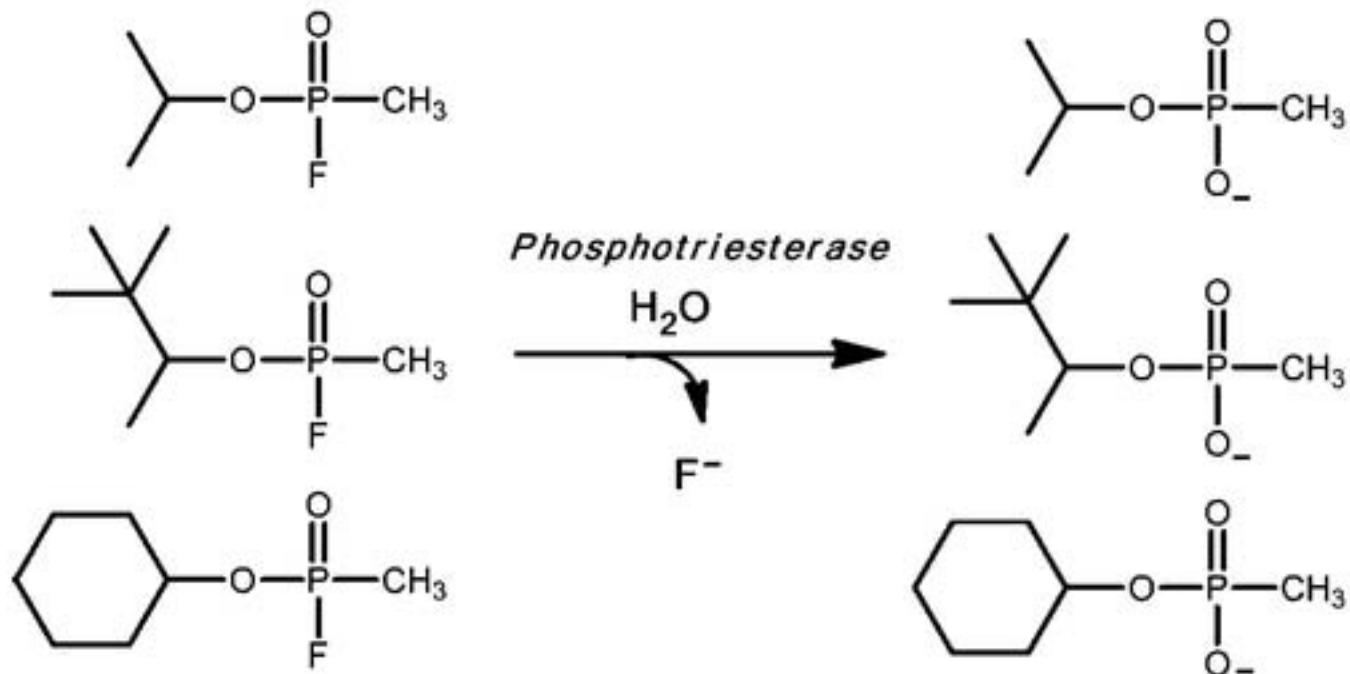


New substances 15,000 times more effective in destroying chemical warfare agents

August 8, 2012

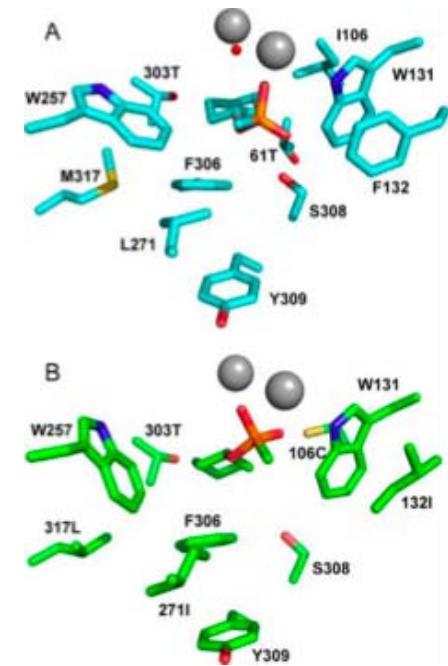
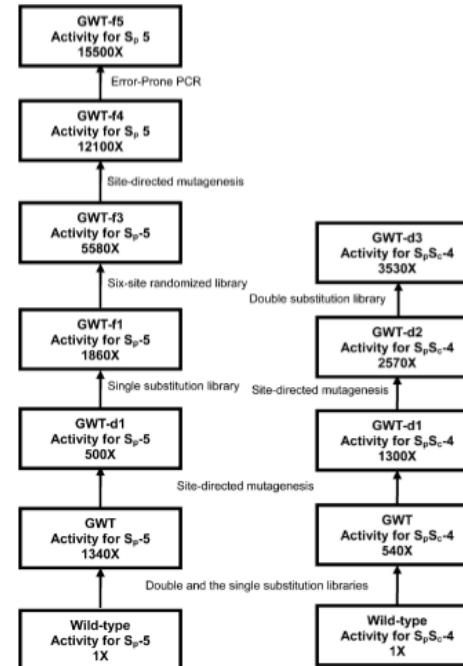
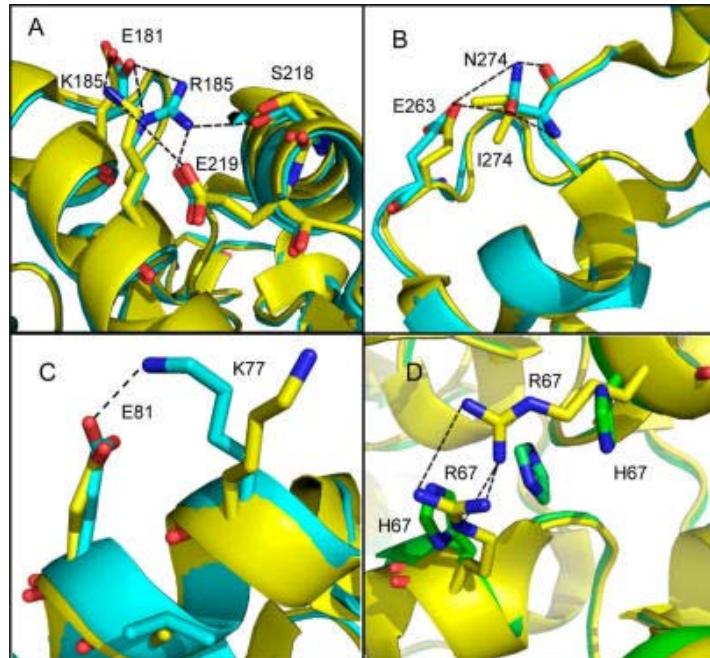


Enzymes for the Homeland Defense: Optimizing Phosphotriesterase for the Hydrolysis of Organophosphate Nerve Agents

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GWT-f5 H254G/H257W/L303T/M317L/I106C/F132I/L271I/
K185R/I274N/A80V/R67H

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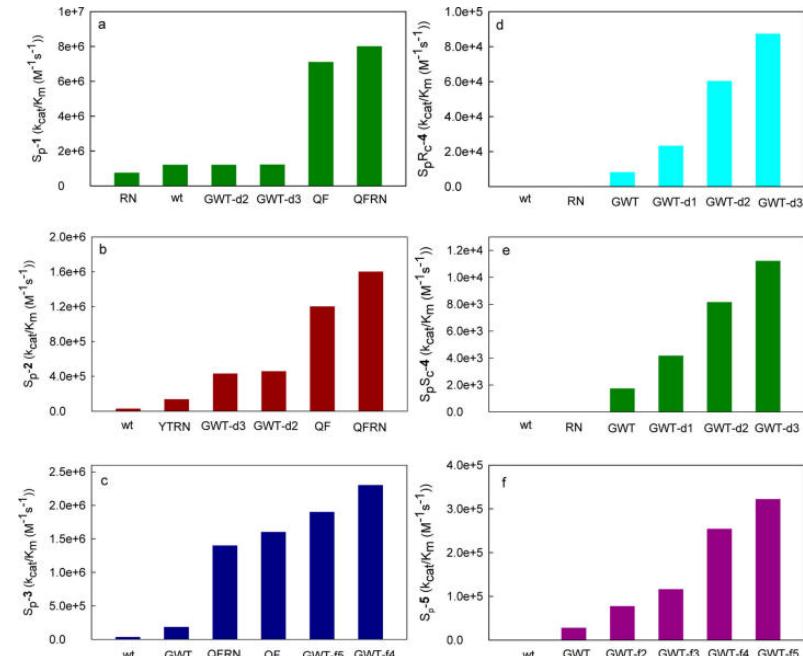
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Table 5. Activity of Wild-Type and Mutant Enzymes with Racemic G-Agents^a

enzyme	GB	GD	GF	GB ^b preferred enantiomer	GF ^b preferred enantiomer
WT	303	14	363	NA ^c	R _p
YT	843	212	240	S _p	S _p
YT-RN	263	115	116	S _p	S _p
QF-RN	32	1.0	41	NA ^c	NA ^c
GWT	20	2.0	44	S _p	S _p
GWT-d1	57	2.0	7	S _p	S _p
GWT-d2	52	1.0	211	S _p	S _p
GWT-d3	48	8	35	S _p	S _p
GWT-f3	142	10	94	S _p	S _p
GWT-f5	240	19	59	S _p	S _p

^aIn micromoles per minute per milligram of protein. ^bDetermined with 0.5 mM racemic substrate. ^cNo significant stereopreference under these conditions.

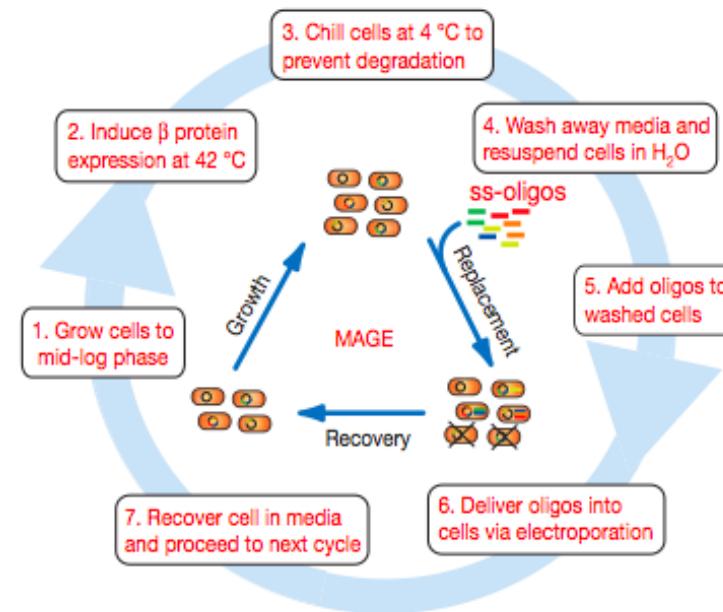
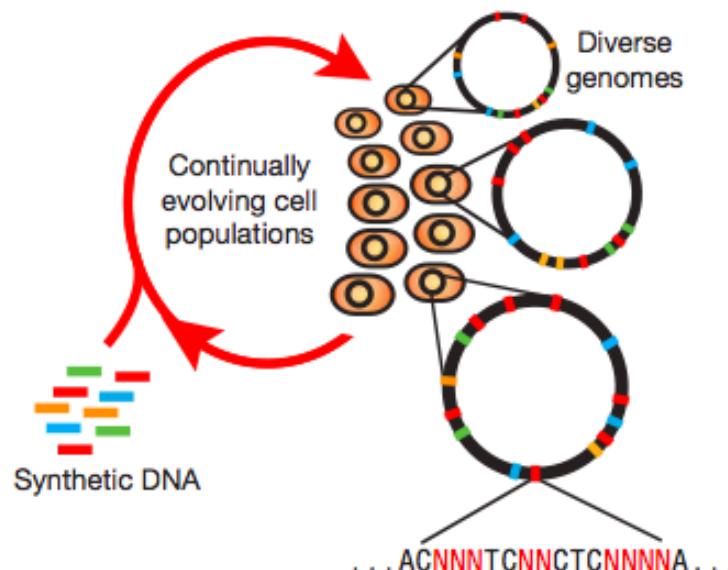


LETTERS

Multiplex Automated Genome Engineering (MAGE)

Programming cells by multiplex genome engineering and accelerated evolution

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Conjugative Assembly Genome Engineering (CAGE)

