

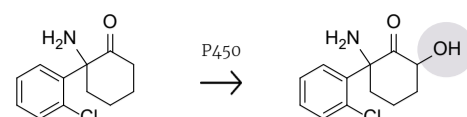
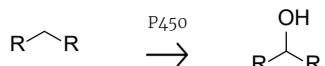
Phase I Metabolism

General Biotransformation

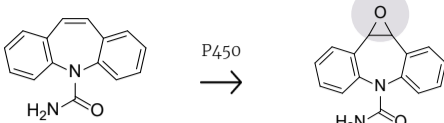
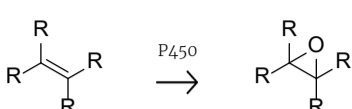
Example of Biotransformation

Oxidation

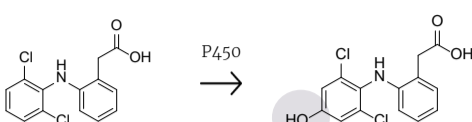
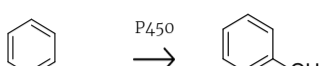
Aliphatic Hydroxylation



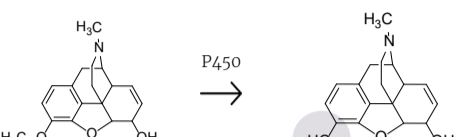
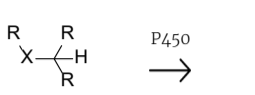
Epoxidation



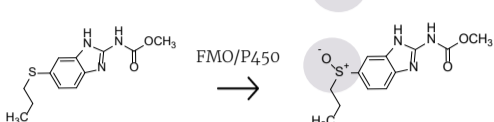
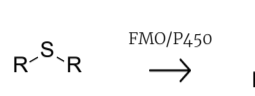
Aromatic Hydroxylation



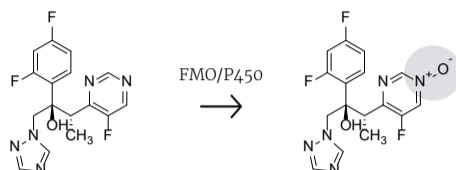
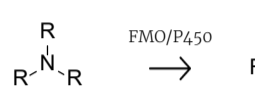
Dealkylation



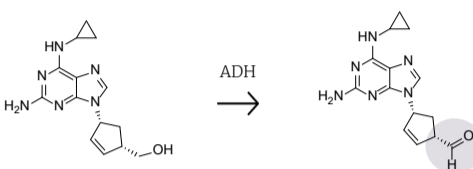
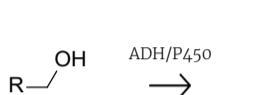
S-Oxidation



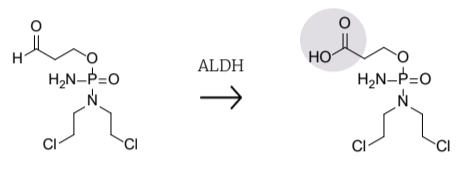
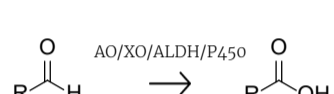
N-Oxidation



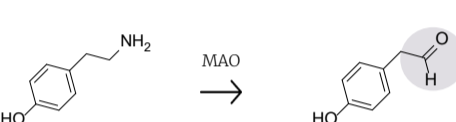
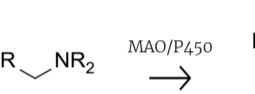
Alcohol Oxidation



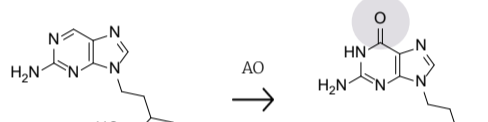
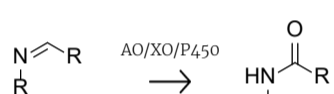
Aldehyde Oxidation



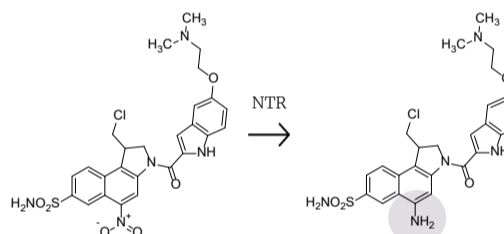
Amine Oxidation



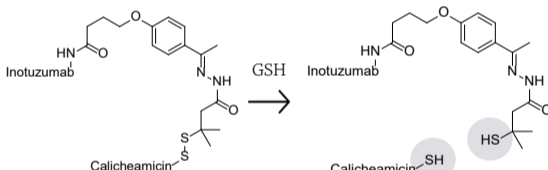
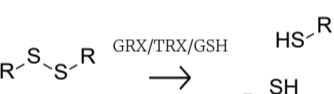
Imine Oxidation



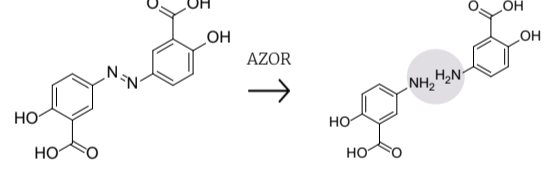
Nitro Reduction



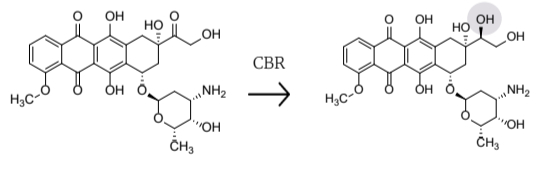
Disulfide Reduction



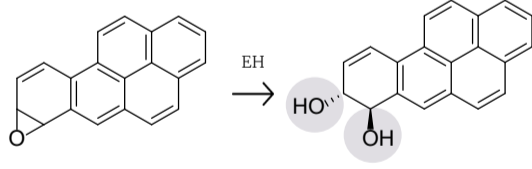
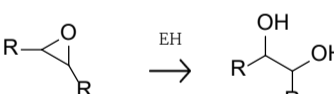
Azo Reduction



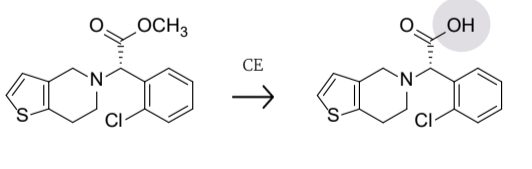
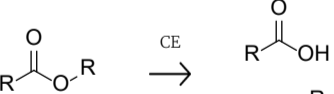
Carbonyl Reduction



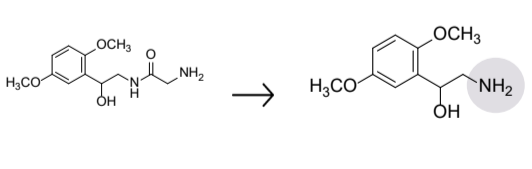
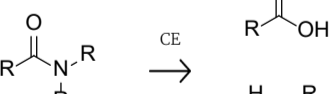
Epoxide Hydration



Ester Hydrolysis



Amide Hydrolysis



various peptidases, endopeptidases, and proteases

Enzymes:

P450 cytochrome P450

FMO flavin-containing monooxygenase

ADH alcohol dehydrogenase

AO aldehyde oxidase

XO xanthine oxidase

ALDH aldehyde dehydrogenase

MAO monoamine oxidase

NTR nitroreductase (Not a specific family of enzymes, overhead term for enzymes that can reduce nitro moieties.)

GRX glutaredoxin

TRX thioredoxin

GSH glutathione (Not an enzyme, the endogenous metabolite glutathione can chemically reduce disulfide bonds.)

AZOR azoreductase (Not a specific family of enzymes, overhead term for enzymes that can reduce azo moieties.)

CBR carbonyl reductase

EH epoxide hydrolase

CE carboxylesterase