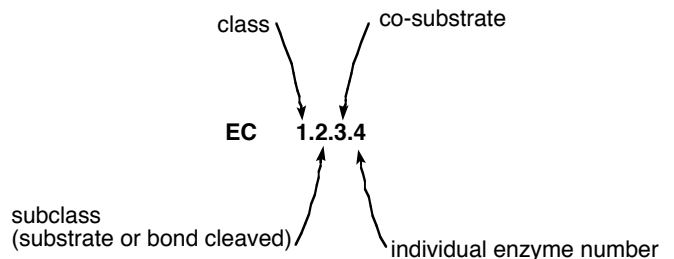
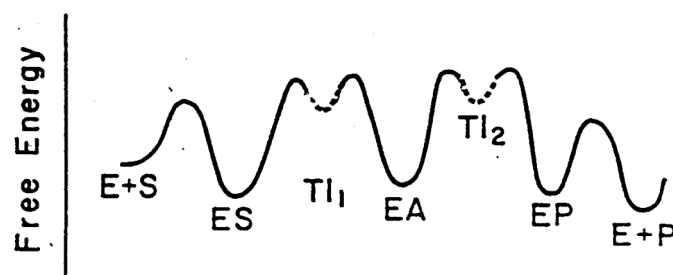
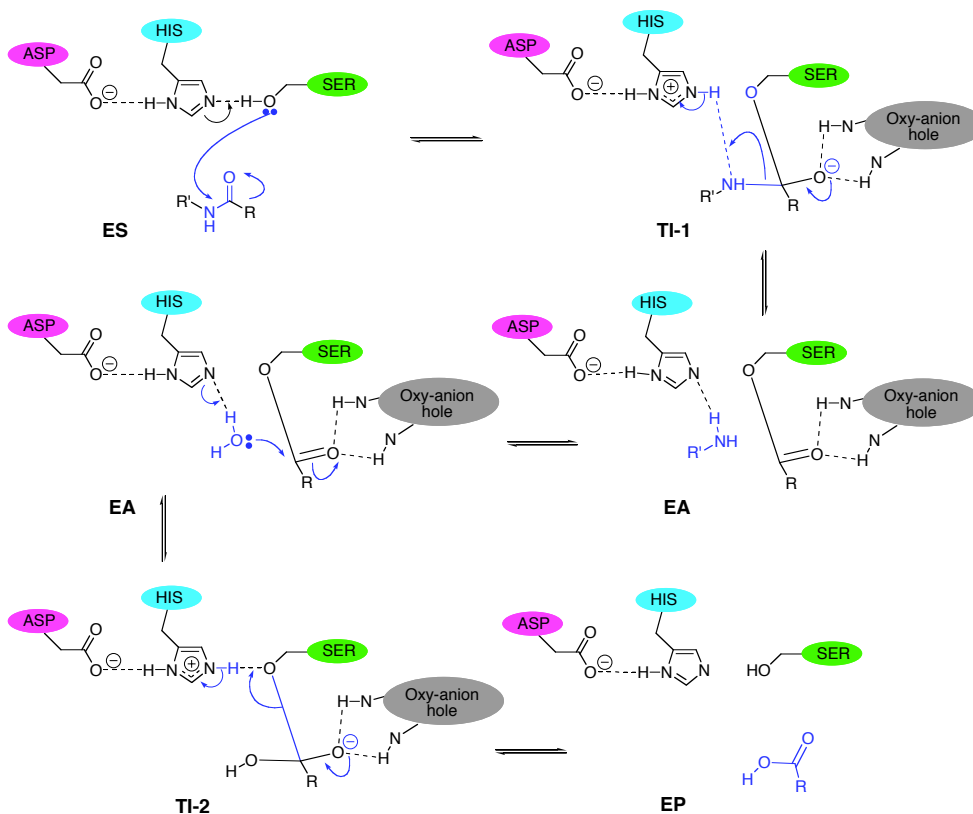


Enzyme commission 1955 (IUPAC)  
 EC 1.2.3.4  
 ~20,000? exist  
 Online directory <http://www.expasy.ch/enzyme/>



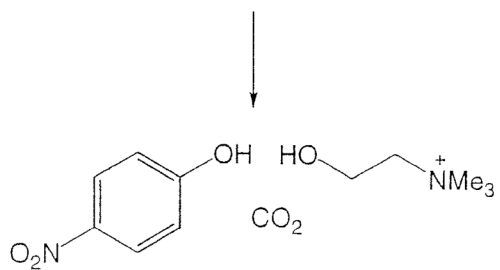
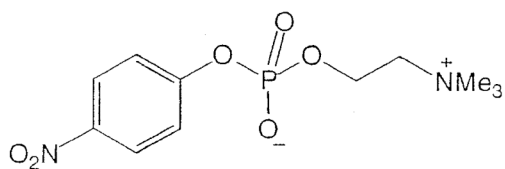
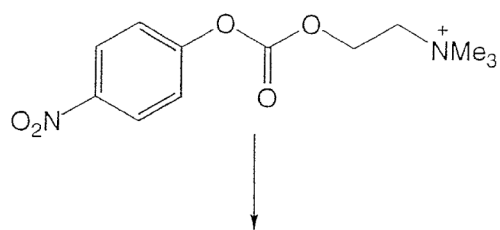
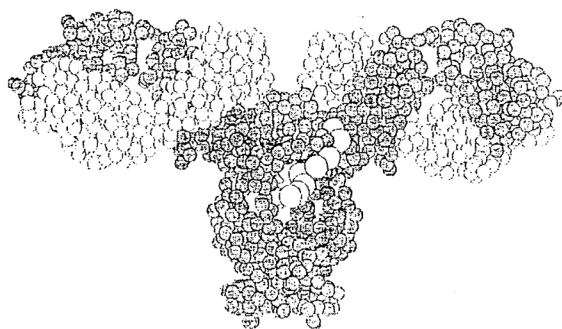
Class	Reaction Type	Number		Usage
		Classified	Available	
1. Oxidoreductases	Redox: C-H, C-C, C=C oxygenation; (de)hydrogenases	~1000	~100	25%
2. Transferases	Transfer acyl, sugar, phosphoryl, methyl	~1000	~100	10%
3. Hydrolases	Hydolyse/form esters, amides, lactones, lactams, epoxides, nitriles, anhydrides, glycosides	~1000	~300	55%
4. Lyases	Addition/elimination to C=X (X = C, N, O)	~300	~50	5%
5. Isomerases	Racemization, epimerization	~150	~10	3%
6. Ligases	Formation/cleavage of C-X (O, S, N, C)	~100	~10	2%

### Serine Hydrolases

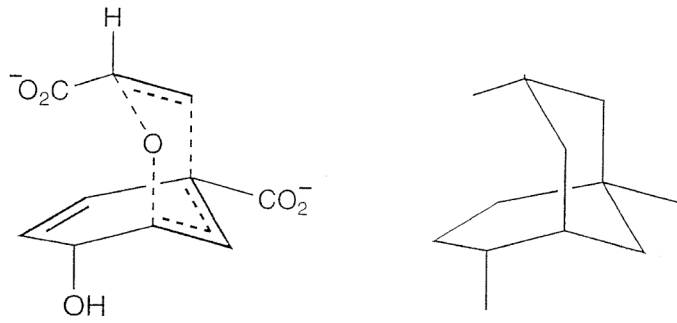
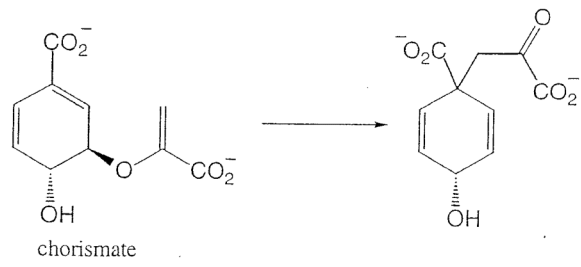


*A representation of the expected free energy diagram for serine protease catalysis. From evolutionary principles the free energies of all the transition states are expected to be similar, and the energies of all the intermediates are anticipated to be similar*

## Catalytic antibodies



$$\frac{k_{cat}}{k_{uncat}} \approx$$



transition state analogue

