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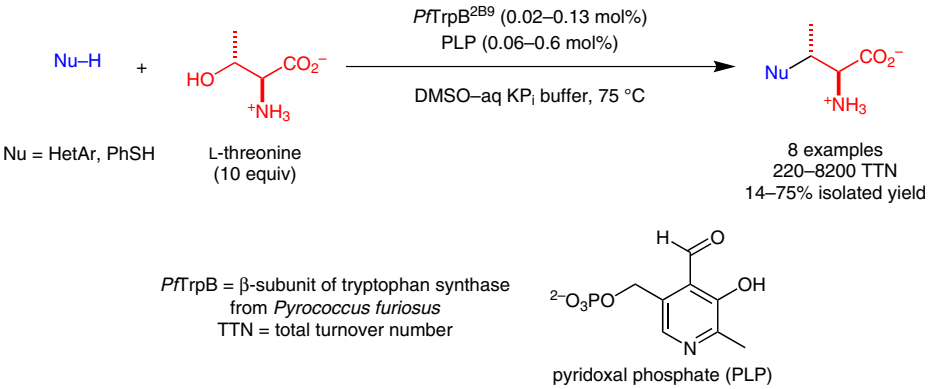
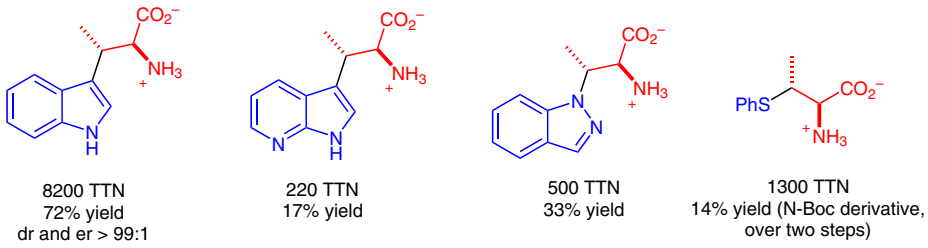
F. H. ARNOLD* (CALIFORNIA INSTITUTE OF TECHNOLOGY, PASADENA, USA)
Synthesis of β-Branched Tryptophan Analogues Using an Engineered Subunit of Tryptophan Synthase
J. Am. Chem. Soc. **2016**, *138*, 8388–8391.

Single-Step Enzymatic Synthesis of β-Methyltryptophans



Selected examples:



Significance: Arnold and co-workers report an enzymatic single-step synthesis of β-methyltryptophan analogues from various nucleophiles and L-threonine by using a mutant β-subunit of the tryptophan synthase from *Pyrococcus furiosus* (*Pf*TrpB). This subunit, derived from directed evolution, proved to be significantly more active than the wild-type subunit.

Comment: By employing directed evolution, the authors have previously achieved the restoration of activity of the sole β-subunit of the heteromeric tryptophan synthase from *Pyrococcus furiosus*, which facilitates applications outside the cell (*Proc. Natl. Acad. Sci. U.S.A.* **2015**, *112*, 14599). The current work is an intriguing extension that permits the efficient transformation of threonine instead of serine. The resulting β-methyltryptophans are valuable precursors to a variety of natural products and could previously be only accessed by several chemical or enzymatic steps.

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