



ProFoldin Products

- Proteomics research tools – protein folding, stability and membrane protein extraction and folding
- Drug discovery research tools - activity assays of protein drug targets (enzyme assays)
- Concentration assay kits for biomolecules, buffer components and metal ions
- Cellular quantification
- Molecular Separation tools – columns and filters
- Molecular binding – 96 well DNA and protein binding plates



ProFoldin Customers

- **University research laboratories**

Research labs in Departments of Biochemistry, Biology, Genetics, Immunology, Chemistry, Microbiology, Virology, Pathology, Pharmacology, Agriculture or Environment Sciences

- **Research institutes**

In the areas of life science, drug discovery or environment sciences

- **Biotech companies**

- **R & D centers of pharmaceutical companies**

- **Research hospitals**



Some of the ProFoldin Customers

Abo Akademi University

Anstaltsapotheke

AstraZeneca

Atlantic Research Centre

Boston University

Brandeis University

Cayman Chemical Co.

Cleveland Clinic

CNRS, France

Colorado State University

Dalhousie University

deCODE

GlaxoSmithKline

Harvard University

HHMI

Intercell USA

LABIOMED

Max-Planck Institute

MIT

MSK Cancer Center

Merck

MT. Sinai School of Medicine

New York University

National Cancer Institute

NIMH

Novartis

Pfizer

Queens University

SickKids, Canada

Daiichisankyo

Stanford University

The Scripps Research Inst

Trius

UMKC

Univ of California Davis

University of Notre Dame

Univ of California, San Diego

University of Chicago

University of Iowa

UK Medical Center

University of Leeds

University of Minnesota

Univ of North Carolina

University of Sydney

University of Toledo

University of Minnesota

Vanderbilt University

Wyeth Pharmaceutical

Yale University

Yeshiva University

York University



Proteomics Research Tools

- Protein folding kits
- Membrane protein extraction kits
- Membrane protein folding kits
- Protein stability and aggregation assay kit
- Protein purification- nucleic acid removal
- Protein sample desalting columns
- Protein concentration measurement
- Acid-free SDS-PAGE staining



Protein Folding Kits

Protein folding tools are needed when proteins are expressed in inclusion bodies, particularly when

- a wild-type protein is over-expressed
- a recombinant protein or domain is expressed in *E. coli*
- an isotope-labeled protein is expressed in a specified medium
- a membrane protein is over-expressed

SFC01-10 Spin-Column Protein Folding Screen Kit

PFC series Large-Scale Preparative Protein Folding Column Set

PFS096 96-Well Protein Folding Plate

MFC01-20 Spin-column Membrane Protein Folding Screen Kit

MFC series Preparative Membrane Protein Folding Column Set

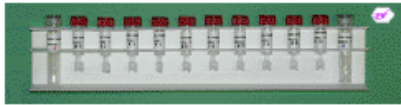
MPS01-20 Dilution Membrane Protein Folding Screen Kit

Protein Folding Kits

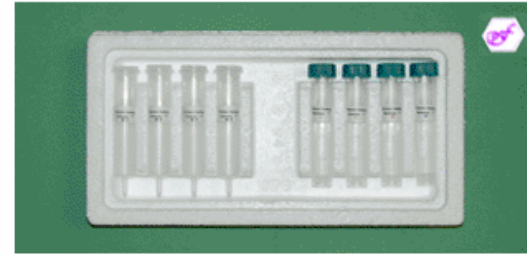
Column

Screen kits

preparative kits



Patent Pending



Spin-Column Protein Folding Screen Kit
Small-Scale Preparative Protein Folding Column Set

Large-Scale Preparative Protein Folding Column Set

Spin-columns

preparative columns

Dilution



96-well Protein Folding Plate



Protein Folding Solutions



Publication Examples Using ProFoldin Protein Folding Kits

1. V. Ekaterina Kuznetsova et al. Genome-wide Analysis of Substrate Specificities of the *Escherichia coli* Haloacid Dehalogenase-like Phosphatase Family, *J. Biol. Chem.* VOL. 2006, 281, NO. 47, pp. 36149–36161.
2. Jooyoung Cha et al. Characterization of the β -Lactam Antibiotic Sensor Domain of the MecR1 Signal Sensor/Transducer Protein from Methicillin-Resistant *Staphylococcus aureus*, *Biochemistry*, 2007, 46 (26), pp 7822–7831
3. XIE Hao et al. Overexpression and Purification of Membrane Transport Protein with Native Functions, *Chinese J. Bioch. Mol. Biol.* 2007, 23:12, 1051-1058.
4. Jacob Thomas et al. Acyl Carrier Protein Phosphodiesterase (AcpH) of *Escherichia coli* Is a Non-Canonical Member of the HD Phosphatase/Phosphodiesterase Family *Biochemistry* 2007, 46, 129-136.
5. Jooyoung Cha et al. Lysine N-Decarboxylation in the BlaR1 Protein from *Staphylococcus Aureus* at the Root of Its Function As an Antibiotic Sensor *J. Am. Chem. Soc.*, 2007, 129 (13), pp 3834–3835.



Membrane Protein Extraction

Common problems in membrane protein extraction

- Protein is difficult to be extracted
- The extracted protein is inactive
- Different membrane proteins require different detergents to be solubilized and stabilized
 - detergent type
 - anionic
 - cationic
 - zwittergent
 - nonionic
 - detergent concentration

Membrane Protein Extraction Kits

Screen kit



**Membrane Protein Extraction Kit
(Catalog number: MPE01-12S)**

Preparative kit



**Membrane Protein Extraction Solution
(Catalog numbers: MPE01 to MPE12)**

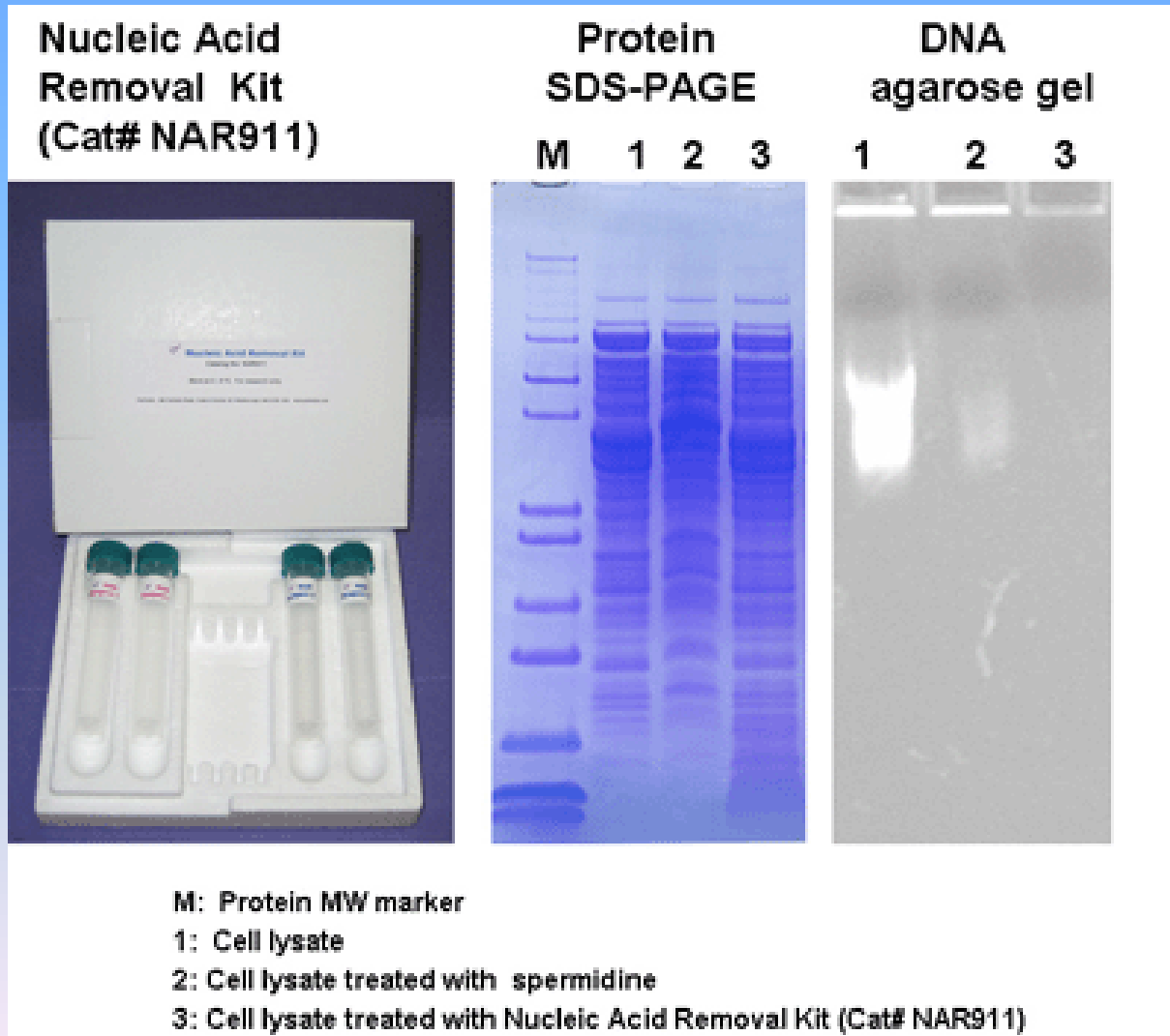
Screen & preparative kit



**Membrane Protein Extraction Kit Plus
(Catalog number: MPE01-12P)**

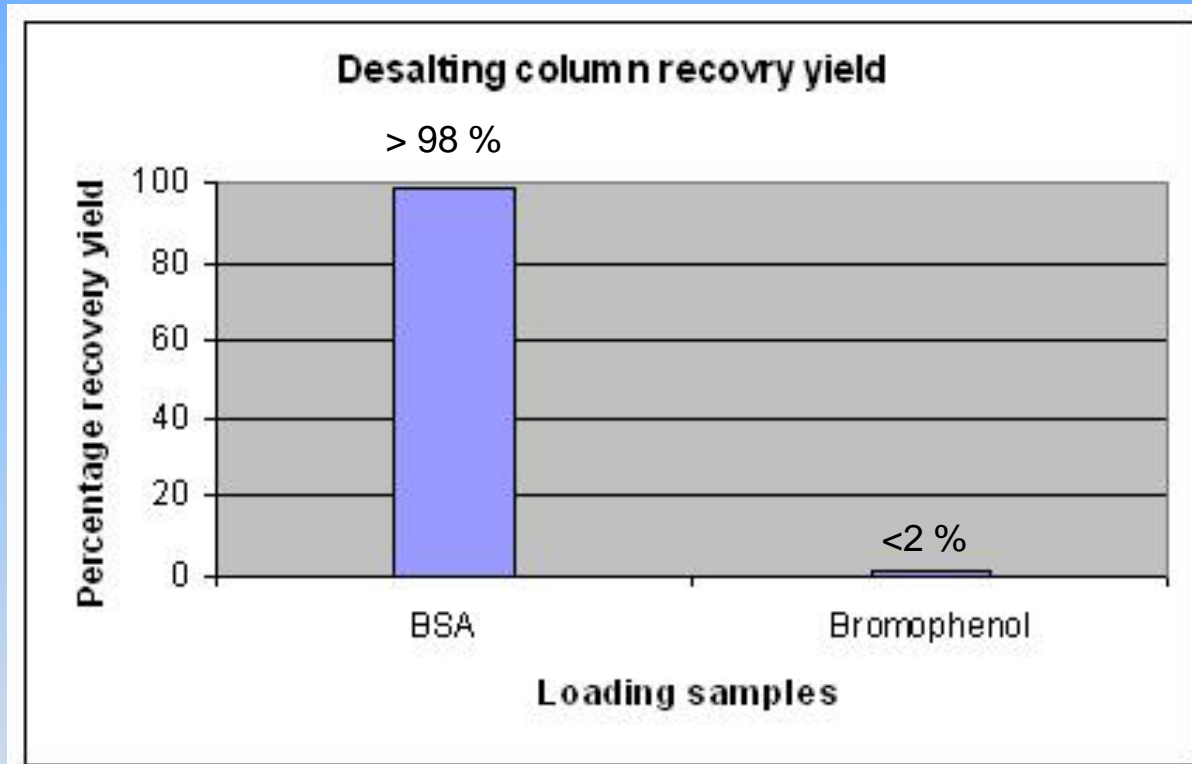
Protein Purification: Nucleic Acid Removal Kit

To remove DNA and RNA in protein samples



Protein and DNA Purification:

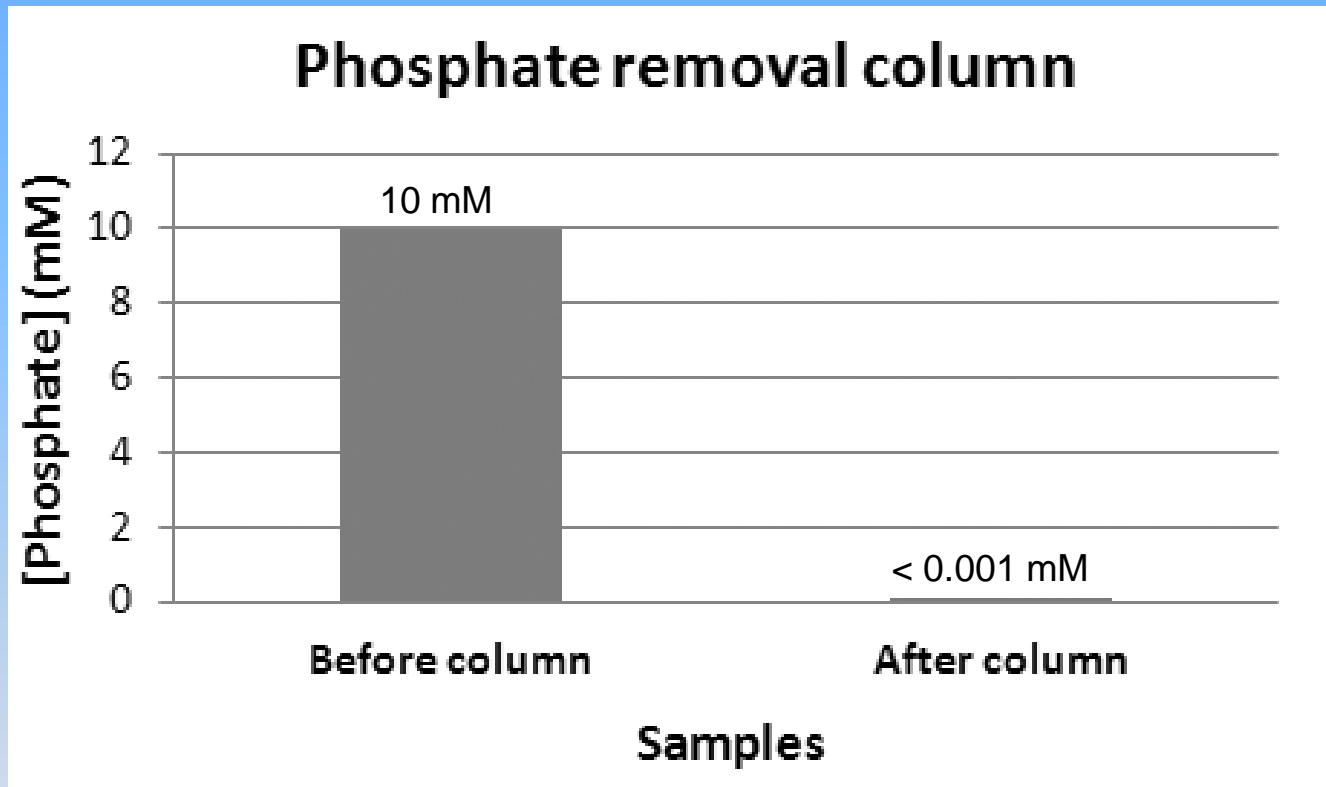
Remove salt and other small molecules



MDC050 Micro Desalting Spin Columns Set (50 Spin columns)

PDC020 Preparative Desalting Column Set (20 preparative columns)

Analytical Sample Purification: Remove phosphate but keep other small molecules

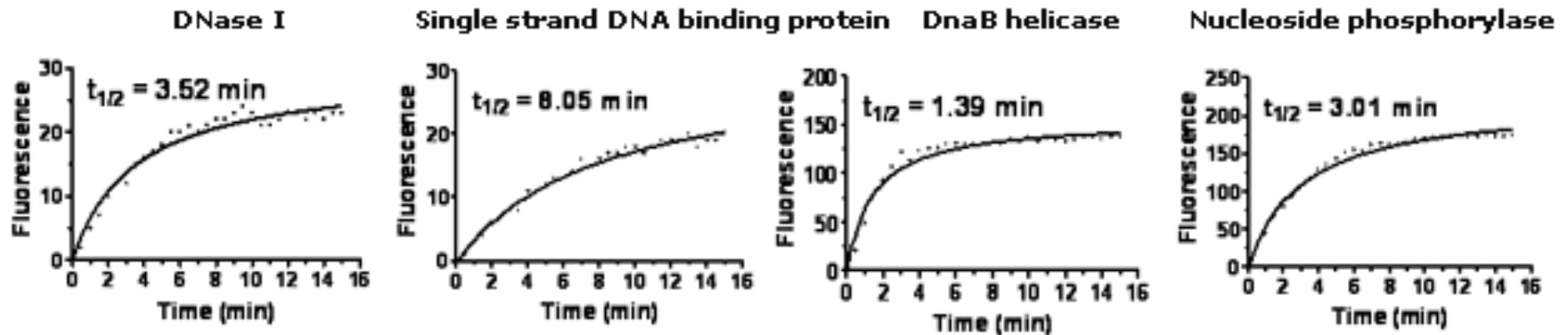


MPR020

Micro Phosphate Removal Column Set (20 columns)

Protein Stability and Aggregation Assay: Measure thermal stability of proteins

Protein stability and aggregation assay kit



Protein unfolding reactions at 55°C are measured by the Protein stability and aggregation assay kit (Catalog number PSA200K). The protein concentrations are 0.2 mg/ml DNase I, 0.25 mg/ml single DNA binding protein, 0.18 mg/ml DnaB helicase and 0.9 mg/ml nucleoside phosphorylase.

$$F = F_N + [F_U \times t / (t_{1/2} + t)]$$

t = the incubation time of the protein at the selected temperature

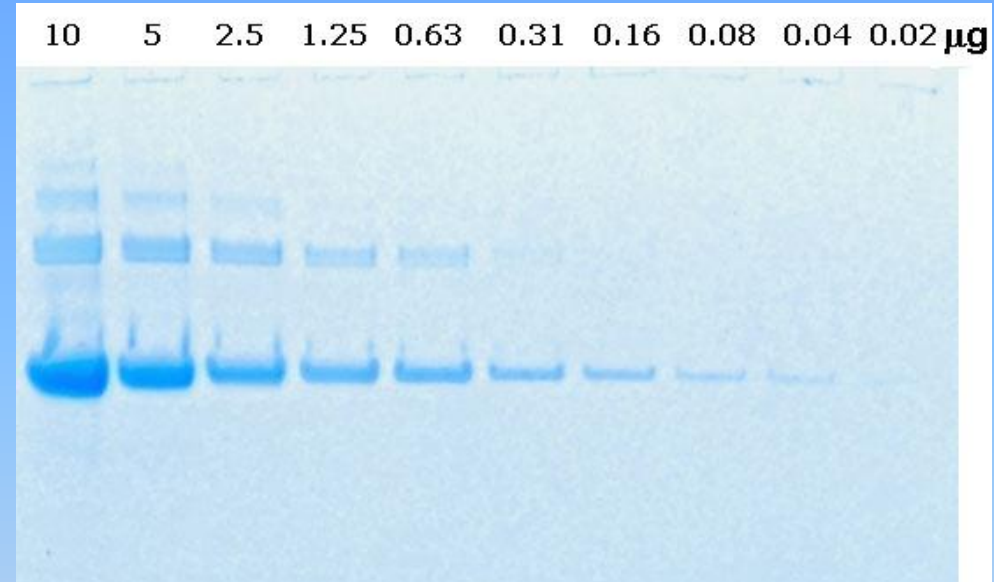
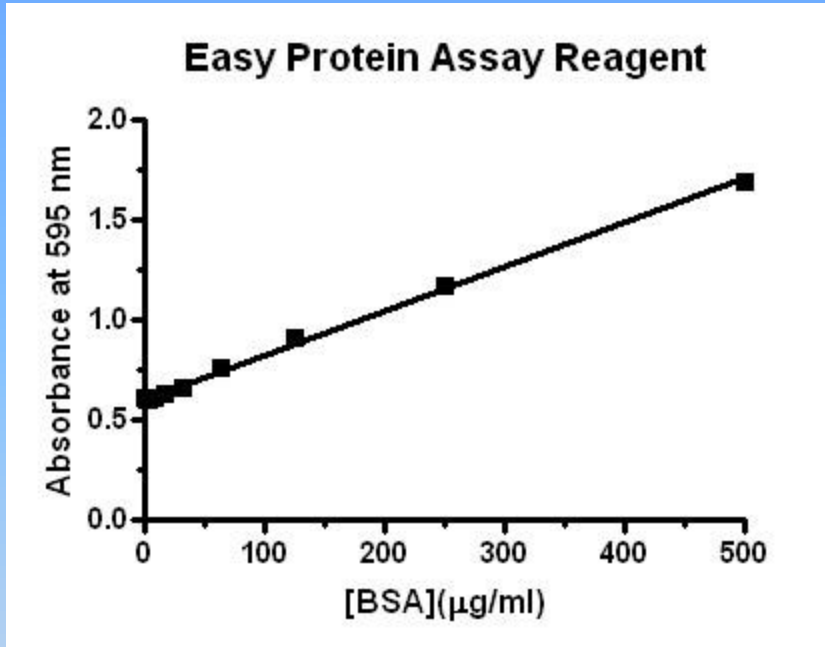
F = the fluorescence of the sample at time t

F_N = the fluorescence of the unheated sample ($t = 0$)

F_U = the fluorescence of the completely unfolded (denatured) protein

$t_{1/2}$ = the half life time

Protein Concentration Measurement and SDS-PAGE Staining



EPA001 Easy protein assay reagent

Simple procedure:

1. Mix equal volumes of protein sample and reagent.
2. Read absorbance at 595 nm.

EPS001 Easy SDS-PAGE staining solution

Safe reagent and simple procedure:
(Without HOAc or methanol)

1. Put the gel in to the reagent for 30 min
2. Destain with water for 2 hr or leave it in water overnight



Drug Discovery Research Tools

- High throughput assay kits of protein drug targets for
 - characterization of drug targets
 - compound screen
 - testing existing drugs

- HTS Reagents including enzymes, enzyme substrates, DNA templates and fluorescence dyes



Assays for Anti-bacterial and Anti-cancer Drug Targets

Specific enzymes are identified as validated drug targets. These enzymes are essential for bacterial or cancer cell growth. ProFoldin provides high throughput assays for the specific enzyme targets. ProFoldin also provides large quantities of assay reagents for large-scale HTS (high throughput screen) activities.

The assays for the drug targets in the following biological systems are available:

- *DNA replication*
- *DNA repair*
- *Gene transcription*
- *Bacterial cell wall synthesis*
- *Kinases and other metabolism or regulation systems*



Assays for Anti Bacterial Drug Targets

Bacterial DNA topoisomerase assays

E. coli topoisomerase I

E. coli gyrase

P. aeruginosa gyrase

S. aureus gyrase

E. coli topoisomerase IV

S. aureus topoisomerase IV

P. aeruginosa topoisomerase IV

S. pneumoniae topoisomerase IV

Bacterial DNA primase assays

E. coli primase

H. influenzae primase

S. aureus primase

S. pneumoniae primase

Bacterial DNA helicase ATPase assays

E. coli DNA helicase

P. aeruginosa DNA helicase

H. influenzae DNA helicase

S. aureus DNA helicase

S. pneumoniae DNA helicase

Bacterial DNA polymerase assays

E. coli DNA polymerase III alpha

H. influenzae polymerase III alpha

S. pneumoniae polymerase III alpha

Bacterial DNA ligase assays

E. coli NAD⁺ -dependent DNA Ligase



Assays for Anti Bacterial Drug Targets (continued)

Bacterial cell wall target assays

E. coli D-alanine ligase

E. coli UDP-N-acetylglucosamine pyrophosphorylase

E. coli MurA (UDP-N-acetylglucosamine enolpyruvyl transferase)

E. coli MurC (UDP-N-acetylmuramoyl:L-alanine ligase)

S. pneumoniae MurC (UDP-N-acetylmuramoyl:L-alanine ligase)

E. coli MurD (UDP-N-acetylmuramoyl-L-alanine:D-glutamate ligase)

P. aeruginosa MurD (UDP-N-acetylmuramoyl-L-alanine:D-glutamate ligase)

S. aureus MurD (UDP-N-acetylmuramoyl-L-alanine:D-glutamate ligase)

E. coli MurE (UDP-N-acetylmuramoyl-L-alanyl-D-glutamate:meso-diaminopimelate ligase)

E. coli MurF (UDP-N-acetylmuramoyl-tripeptide:D-alanyl-D-alanine ligase)

P. aeruginosa MurF (UDP-N-acetylmuramoyl-tripeptide:D-alanyl-D-alanine ligase)

S. aureus MurF (UDP-N-acetylmuramoyl-tripeptide:D-alanyl-D-alanine ligase)

S. pneumoniae MurF (UDP-N-acetylmuramoyl-tripeptide:D-alanyl-D-alanine ligase)



Assays for Anti Bacterial Drug Targets (continued)

Bacterial kinase assays

E. coli thymidylate kinase

E. coli UMP kinase

E. coli NAD kinase

E. coli GMP kinase

S. pneumoniae GMP kinase

Other anti bacterial drug target assays

S. pneumoniae nicotinate phosphoribosyltransferase

S. aureus nicotinate phosphoribosyltransferase

E. coli biotin ligase

E. coli 4-diphosphocytidyl-2C-methyl-D-erythritol synthetase

P. aeruginosa 4-diphosphocytidyl-2C-methyl-D-erythritol synthetase



Assays for Anti Cancer Drug Targets

Human topoisomerase assays

Human topoisomerase I

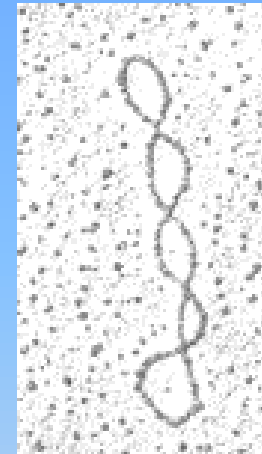
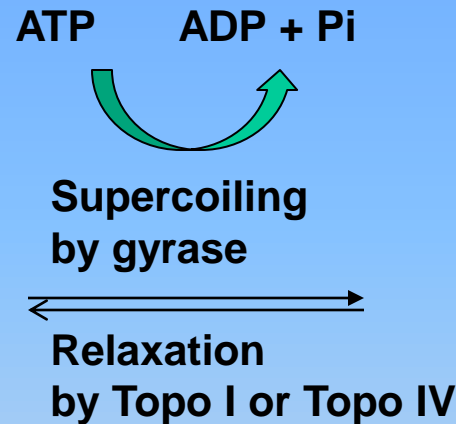
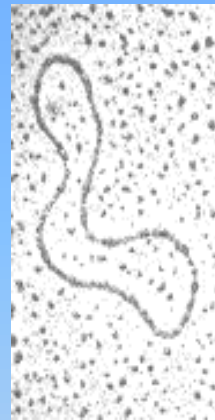
Human topoisomerase II

Human DNA polymerase beta assay

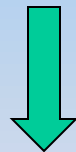
Human poly (ADP-ribose) polymerase-1 assay

Human thymidylate kinase assay

Assays for DNA Supercoiling and Relaxation



Relaxed DNA



Dye H19

Fluorescence Reading (Fr)

Supercoiled DNA



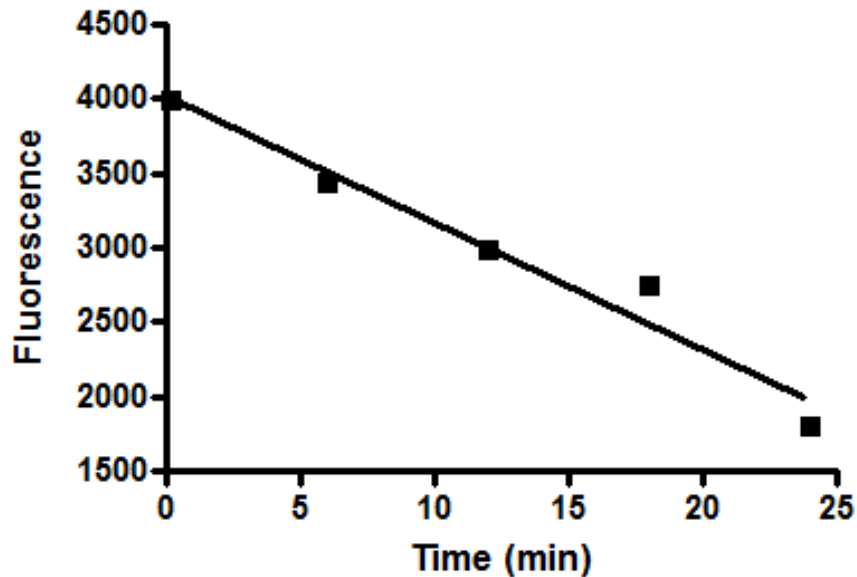
Dye H19

Fluorescence Reading (Fs)

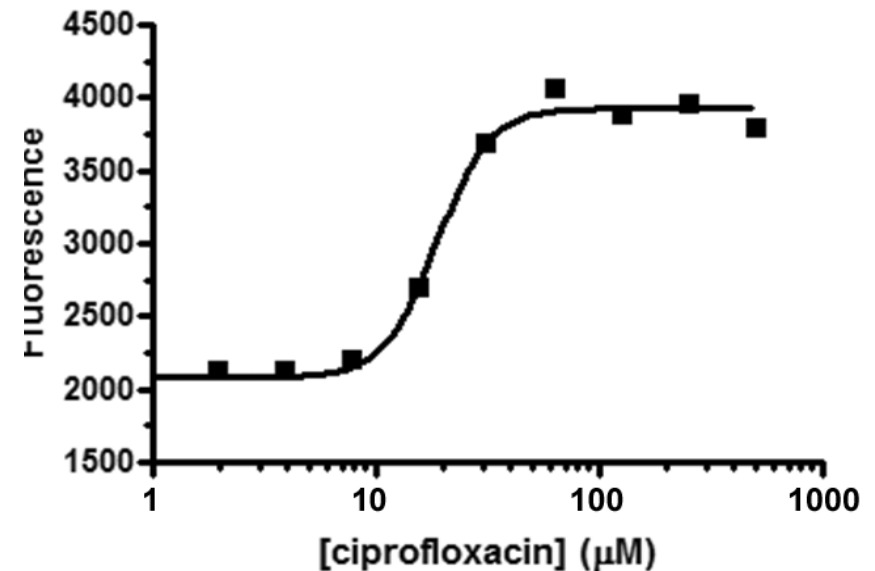
$F_s > F_r$

DNA Relaxation Assay Kits Employed for Testing DNA Topo I Inhibitors

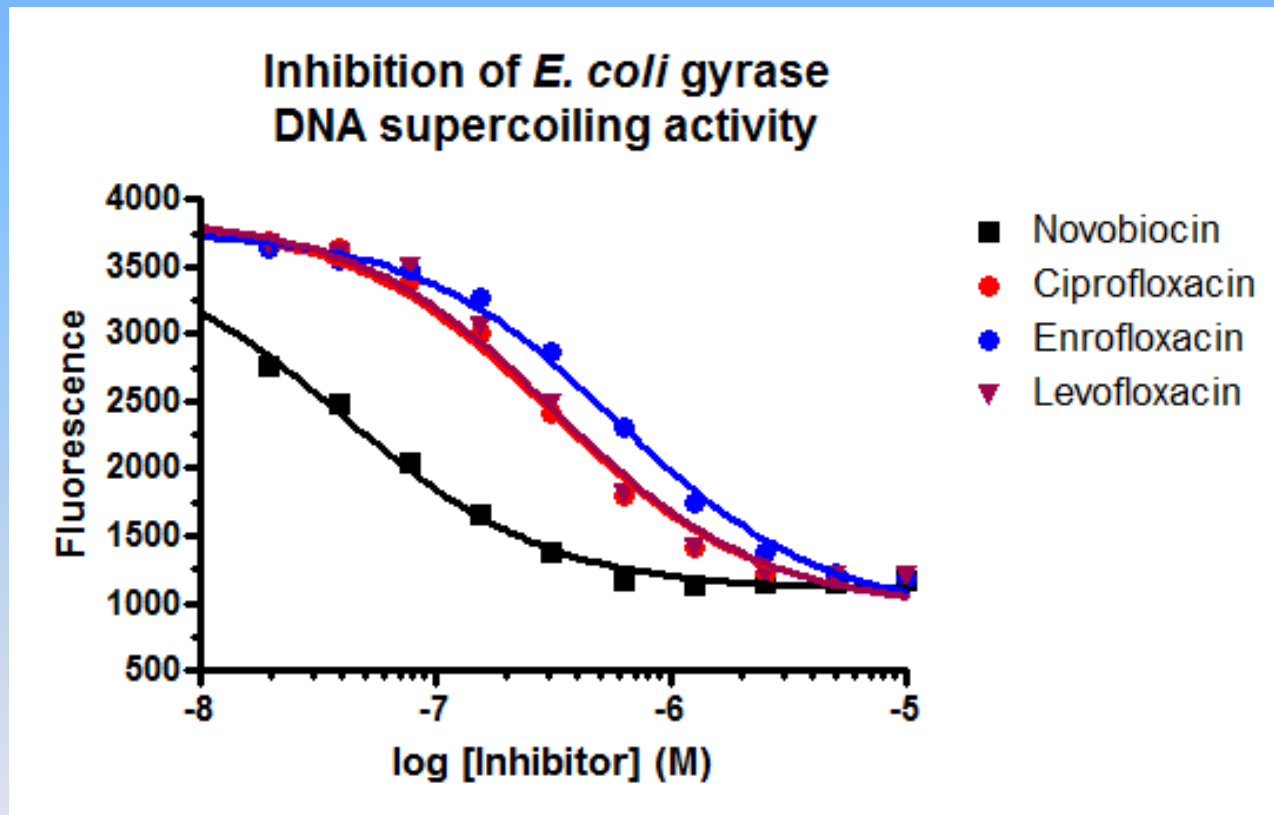
E. coli Topoisomerase I
DNA relaxation activity



E. coli topoisomerase I
inhibited by ciprofloxacin



DNA Supercoiling Kits Employed for Testing DNA Gyrase Inhibitors

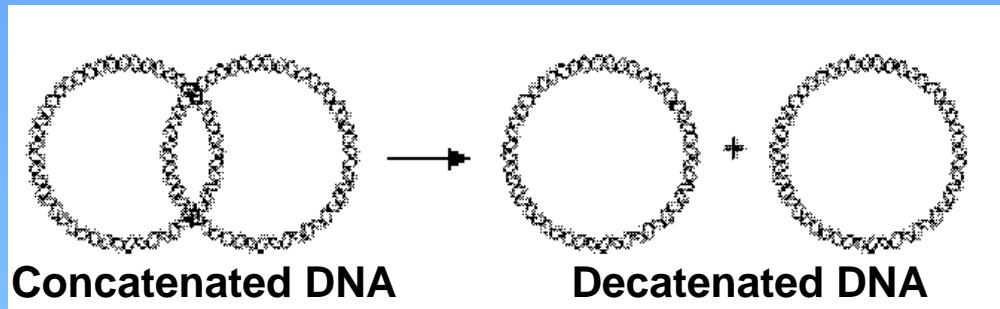




DNA Supercoiling and Relaxation Assay Kits

DRA020K	DNA Topoisomerase I Assay Kit (enzyme not included, 20 assays)
DSA1000D	H19 Dye for DNA Relaxation and Supercoiling Assays (1000 assays)
DRA020KE	DNA Topoisomerase I Assay Kit Plus (<i>E. coli</i> Topo I included, 20 assays)
DRA100KE	DNA Topoisomerase I Assay Kit Plus-100 (100 assays)
HRA020K	Human DNA Topoisomerase I Assay Kit (enzyme not included, 20 assays)
HRA100K	Human DNA Topoisomerase I Assay Kit-100 (100 assays)
DSA020K	DNA Topoisomerase II (Gyrase) Assay Kit (enzyme not included, 20 assays)
DSA020KE	DNA Topoisomerase II (Gyrase) Assay Kit Plus (<i>E. coli</i> gyrase included, 20 assays)
DSA100KE	DNA Topoisomerase II (Gyrase) Assay Kit Plus-100 (enzyme included, 100 assays)
DSA100KSE	<i>S. aureus</i> Gyrase DNA Supercoiling Assay Plus-100 (enzyme included, 100 assays)
DSA020KSE	<i>S. aureus</i> Gyrase DNA Supercoiling Assay Kit Plus (enzyme included, 20 assays)
T4RA-100KE	<i>E. coli</i> Topo IV DNA Relaxation Assay Kit Plus (enzyme included, 100 assays)
T4RA-100KN	<i>S. pneumoniae</i> Topo IV DNA Relaxation Assay Kit Plus (enzyme included, 100 assays)
T4RA-100KP	<i>P. aeruginosa</i> Topo IV DNA Relaxation Assay Kit Plus (enzyme included, 100 assays)
T4RA-100KS	<i>S. aureus</i> Topo IV DNA Relaxation Assay Kit Plus (enzyme included, 100 assays)

DNA Decatenation Assay Kits

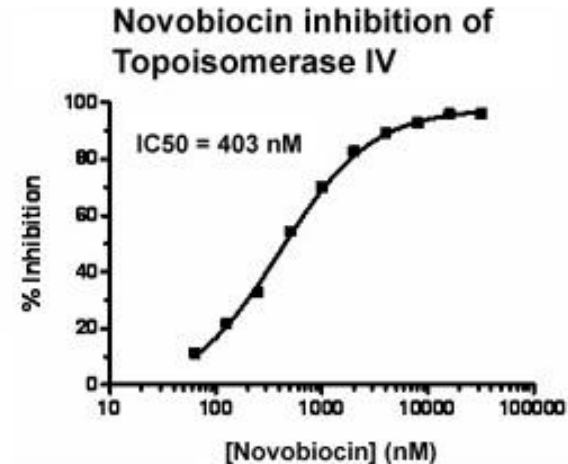
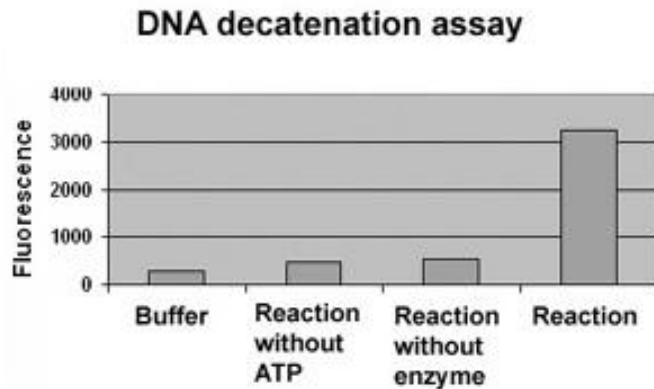


Spin column
or filter



Does not pass

Pass → DNA detected by fluorescence





DNA Decatenation Assay Kits

HDC020K	Human Topoisomerase II DNA Decatenation Assay Kit (enzyme not included, 20 assays)
HDC020KE	Human Topoisomerase II DNA Decatenation Assay Kit Plus (enzyme included, 20 assays)
HDC100KE	Human Topoisomerase II DNA Decatenation Assay Kit Plus-100 (enzyme included, 100 assays)
DDC020K	DNA Topoisomerase IV Assay Kit (enzyme not included, 20 assays)
DDC020KE	DNA Topoisomerase IV Assay Kit Plus (<i>E. coli</i> Topo IV included, 20 assays)
DDC100	DDC Spin-columns for DNA decatenation assays (100 columns)
DDC100KE	DNA Topoisomerase IV Assay Kit Plus-100 (<i>E. coli</i> Topo IV included, 100 assays)
TDD96K	96-Well Topoisomerase DNA Decatenation Assay Kit (enzyme not included, 96 assays)
HDD96KE	96-Well Human Topo II DNA Decatenation Assay Kit Plus (enzyme included, 96 assays)
EDD96KE	96-Well <i>E. coli</i> Topo IV DNA Decatenation Assay Kit Plus (enzyme included, 96 assays)
SDD96KE	96-Well <i>S. aureus</i> Topo IV DNA Decatenation Assay Kit Plus (enzyme included, 96 assays)
NDD96KE	96-Well <i>S. pneumoniae</i> Topo IV DNA Decatenation Assay Kit Plus (enzyme included, 96 assays)
PDD96KE	96-Well <i>P. aeruginosa</i> Topo IV DNA Decatenation Assay Kit Plus (enzyme included, 96 assays)
T1DD-96KE	96 well <i>E. coli</i> Topo I DNA Decatenation Assay Plus (enzyme included, 96 assays)
T2DD-96KE	96-Well <i>E. coli</i> gyrase DNA decatenation assay Kit Plus (enzyme included, 96 assays)



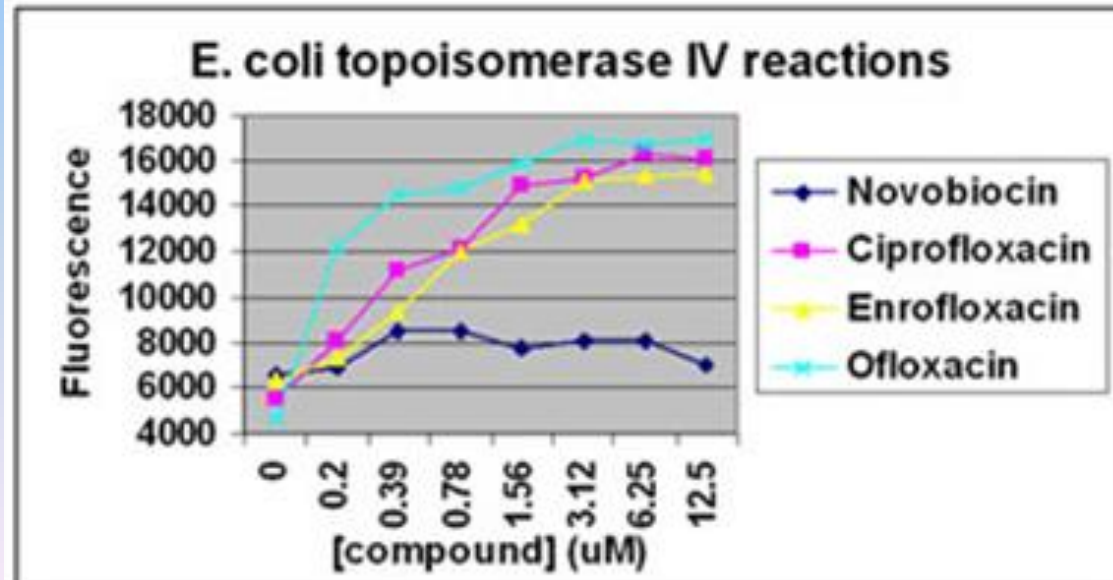
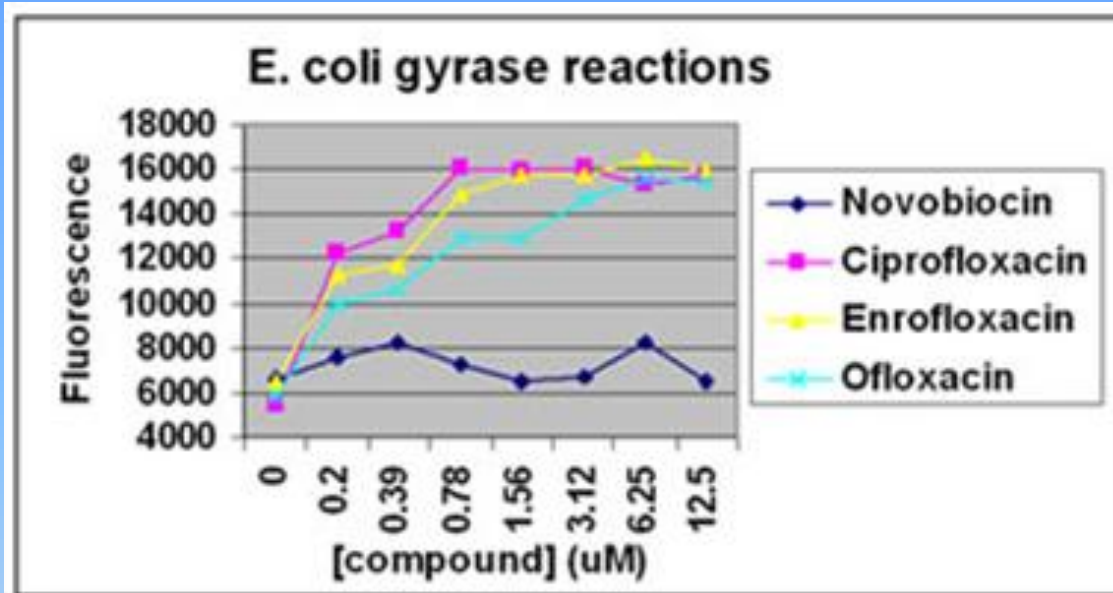
Topoisomerase Inhibition Mechanism Studies

- **Drugs that cause DNA damage:**
Example: ciprofloxacin
Target: gyrA subunit of gyrase parC subunit of topo IV

- **Drugs that do not cause DNA damage:**
Example: Novobiocin
Target: gyrB subunit of gyrase parE subunit of topo IV

The Topoisomerase DNA-cleavage assay kits are to test the DNA cleavage (damage) properties.

Topoisomerase DNA-cleavage Assay Kits





Topoisomerase DNA-cleavage Assay Kits

T2C96KE	96-well E. coli Gyrase DNA Cleavage Assay Kit Plus (enzyme included, 96 assays)
TDC96K	96-well Topoisomerase DNA Cleavage Assay Kit (enzyme not included, 96 assays)
T4C96KE	96-well E. coli Topo IV DNA Cleavage Assay Kit Plus (enzyme included, 96 assays)
T4C96KS	96-well S. aureus Topo IV DNA Cleavage Assay Kit Plus enzyme included, (96 assays)

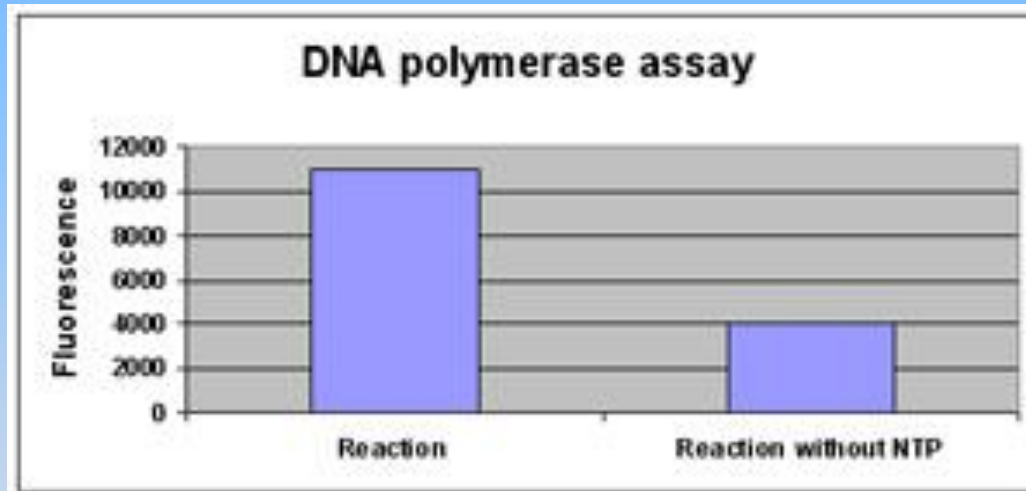
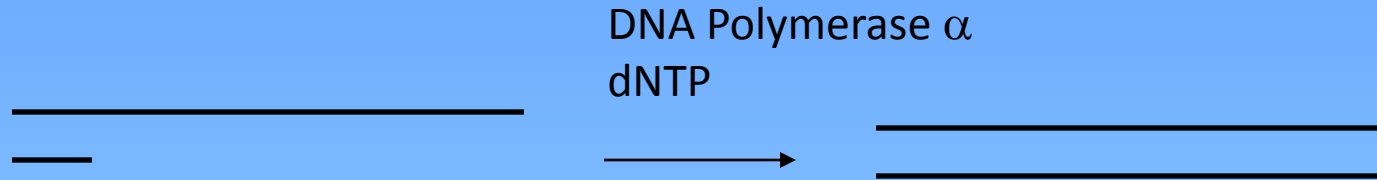


Topoisomerase ATPase Assay Kits

Topoisomerase II and topoisomerase IV use ATP hydrolysis as the energy source for their DNA topology functions. The DNA-dependent ATPase activities can be used for the screening of inhibitors of topoisomerase II and topoisomerase IV.

T2A-100KE	E. coli gyrase ATPase Assay Kit Plus (enzyme included, 100 assays)
TA1000	Topoisomerase ATPase Assay Kit (enzyme not included, 1000 assays)
T2A-100KS	S. aureus gyrase ATPase Assay Kit Plus (enzyme included, 100 assays)
T4A-100KE	E. coli Topo IV ATPase Assay Kit Plus (enzyme included, 100 assays)
T4A-100KN	S. pneumoniae Topo IV ATPase Assay Kit Plus (enzyme included, 100 assays)
T4A-100KP	P. aeruginosa Topoisomerase IV ATPase Assay Kit Plus (enzyme included, 100 assays)
T4A-100KS	S. aureus Topoisomerase IV ATPase Assay Kit Plus (enzyme included, 100 assays)

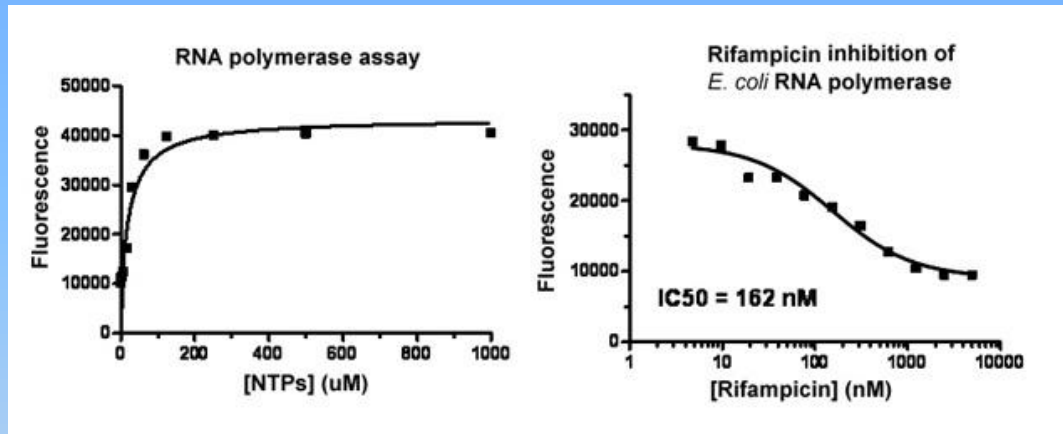
Bacterial DNA Polymerase α Assay Kit



DPA100K DNA polymerase Assay Kit (enzyme not included, 100 assays)

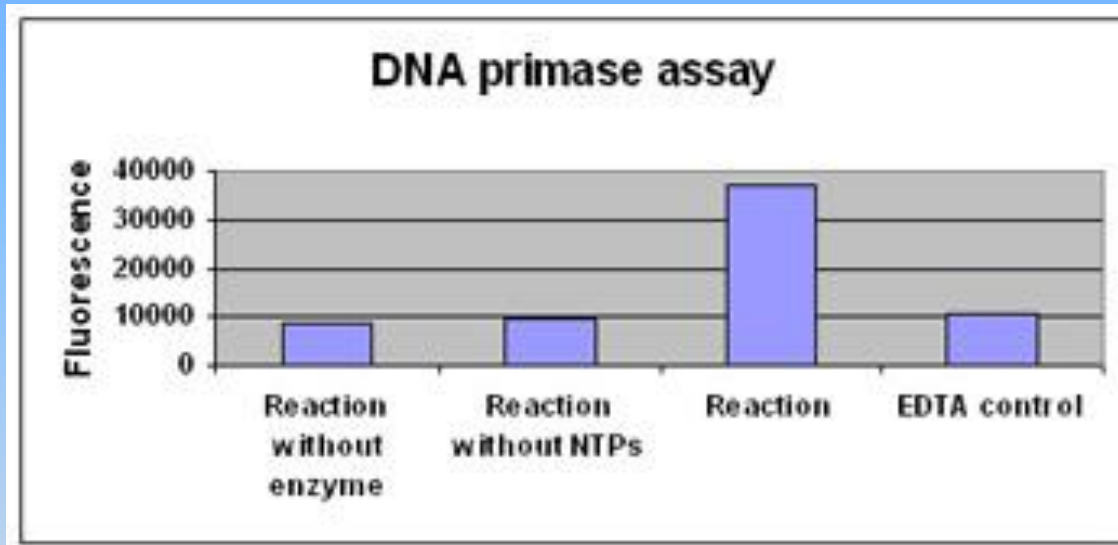
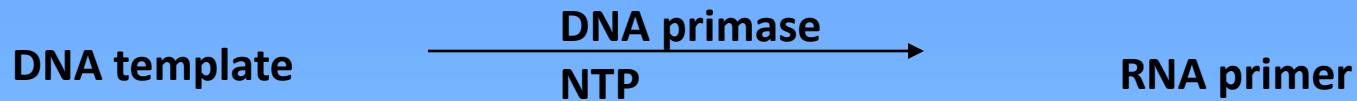
DPA100KE DNA polymerase Assay Kit Plus (*E. coli* DNA pol III alpha subunit included, 100 assays)

RNA Polymerase Assay Kits



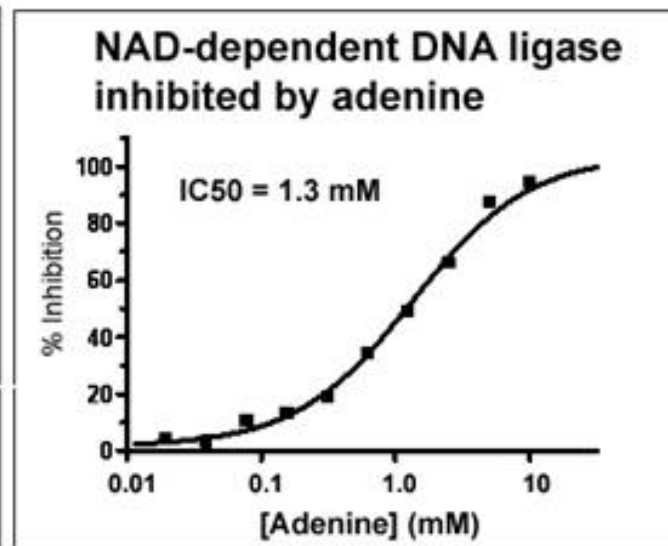
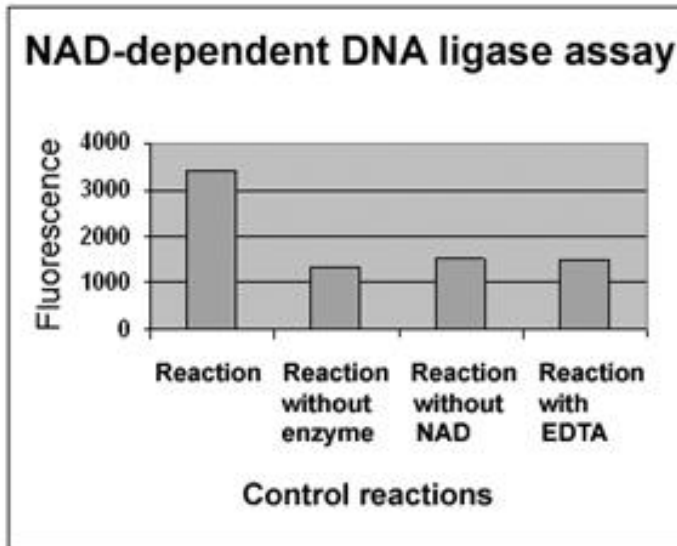
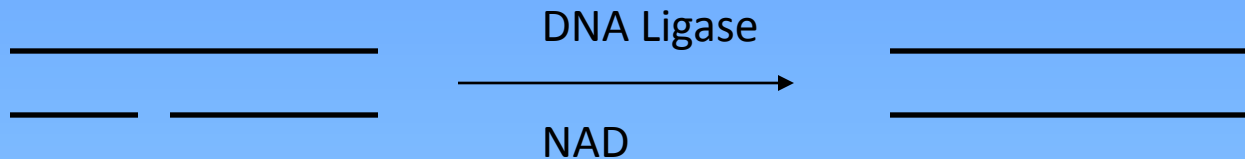
- RPAP100K Bacterial RNA Polymerase Pyrophosphate Assay Kit (enzyme not included, 100 assays)
- RPAP100KE *E. coli* RNA Polymerase Assay Pyrophosphate Kit Plus (enzyme included, 100 assays)
- RPAP100KSE *S. aureus* RNA Polymerase Assay Pyrophosphate Kit Plus (enzyme included, 100 assays)
- RPA100K RNA polymerase Assay Kit (enzyme not included, 100 assays)
- RPA100KE RNA polymerase Assay Kit Plus (*E. coli* RNA polymerase included, 100 assays)
- RPA-100KS *S. aureus* RNA polymerase assay kit (enzyme not included, 100 assays)
- RPA-100KSE *S. aureus* RNA polymerase assay kit Plus (enzyme included, 100 assays)
- T7RPA100K T7 RNA Polymerase Assay Kit (enzyme not included, 100 assays)
- T7RPA100KE T7 RNA Polymerase Assay Kit Plus (enzyme included, 100 assays)

Bacterial DNA Primase Assay Kits



- | | |
|----------|---------------------------------------------------------------------------------------------------|
| EGA100K | <i>E. coli</i> DNA Primase Assay Kit (enzyme not included, 100 assays) |
| EGA100KE | <i>E. coli</i> DNA Primase Assay Kit Plus (<i>E. coli</i> primase-helicase included, 100 assays) |
| HGA100K | <i>H. influenzae</i> DNA Primase Assay Kit (enzyme not included, 100 assays) |
| HGA100KE | <i>H. influenzae</i> DNA Primase Assay Kit Plus (enzyme included, 100 assays) |
| AGA100K | <i>S. aureus</i> DNA Primase Assay Kit (enzyme not included, 100 assays) |
| AGA100KE | <i>S. aureus</i> DNA Primase Assay Kit Plus (enzyme included, 100 assays) |
| PGA100K | <i>S. pneumoniae</i> DNA Primase Assay Kit (enzyme not included, 100 assays) |
| PGA100KE | <i>S. pneumoniae</i> DNA Primase Assay Kit Plus (enzyme included, 100 assays) |

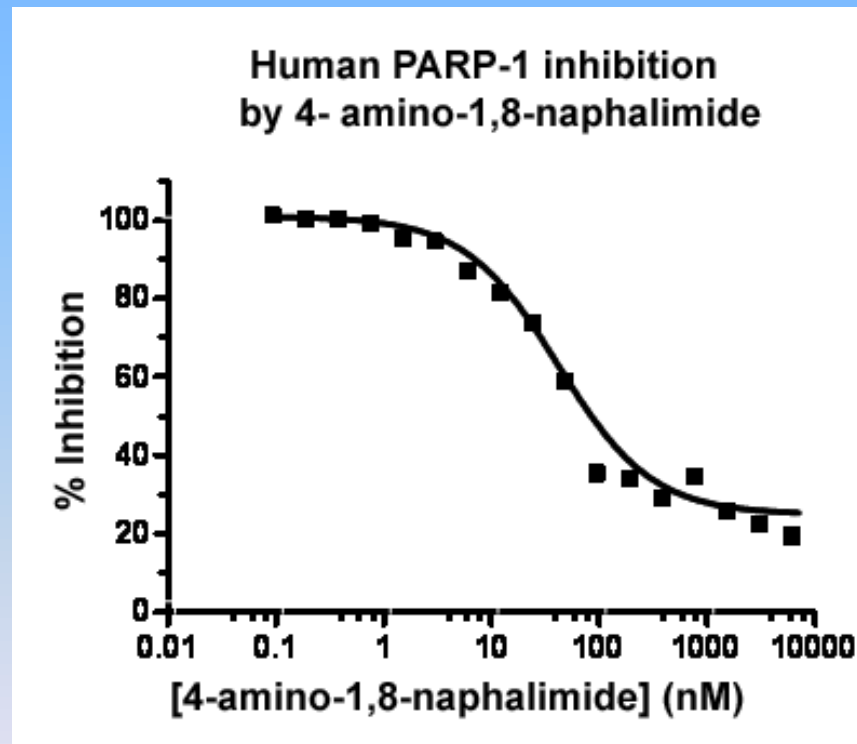
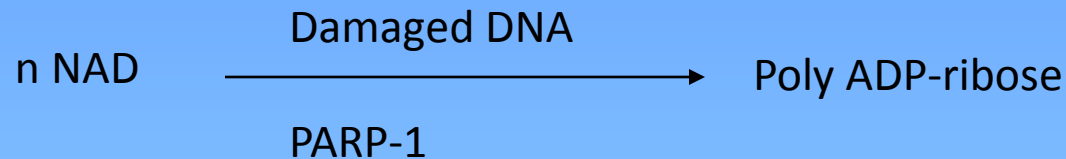
Bacterial NAD⁺-dependent Ligase Assay Kit



Assay conditions: 40 μ l of reaction volume with 1 nM of NAD-dependent DNA ligase from *S. pneumoniae*, 10 μ M NAD, 200 nM substrate DNA in the assay buffer. The EDTA concentration in the control reaction is 50 mM. The assay reaction is at room temperature for 15 min using a 96-well plate.

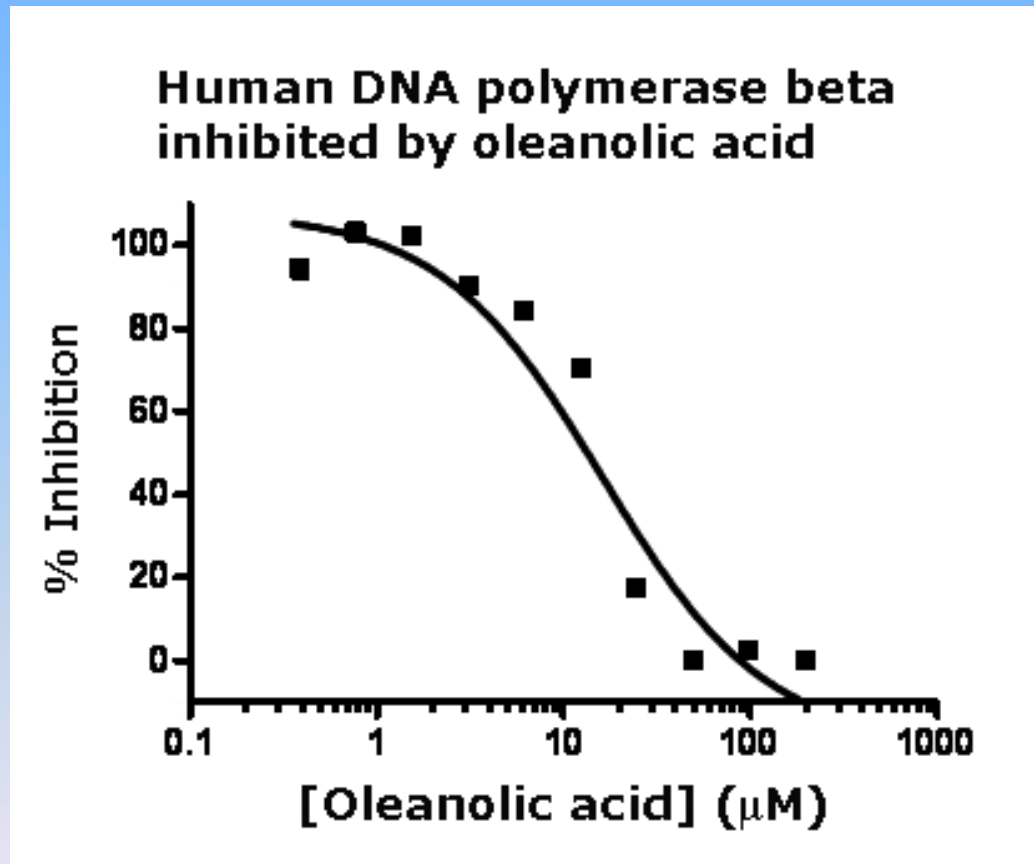
- NLA100K NAD⁺-dependent DNA ligase assay kit (enzyme not included, 100 assays)
- NLA100KE NAD⁺-dependent DNA ligase assay kit Plus (*E. coli* ligase included, 100 assays)

Human PARP-1 Assay Kit



PAR100K Human poly (ADP-ribose) polymerase-1 assay kit (Enzyme not included, 100 assays)

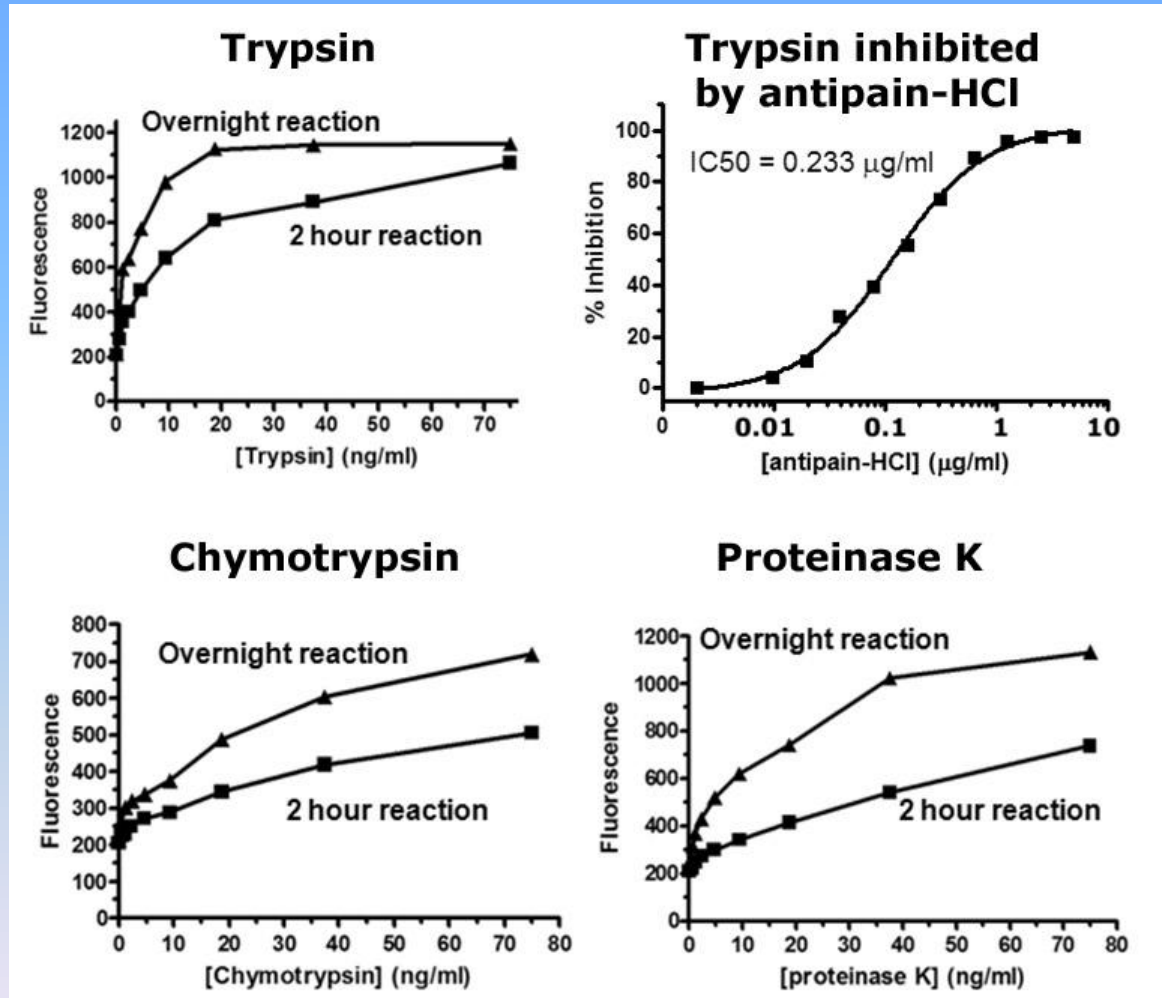
Human DNA Polymerase β Assay Kit



DPB100K Human DNA polymerase beta assay kit (enzyme not included, 100 assays)

Protease Assay Kit

To detect protease contamination of samples and protease inhibitors





Kinase Assay Kits

MUK100K	MicroMolar Universal Kinase Assay Kit (enzyme not included, 100 assays)
MUK1000K	MicroMolar Universal Kinase Assay Kit-1000 (enzyme not included, 1000 assays)
TMK100KE	Thymidylate Kinase Assay Kit Plus (<i>E. coli</i> enzyme included, 100 assays)
TMK500KE	Thymidylate Kinase Assay Kit Plus-500 (<i>E. coli</i> enzyme included, 500 assays)
HTMK500KE	Human Thymidylate Kinase Assay Kit Plus-500 (enzyme included, 500 assays)
GMK100KE	Guanylate Kinase Assay Kit Plus (<i>E. coli</i> enzyme included, 100 assays)
GMK500KE	Guanylate Kinase Assay Kit Plus-500 (<i>E. coli</i> enzyme included, 500 assays)
UMK100KE	UMP Kinase Assay Kit Plus (<i>E. coli</i> enzyme included, 100 assays)
UMK500KE	UMP Kinase Assay Kit Plus-500 (<i>E. coli</i> enzyme included, 500 assays)
NAK100KE	NAD ⁺ Kinase Assay Kit Plus (<i>E. coli</i> enzyme included, 100 assays)
NAK500KE	NAD ⁺ Kinase Assay Kit Plus-500 (<i>E. coli</i> enzyme included, 500 assays)



Bacterial Cell Wall Enzyme Assay Kits

DLL200KE	<i>E. coli</i> D-alanine ligase assay kit plus (enzyme included, 200 assays)
UAP200KE	<i>E. coli</i> UDP-N-acetylglucosamine pyrophosphorylase assay kit plus (enzyme included, 200 assays)
MUA200KE	<i>E. coli</i> MurA assay kit plus (enzyme included, 200 assays)
MUC200KE	<i>E. coli</i> MurC assay kit plus (enzyme included, 200 assays)
MUC200KN	<i>S. pneumoniae</i> MurC assay kit plus (enzyme included, 200 assays)
MUD200KE	<i>E. coli</i> MurD assay kit plus (enzyme included, 200 assays)
MUD200KP	<i>P. aeruginosa</i> MurD assay kit plus (enzyme included, 200 assays)
MUD200KS	<i>S. aureus</i> MurD assay kit plus (enzyme included, 200 assays)
MUE200KE	<i>E. coli</i> MurE assay kit plus (enzyme included, 200 assays)
MUF200KE	<i>E. coli</i> MurF assay kit plus (enzyme included, 200 assays)
MUF200KP	<i>P. aeruginosa</i> MurF assay kit plus (enzyme included, 200 assays)
MUF200KS	<i>S. aureus</i> MurF assay kit plus (enzyme included, 200 assays)
MUF200KN	<i>S. pneumoniae</i> MurF assay kit plus (enzyme included, 200 assays)



Other Anti Bacterial Drug Target Assays

- PNC200KN *S. pneumonia* nicotinate phosphoribosyltransferase assay kit plus (enzyme included, 200 assays)
- PNC200KSE *S. aureus* nicotinate phosphoribosyltransferase assay kit plus (enzyme included, 200 assays)
- BIL200KE *E. coli* biotin ligase assay kit plus (enzyme included, 200 assays)
- ISP200KE *E. coli* 4-diphosphocytidyl-2C-methyl-D-erythritol synthetase assay kit plus (enzyme included, 200 assays)
- ISP200KP *P. aeruginosa* 4-diphosphocytidyl-2C-methyl-D-erythritol synthetase assay kit plus (enzyme included, 200 assays)



Universal Assays for Drug Targets in Various Disease Areas

Similar biochemical reactions may be carried out in different biological systems or cells. They produce the same biochemical substances. ProFoldin provides assays of these biochemical substances. These assays can be used for drug targets in various disease areas.

Biochemical substances

Supercoiled , relaxed or decatenated DNA
Double strand DNA
RNA
ADP, UDP, GP or CDP
Phosphate
Polyphosphate
Amino acids
CoA
Phosphatidylcholine
Digested proteins

Assays available

Topoisomerase assays (Topo I, Topo II and Topo IV)
DNA polymerase assays (DNA replication and repair)
RNA polymerase and primase assays (RNA synthesis)
Kinases, ATPase and transferase assays
Phosphate assay and ATPases, assays
Polyphosphate assay and Polyphosphate kinase assays
Amino acid assay and Amino acid metabolism assays
CoA assay and Acetyl transferases
Phosphatidylcholine and Phosphacholine transferase
Protease assay

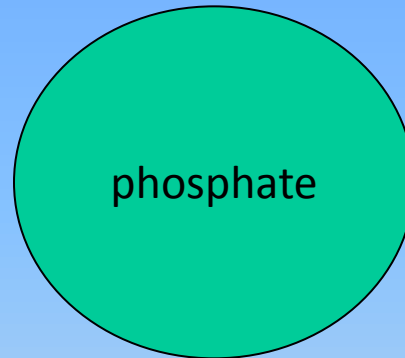
Universal Assay Kits

Using Detection of Phosphate

ATPase



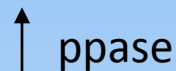
GTPase



NanoMolar phosphate assay kit

Catalog No: NPA1000

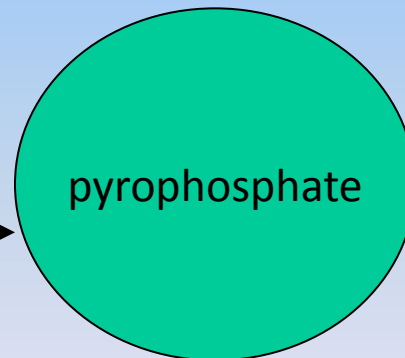
for measurement of nanomolar concentrations of phosphate



Polymerase



Transferase

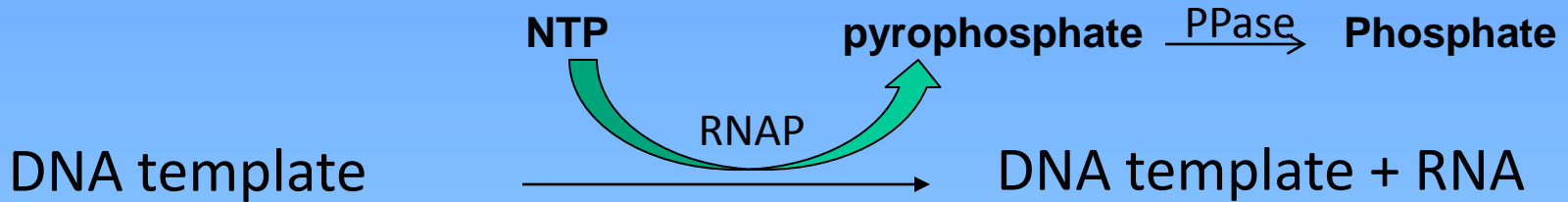


MicroMolar phosphate assay reagent

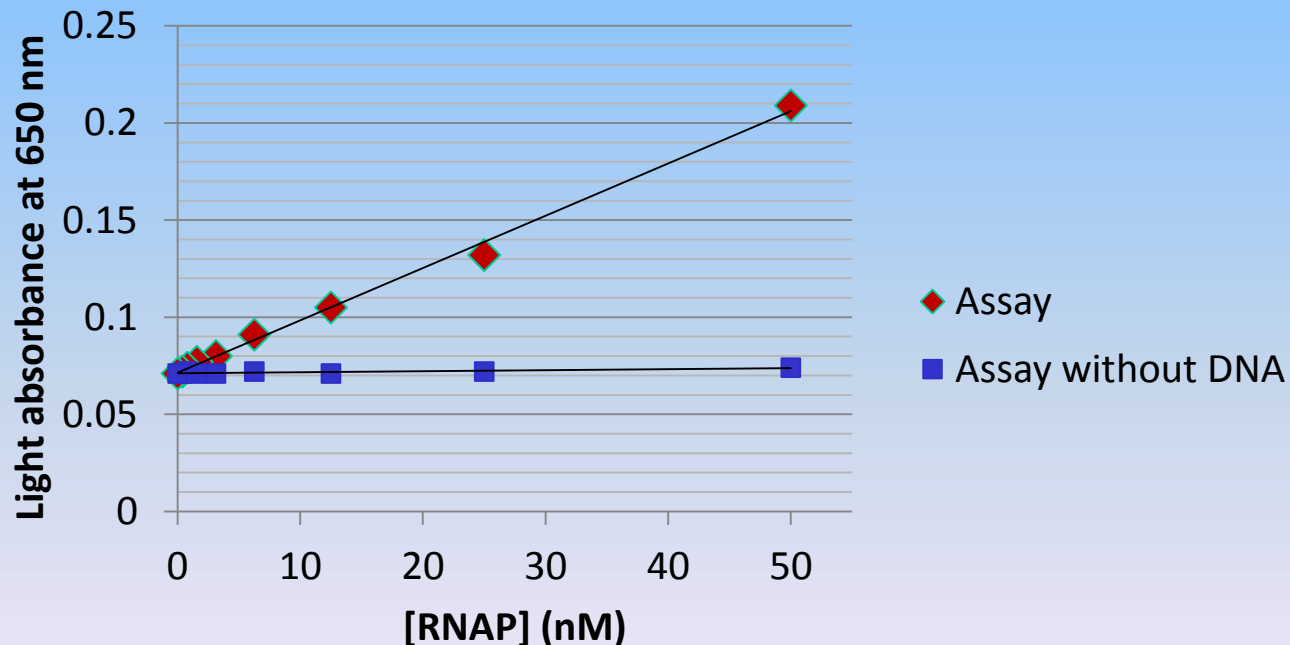
Catalog No: MPA3000

for measurement of micromolar concentrations of phosphate.

Example of Phosphate Detection in RNA Polymerase Assay



E. coli RNAP assay based on phosphate detection

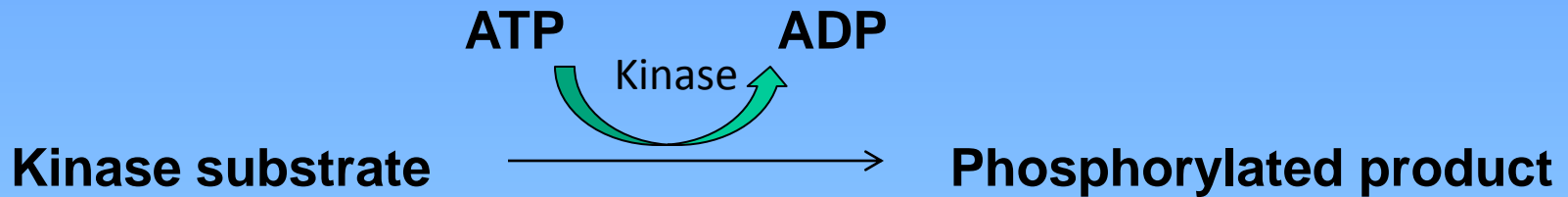


RPAP100KE *E. coli* RNA Polymerase Assay Pyrophosphate Kit Plus (enzyme included, 100 assays)

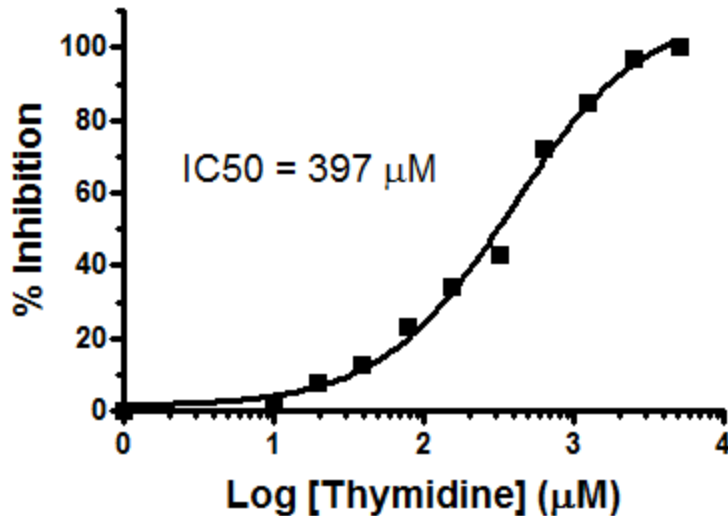
RPAP100KSE *S. aureus* RNA Polymerase Assay Pyrophosphate Kit Plus (enzyme included, 100 assays)

Universal Assay Kits

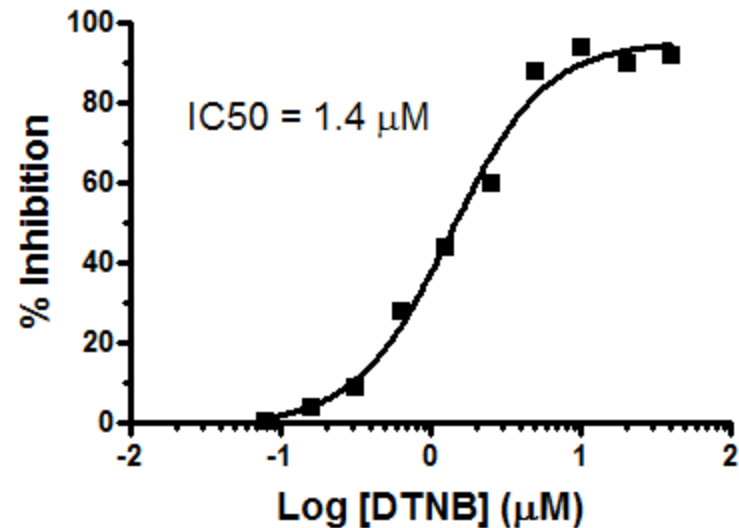
Using Detection of ADP, UDP and GDP



Inhibition of *E. coli* thymidylate kinase by thymidine



Inhibition of human thymidylate kinase by DTNB





Concentration Assay kits for Bio- and Organic Molecules

Substance	Sensitivity	Catalog	Assay Kit
DNA	ng /ml to μg / ml	NDA500	NanoGram DNA Assay Reagent -500 (500 assays)
Protein	μg / ml	EPA001	Easy Protein Assay Reagent (2500 assays)
Peptide	μM to mM	MP200	MicroMolar Peptide Assay Kit (200 assays)
ADP	μM	MAD500K	MicroMolar ADP Assay kit - 500 (500 assays)
UDP	μM	MUD500K	MicroMolar UDP assay kit – 500 (500 assays)
GDP	μM	MGD500K	MicroMolar GDP assay kit -500 (500 assays)
Amino acid	μM to mM	AAK1000	Amino acid assay kit-1000 (1000 assays)
Histidine	μM	MHI250	MicroMolar Histidine Assay Kit-250 (250 assays)
CoA	μM	CAK1000	Coenzyme A Assay Kit (1000 assays)
Phosphate	nM	NPA1000	NanoMolar Phosphate Assay Kit (1000 assays)
Phosphate	μM	MPA3000	MicroMolar Phosphate Assay Reagent (3000 assays)
Polyphosphate	μM	PPD1000	MicroMolar Polyphosphate Assay Kit (1000 assays)
Phosphatidylcholine	μg / ml	MPC200K	MicroGram Phosphatidylcholine Assay Kit (200 assays)
Detergent	< CMC	DAK1000	Detergent assay kit (1000 assays)
Detergent CMC	CMC	CMC1000	Detergent CMC Assay Kit (1000 assays)
EDTA	μM	MED250	MicroMolar EDTA Assay Kit-250 (250 assays)
DTT	μM	MDT250	MicroMolar DTT Assay Kit-250 (250 assays)



Concentration Assay kits (continued)

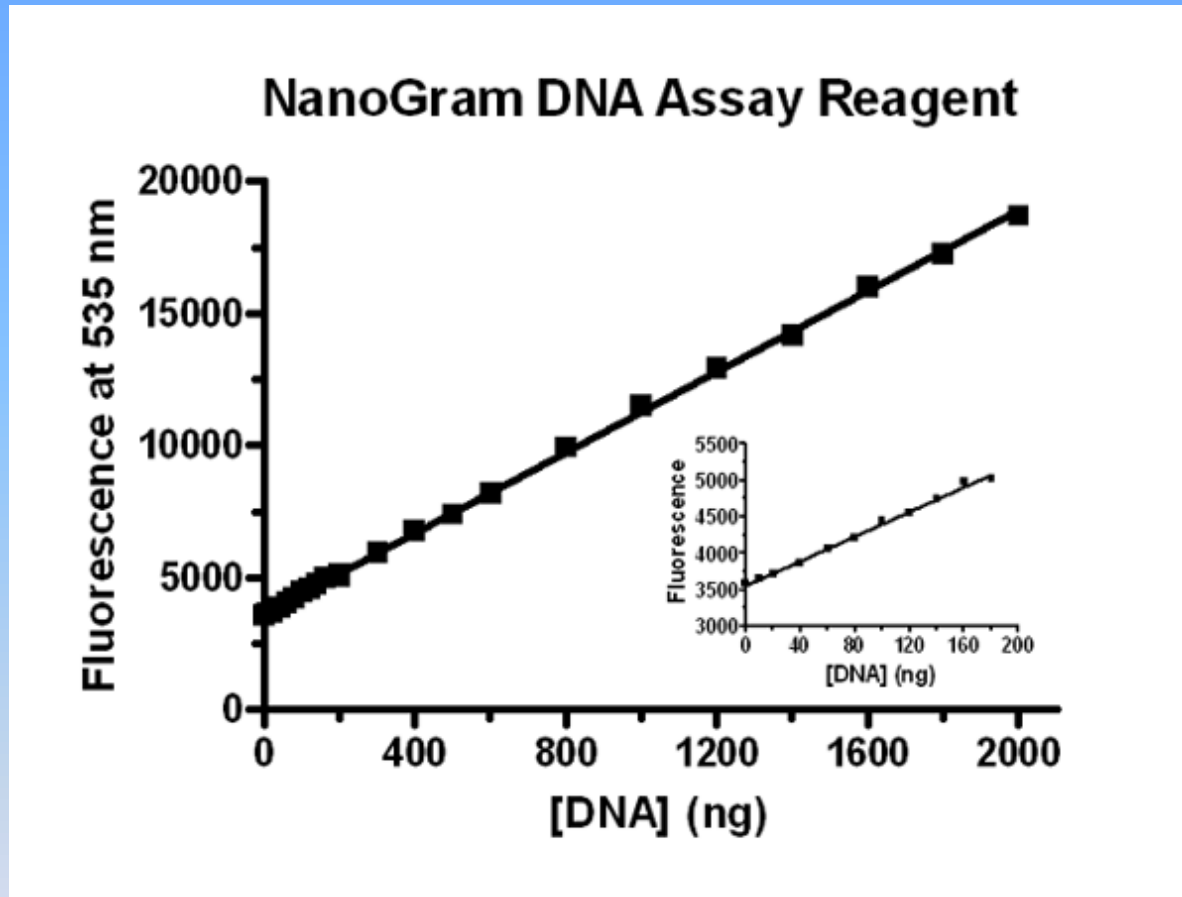
Assay kits for drug molecules

Substance	Sensitivity	Catalog	Assay Kit
hydrolyzed penicillin	μg / ml	PST100	Penicillin Drug Stability Test Kit (100 assays)
polymyxin	μg / ml	PMX200	MicroMolar Polymyxin Assay Kit (200 assays)

Assay kits for inorganic ions

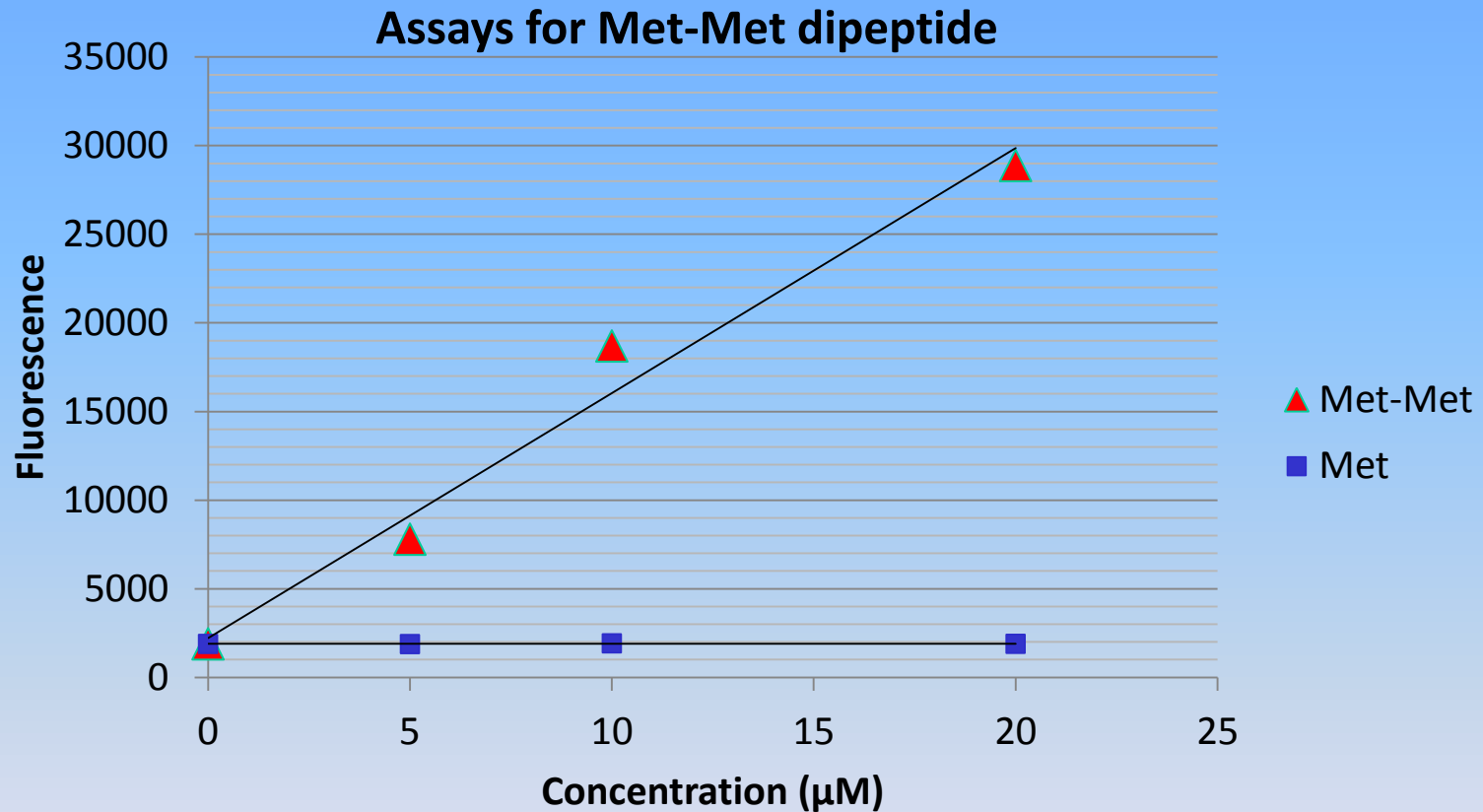
Substance	Sensitivity	Catalog	Assay Kit
Sulfate	μM to mM	MSA250	MicroMolar Sulfate Assay Kit-250 (250 assays)
Ni ⁺⁺ or Co ⁺⁺	nM	NMA1000	NanoMolar Nickel / Cobalt Assay Kit (1000 assays)
Zn ⁺⁺	nM	NZA1000	NanoMolar Zinc Assay Kit (1000 assays)
Cu ⁺⁺	μM	MCA1000	MicroMolar Copper Assay Kit (1000 assays)
Cl ⁻ , Br ⁻ , I ⁻	μM	MHA200	MicroMolar Halide Assay Kit (1000 assays)

Measure DNA Concentrations



NDA500 NanoGram DNA assay reagent (500 assays)

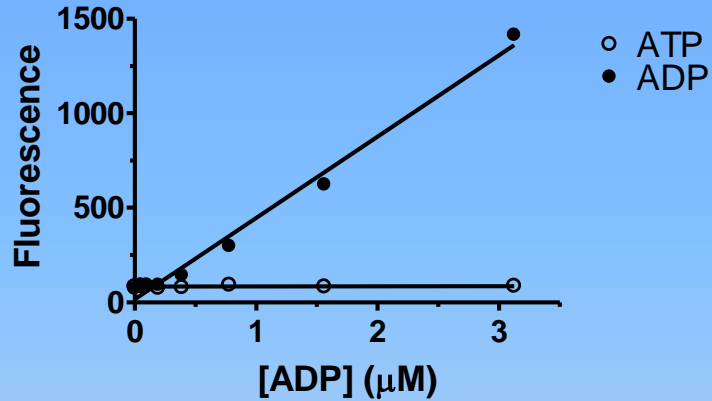
Measure Peptide Concentrations



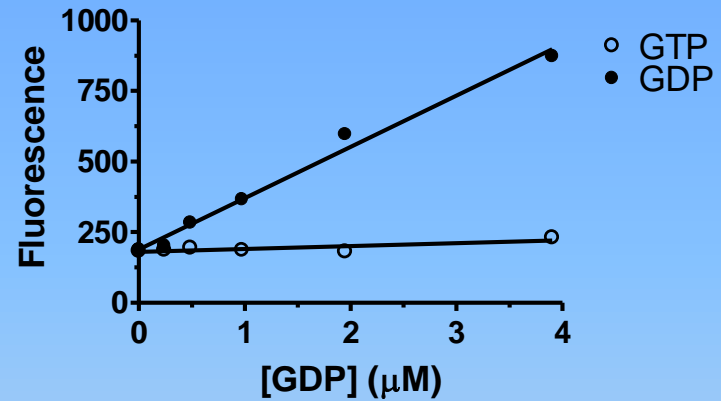
MP200 Peptide Assay Kit (200 assays)

Measure ADP, UDP, GDP and CDP Concentrations

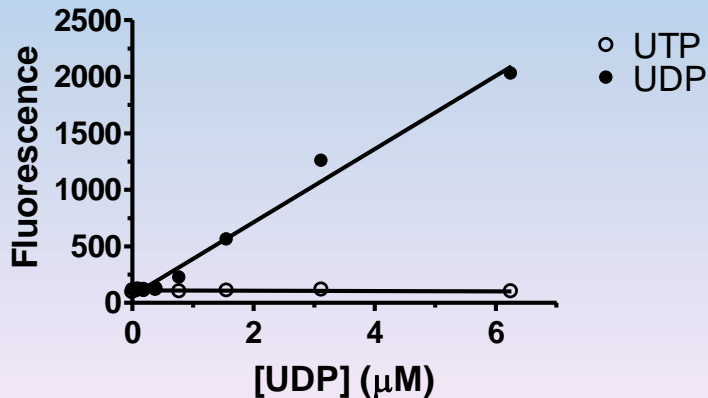
ADP assay



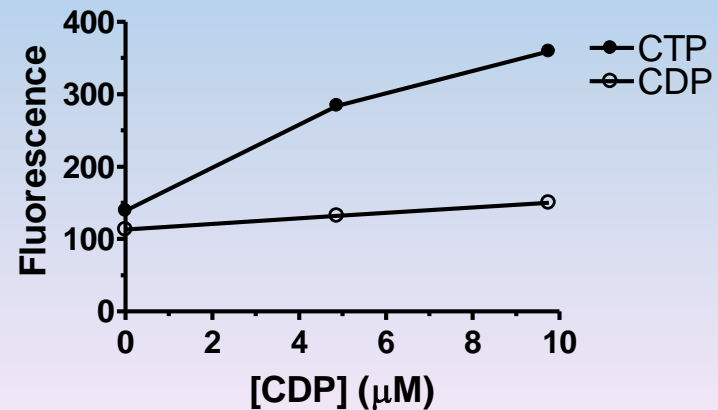
GDP assay



UDP assay



CDP assay

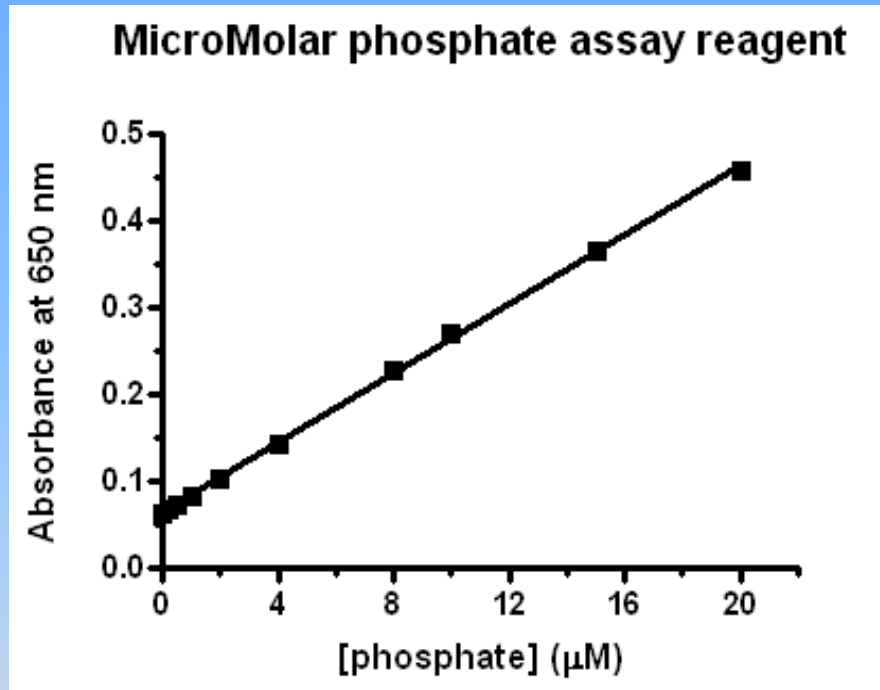




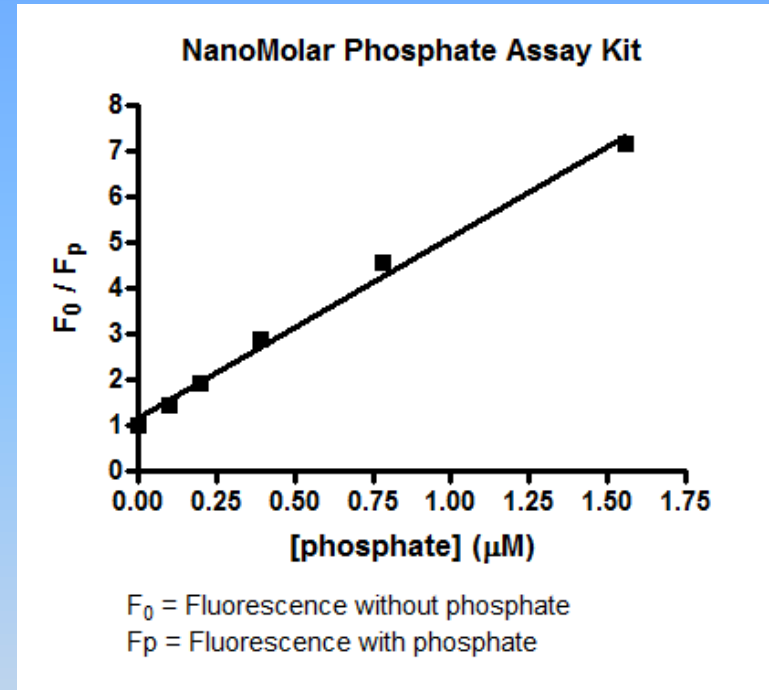
ADP, UDP, GDP, CDP Assay kits

MAD100K	MicroMolar ADP Assay kit - 100 assays
MAD500K	MicroMolar ADP Assay kit - 500 assays
MCD100K	MicroMolar CDP assay kit - 100 assays
MCD500K	MicroMolar CDP assay kit - 500 assays
MGD100K	MicroMolar GDP assay kit -100 assays
MGD500K	MicroMolar GDP assay kit -500 assays
MUD100K	MicroMolar UDP assay kit - 100 assays
MUD500K	MicroMolar UDP assay kit - 500 assays

Measure Phosphate Concentrations



MPA3000 MicroMolar phosphate assay reagent
(3000 assays)



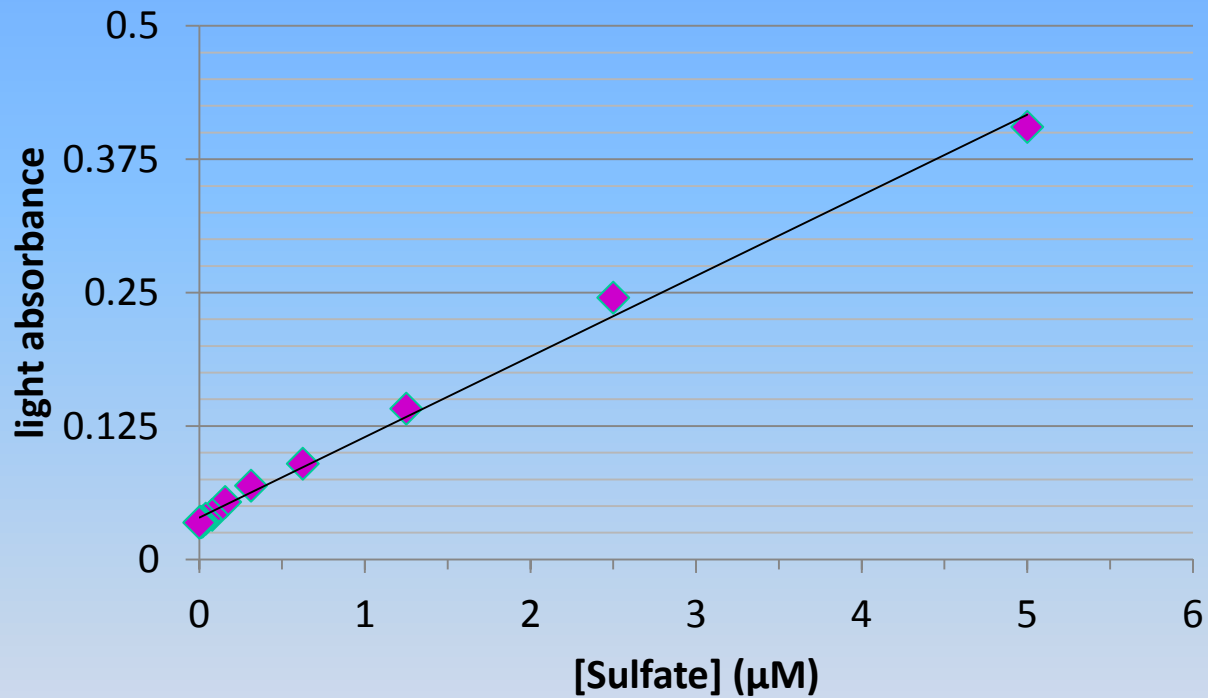
NPA1000 NanoMolar phosphate assay kit
(1000 assays)

Applications:

- Measure ATPase activity of enzymes
- Measure phosphate concentrations in biological samples
- Measure phosphate concentrations in water (environment)

Measure Sulfate Concentrations

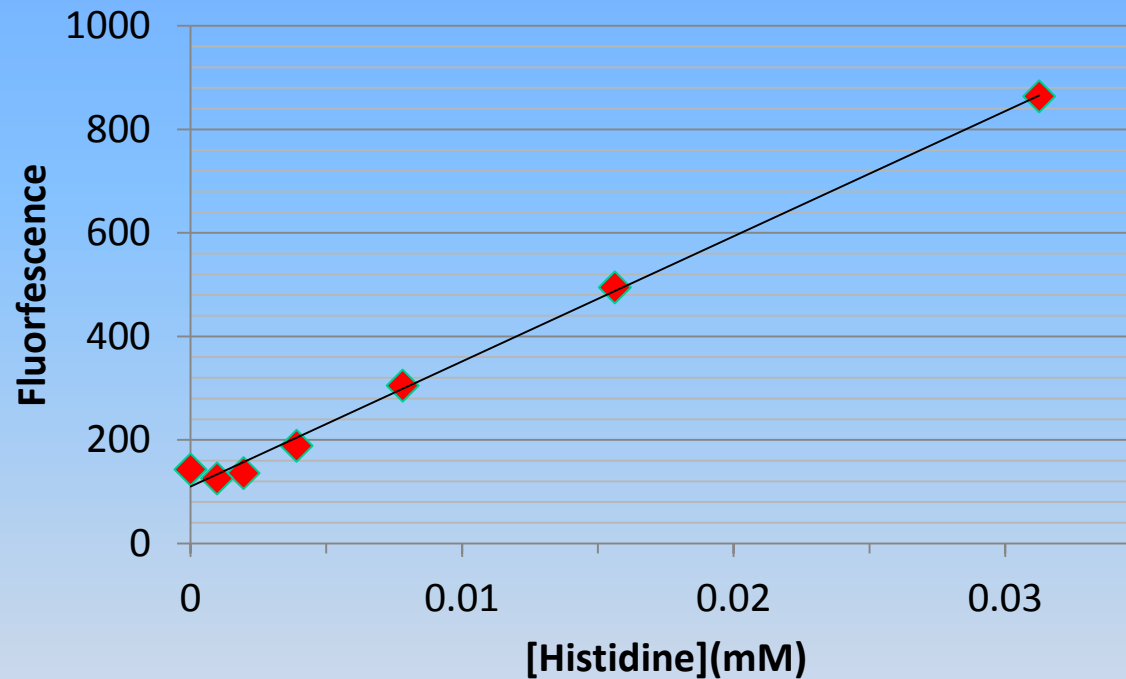
MicroMolar Sulfate Assay Kit-250



MSA250 MicroMolar Sulfate Assay Kit-250 (250 assays)

Measure Histidine Concentrations

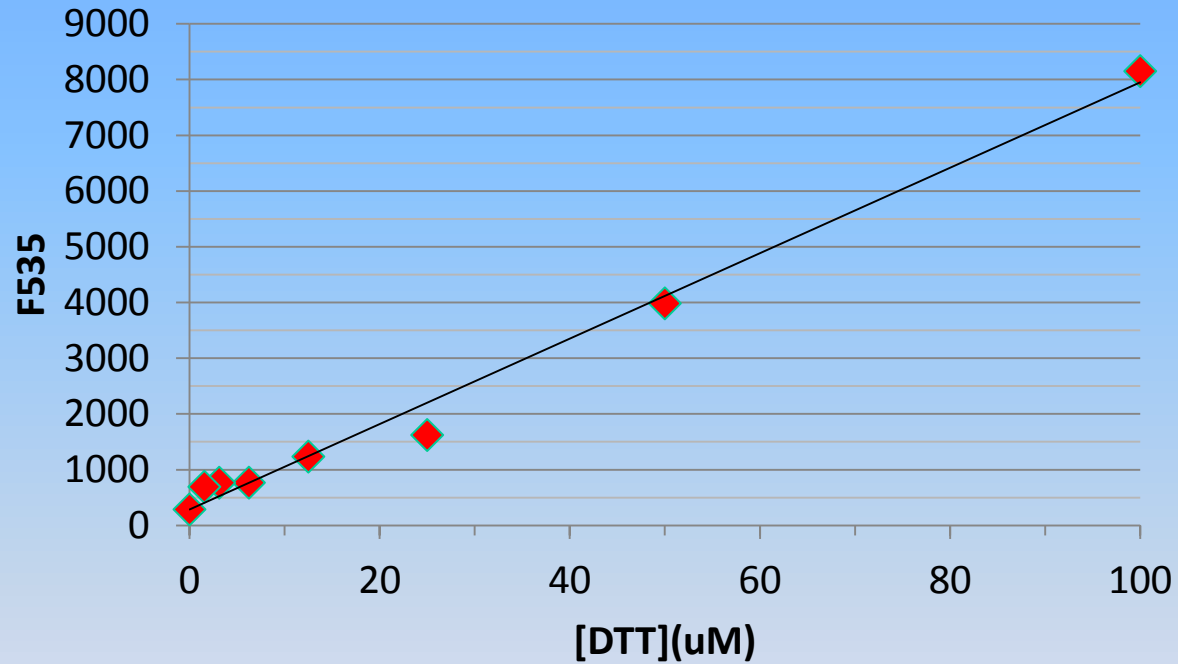
MicroMolar Histidine assay -250



MHI250 MicroMolar Histidine Assay Kit-250 (250 assays)

Measure DTT Concentrations

MicroMolar DTT Assay Kit-250

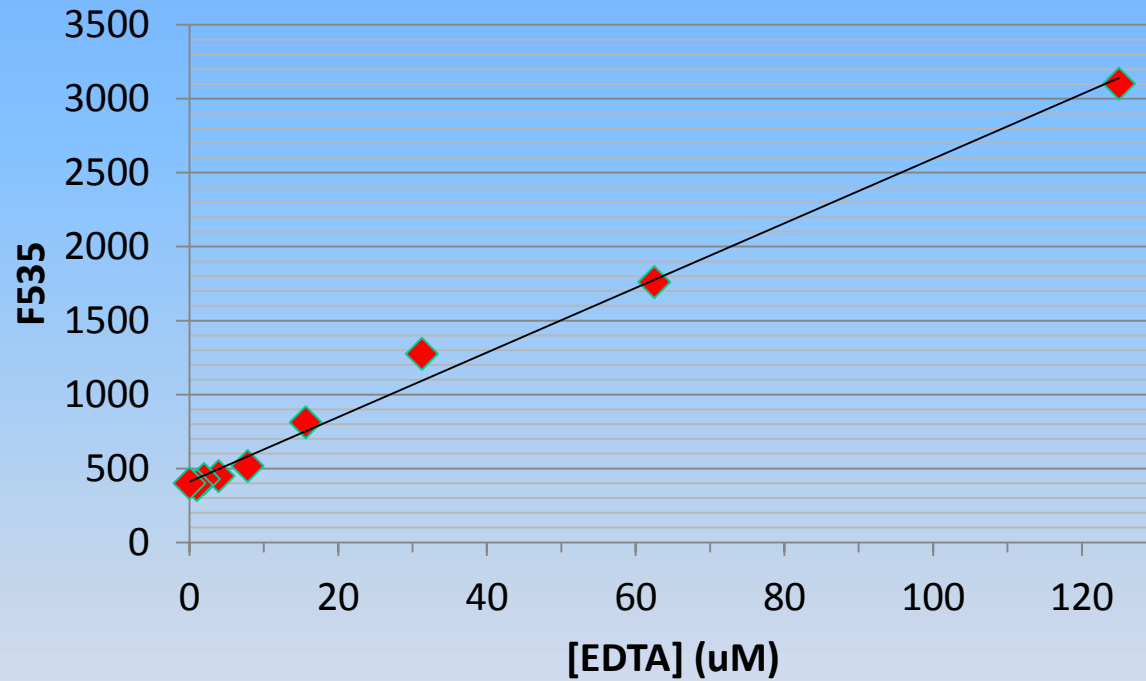


MDT250

MicroMolar DTT Assay Kit-250 (250 assays)

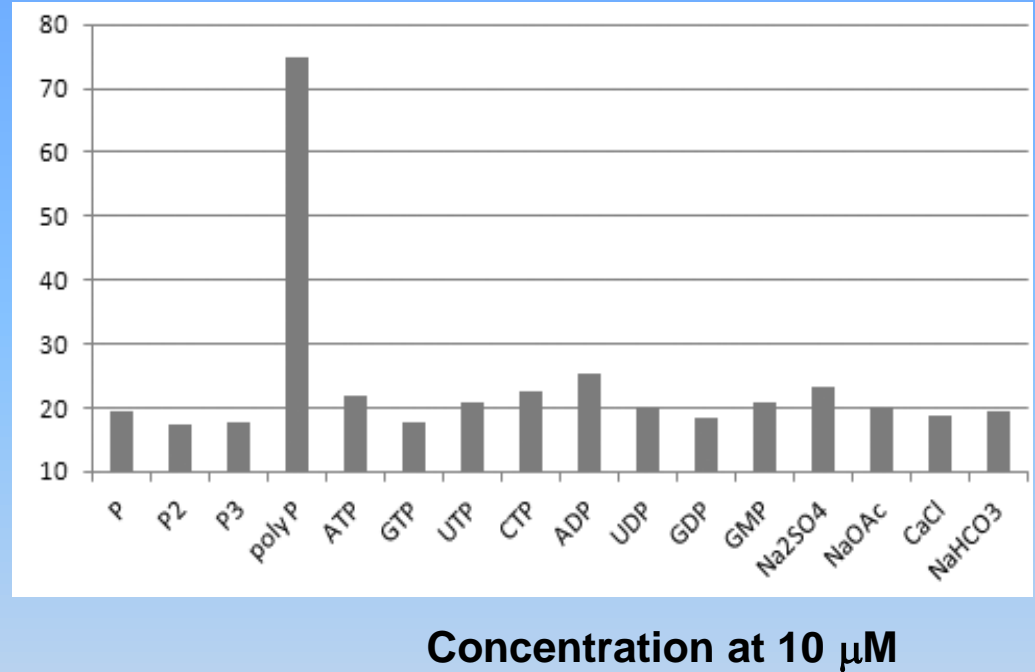
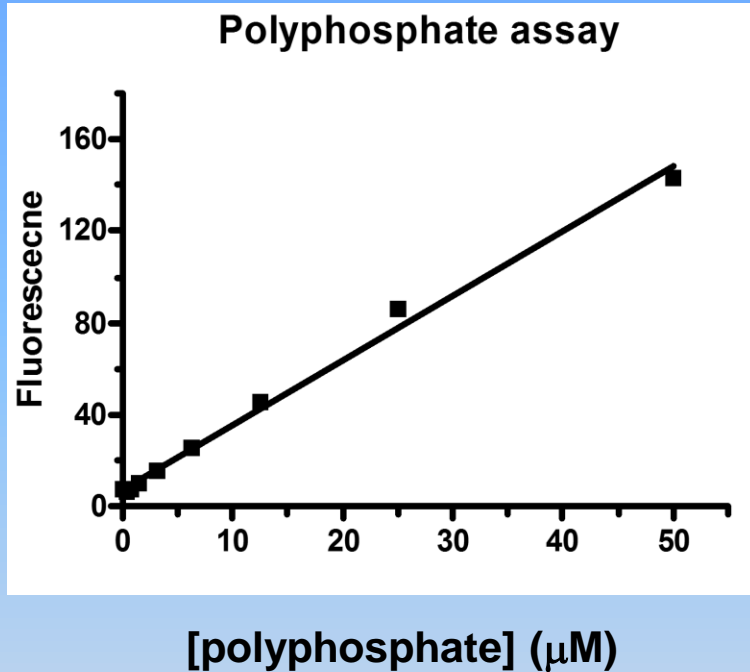
Measure EDTA Concentrations

MicroMolar EDTA assay kit-250



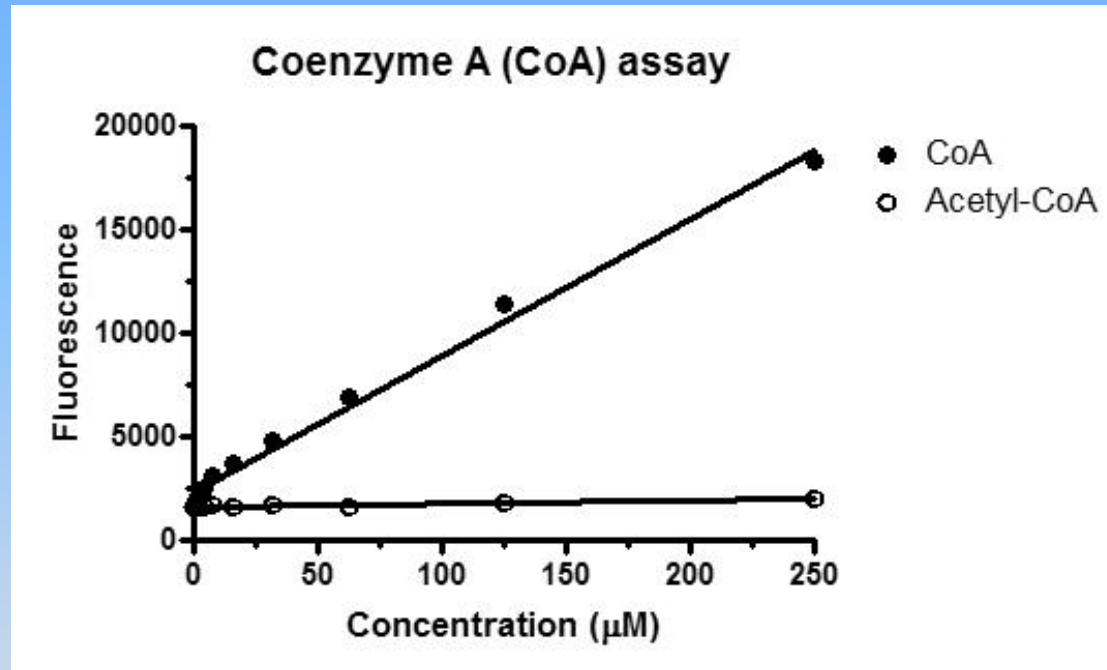
MED250 MicroMolar EDTA Assay Kit-250 (250 assays)

Measure Polyphosphate Concentrations



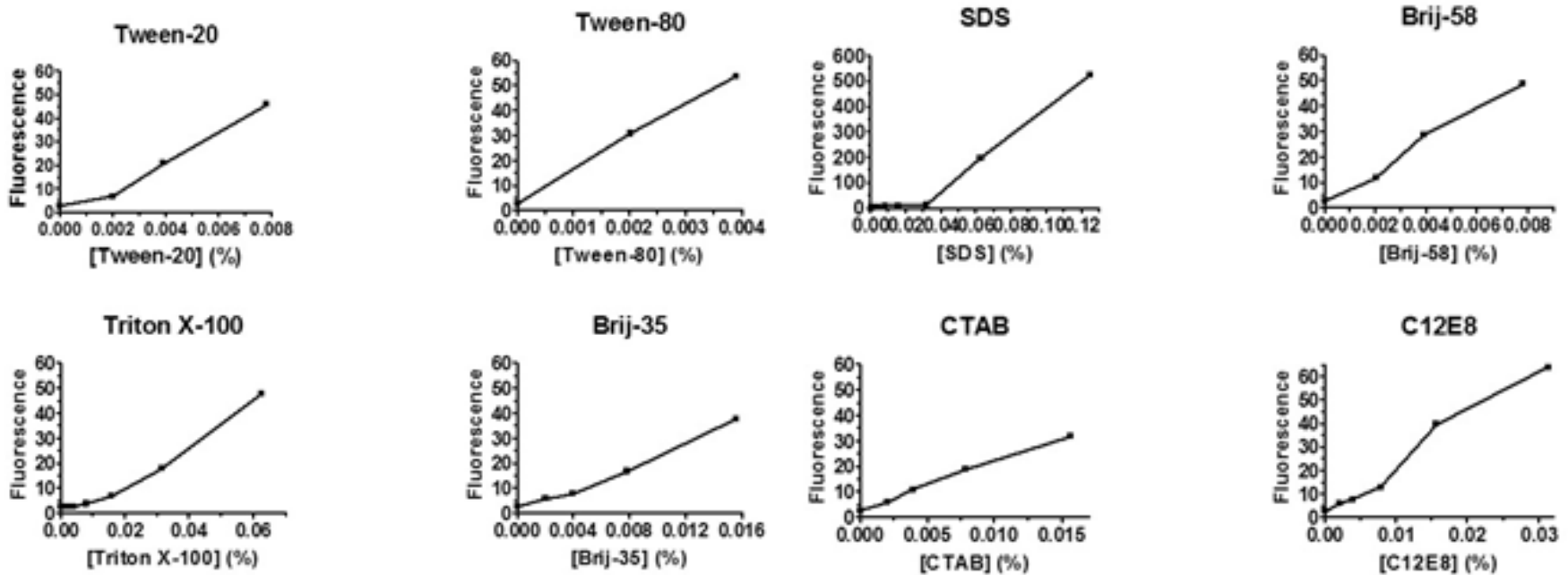
PPD1000 MicroMolar Polyphosphate Assay Kit (1000 assays)

Measure Coenzyme A (CoA) Concentrations



CAK1000 Coenzyme A Assay Kit (1000 assays)

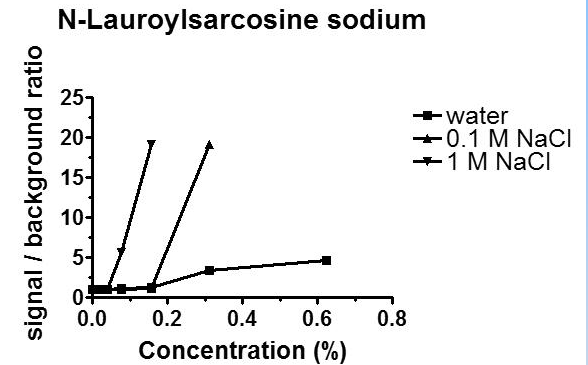
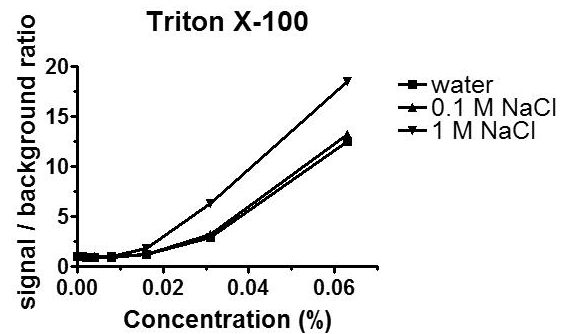
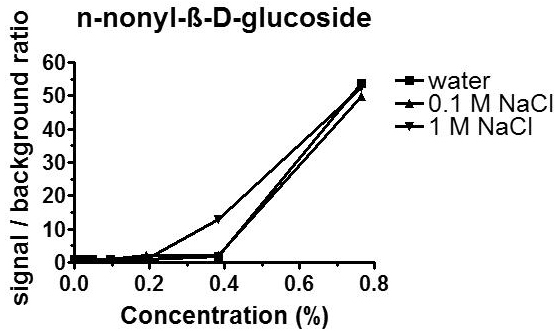
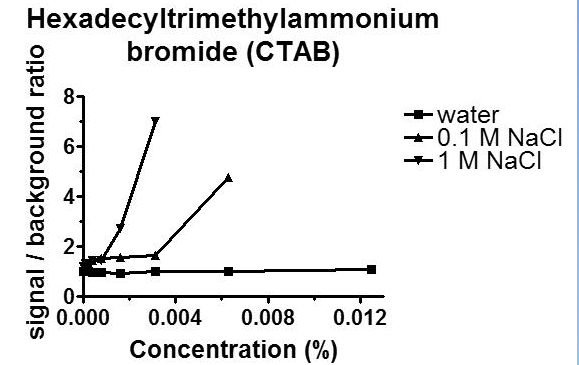
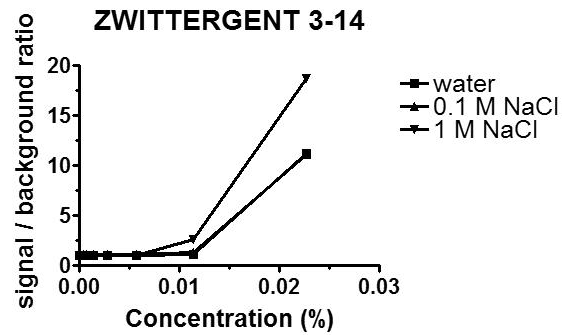
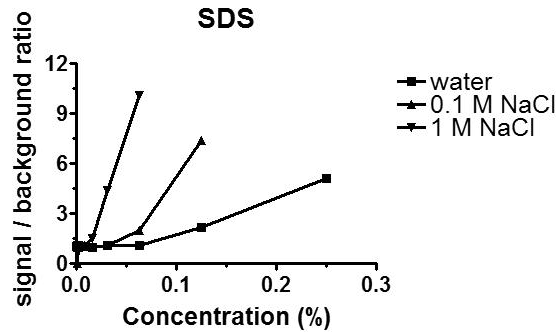
Measure Detergent Concentrations



DAK1000

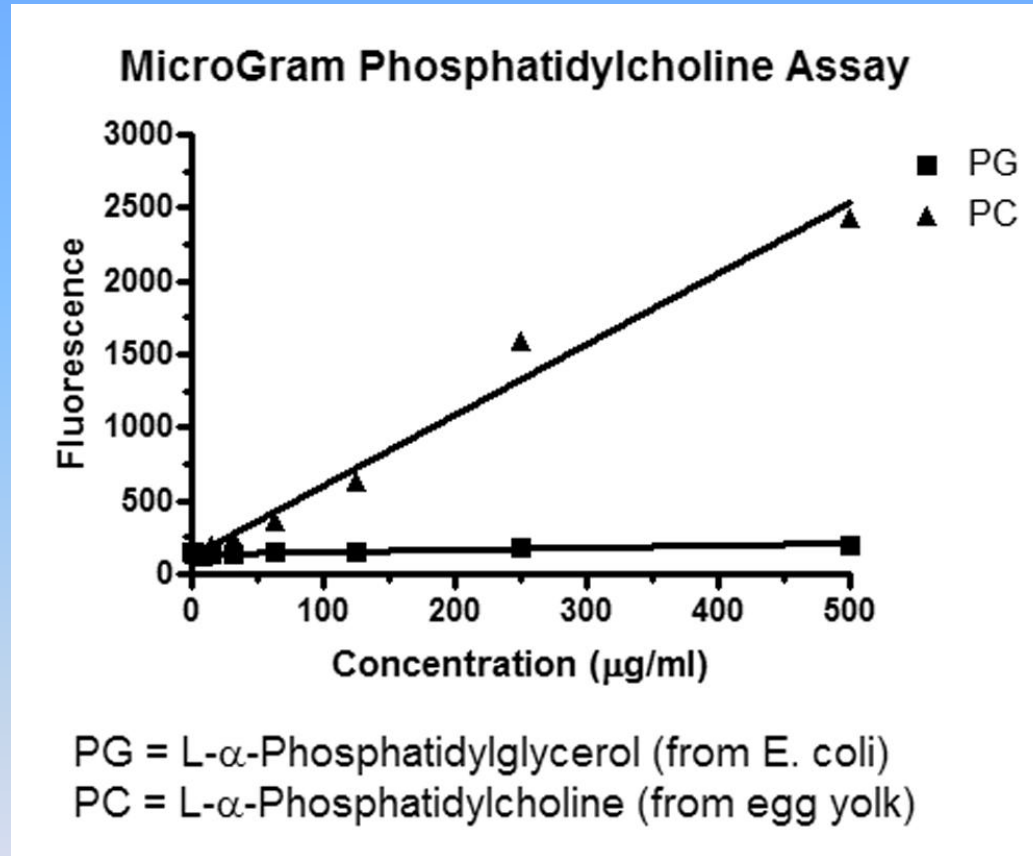
Detergent assay kit (1000 assays)

Measure Detergent Critical Micelle Concentration (CMC)



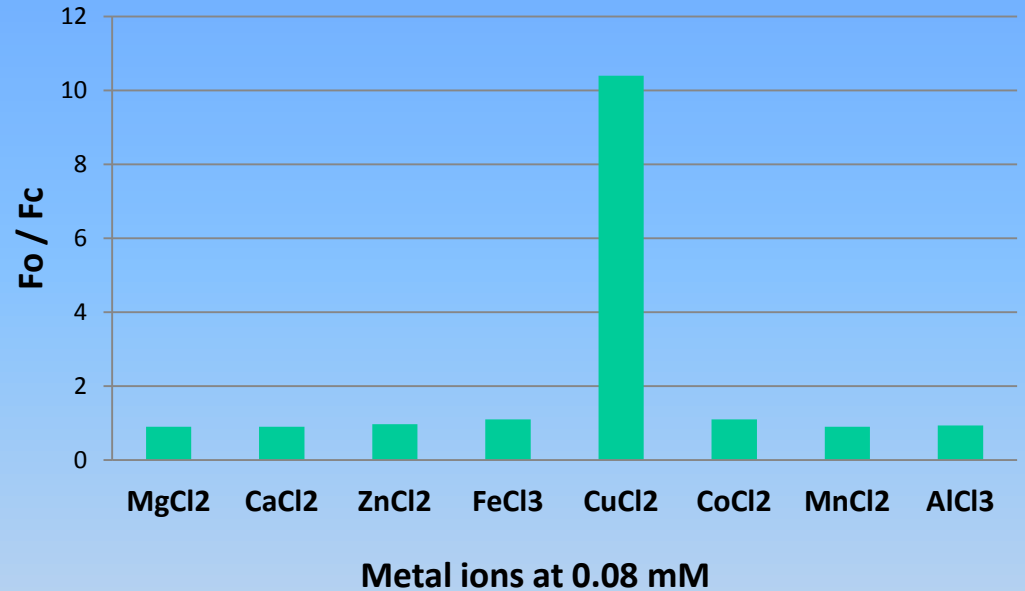
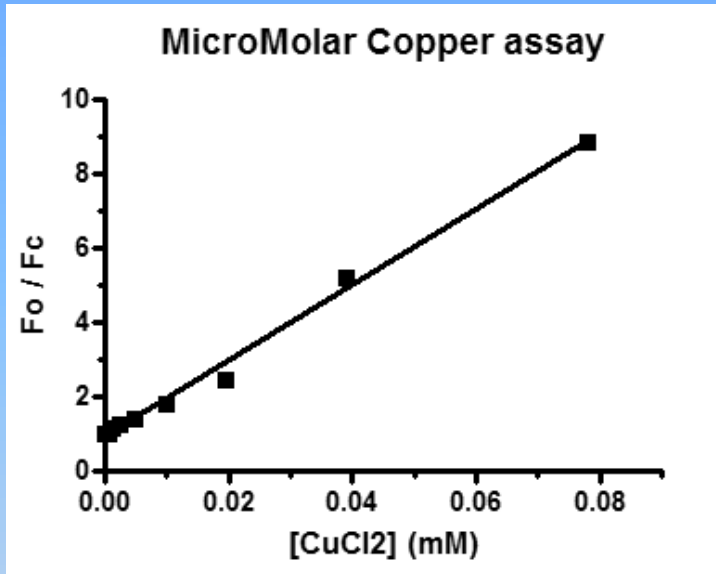
CMC1000 Detergent Critical Micelle Concentration (CMC) Assay Kit (1000 assays)

Measure Phosphatidylcholine Concentrations



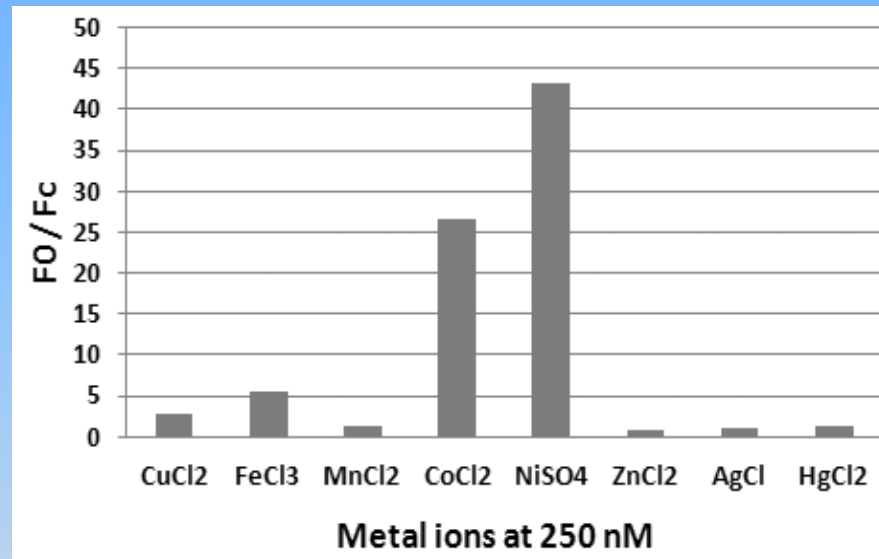
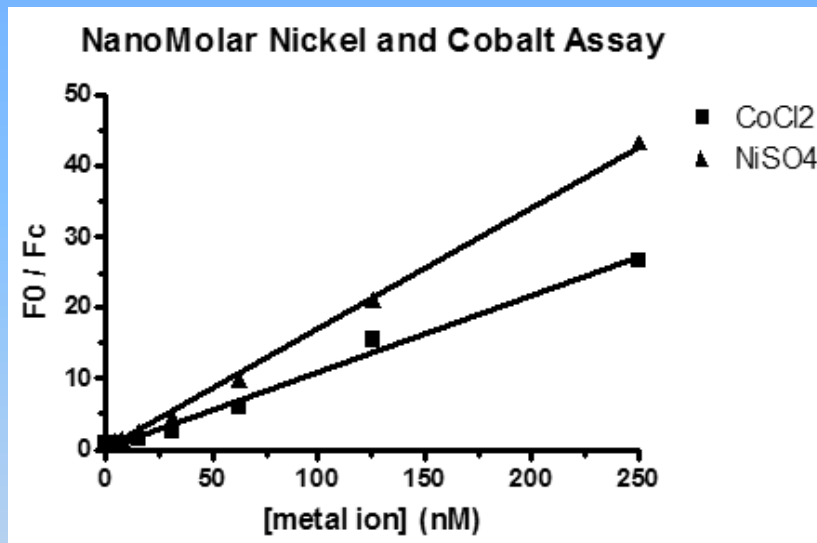
MPC200K MicroGram Phosphatidylcholine Assay Kit (200 assays)

Measure Copper Concentrations



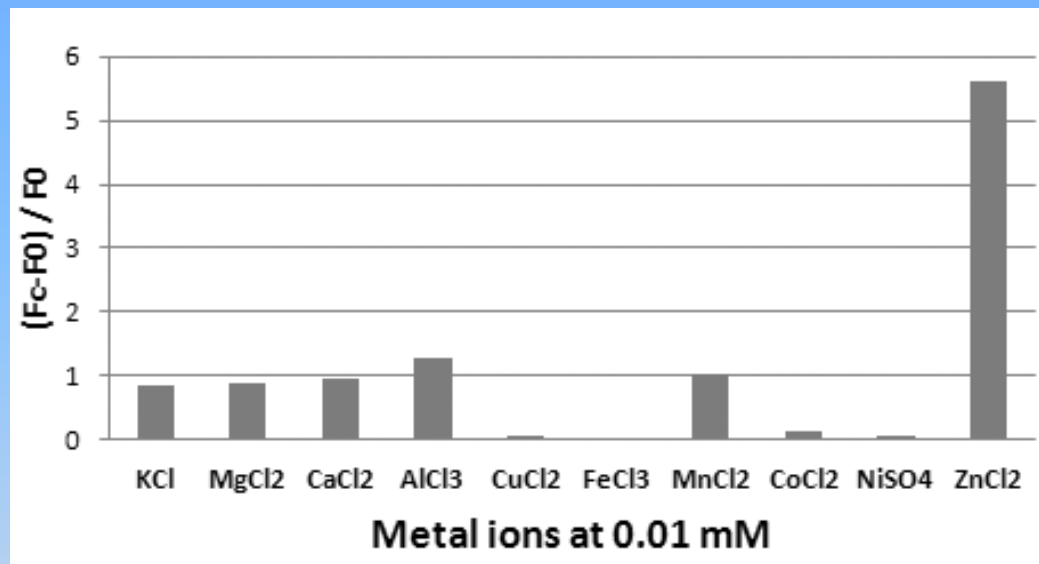
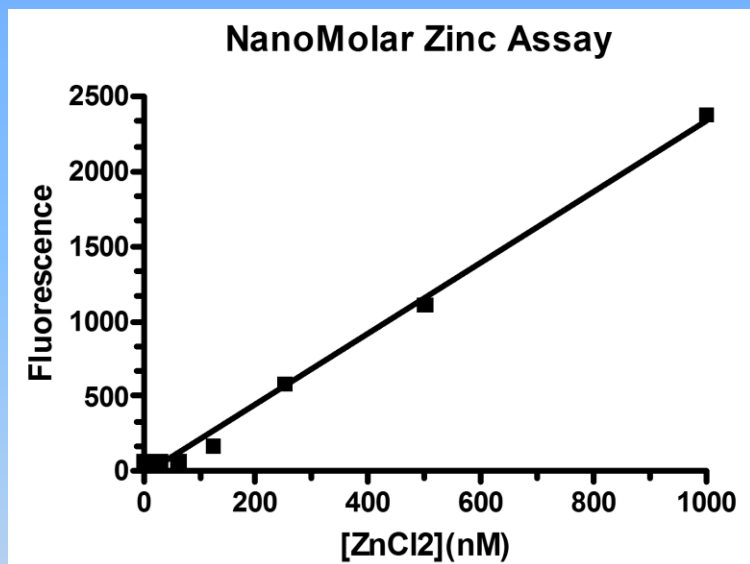
MCA1000 MicroMolar Copper Assay Kit (1000 assays)

Measure Nickel and Cobalt Concentrations



NMA1000 NanoMolar Nickel / Cobalt Assay Kit (1000 assays)

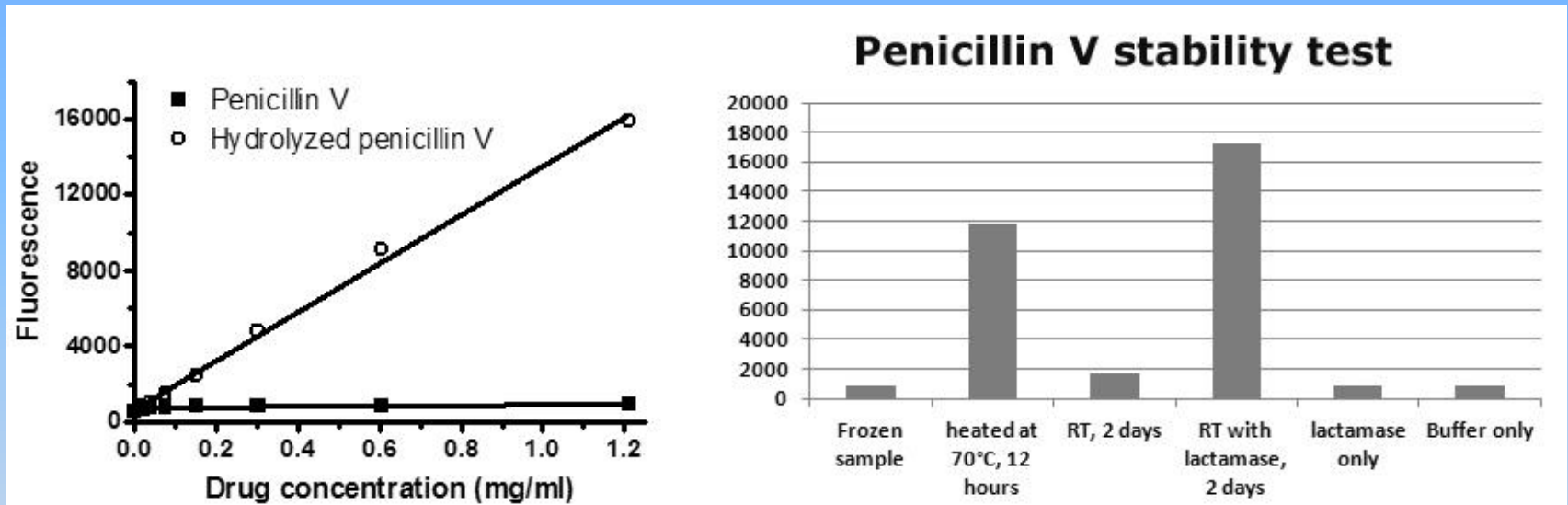
Measure Zinc Concentrations



NZA1000

NanoMolar Zinc Assay Kit (1000 assays)

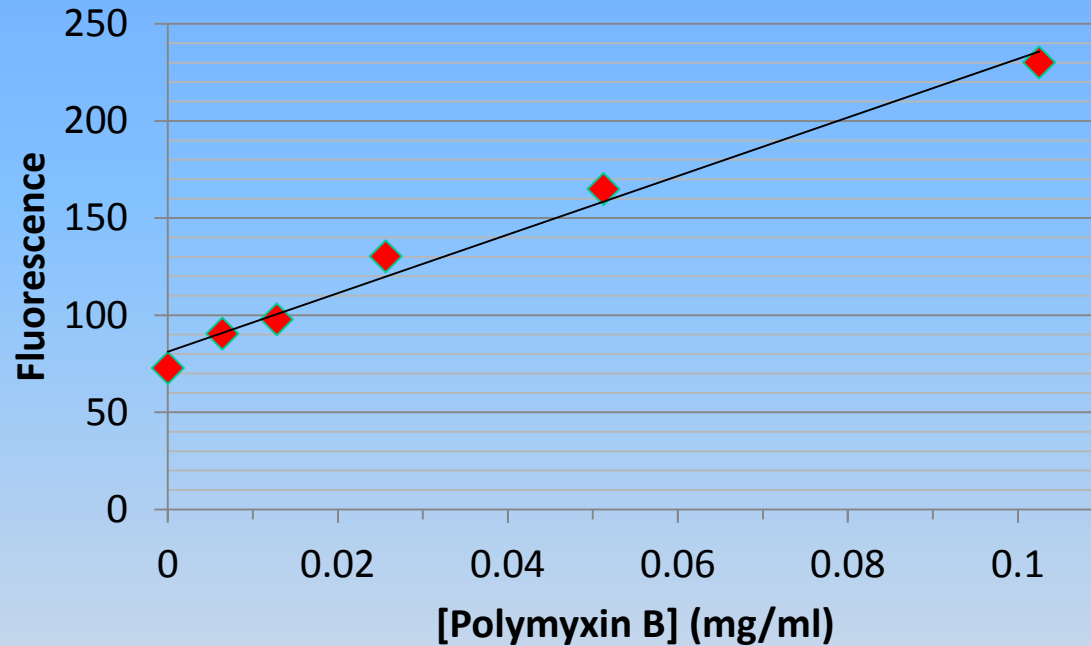
Measure Hydrolyzed Penicillin Concentrations



PST100 Penicillin Drug Stability Test Kit (100 assays)

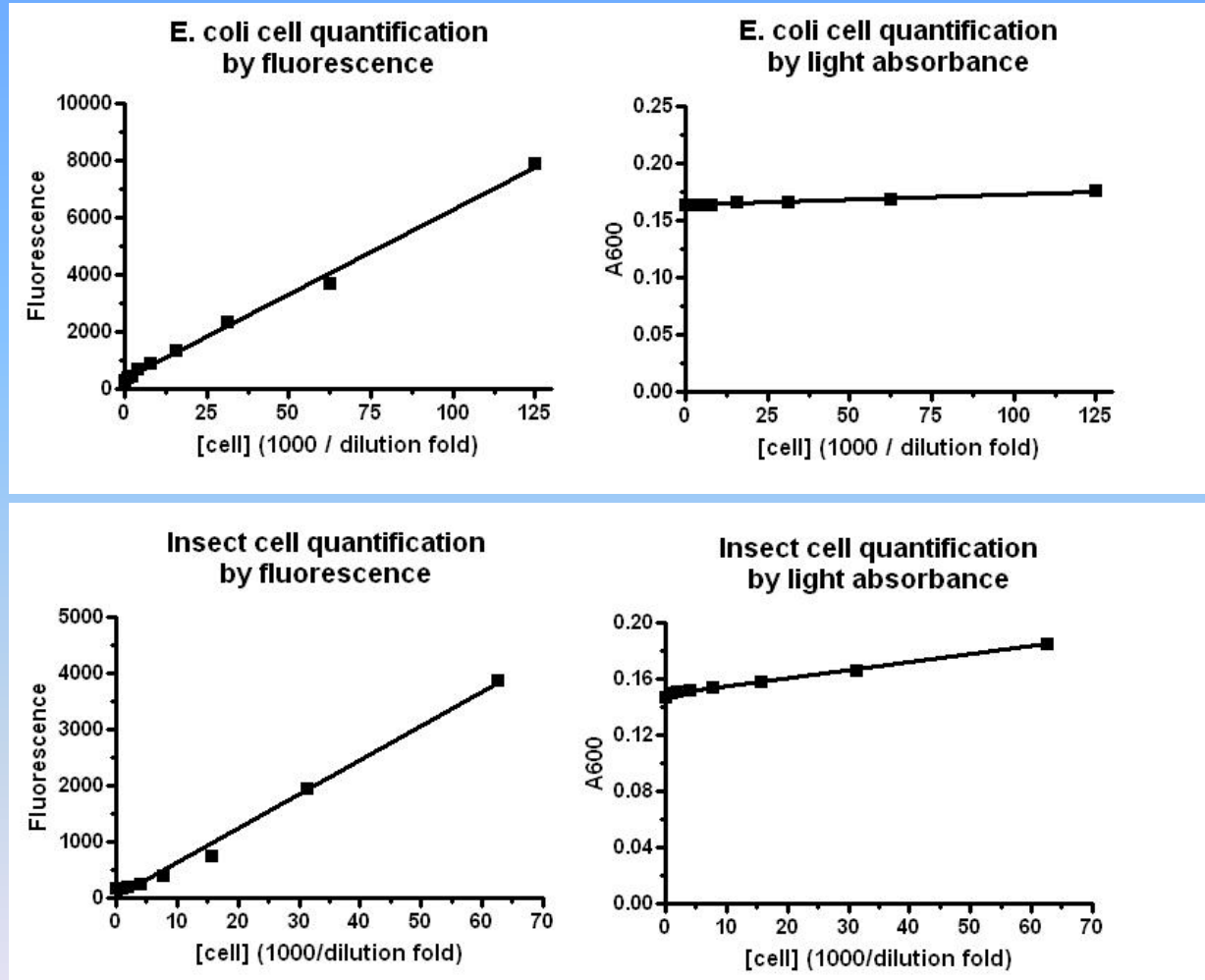
Measure Polymyxin Concentrations

Polymyxin B assay



PMX200 MicroMolar Polymyxin Assay Kit (250 assays)

Measure Cell Density by Fluorescence – Sensitivity Comparison with Light Absorbance Assay



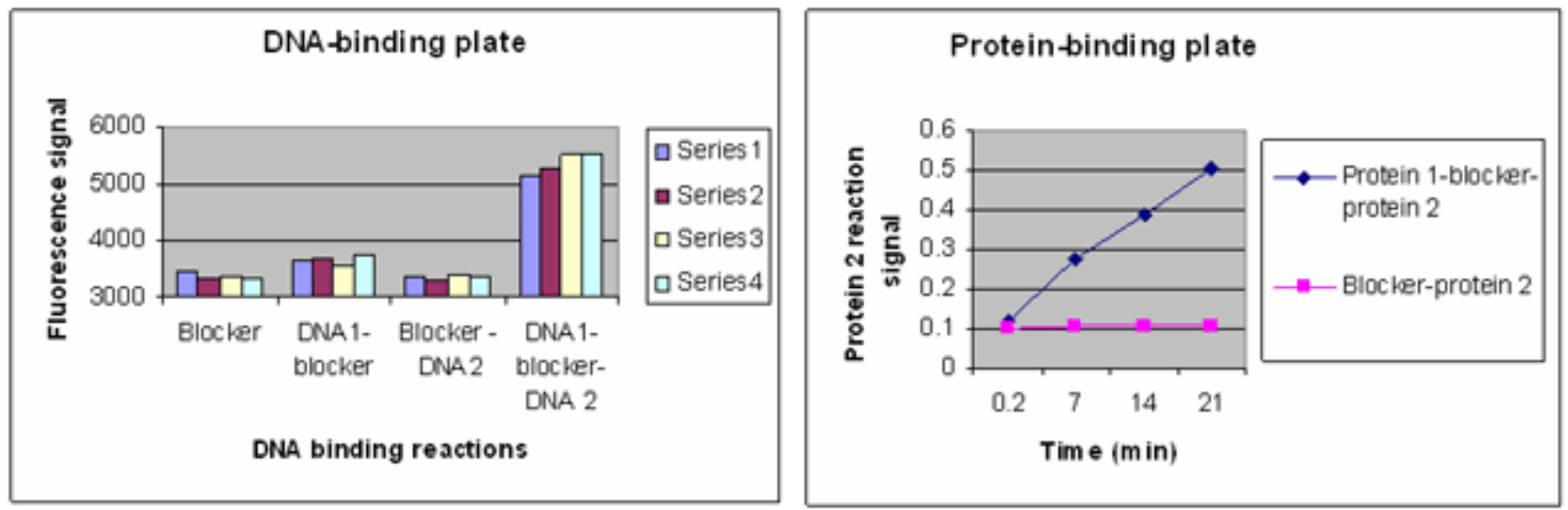
CS1000 Fluorescence dye for cell quantification (1000 assays)



Molecular Separation Tools – Columns and Filters

Columns	Separation	Description / application	Product catalog
Desalting columns	desalting	columns to remove salt or buffer exchange, 50 spin columns for MDC050; 20 preparative columns for PDC020	MDC050, PDC020
Phosphate removal columns	phosphate	columns to remove phosphate, 20 spin columns for MPR020; 10 preparative columns for PPR010	MPR020, PPR010
DD columns	decatenated DNA	columns for DNA decatenation assay, 20 spin columns for DDC020K, 100 spin columns for DDC100	DDC020K and DDC100
TDC plate	linear DNA	A 96-well plate that allows linearized plasmid DNA, not the circular DNA, to pass the filter in the presence of the TDC matrix, one plate	included in TDC96K
TDD plate	decatenated DNA	A 96-well plate that allows decatenated DNA, not concatenated DNA, to pass the filter, one plate	included in TDD96K
CSF plate	Cell	96-well plates that allow small molecules, not cells, to pass the filter, 4 plates per pack	CSF1

Molecular Binding – 96 Well DNA and Protein Binding Plates



DNA-binding plates

- NBP96B 96-well DNA-binding Plates (black) (4 plates)
- NBP96T 96-well DNA-binding Plates (transparent) (4 plates)
- NBP96N Nucleic Acid Binding Blocker

Protein-binding plates

- APP96B 96-well Anionic Protein-binding Plates (black) (4 plates)
- APP96T 96-well Anionic Protein-binding Plates (transparent) (4 plates)
- CPP96B 96-well Cationic Protein-binding Plates (black) (4 plates)
- CPP96T 96-well Cationic Protein-binding Plates (transparent) (4 plates)