



Codex™ TA Panels

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- Functionally diverse TA variants *demonstrated*:
 - to accept wide range of substrates
 - to be chemical process robust (stable to organics, thermo-stable)
 - to be manufactured at commercial scale
- Combinatorial design for sequence-function analysis
- Arrayed on 96-well plates for rapid screening

Advantages to the Process Research Chemist

- Quickly determine feasibility of a biocatalytic route
- Reduce development timelines for biocatalyst optimization – competitive with chemical process optimization
- Available for in-house screening, or as service provided by Codexis
- Deliver low-cost, scalable, environmentally-friendly routes to chiral amines

Chiral Amines

Chiral amines are highly versatile building blocks used in the synthesis of numerous pharmaceutical active ingredients. Traditional methods for the synthesis of chiral amines include asymmetric stoichiometric reduction, hydrogenation of chiral imines (chiral auxiliaries), chiral resolution and chiral chromatography (e.g. SMB methods). These methods have been used for commercial manufacture of chiral amines, but each has drawbacks: design of specific catalysts and catalytic processes, dedicated equipment, use of expensive reagents and creation of large amounts of waste. Transaminase (TA)-catalyzed biotransformations are capable of converting a prochiral ketone group to an optically pure amine in 100% theoretical yield. However, use of TAs in commercial chemical processes has been limited due to unfavorable thermodynamic equilibria and product inhibition. We have identified novel biocatalysts capable of performing under standard chemical process conditions that overcome these limitations.

Codex™ Transaminase (TA) Panels: Biocatalytic Solution to Chiral Amine Production

TAs can selectively transform ketones to the corresponding chiral amine using an amine donor. Codexis has developed a set of unique, proprietary TAs that are “pre-tuned” to accept a wide range of substrates and to perform under chemical process conditions suitable for pharmaceutical manufacturing. Codex™ TA Panel biocatalysts are optimized to use isopropylamine as an amine donor, and have been shown to perform under a wide range of temperatures (30 - 50° C), pH (7.0 – 9.5) and solvents (i.e. EtOH, MeOH, IPA, CH₃CN, THF). Figure 1 illustrates a number of substrates accepted by Codex™ TA Panel biocatalysts.

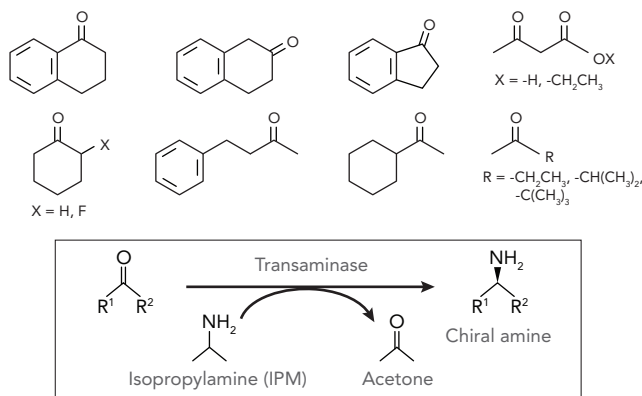


Figure 1 – Lists a number of substrates accepted by Codex™ TA Panel Biocatalysts.