3. Conclude with some big picture take-aways from this paper.
   1. What concepts from 356 did you need to consider?
   2. What is the big achievement that warrants publication in *Journal of the American Chemical Society*, a high impact journal?