

A Novel High-Throughput Cell Based Assay Aimed at Identifying Inhibitors of DNA Metabolism in Bacteria

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Running title: HTS screen for DNA metabolism Inhibitors

TABLE S1 Approximately 100 essential *E. coli* genes linked to DNA metabolism, that are potential antibacterial targets for SOS biosensor assay.

Gene name	Alias	Swiss-Prot ID and Functional Description		Functional category ¹
	Blattner ID	SP_ID	Function	
<i>aceF</i>	b0115	P06959	Dihydrolipoamide acetyltransferase component of pyruvate dehydrogenase complex (EC 2.3.1.12)	NCM
<i>acpS</i>	b2563	P24224	Holo-[acyl-carrier protein] synthase (EC 2.7.8.7)	NCM
<i>allA</i>	b0505	P77731	Ureidoglycolate hydrolase (EC 3.5.3.19)	NCM
<i>apt</i>	b0469	P07672	Adenine phosphoribosyltransferase (EC 2.4.2.7)	NCM
<i>birA</i>	b3973	P06709	BirA bifunctional protein	NCM
<i>btuR</i>	b1270	P13040	COB(l)alamin adenosyltransferase (EC 2.5.1.17)	NCM
<i>cca</i>	b3056	P06961	tRNA nucleotidyltransferase (EC 2.7.7.25)	NAM
<i>cmk</i>	b0910	P23863	Cytidylate kinase (EC 2.7.4.14)	NCM
<i>coaA</i>	b3974	P15044	Pantothenate kinase (EC 2.7.1.33)	NCM
<i>coaD</i>	b3634	P23875	Phosphopantetheine adenylyltransferase (EC 2.7.7.3)	NCM
<i>coaE</i>	b0103	P36679	Dephospho-CoA kinase (EC 2.7.1.24)	NCM
<i>dcm</i>	b1961	P11876	DNA-cytosine methyltransferase (EC 2.1.1.73)	NAM
<i>dfp</i>	b3639	P24285	DNA/pantothenate metabolism flavoprotein	NCM
<i>dnaA</i>	b3702	P03004	Chromosomal replication initiator protein dnaA	NAM
<i>dnaB</i>	b4052	P03005	Replicative DNA helicase (EC 3.6.1.-)	NAM
<i>dnaC</i>	b4361	P07905	DNA replication protein dnaC	NAM
<i>dnaE</i>	b0184	P10443	DNA polymerase III alpha subunit (EC 2.7.7.7)	NAM
<i>dnaG</i>	b3066	P02923	DNA primase (EC 2.7.7.-)	NAM
<i>dnaQ</i>	b0215	P03007	DNA polymerase III, epsilon chain (EC 2.7.7.7)	NAM
<i>dnaT</i>	b4362	P07904	Primosomal protein I	NAM
<i>dnaX</i>	b0470	P06710	DNA polymerase III subunit tau (EC 2.7.7.7)	NAM
<i>dut</i>	b3640	P06968	Deoxyuridine 5'-triphosphate nucleotidohydrolase (EC 3.6.1.23)	NCM
<i>dxs</i>	b0420	P77488	1-deoxy-D-xylulose 5-phosphate synthase (EC 4.1.3.37)	NCM
<i>fmt</i>	b3288	P23882	Methionyl-tRNA formyltransferase (EC 2.1.2.9)	NAM
<i>folA</i>	b0048	P00379	Dihydrofolate reductase (EC 1.5.1.3)	NCM
<i>folE</i>	b2153	P27511	GTP cyclohydrolase I (EC 3.5.4.16)	NCM
<i>folk</i>	b0142	P26281	2-amino-4-hydroxy-6-hydroxymethyl-dihydropteridine pyrophosphokinase (EC 2.7.6.3)	NCM
<i>gmk</i>	b3648	P24234	Guanylate kinase (EC 2.7.4.8)	NCM
<i>gyrA</i>	b2231	P09097	DNA gyrase subunit A (EC 5.99.1.3)	NAM
<i>hemB</i>	b0369	P15002	Delta-aminolevulinic acid dehydratase (EC 4.2.1.24)	NCM
<i>hemC</i>	b3805	P06983	Porphobilinogen deaminase (EC 4.3.1.8)	NCM
<i>hemD</i>	b3804	P09126	Uroporphyrinogen-III synthase (EC 4.2.1.75)	NCM
<i>hemE</i>	b3997	P29680	Uroporphyrinogen decarboxylase (EC 4.1.1.37)	NCM
<i>hemG</i>	b3850	P27863	Protoporphyrinogen oxidase (EC 1.3.3.4)	NCM
<i>hemH</i>	b0475	P23871	Ferrochelatase (EC 4.99.1.1)	NCM
<i>hemK</i>	b1212	P37186	Protein methyltransferase hemK (EC 2.1.1.-)	NCM
<i>hemL</i>	b0154	P23893	Glutamate-1-semialdehyde 2,1-aminomutase (EC 5.4.3.8)	NCM
<i>holA</i>	b0640	P28630	DNA polymerase III, delta subunit (EC 2.7.7.7)	NAM
<i>holB</i>	b1099	P28631	DNA polymerase III, delta' subunit (EC 2.7.7.7)	NAM
<i>holC</i>	b4259	P28905	DNA polymerase III, chi subunit (EC 2.7.7.7)	NAM
<i>iscS</i>	b2530	P39171	Cysteine desulfurase (EC 4.4.1.-)	NCM
<i>ligA</i>	b2411	P15042	DNA ligase (EC 6.5.1.2)	NAM
<i>lplA</i>	b4386	P32099	Lipoate-protein ligase A (EC 6.-.-)	NCM
<i>menE</i>	b2260	P37353	O-succinylbenzoic acid--CoA ligase (EC 6.2.1.26)	NCM

<i>miaA</i>	b4171	P16384	tRNA delta(2)-isopentenylpyrophosphate transferase (EC 2.5.1.8)	NAM
<i>mog</i>	b0009	P28694	Molybdopterin biosynthesis mog protein	NCM
<i>nadE</i>	b1740	P18843	NH(3)-dependent NAD(+) synthetase (EC 6.3.5.1)	NCM
<i>nrdA</i>	b2234	P00452	Ribonucleoside-diphosphate reductase 1 alpha chain (EC 1.17.4.1)	NCM
<i>nrdB</i>	b2235	P00453	Ribonucleoside-diphosphate reductase 1 beta chain (EC 1.17.4.1)	NCM
<i>nudB</i>	b1865	P24236	dATP pyrophosphohydrolase (EC 3.6.1.-)	NCM
<i>parC</i>	b3019	P20082	Topoisomerase IV subunit A (EC 5.99.1.-)	NAM
<i>parE</i>	b3030	P20083	Topoisomerase IV subunit B (EC 5.99.1.-)	NAM
<i>pdxJ</i>	b2564	P24223	Pyridoxal phosphate biosynthetic protein pdxJ	NCM
<i>phrB</i>	b0708	P00914	Deoxyribodipyrimidine photolyase (EC 4.1.99.3)	NAM
<i>plsC</i>	b3018	P26647	1-acyl-sn-glycerol-3-phosphate acyltransferase (EC 2.3.1.51)	NAM
<i>pnp</i>	b3164	P05055	Polyribonucleotide nucleotidyltransferase (EC 2.7.7.8)	NAM
<i>priA</i>	b3935	P17888	Primosomal protein N'	NAM
<i>priB</i>	b4201	P07013	Primosomal replication protein N	NAM
<i>priC</i>	b0467	P23862	Primosomal replication protein N"	NAM
<i>pth</i>	b1204	P23932	Peptidyl-tRNA hydrolase (EC 3.1.1.29)	NAM
<i>purU</i>	b1232	P37051	Formyltetrahydrofolate deformylase (EC 3.5.1.10)	NCM
<i>pyrF</i>	b1281	P08244	Orotidine 5'-phosphate decarboxylase (EC 4.1.1.23)	NCM
<i>pyrG</i>	b2780	P08398	CTP synthase (EC 6.3.4.2)	NCM
<i>pyrH</i>	b0171	P29464	Uridylate kinase (EC 2.7.4.-)	NCM
<i>rep</i>	b3778	P09980	ATP-dependent DNA helicase rep (EC 3.6.1.-)	NAM
<i>ribA</i>	b1277	P25523	GTP cyclohydrolase II (EC 3.5.4.25)	NCM
<i>ribB</i>	b3041	P24199	3,4-dihydroxy-2-butanone 4-phosphate synthase	NCM
<i>ribD</i>	b0414	P25539	Riboflavin biosynthesis protein ribD	NCM
<i>ribE</i>	b1662	P29015	Riboflavin synthase alpha chain (EC 2.5.1.9)	NCM
<i>ribF</i>	b0025	P08391	Riboflavin biosynthesis protein ribF	NCM
<i>ribH</i>	b0415	P25540	6,7-dimethyl-8-ribityllumazine synthase (EC 2.5.1.9)	NCM
<i>rimM</i>	b2608	P21504	16S rRNA processing protein rimM	NAM
<i>rluA</i>	b0058	P39219	Ribosomal large subunit pseudouridine synthase A (EC 4.2.1.70)	NAM
<i>rluD</i>	b2594	P33643	Ribosomal large subunit pseudouridine synthase D (EC 4.2.1.70)	NAM
<i>rnc</i>	b2567	P05797	Ribonuclease III (EC 3.1.26.3)	NAM
<i>rne</i>	b1084	P21513	Ribonuclease E (EC 3.1.4.-)	NAM
<i>rnhA</i>	b0214	P00647	Ribonuclease HI (EC 3.1.26.4)	NAM
<i>rnhB</i>	b0183	P10442	Ribonuclease HII (EC 3.1.26.4)	NAM
<i>rnt</i>	b1652	P30014	Ribonuclease T (EC 3.1.13.-)	NAM
<i>rpoB</i>	b3987	P00575	DNA-directed RNA polymerase beta chain (EC 2.7.7.6)	NAM
<i>rpoC</i>	b3988	P00577	DNA-directed RNA polymerase beta' chain (EC 2.7.7.6)	NAM
<i>rusA</i>	b0550	P40116	Crossover junction endodeoxyribonuclease rusA (EC 3.1.22.-)	NAM
<i>ruvC</i>	b1863	P24239	Crossover junction endodeoxyribonuclease ruvC (EC 3.1.22.4)	NAM
<i>tdk</i>	b1238	P23331	Thymidine kinase (EC 2.7.1.21)	NCM
<i>thiL</i>	b0417	P77785	Thiamine-monophosphate kinase (EC 2.7.4.16)	NCM
<i>thyA</i>	b2827	P00470	Thymidylate synthase (EC 2.1.1.45)	NCM
<i>tmk</i>	b1098	P37345	Thymidylate kinase (EC 2.7.4.9)	NCM
<i>topA</i>	b1274	P06612	DNA topoisomerase I (EC 5.99.1.2)	NAM
<i>trmD</i>	b2607	P07020	tRNA (Guanine-N(1)-)-methyltransferase (EC 2.1.1.31)	NAM
<i>trmU</i>	b1133	P25745	tRNA (5-methylaminomethyl-2-thiouridylate)-methyltransferase (EC 2.1.1.61)	NAM
<i>tus</i>	b1610	P16525	DNA replication terminus site-binding protein	NAM

<i>ubiE</i>	b3833	P27851	Ubiquinone/menaquinone biosynthesis methyltransferase <i>ubiE</i> (EC 2.1.1.-)	NCM
<i>ubiG</i>	b2232	P17993	3-demethylubiquinone-9 3-methyltransferase (EC 2.1.1.64)	NCM
<i>ubiH</i>	b2907	P25534	2-octaprenyl-6-methoxyphenol hydroxylase (EC 1.14.13.-)	NCM
<i>ubiX</i>	b2311	P09550	3-octaprenyl-4-hydroxybenzoate carboxy-lyase (EC 4.1.1.-)	NCM
<i>uppS</i>	b0174	Q47675	Undecaprenyl pyrophosphate synthetase (EC 2.5.1.31)	NCM
<i>xerC</i>	b3811	P22885	Integrase/recombinase <i>xerC</i>	NAM

¹NAM, Nucleic acid metabolism; NCM, Nucleotide and Cofactor Metabolism