# Vanadium dependent haloperoxidases Screening Kit

VHPESK-5000

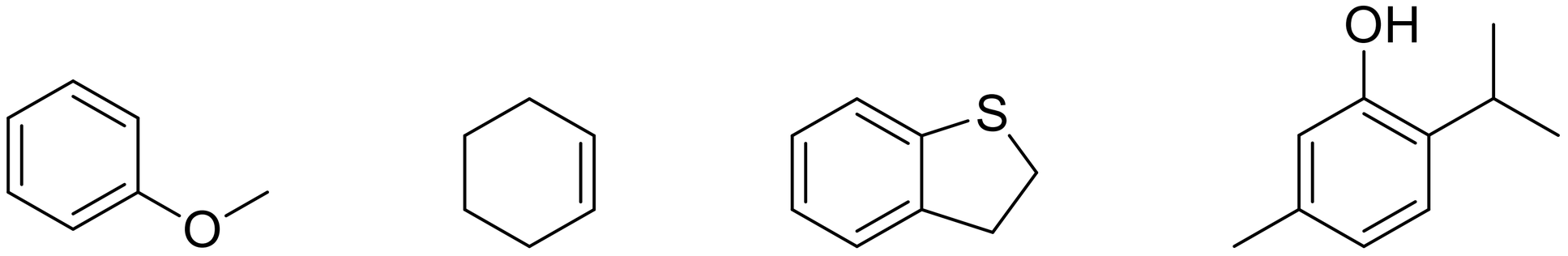
Partnering to Advance Human Health

## Applications

Catalyse formation of C-X bonds (by oxidation of halides) in typically electron-rich substrates, simply requiring vanadate, a halide source, and co-substrate hydrogen peroxide for activity. Also capable of enantioselective sulfoxidation of sulfides.

## Substrate Range

Activities with a variety of substrates. A selection is shown below.




## Kit description

The kit contains 50 diverse pre-formulated vanadium dependent haloperoxidases (VHP) biocatalysts as lyophilised powders in a 96 well plate format, as well as pre-prepared Tris$SO_4$ buffer and reaction components.

***VHPs contained in the screening kit***

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| **A** | VHP-1 | VHP-9 | VHP-17 | VHP-25 | VHP-33 | VHP-41 | VHP-49 |
| **B** | VHP-2 | VHP-10 | VHP-18 | VHP-26 | VHP-34 | VHP-42 | VHP-50 |
| **C** | VHP-3 | VHP-11 | VHP-19 | VHP-27 | VHP-35 | VHP-43 | |
| **D** | VHP-4 | VHP-12 | VHP-20 | VHP-28 | VHP-36 | VHP-44 | |
| **E** | VHP-5 | VHP-13 | VHP-21 | VHP-29 | VHP-37 | VHP-45 | |
| **F** | VHP-6 | VHP-14 | VHP-22 | VHP-30 | VHP-38 | VHP-46 | |
| **G** | VHP-7 | VHP-15 | VHP-23 | VHP-31 | VHP-39 | VHP-47 | |
| **H** | VHP-8 | VHP-16 | VHP-24 | VHP-32 | VHP-40 | VHP-48 | |

**Contents:**

| | |
|---|---|
| VHPs | 50 (50 mg each) |
| Sodium vanadate | 4.5 g |
| Hydrogen peroxide (2.64 M) | 1.5 mL |
| Sodium bromide | 600 mg |
| DMSO | 1 vial (25 mL) |
| 0.1M Tris$SO_4$ buffer (pH 5.5) | 1 bottle (300 mL) |

## Screening Procedure

1. Make up Tris$SO_4$ buffer (50 mL) containing sodium vanadate (0.9 g) and add this solution (0.8 mL) to enzyme (10 mg) in a vial.
2. Incubate at 25 ºC for 1 hour.
3. Add sodium bromide (102 mg) to Tris$SO_4$ buffer (5 mL).**
4. Add sodium bromide solution (0.1 mL) and hydrogen peroxide solution (5 µL) to the enzyme solution.
5. Add substrate solution (100 µL - made up in DMSO at a concentration of 10 g/L).
6. Incubate reaction overnight at 25 ºC.
7. Extract product with an organic solvent (MTBE, EtOAc etc.).
8. Analyse sample by GC/HPLC to determine conversion and product ee.

**It is recommended to make the solution fresh and use immediately.

**Storage:** Recommend refrigeration at <4 °C to preserve enzyme activity.

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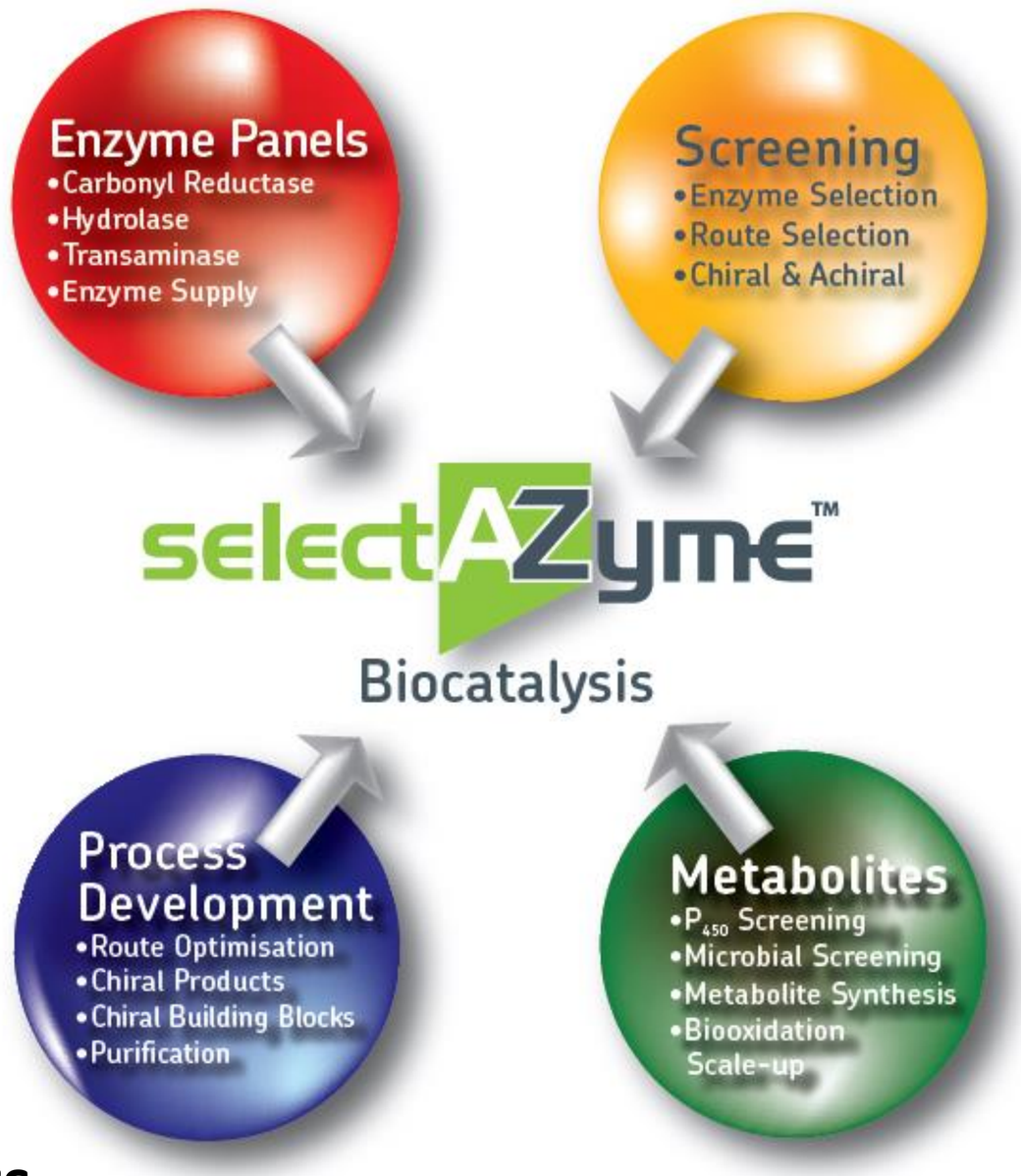
## selectAZyme Offerings

- An ever-expanding biocatalysis team including molecular and microbiologists, enzymologists, bioinformaticians, organic chemists and analysts, all equipped with state-of-the art facilities.
- Expertise in gene identification, expression, fermentation and enzyme production, followed by the efficient use of enzymes to produce complex chiral APIs.
- Enzyme evolution based on computational re-design, semi-rational and random mutagenesis approaches, allowing access to bespoke biocatalysts with enhanced activity, selectivity and process robustness.
- Fully integrated biocatalyst development through screening, (chemo-) enzymatic route definition, process development and scale up (pilot plant facilities available).
- Rapid implementation of enzymatic steps in complex, multi-stage syntheses, leading to significant improvements in production yields and timelines.
- A simple business model that avoids IP issues.




## The selectAZyme Range of Enzyme Screening Kits

Our selectAZmye kits include a detailed user guide and come with all buffers, cofactors, recycling systems and reagents necessary to perform screens using standard laboratory equipment.

**Carbonyl Reductase (CRED) biocatalysts**

96 CRED biocatalysts for the production of chiral alcohols and/or use in cofactor recycling schemes

**Aldehyde Reductase (ARED) biocatalysts**

16 ARED biocatalysts

**Hydrolase biocatalysts**

48 commercially available hydrolases for selective acylation of alcohols and amines.

**Nitrilase and Nitrile Hydratase (NHase) biocatalysts**

9 NHases and 15 nitrilases

**Transaminase (TAm) biocatalysts**

96 TAms for the prodcution of chiral amines from pro-chiral ketones.

**Ene Reductase (ERED) biocatalysts**

143 ERED biocatalysts for asymmetric reduction of activated alkenes

**P450 Monooxygenase biocatalysts**

96 P450 monooxygenase biocatalysts for a huge range of highly selective oxidations

## Want Almac to do the screening for you?

- Our experienced biocatalysis team can screen all of our enzymes against your target substrate(s) and simply provide the results.
- Flexible options for subsequent enzyme supply, evolution services, process development and scale up as required.

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