Partnering to Advance Human Health

Carbonyl Reductase (CRED) Enzyme Screening Kit

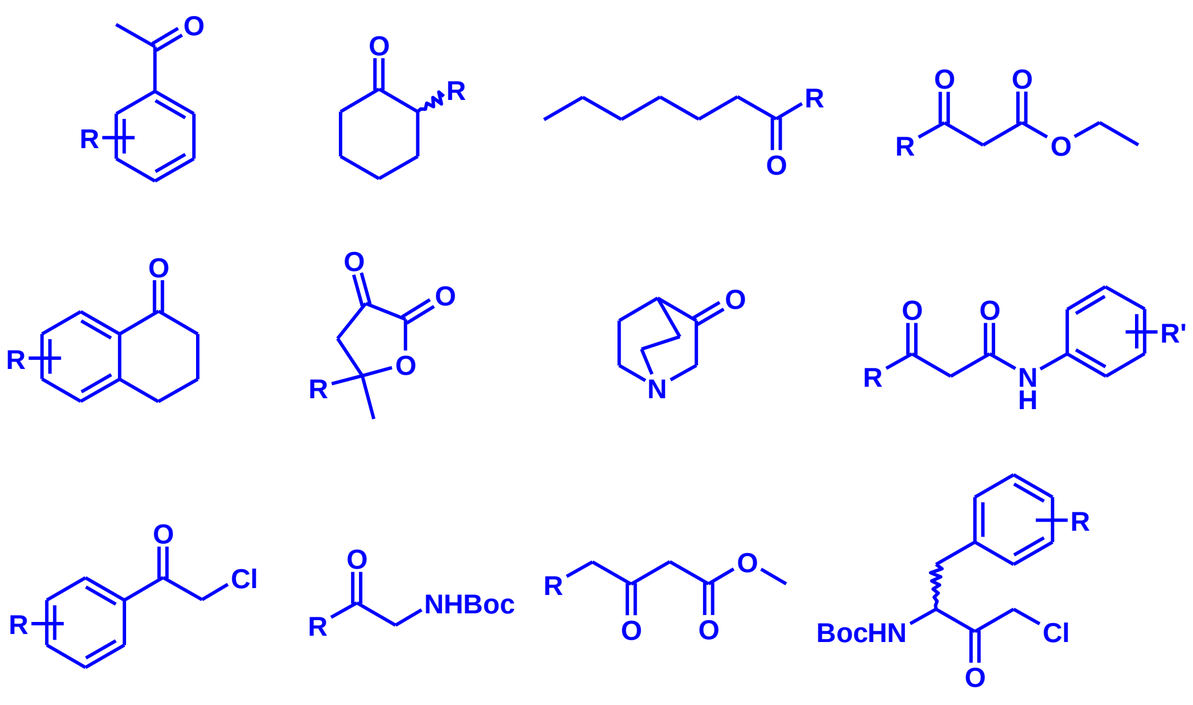
C(A)ESK-9600

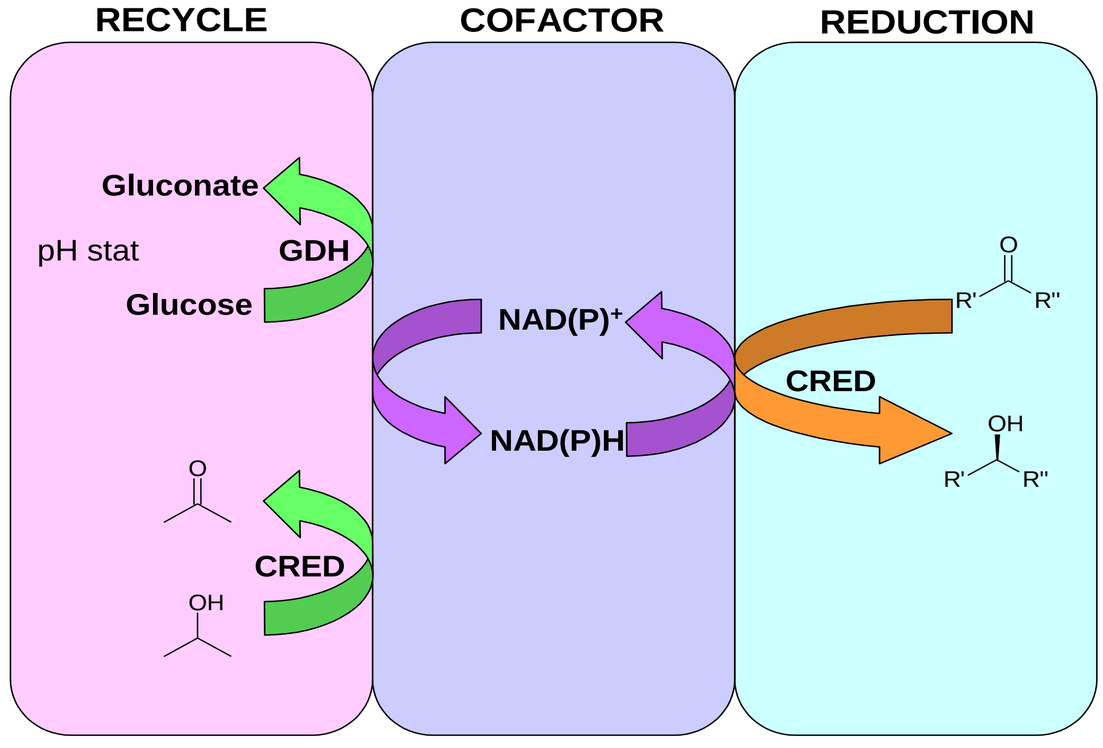
Applications

Synthesis of enantiomerically pure (*R*) or (*S*) alcohols by enzymatic reduction of carbonyl compounds.

Substrate range

A wide variety of structurally diverse carbonyl compounds, including aliphatic & aromatic ketones, diketones, ketoesters, ketoamides, ketoacids, cyclic ketones and aldehydes. A selection is shown below.





Kit description

The kit contains 96 diverse pre-formulated carbonyl reductase (CRED) biocatalysts as lyophilised powders in 96 well format, as well as pre-prepared phosphate buffer and a reaction mix for the cofactor recycle system. Note that for some enzymes, it is possible to recycle cofactor using a low-cost alcohol donor such as isopropyl alcohol (IPA).

CREDs contained in the screening kit:

	1	2	3	4	5	6	7	8	9	10	11	12
A	1	9	17	25	33	41	49	57	65	73	81	89
B	2	10	18	26	34	42	50	58	66	74	82	90
C	3	11	19	27	35	43	51	59	67	75	83	91
D	4	12	20	28	36	44	52	60	68	76	84	92
E	5	13	21	29	37	45	53	61	69	77	85	93
F	6	14	22	30	38	46	54	62	70	78	86	94
G	7	15	23	31	39	47	55	63	71	79	87	95
H	8	16	24	32	40	48	56	64	72	80	88	96

Contents

CREDs	96 enzymes (10 mg each) in 96 well format
Reaction mix*	1 vial (3.4 g)
DMSO	1 vial (10 mL)
0.1 M Phosphate buffer (pH 7)	1 bottle (60 mL)

*Once dissolved in 50 mL phosphate buffer, reaction mix contains 60 mg/mL glucose monohydrate, 2 mg/mL NAD, 2 mg/mL NADP and 4 mg/mL GDH.

Screening Procedure

1. Dissolve the reaction mix (1 vial) in 50 mL of phosphate buffer.**
2. Once dissolved, add 500 µL of the reaction mix solution to each well containing 10 mg CRED.
3. Add a solution of 5-10 mg substrate in DMSO (25-50 µL, depending on solubility).
4. Shake at room temperature (or ideally 30 °C). Agitate overnight.
5. Extract product with an organic solvent (MTBE, EtOAc etc.).
6. Analyse sample by GC/HPLC to determine conversion and product ee.

**It is recommended to make the reaction mix solution fresh and use immediately. Avoid storage of the reaction mix as a solution, as this will degrade over time. Additional GDH, buffer, glucose monohydrate or NAD/NADP can be purchased from Almac if required.

Storage: The screening kit should be stored in a refrigerator at 4 °C to preserve enzyme activity.

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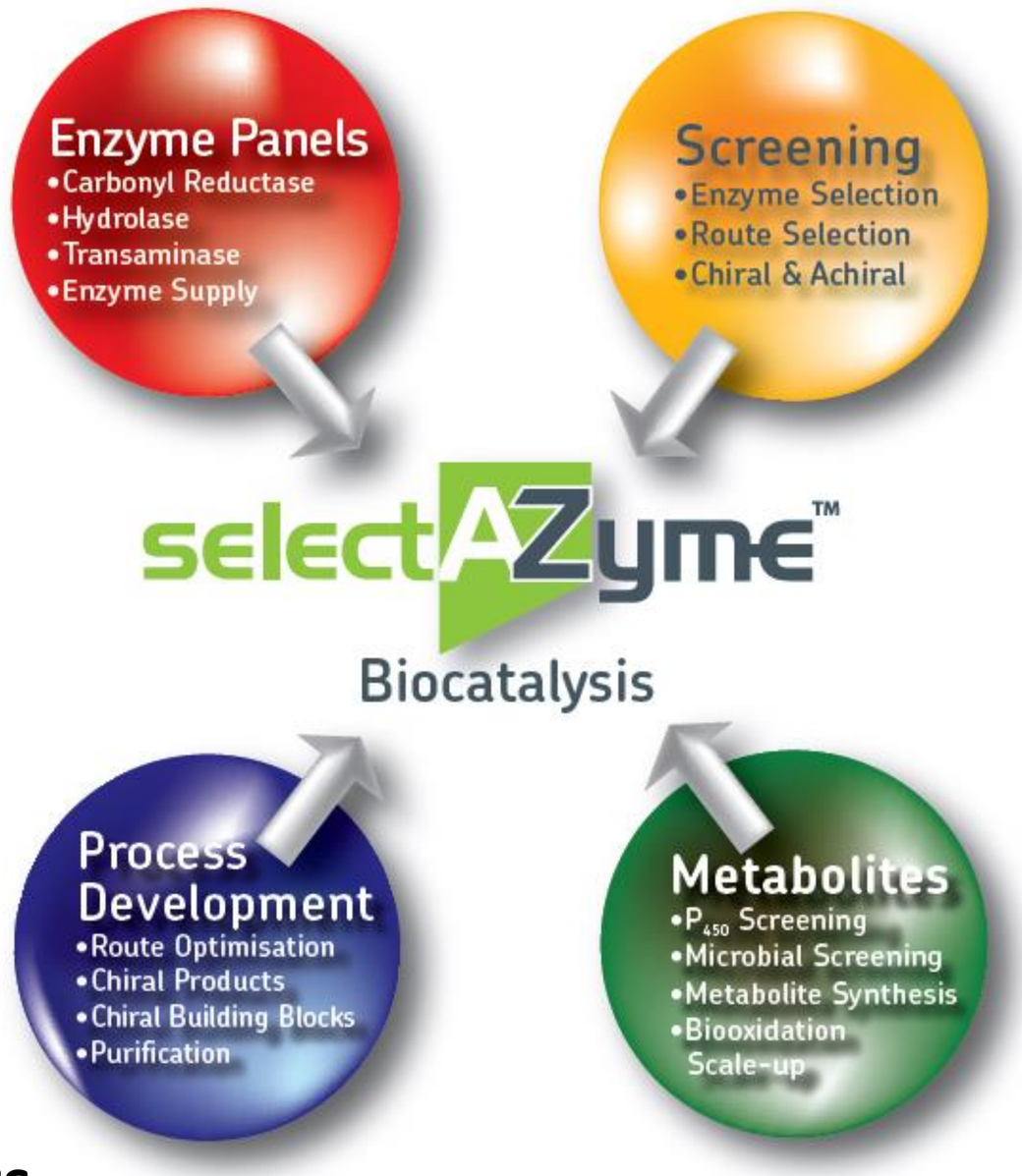
selectAZyme Offerings

- 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 unique selectAZyme platform offers a range of enzymes suitable for carrying out a wide variety of chemical reactions. Our biocatalysts are prepared in easy to use kits for rapid customer evaluation without any IP issues. These include the following:

Carbonyl Reductase (CRED) biocatalysts

>300 CREDs for the production of chiral alcohols from pro-chiral ketones

Hydrolase biocatalysts

>100 hydrolases for selective hydrolysis in aqueous media, selective acylation in non-aqueous media, resolution of secondary alcohols, amines and thiols, formation of peptides

Nitrilase biocatalysts

>200 nitrilases for the synthesis of carboxylic acids by enzymatic hydrolysis of nitriles

Transaminase (TAm) biocatalysts

>200 TAms for the production of chiral amines by asymmetric synthesis from pro-chiral ketones or resolution of racemic amines

Ene Reductase (ERED) biocatalysts

>200 EREDs for asymmetric reduction of activated alkenes

For the full range of enzyme screening kits on offer, please check the Almac website

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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