Day 8: Nucleopalladation and Wacker Oxidation

QUOTE OF THE DAY

"A gold medal is a wonderful thing. But if you're not enough without one, you'll never be enough with one."
- Cool Runnings

PROBLEMS OF THE DAY

**#1**

\[
\begin{array}{c}
\text{cat. Pd}^{\text{II}} \\
\text{cat. Cu}^{\text{II}}
\end{array}
\]

\[\text{D}_2\text{O}, \text{O}_2 \rightarrow \overset{\text{cat. Pd}^{\text{II}} \ \ \text{cat. Cu}^{\text{II}}}{\text{H}_3\text{C} \rightarrow \overset{\text{H}_2\text{O}, \text{O}_2}{\text{D}_3\text{C}}}
\]

Propose a mechanism that is consistent with these results.

**#2**

Design an experiment to probe the mechanism of nucleopalladation.

**#3**

\[\text{cat. Pd}^{\text{II}} (\text{MeCN})_2 \]

\[8 \text{ mol}\% \ Pd(\text{OTs})_2(\text{MeCN})_2 \]

\[10 \text{ mol}\% \ \text{L} \]

\[3 \text{ equiv } \text{BQ} \]

\[1 \text{ equiv } \text{Ca(OH)}_2 \]

\[3 \text{ Å } \text{MS, PhCF}_3, \text{ rt} \]

**#4**

\[\text{mechanism?} \]

Shvo's catalyst review: 

**#5**

Name these ligand families.

**#1**

Name? known for?

**Jan E. Bäckvall** (1947–present)
Born: Malung, Sweden
Stockholm University

Known for:
- mechanism of Wacker [O]
- 1,2-difunctionalization of alkenes
- 1,4-difunctionalization of dienes
- aerobic oxidation
- DKR

Catalyst name? catalyst synthesis?

Shvo's catalyst review: 

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