- LIFE SCIENCE INSTITUTE -

BIOLOG

Triphosphate Analogues

Second Messenger and Signal Transduction Research
High Purity Nucleotide & Nucleoside Analogues

- *Unique Collection of Cyclic Nucleotides*
- *Inhibitors and Activators of Protein Kinases A and G*
- *Specific Epac Modulators*
- *Widest Selection of NAD^+ and cADPR Analogues*
- *c-diGMP and c-diAMP, Derivatives and Metabolites*
- *Nucleoside Mono-, Di-, Tri- and Polyphosphates*
- *Fluorescent and Biotinylated Analogues*
- *Affinity Chromatography Gels*
- *Bulk and Custom Syntheses*

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BIOLOG Product List

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Nucleoside- 5'- O- triphosphates, ribose or nucleobase-modified *(continued)*

Nucleoside- 5'- O- triphosphates, phosphate-modified

Nucleoside- 5'- O- triphosphates, phosphate-modified *(continued)*

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Thymidine- 5'- O- (1- thiotriphosphate), Sp- isomer (Sp-TTP-α-S / Sp-dTTP-α-S)	T 003	21
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N^6- Cyclohexyladenosine- 5'- O- (3- thiotriphosphate) (6-cHe-ATP-γ-S)	C 127	11
N^6- Cyclohexyladenosine- 5'- O- triphosphate (6-cHe-ATP)	C 084	12
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N^6- (1- Methylbutyl)adenosine- 5'- O- triphosphate (6-(1-MeBu)-ATP)	M 027	15
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2', 3'- O- (Bis- [5- bromoanthraniloyl])adenosine- 5'- O- triphosphate (Bis-Br-ANT-ATP)	B 111	10
2', 3'- O- (Bis- [5- chloroanthraniloyl])adenosine- 5'- O- triphosphate (Bis-Cl-ANT-ATP)	B 091	10
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Uridine- 5'- O- triphosphoro- γ- 1- (5- sulfonic acid)naphthylamidate (UTP-γ-AmNS)	U 014	22

Preparation of Stock Solutions

Most BIOLOG products are sold in micromol quantities in order to assist customers with the preparation of stock solutions. In contrast to often troublesome calculations regarding molecular weight, salt form, water content and purity percentages, simply add certain volumes of solvent (mostly water or buffer) and end up already with stock solutions of defined concentrations.
The following table shows how to dissolve the content of a vial with water or buffer in order to obtain defined stock solutions:

Concentration of stock solution	Content of vial					
	1 µmol	**5 µmol**	**10 µmol**	**25 µmol**	**50 µmol**	**100 µmol**
	⇓	⇓	⇓	⇓	⇓	⇓
	Water or buffer volumes to be added to achieve stock concentrations on the left					
	⇓	⇓	⇓	⇓	⇓	⇓
100 mM (1×10^{-1} M)	10 µl	50 µl	100 µl	250 µl	500 µl	1 ml
50 mM (5×10^{-2} M)	20 µl	100 µl	200 µl	500 µl	1 ml	2 ml
20 mM (2×10^{-2} M)	50 µl	250 µl	500 µl	1.25 ml	2.5 ml	5 ml
10 mM (1×10^{-2} M)	100 µl	500 µl	1 ml	2.5 ml	5 ml	10 ml
5 mM (5×10^{-3} M)	200 µl	1 ml	2 ml	5 ml	10 ml	20 ml
1 mM (1×10^{-3} M)	1 ml	5 ml	10 ml	25 ml	50 ml	100 ml
500 µM (5×10^{-4} M)	2 ml	10 ml	20 ml	50 ml	100 ml	200 ml

If a typical dilution series (1 mM, 100 µM, 10 µM, 1 µM ...) is prepared, respective final end volumes will be 90% of the starting stock solution. For example: The content of a 10 µmol vial that has been dissolved in 10 ml of water to result in a 1 mM stock solution, yields 9 ml of each concentration level after dilution.

Interested in our experience with nucleotides?

Since we collect scientific data for most of the structures offered, we can assist you with many of your specific questions connected to nucleotide-related compounds. Since our main competence lies in cyclic nucleotide-related issues we can offer here:

- lipophilic ranking of analogues and information about membrane permeability
- phosphodiesterase hydrolysis data
- protein kinase binding, activation and inhibition data
- application references
- potential analogue pitfalls
- selection of suitable structures for respective biological systems

We invite your questions and appreciate hearing about your results and papers related to our products. Confidentiality regarding sensitive matters is, of course, assured. You are encouraged to take advantage of this service regardless whether or not you are already a customer.

**Our products are designed, developed and sold for research purposes only!
They are intended for *in vitro* and nonhuman *in vivo* laboratory applications.
Contents of vials are not sterile and have not been tested for endotoxins.**

Please visit Biolog's new website

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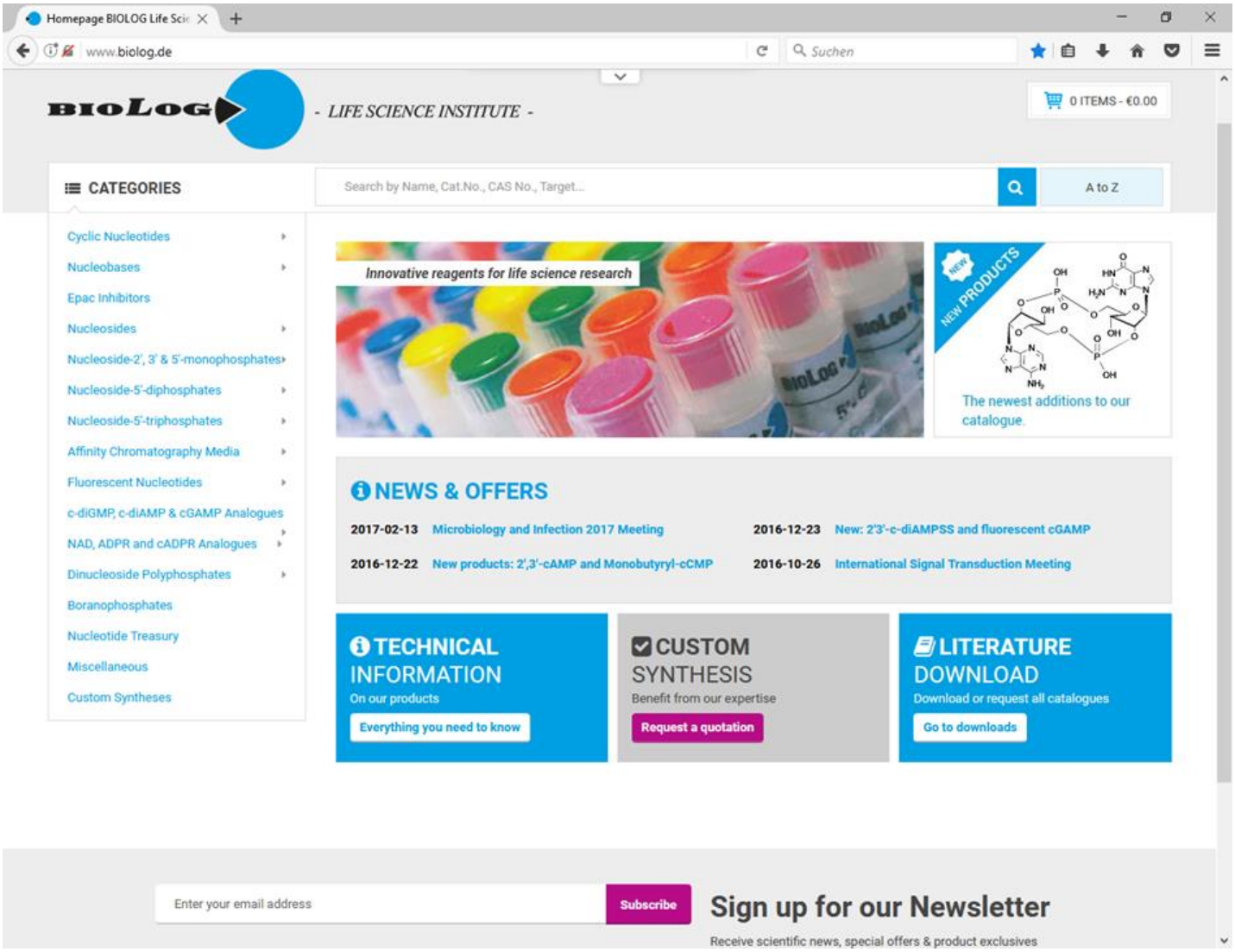
and discover a large variety of rare and sophisticated nucleotide analogues with interesting modifications and useful ligands connected, extended search functions and a convenient shop system

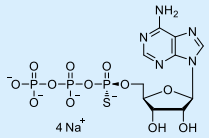


Nucleoside- 5'- O- triphosphates and 5'- O- thiotriphosphates

Product purity is of major importance at Biolog and we take it really seriously. Thus, our triphosphates will only pass quality control with a HPLC purity of **> 98%**. Stored frozen in neutral aqueous solution they degrade only very slowly forming mainly the corresponding di- and tetra-phosphates (traces). Since we have no control over our products once they have been shipped, and in order to be on the safe side we decided to mark all triphosphates with ">95%", although you can usually expect a much higher purity.

Triphosphates with Adenine Nucleobases

A 039



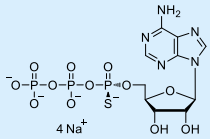
Adenosine- 5'- O- (1- thiotriphosphate), Rp- isomer (Rp-ATP-α-S)

[58976-49-1]; $C_{10}H_{16}N_5O_{12}P_3S$; MW 523.3 (free acid); λ_{max} 259 nm; ε 15200; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Useful for modulation of ATP-responsive receptors and determination of their stereospecificity (Eckstein, *Ann. Rev. Biochem.*, **54**, 367 - 402 (1985)). Competitive inhibitor of adenylate cyclase and substrate for ATPase reaction of gyrase (Cullis et al., *Biochemistry,* **36**, 6059 - 6068 (1997)). Detailed technical information available.

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.6 mg € 135.- (A 039 - 05)	5 x 5 µmol € 571.- (A 039 - 25)	**Inquiries for bulk quantities welcome!**

A 040



Adenosine- 5'- O- (1- thiotriphosphate), Sp- isomer (Sp-ATP-α-S)

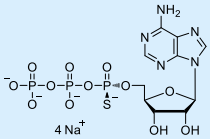
[58976-48-0]; $C_{10}H_{16}N_5O_{12}P_3S$; MW 523.3 (free acid); λ_{max} 259 nm; ε 15200; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Useful for modulation of ATP-responsive receptors and determination of their stereospecificity (Eckstein, *Ann. Rev. Biochem.*, **54**, 367 - 402 (1985)). Increased metabolic stability compared to ATP. Accepted by RNA polymerase for incorporation of phosphorothioate into RNA. Detailed technical information available.

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.6 mg € 128.- (A 040 - 05)	5 x 5 µmol € 545.- (A 040 - 25)	**Inquiries for bulk quantities welcome!**

A 060

High Purity !



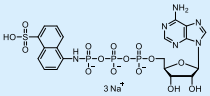
Adenosine- 5'- O- (3- thiotriphosphate) (ATP-γ-S)

[88453-52-5]; $C_{10}H_{16}N_5O_{12}P_3S$; MW 523.3 (free acid); λ_{max} 259 nm; ε 15200; sodium salt. High purity > 95% HPLC.
For other salt forms please inquire. ATP analogue with increased metabolic stability. Useful for inhibition or activation of ATP-responsive receptors and determination of their stereospecificity, for thiophosphorylation of proteins, for modification with SH-reactive reporters or for connection to structures with SH-groups via a disulfide bond. Detailed technical information available. References: Chrysogelos et al., *J. Biol. Chem.*, **258**, 12624 - 12631 (1983); Allen et al., *J. Am. Chem. Soc.*, **127**, 5288 - 5289 (2005).

Vial containing 500 µl of 10 mM aqueous solution of pH 8.5. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.6 mg € 108.- (A 060 - 05)	5 x 5 µmol € 375.- (A 060 - 25)	**Inquiries for bulk quantities welcome!**

A 176



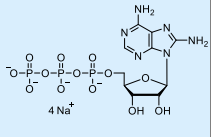
Adenosine- 5'- O- triphosphoro- γ- 1- (5- sulfonic acid)naphthylamidate (ATP-γ-AmNS)

[66492-86-2]; $C_{20}H_{23}N_6O_{15}P_3S$; MW 712.4 (free acid); λ_{max} 246 nm; ε 31000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. ATP-γ-AmNS is a fluorescent analogue of ATP with λ_{em} 460 nm (quantum yield = 0.63). Upon cleavage of the α-β-phosphoryl bond the emission maximum shifts to 475 nm. Detailed technical information available. References: Yarbrough, *Biochem. Biophys. Res. Comm.*, **81**, 35 - 41 (1978); Yarbrough & Bock, *J. Biol. Chem.*, **255**, 9907 - 9911 (1980).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3.6 mg € 295.- (A 176 - 05)	5 x 5 µmol € 1,211.- (A 176 - 25)

A 115



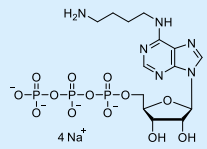
8- Aminoadenosine- 5'- O- triphosphate (8-NH_2-ATP)

[35874-49-8]; $C_{10}H_{17}N_6O_{13}P_3$; MW 522.2 (free acid); λ_{max} 273 nm; ε 16400 (pH 11); sodium salt; purity > 95% HPLC. For other salt forms or higher purity please inquire. Analogue of adenosine-5'-triphosphate suitable for receptor mapping purposes. Active metabolite of the cytotoxic nucleoside 8-aminoadenosine. The corresponding diphosphate form is offered as well (8-NH_2-ADP, Cat. No. A 144). Detailed technical information available. References: Chen & Sheppard, *J. Biol. Chem.*, **279**, 40405 - 40411 (2004); Frey & Ghandi, *Mol. Cancer Ther.*, **9**, 236 - 245 (2010).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.6 mg € 229.- (A 115 - 05)	5 x 5 µmol € 970.- (A 115 - 25)

A 074 ❄



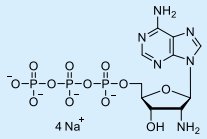
N^6- (4- Aminobutyl)adenosine- 5'- O- triphosphate (6-AB-ATP)

[280577-98-2]; $C_{14}H_{25}N_6O_{13}P_3$; MW 578.3 (free acid); λ_{max} 268 nm; ε 16000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Ligand for affinity chromatography and suitable for modification with fluorophores and other markers. Detailed technical information available. For reference compare: Trayer et al., *Biochem. J.*, **139**, 609 - 623 (1974).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.9 mg € 169.- (A 074 - 05)	5 x 5 µmol € 716.- (A 074 - 25)

A 113 ❄



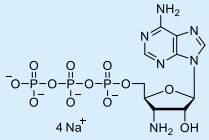
2'- Amino- 2'- deoxyadenosine- 5'- O- triphosphate (2'-NH_2-ATP)

[61468-88-0]; $C_{10}H_{17}N_6O_{12}P_3$; MW 506.2 (free acid); λ_{max} 259 nm; ε 15000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Ligand for affinity chromatography and suitable for modification with fluorophores and other markers. Detailed technical information available. Reference: Watanabe et al., *J. Biochem.*, **90**, 957 - 965 (1981).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.5 mg € 272.- (A 113 - 05)	5 x 5 µmol € 1,116.- (A 113 - 25)

A 114 ❄



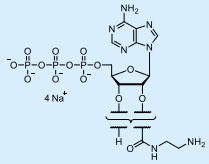
3'- Amino- 3'- deoxyadenosine- 5'- O- triphosphate (3'-NH_2-ATP)

[4209-30-7]; $C_{10}H_{17}N_6O_{12}P_3$; MW 506.2 (free acid); λ_{max} 259 nm; ε 15000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Putative RNA polymerase inhibitor, ligand for affinity chromatography and suitable for modification with fluorophores and other markers. Detailed technical information available. References: Truman & Klenow, *Mol. Pharmacol.*, **4**, 77 - 86 (1968); Fraser & Rich, *Proc. Nat. Acad. Sci. USA*, **70**, 2671 - 2675 (1973); Kinoshita & Nishigaki, *J. Biochem.*, **122**, 205 - 211 (1997).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.5 mg € 298.- (A 114 - 05)	5 x 5 µmol € 1,222.- (A 114 - 25)

A 072 ❄



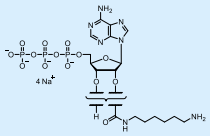
2'- / 3'- O- (2- Aminoethylcarbamoyl)adenosine- 5'- O- triphosphate (2'-/3'-AEC-ATP / EDA-ATP)

[173074-70-9]; $C_{13}H_{22}N_7O_{14}P_3$; MW 593.3 (free acid); λ_{max} 259 nm; ε 15000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Ligand for affinity chromatography and suitable for modification with fluorophores and other markers. Detailed technical information available. References: Oiwa et al., *J. Biochem.*, **123**, 614 - 618 (1998); Webb & Corrie, *Biophys. J.*, **81**, 1562 - 1569 (2001).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3 mg € 164.- (A 072 - 05)	5 x 5 µmol € 692.- (A 072 - 25)	**Inquiries for bulk quantities welcome!**

A 189 ❄



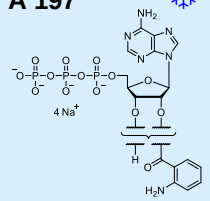
2'- / 3'- O- (6- Aminohexylcarbamoyl)adenosine- 5'- O- triphosphate (2'-/3'-AHC-ATP)

$C_{17}H_{30}N_7O_{14}P_3$; MW 649.4 (free acid); λ_{max} 259 nm; ε 15000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Ligand for affinity chromatography and suitable for modification with fluorophores and other markers. Detailed technical information available.

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3.2 mg € 164.- (A 189 - 05)	5 x 5 µmol € 692.- (A 189 - 25)

A 197 ❄



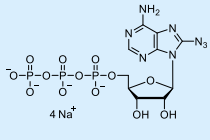
2'- / 3'- O- Anthraniloyladenosine- 5'- O- triphosphate (ANT-ATP)

[289633-56-3]; $C_{17}H_{21}N_6O_{14}P_3$; MW 626.3 (free acid); λ_{max} 252 nm; ε 20200; sodium salt; purity > 95% HPLC.
For other salt forms please inquire. Fluorescent analogue of adenosine-5'-triphosphate (λ_{exc} 332 nm; λ_{em} 421 nm), useful for research into ATP-dependent receptor proteins. The ANT fluorophore has a certain sensitivity for its environment and can change its spectral properties upon binding. Detailed technical information available. Reference: Hiratsuka, *Biochim. Biophys. Acta*, **742**, 496 - 508 (1983).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3.1 mg € 196.- (A 197 - 05)	5 x 5 µmol € 831.- (A 197 - 25)

A 043 ❄



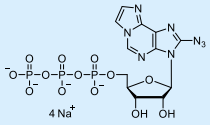
8- Azidoadenosine- 5'- O- triphosphate (8-N_3-ATP)

[53696-59-6]; $C_{10}H_{15}N_8O_{13}P_3$; MW 548.2 (free acid); λ_{max} 281 nm; ε 13000 (pH 6); sodium salt; purity > 95% HPLC.
For other salt forms please inquire. Useful for photoaffinity labelling of ATP binding proteins and for incorporation into RNA for labelling purposes. Detailed technical information available. References: Haley & Hoffmann, *Proc. Nat. Acad. Sci. USA*, **71**, 3367 - 3371 (1974); Potter & Haley, *Methods Enzymol.*, **91**, 613 - 633 (1983).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.7 mg € 113.- (A 043 - 05)	5 x 5 µmol € 395.- (A 043 - 25)

A 211



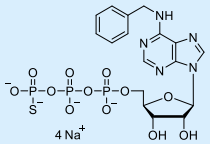
8- Azido- 1, N^6- ethenoadenosine- 5'- O- triphosphate (8-N_3-ε-ATP)

[66895-05-4]; $C_{12}H_{15}N_8O_{13}P_3$; MW 572.2 (free acid); λ_{max} 290 nm; ε 10000 (pH 6); sodium salt; purity > 95% HPLC.
For other salt forms please inquire. 8-N_3-ε-ATP combines the photosensitive activity of 8-N_3-ATP (Cat. No. A 043) and the fluorescent properties of ε-ATP (Cat. No. E 004). It is useful for photoaffinity labelling of ATP binding proteins and subsequent detection of the fluorescent label (λ_{exc} 285 nm, λ_{em} 412 nm). Alternatively, detection may be achievable by using an ethenoadenosine-specific antibody (1G4, compare: Krebs et al., *Anal. Biochem.*, **314**, 108 - 115 (2003)). Detailed technical information available. References: Schäfer et al., *Anal. Biochem.*, **104**, 106 - 111 (1980); Schäfer et al., *Nucleic Acids Res.*, **5**, 1345 - 1351 (1978).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.7 mg € 207.- (A 043 - 05)	5 x 5 µmol € 880.- (A 043 - 25)

B 072



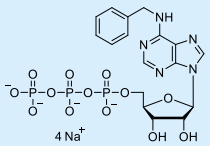
N^6- Benzyladenosine- 5'- O- (3- thiotriphosphate) (6-Bn-ATP-γ-S)

[944834-42-8]; $C_{17}H_{22}N_5O_{12}P_3S$; MW 613.4 (free acid); λ_{max} 269 nm; ε 20500; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire.
Analogue useful for specific interaction with modified receptor proteins (chemical genetics approach). 6-cHe-ATP-γ-S (Cat. No. C 127), 6-cPe-ATP-γ-S (Cat. No. C 116), 6-Fu-ATP-γ-S (Cat. No. F 008), 6-(1-MeBu)-ATP-γ-S (Cat. No. M 074), 6-PhEt-ATP-γ-S (Cat. No. P 026) and 6-Phe-ATP-γ-S (Cat. No P 044) are available as well. Detailed technical information available. References: Allen et al., *Nature Meth.*, **4**, 511 - 516 (2007) & *J. Am. Chem. Soc.*, **127**, 5288 - 5289 (2005); Blethrow et al., *Proc. Nat. Acad. Sci. USA*, **105**, 1442 - 1447 (2008).

Vial containing 500 µl of 10 mM aqueous solution of pH 8.5. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3.1 mg € 336.- (B 072 - 05)	5 x 5 µmol € 1,428.- (B 072 - 25)

B 024



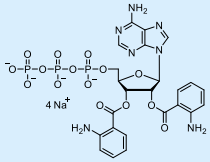
N^6- Benzyladenosine- 5'- O- triphosphate (6-Bn-ATP)

[40922-97-2]; $C_{17}H_{22}N_5O_{13}P_3$; MW 597.3 (free acid); λ_{max} 269 nm; ε 20500; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire.
Analogue useful for specific interaction with modified receptor proteins (chemical genetics approach). The corresponding diphosphate (Cat. No. B 023) is offered as well. Detailed technical information available. Reference: Gillespie et al., *J. Biol. Chem.*, **274**, 31373 - 31381 (1999).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3 mg € 272.- (B 024 - 05)	5 x 5 µmol € 1,116.- (B 024 - 25)

B 090



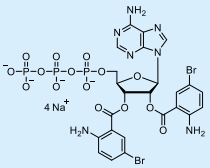
2', 3'- O- (Bis- anthraniloyl)adenosine- 5'- O- triphosphate (Bis-ANT-ATP)

$C_{24}H_{26}N_7O_{15}P_3$; MW 745.4 (free acid); λ_{max} 250 nm; ε 20200; sodium salt; purity > 95% HPLC.
For other salt forms please inquire. Analogue of adenosine-5'-triphosphate with only moderate intrinsic fluorescence (λ_{exc} 337 nm; λ_{em} 423 nm), increasing considerably within hydrophobic environment. Useful for research into ATP-dependent receptor proteins. Detailed technical information available. For references compare: Hiratsuka, *Biochim. Biophys. Acta*, **742**, 496 - 508 (1983); Taha et al., *Naunyn-Schmiedeberg's Arch. Pharmacol.*, **385**, 57 - 68 (2012).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3.7 mg € 212.- (B 090 - 05)	5 x 5 µmol € 901.- (B 090 - 25)

B 111



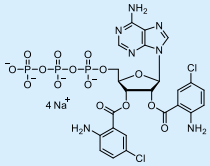
2', 3'- O- (Bis- [5- bromoanthraniloyl])adenosine- 5'- O- triphosphate (Bis-Br-ANT-ATP)

[1350460-91-1]; $C_{24}H_{24}Br_2N_7O_{15}P_3$; MW 903.2 (free acid); λ_{max} 255 nm; ε 14600; sodium salt; purity > 95% HPLC.
For other salt forms please inquire. Analogue of adenosine-5'-triphosphate with only moderate intrinsic fluorescence (λ_{exc} 358 nm; λ_{em} 439 nm), increasing considerably within hydrophobic environment. Useful for research into ATP-dependent receptor proteins. Detailed technical information available. Reference: Geduhn et al., *J. Pharmacol. Exp. Ther.*, **336**, 104 - 115 (2011).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~4.5 mg € 212.- (B 111 - 05)	5 x 5 µmol € 901.- (B 111 - 25)

B 091



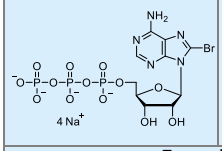
2', 3'- O- (Bis- [5- chloroanthraniloyl])adenosine- 5'- O- triphosphate (Bis-Cl-ANT-ATP)

[1350460-89-7]; $C_{24}H_{24}Cl_2N_7O_{15}P_3$; MW 814.3 (free acid); λ_{max} 255 nm; ε 16200; sodium salt; purity > 95% HPLC.
For other salt forms please inquire. Analogue of adenosine-5'-triphosphate with only moderate intrinsic fluorescence (λ_{exc} 367 nm; λ_{em} 437 nm), increasing considerably within hydrophobic environment. Useful for research into ATP-dependent receptor proteins. Detailed technical information available. Reference: Geduhn et al., *J. Pharmacol. Exp. Ther.*, **336**, 104 - 115 (2011).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~4.1 mg € 212.- (B 091 - 05)	5 x 5 µmol € 901.- (B 091 - 25)

B 068



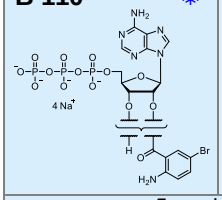
8- Bromoadenosine- 5'- O- triphosphate (8-Br-ATP)

[23567-97-7]; $C_{10}H_{15}BrN_5O_{13}P_3$; MW 586.1 (free acid); λ_{max} 264 nm; ε 17000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Analogue of ATP with changed syn/anti ratio for receptor mapping studies and starting structure for 8-modified ATP derivatives. Detailed technical information available. References: Kwiatkowski & King, *Biochemistry*, **26**, 7636 - 7640 (1987); Maruta et al., *Eur. J. Biochem.*, **256**, 229 - 237 (1998).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.9 mg € 52.- (B 068 - 05)	5 x 5 µmol € 220.- (B 068 - 25)

B 110



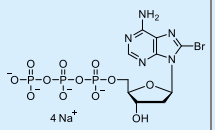
2'- / 3'- O- (5- Bromoanthraniloyl)adenosine- 5'- O- triphosphate (Br-ANT-ATP)

[1350521-49-1]; $C_{17}H_{20}BrN_6O_{14}P_3$; MW 705.2 (free acid); λ_{max} 256 nm; ε 16400; sodium salt; purity > 95% HPLC.
For other salt forms please inquire. Analogue of adenosine-5'-triphosphate with only moderate intrinsic fluorescence (λ_{exc} 346 nm; λ_{em} 426 nm), increasing considerably within hydrophobic environment. Useful for research into ATP-dependent receptor proteins. Detailed technical information available. Reference: Geduhn et al., *J. Pharmacol. Exp. Ther.*, **336**, 104 - 115 (2011).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3.5 mg € 212.- (B 110 - 05)	5 x 5 µmol € 901.- (B 110 - 25)

B 069



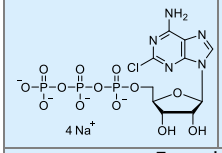
8- Bromo- 2'- deoxyadenosine- 5'- O- triphosphate (8-Br-dATP)

[92410-99-6]; $C_{10}H_{15}BrN_5O_{12}P_3$; MW 570.1 (free acid); λ_{max} 264 nm; ε 17000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Analogue of dATP with changed syn/anti ratio for receptor mapping studies and starting structure for 8-modified dATP derivatives. Detailed technical information available. References: Amarnath et al., *Biochim. Biophys. Acta*, **800**, 207 - 213 (1984); Kamiya et al., *J. Mol. Biol.*, **336**, 843 - 850 (2004).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.9 mg € 87.- (B 069 - 05)	5 x 5 µmol € 369.- (B 069 - 25)

C 039



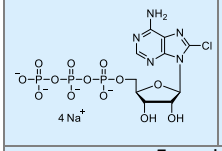
2- Chloroadenosine- 5'- O- triphosphate (2-Cl-ATP)

[49564-60-5]; $C_{10}H_{15}ClN_5O_{13}P_3$; MW 541.6 (free acid); λ_{max} 262 nm; ε 14300; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. P2Y purinoceptor agonist. Inhibits soluble guanylate cyclase. Detailed technical information available. Reference: Ruiz-Stewart et al., *Eur. J. Biochem.*, **269**, 2186 - 2193 (2002).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.7 mg € 164.- (C 039 - 05)	5 x 5 µmol € 692.- (C 039 - 25)

C 018



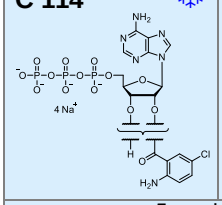
8- Chloroadenosine- 5'- O- triphosphate (8-Cl-ATP)

[185341-71-3]; $C_{10}H_{15}ClN_5O_{13}P_3$; MW 541.6 (free acid); λ_{max} 262 nm; ε 17000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Corresponding triphosphate for research on 8-chloro cyclic AMP (Cat. No. C 007) and 8-Cl-adenosine (Cat. No. C 006), respectively. Detailed technical information available. References: Tagliaferri et al., *Cancer Res.*, **48**, 1642 - 1650 (1988); Gandhi et al., *Cancer Res.*, **61**, 5474 - 5479 (2001).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.7 mg € 169.- (C 018 - 05)	5 x 5 µmol € 716.- (C 018 - 25)

C 114



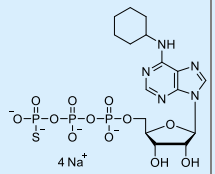
2'- / 3'- O- (5- Chloroanthraniloyl)adenosine- 5'- O- triphosphate (Cl-ANT-ATP)

[1350521-45-7]; $C_{17}H_{20}ClN_6O_{14}P_3$; MW 660.8 (free acid); λ_{max} 255 nm; ε 16000; sodium salt; purity > 95% HPLC.
For other salt forms please inquire. Analogue of adenosine-5'-triphosphate with only moderate intrinsic fluorescence (λ_{exc} 349 nm; λ_{em} 432 nm), increasing considerably within hydrophobic environment. Useful for research into ATP-dependent receptor proteins. Detailed technical information available. Reference: Geduhn et al., *J. Pharmacol. Exp. Ther.*, **336**, 104 - 115 (2011).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3.3 mg € 212.- (C 114 - 05)	5 x 5 µmol € 901.- (C 114 - 25)

C 127



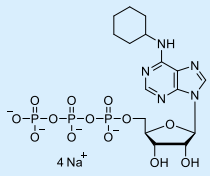
N^6- Cyclohexyladenosine- 5'- O- (3- thiotriphosphate) (6-cHe-ATP-γ-S)

$C_{16}H_{26}N_5O_{12}P_3S$; MW 605.4 (free acid); λ_{max} 270 nm; ε 19900; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Analogue useful for specific interaction with modified receptor proteins (chemical genetics approach). 6-Bn-ATP-γ-S (Cat. No. B 072), 6-cPe-ATP-γ-S (Cat. No. C 116), 6-Fu-ATP-γ-S (Cat. No. F 008), 6-(1-MeBu)-ATP-γ-S (Cat. No. M 074), 6-PhEt-ATP-γ-S (Cat. No. P 026) and 6-Phe-ATP-γ-S (Cat. No P 044) are available as well. Detailed technical information available. For information on related compounds as well as on the "chemical genetics approach" compare: Allen et al., *J. Am. Chem. Soc.*, **127**, 5288 - 5289 (2005); Allen et al., *Nature Meth.*, **4**, 511 - 516 (2007); Lo and Hollingsworth, *Methods Mol. Biol.*, **745**, 135 - 149 (2011).

Vial containing 500 µl of 10 mM aqueous solution of pH 8.5. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3 mg € 348.- (C 127 - 05)	5 x 5 µmol € 1,428.- (C 127 - 25)

C 084



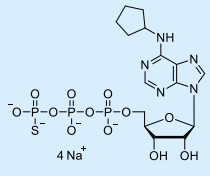
N^6- Cyclohexyladenosine- 5'- O- triphosphate (6-cHe-ATP)

[206978-73-6]; $C_{16}H_{26}N_5O_{13}P_3$; MW 589.3 (free acid); λ_{max} 270 nm; ε 19900; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Analogue useful for specific interaction with modified receptor proteins (chemical genetics approach). The corresponding diphosphate (Cat. No. C 085) is offered as well. Detailed technical information available. References: Liu et al., *Chemistry & Biology*, **5**, 91 - 101 (1998); Kapoor & Mitchison, *Proc. Nat. Acad. Sci. USA*, **96**, 9106 - 9111 (1999).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.9 mg € 272.- (C 084 - 05)	5 x 5 µmol € 1,116.- (C 084 - 25)

C 116



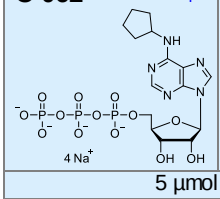
N^6- Cyclopentyladenosine- 5'- O- (3- thiotriphosphate) (6-cPe-ATP-γ-S)

$C_{15}H_{24}N_5O_{12}P_3S$; MW 591.4 (free acid); λ_{max} 270 nm; ε 19900; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Analogue useful for specific interaction with modified receptor proteins (chemical genetics approach). 6-Bn-ATP-γ-S (Cat. No. B 072), 6-cHe-ATP-γ-S (Cat. No. C 127), 6-Fu-ATP-γ-S (Cat. No. F 008), 6-(1-MeBu)-ATP-γ-S (Cat. No. M 074), 6-PhEt-ATP-γ-S (Cat. No. P 026) and 6-Phe-ATP-γ-S (Cat No P 044) are available as well. For information on related compounds as well as on the "chemical genetics approach" compare: Allen et al., *J. Am. Chem. Soc.*, **127**, 5288 - 5289 (2005); Allen et al., *Nature Meth.*, **4**, 511 - 516 (2007).

Vial containing 500 µl of 10 mM aqueous solution of pH 8.5. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3 mg € 348.- (C 116 - 05)	5 x 5 µmol € 1,428.- (C 116 - 25)

C 062



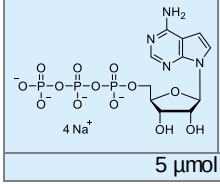
N^6- Cyclopentyladenosine- 5'- O- triphosphate (6-cPe-ATP)

[189822-11-5]; $C_{15}H_{24}N_5O_{13}P_3$; MW 575.3 (free acid); λ_{max} 270 nm; ε 19900; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Analogue useful for specific interaction with modified receptor proteins (chemical genetics approach). The corresponding diphosphate (Cat. No. C 061) is offered as well. Detailed technical information available. Reference: Gillespie et al., *J. Biol. Chem.*, **274**, 31373 - 31381 (1999).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.9 mg € 272.- (C 062 - 05)	5 x 5 µmol € 1,116.- (C 062 - 25)

D 096



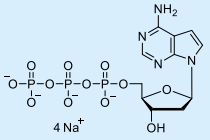
7- Deazaadenosine- 5'- O- triphosphate (7-CH-ATP)

[10058-66-9]; $C_{11}H_{17}N_4O_{13}P_3$; MW 506.2 (free acid); λ_{max} 269 nm; ε 12000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Isosteric modification of ATP. Causes bending of corresponding oligonucleotides. Detailed technical information available. References: Petrescu et al., *Biochemistry*, **21**, 886 - 893 (1982); Wieczorek et al., *Bioorg. Med. Chem. Lett.*, **4**, 987 - 994 (1994).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.5 mg € 319.- (D 096 - 05)	5 x 5 µmol € 1,309.- (D 096 - 25)

D 033



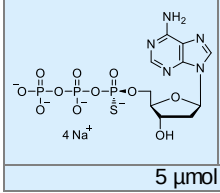
7- Deaza- 2'- deoxyadenosine- 5'- O- triphosphate (7-CH-dATP)

[67460-15-5]; $C_{11}H_{17}N_4O_{12}P_3$; MW 490.2 (free acid); λ_{max} 269 nm; ε 12000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Isosteric modification of dATP. Causes bending of corresponding oligonucleotides. Detailed technical information available. Reference: Seela et al., *Biochemistry,* **28**, 6193 - 6198 (1989).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.5 mg € 319.- (D 033 - 05)	5 x 5 µmol € 1,309.- (D 033 - 25)

D 006



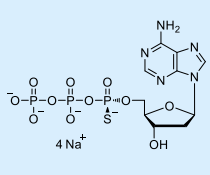
2'- Deoxyadenosine- 5'- O- (1- thiotriphosphate), Rp- isomer (Rp-dATP-α-S)

[87358-15-4]; $C_{10}H_{16}N_5O_{11}P_3S$; MW 507.3 (free acid); λ_{max} 259 nm; ε 15200; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Useful for modulation of dATP-responsive receptors and determination of their stereospecificity. Increased metabolic stability compared to dATP. Not accepted by DNA polymerase. Detailed technical information available. Reference: Romaniuk et al., *J. Biol. Chem.*, **257**, 7684 - 7688 (1982).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.5 mg € 199.- (D 006 - 05)	5 x 5 µmol € 845.- (D 006 - 25)

D 007



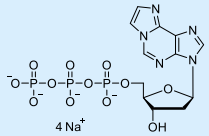
2'- Deoxyadenosine- 5'- O- (1- thiotriphosphate), Sp- isomer (Sp-dATP-α-S)

[80875-87-2]; $C_{10}H_{16}N_5O_{11}P_3S$; MW 507.3 (free acid); λ_{max} 259 nm; ε 15200; sodium salt; purity > 98% HPLC.
For other salt forms please inquire. Useful for modulation of dATP-responsive receptors and determination of their stereospecificity. Increased metabolic stability compared to dATP. Accepted by DNA polymerase for incorporation of phosphorothioate into DNA. Detailed technical information available. Reference: Eckstein et al., *Methods Enzymol.*, **262**, 189 - 202 (1995). Useful for pyrosequencing techniques: Ronaghi et al., *Science,* **281**, 363 - 365 (1998); Gharizadeh et al., *Anal. Biochem.*, **301**, 82 - 90 (2002).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.5 mg € 174.- (D 007 - 05)	5 x 5 µmol € 738.- (D 007 - 25)	**Inquiries for bulk quantities welcome!**

D 078 ❄



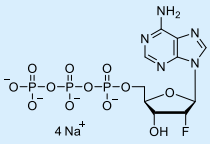
2'- Deoxy- 1, N⁶- ethenoadenosine- 5'- O- triphosphate (ε-dATP)

[81004-54-8]; $C_{12}H_{16}N_5O_{12}P_3$; MW 515.2 (free acid); λ_{max} 275 nm; ε 6000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Fluorescent dATP analogue; λ_{exc} 300 nm, λ_{em} 415 nm. Detailed technical information available. Reference: Revich et al., *Carcinogenesis*, **7**, 1569 - 1576 (1986).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.6 mg € 130.- (D 078 - 05)	5 x 5 µmol € 555.- (D 078 - 25)	**Inquiries for bulk quantities welcome!**

D 074 ❄



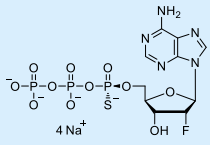
2'- Deoxy- 2'- fluoroadenosine- 5'- O- triphosphate (2'-F-ATP)

[73449-07-7]; $C_{10}H_{15}FN_5O_{12}P_3$; MW 509.2 (free acid); λ_{max} 259 nm; ε 15000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Analogue of ATP for receptor mapping. 2'-F-ATP can substitute for dATP using DNA polymerase α and γ, but not DNA polymerase β. Detailed technical information available. References: Parker et al., *Mol. Pharmacol*., **34**, 485 - 491 (1988); Ono et al., *Nucleic Acids Res*., **25**, 4581 - 4588 (1997); Richardson et al., *Biochem. Pharmacol*., **59**, 1045 - 1052 (2000).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.5 mg € 269.- (D 074 - 05)	5 x 5 µmol € 1,105.- (D 074 - 25)

D 220 ❄



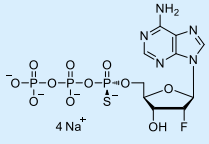
2'- Deoxy- 2'- fluoroadenosine- 5'- O- (1- thiotriphosphate), Rp- isomer (Rp-2'-F-dATP-α-S)

$C_{10}H_{15}FN_5O_{11}P_3S$; MW 525.3 (free acid); λ_{max} 259 nm; ε 15000; sodium salt; purity > 95% HPLC.
For other salt forms or a guaranteed higher purity please inquire. Rp-2'-F-dATP-α-S is supposed to have increased metabolic stability compared to its parent compound dATP.

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.6 mg € 348.- (D 220 - 05)	5 x 5 µmol € 1,428.- (D 220 - 25)

D 219 ❄



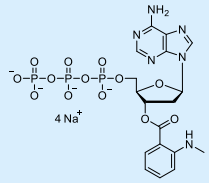
2'- Deoxy- 2'- fluoroadenosine- 5'- O- (1- thiotriphosphate), Sp- isomer (Sp-2'-F-dATP-α-S)

$C_{10}H_{15}FN_5O_{11}P_3S$; MW 525.3 (free acid); λ_{max} 259 nm; ε 15000; sodium salt; purity > 95% HPLC.
For other salt forms or a guaranteed higher purity please inquire. Sp-2'-F-dATP-α-S is supposed to have increased metabolic stability compared to its parent compound dATP.

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.6 mg € 348.- (D 219 - 05)	5 x 5 µmol € 1,428.- (D 219 - 25)

D 085 ❄



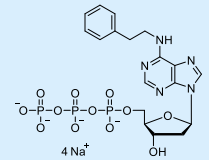
2'- Deoxy- 3'- O- (N'- methylanthraniloyl)adenosine- 5'- O- triphosphate (MANT-dATP)

[128113-53-1]; $C_{18}H_{23}N_6O_{13}P_3$; MW 624.3 (free acid); λ_{max} 255 nm (pH 8); ε 23300; sodium salt; purity > 95% HPLC. For other salt forms please inquire. Fluorescent analogue of 2'-deoxyadenosine-5'-triphosphate (λ_{exc} 350 nm; λ_{em} 446 nm), useful for research into dATP-dependent receptor proteins. The MANT fluorophore has a certain sensitivity for its environment and can change its spectral properties upon binding (compare: Hiratsuka, *Biochim. Biophys. Acta*, **742**, 496 - 508 (1983)). Detailed technical information available. Reference: Nomanbhoy & Schimmel, *Bioorg. Med. Chem. Lett*., **11**, 1485 - 1491 (2001).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3.1 mg € 130.- (D 085 - 05)	5 x 5 µmol € 555.- (D 085 - 25)

D 104 ❄



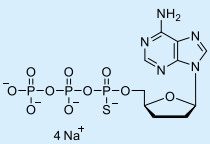
2'- Deoxy- N⁶- (2- phenylethyl)adenosine- 5'- O- triphosphate (6-PhEt-dATP)

[1239610-11-7]; $C_{18}H_{24}N_5O_{12}P_3$; MW 595.3 (free acid); λ_{max} 269 nm; ε 20500; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Potentiates activity of disease-associated CFTR channel mutants. Detailed technical information available. References: Miki et al., *J. Biol. Chem*., **285**, 19967 - 19975 (2010); Jih et al., *J. Physiol.*, **589**, 2719 - 2731 (2011).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3 mg € 272.- (D 104 - 05)	5 x 5 µmol € 1,116.- (D 104 - 25)

D 026 ❄



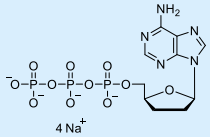
2', 3'- Dideoxyadenosine- 5'- O- (1- thiotriphosphate) (ddATP-α-S)

[154902-26-8]; $C_{10}H_{16}N_5O_{10}P_3S$; MW 491.3 (free acid); λ_{max} 259 nm; ε 15200; sodium salt; purity > 95% HPLC for mixture of Rp-/Sp-isomers. For other salt forms or higher purity please inquire. Useful in mass spectrometric genotyping. Detailed technical information available. Reference: Sauer et al., *Nucleic Acids Res*., **28** (5), e13 (2000).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.5 mg € 202.- (D 026 - 05)	5 x 5 µmol € 859.- (D 026 - 25)

D 018



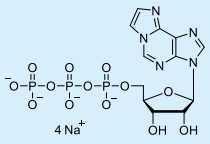
2', 3'- Dideoxyadenosine- 5'- O- triphosphate (ddATP)

[132619-65-9]; $C_{10}H_{16}N_5O_{11}P_3$; MW 475.2 (free acid); λ_{max} 259 nm; ε 15000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Inhibits DNA polymerase I- dependent chain elongation.
Detailed technical information available. Reference: Sanger et al., *Proc. Natl. Acad. Sci. USA*, **74**, 5463 - 5467 (1977).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.4 mg € 118.- (D 018 - 05)	5 x 5 µmol € 444.- (D 018 - 25)	**Inquiries for bulk quantities welcome!**

E 004



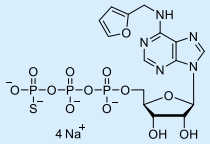
1, N^6- Ethenoadenosine- 5'- O- triphosphate (ε-ATP)

[60777-99-3]; $C_{12}H_{16}N_5O_{13}P_3$; MW 531.2 (free acid); λ_{max} 275 nm; ε 6000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Fluorescent ATP analogue; λ_{exc} 300 nm, λ_{em} 415 nm. Detailed technical information available. References: Shahak et al., *FEBS Lett.*, **33**, 293 - 296 (1973); Leonard, N.J., *CRC Crit. Reviews Biochem.*, **15**, 125 - 199 (1983); Kinoshita & Nishigaki, *J. Biochem.*, **122**, 205 - 211 (1997).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.7 mg € 52.- (E 004 - 05)	5 x 5 µmol € 181.- (E 004 - 25)	**Inquiries for bulk quantities welcome!**

F 008



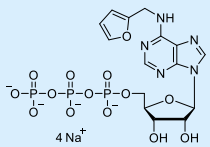
N^6- Furfuryladenosine- 5'- O- (3- thiotriphosphate) (6-Fu-ATP-γ-S)

[1400539-83-4]; $C_{15}H_{20}N_5O_{13}P_3S$; MW 603.3 (free acid); λ_{max} 267 nm; ε 20500; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Analogue useful for specific interaction with modified receptor proteins (chemical genetics approach). 6-Bn-ATP-γ-S (Cat. No. B 072), 6-cHe-ATP-γ-S (Cat. No. C 127), 6-cPe-ATP-γ-S (Cat. No. C 116), 6-(1-MeBu)-ATP-γ-S (Cat. No. M 074), 6-PhEt-ATP-γ-S (Cat. No. P 026) and 6-Phe-ATP-γ-S (Cat. No P 044) are offered as well. Detailed technical information available. For information on related compounds as well as on the "chemical genetics approach" compare: Allen et al., *J. Am. Chem. Soc.*, **127**, 5288 - 5289 (2005); Allen et al., *Nature Meth.*, **4**, 511 - 516 (2007); Lo and Hollingsworth, *Methods Mol. Biol.*, **745**, 135 - 149 (2011).

Vial containing 500 µl of 10 mM aqueous solution of pH 8.5. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3 mg € 348.- (F 008 - 05)	5 x 5 µmol € 1,428.- (F 008 - 25)

F 007



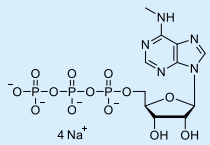
N^6- Furfuryladenosine- 5'- O- triphosphate (6-Fu-ATP)

$C_{15}H_{20}N_5O_{14}P_3$; MW 587.3 (free acid); λ_{max} 267 nm; ε 20500; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Analogue of ATP that may be useful for specific interaction with modified receptor proteins (chemical genetics approach). The corresponding diphosphate 6-Fu-ADP is offered as well (Cat. No. F 006). Detailed technical information available. For information on related compounds as well as on the "chemical genetics approach" compare: Shah et al., *Proc. Natl. Acad. Sci. USA*, **94**, 3565 - 3570 (1997); Ulrich et al., *Biochemistry*, **42**, 7915 - 7921 (2003).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.9 mg € 272.- (F 007 - 05)	5 x 5 µmol € 1,116.- (F 007 - 25)

M 039



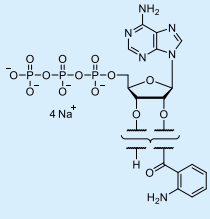
N^6- Methyladenosine- 5'- O- triphosphate (6-Me-ATP)

[3130-39-0]; $C_{11}H_{18}N_5O_{13}P_3$; MW 521.2 (free acid); λ_{max} 265 nm; ε 18000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Modulator of P2Y receptors.
Detailed technical information available. Reference: Burnstock et al., *Drug Dev. Res.*, **31**, 206 - 219 (1994).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.6 mg € 186.- (M 039 - 05)	5 x 5 µmol € 792.- (M 039 - 25)

M 030



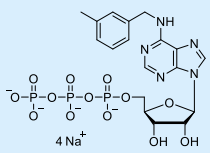
2'- / 3'- O- (N'- Methylanthraniloyl)adenosine- 5'- O- triphosphate (MANT-ATP)

[151481-86-6]; $C_{18}H_{23}N_6O_{14}P_3$; MW 640.3 (free acid); λ_{max} 255 nm (pH 8); ε 23300; sodium salt; purity > 95% HPLC.
For other salt forms please inquire. Fluorescent analogue of adenosine-5'-triphosphate (λ_{exc} 350 nm; λ_{em} 446 nm), useful for research into ATP-dependent receptor proteins. The MANT fluorophore has a certain sensitivity for its environment and can change its spectral properties upon binding. Detailed technical information available. References: Hiratsuka, *Biochim. Biophys. Acta*, **742**, 496 - 508 (1983); Woodward et al., *Biochemistry*, **30**, 422 - 430 (1991); Mocz et al., *Biochemistry*, **37**, 9862 - 9869 (1998). Potent inhibitor of adenylate cyclase (Mou et al., *J. Biol. Chem.*, **280**, 7253 - 7261 (2001)).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3.2 mg € 196.- (M 030 - 05)	5 x 5 µmol € 831.- (M 030 - 25)	**Inquiries for bulk quantities welcome!**

M 025 ❄



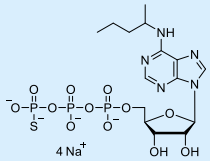
N^6- (3- Methylbenzyl)adenosine- 5'- O- triphosphate (6-(3-MeBn)-ATP)

[215321-95-2]; $C_{18}H_{24}N_5O_{13}P_3$; MW 611.3 (free acid); λ_{max} 269 nm; ε 20500; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Analogue useful for specific interaction with modified receptor proteins (chemical genetics approach). The corresponding diphosphate (Cat. No. M 024) is offered as well. Detailed technical information available. References: Liu et al., *Bioorg. Med. Chem.*, **6**, 1219 - 1226 (1998); Gillespie et al., *J. Biol. Chem.*, **274**, 31373 - 31381 (1999); Liu et al., *Biochemistry*, **39**, 14400 - 14408 (2000).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3.1 mg € 272.- (M 025 - 05)	5 x 5 µmol € 1,116.- (M 025 - 25)

M 074 ❄



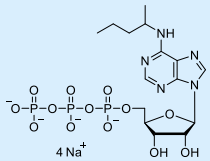
N^6- (1- Methylbutyl)adenosine- 5'- O- (3-thiotriphosphate) (6-(1-MeBu)-ATP-γ-S)

$C_{15}H_{26}N_5O_{12}P_3S$; MW 593.4 (free acid); λ_{max} 268 nm; ε 17000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Analogue useful for specific interaction with modified receptor proteins (chemical genetics approach). 6-Bn-ATP-γ-S (Cat. No. B 072), 6-cHe-ATP-γ-S (Cat. No. C 127), 6-cPe-ATP-γ-S (Cat. No. C 116), 6-Fu-ATP-γ-S (Cat. No. F 008), 6-PhEt-ATP-γ-S (Cat. No. P 026) and 6-Phe-ATP-γ-S (Cat. No P 044) are offered as well. Detailed technical information available. For information on related compounds as well as on the "chemical genetics approach" compare: Allen et al., *J. Am. Chem. Soc.*, **127**, 5288 - 5289 (2005); Allen et al., *Nature Meth.*, **4**, 511 - 516 (2007).

Vial containing 500 µl of 10 mM aqueous solution of pH 8.5. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3 mg € 348.- (M 074 - 05)	5 x 5 µmol € 1,428.- (M 074 - 25)

M 027 ❄



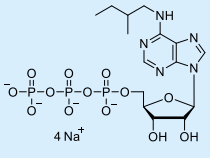
N^6- (1- Methylbutyl)adenosine- 5'- O- triphosphate (6-(1-MeBu)-ATP)

[252889-13-7]; $C_{15}H_{26}N_5O_{13}P_3$; MW 577.3 (free acid); λ_{max} 268 nm; ε 17000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Analogue useful for specific interaction with modified receptor proteins (chemical genetics approach). The corresponding diphosphate (Cat. No. M 026) is offered as well. Detailed technical information available. References: Gillespie et al., *J. Biol. Chem.*, **274**, 31373 - 31381 (1999); Kumar et al., *Methods*, **32**, 389 - 397 (2004).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.9 mg € 272.- (M 027 - 05)	5 x 5 µmol € 1,116.- (M 027 - 25)

M 029 ❄



N^6- (2- Methylbutyl)adenosine- 5'- O-triphosphate (6-(2-MeBu)-ATP)

[252889-14-8]; $C_{15}H_{26}N_5O_{13}P_3$; MW 577.3 (free acid); λ_{max} 268 nm; ε 17000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Analogue useful for specific interaction with modified receptor proteins (chemical genetics approach). The corresponding diphosphate (Cat. No. M 028) is offered as well. Detailed technical information available. References: Gillespie et al., *J. Biol. Chem.*, **274**, 31373 - 31381 (1999); Zhou et al., *J. Physiology*, **569**, 447 - 457 (2005).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

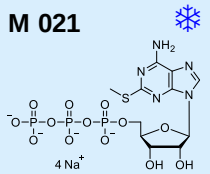
5 µmol / ~2.9 mg € 272.- (M 029 - 05)	5 x 5 µmol € 1,116.- (M 029 - 25)

D 085

3'- O- (N'- Methylanthraniloyl)- 2'- deoxyadenosine- 5'- O- triphosphate (MANT-dATP)

Please refer to 2'- Deoxy- 3'- O- (N'- methylanthraniloyl)adenosine- 5'- O- triphosphate listed above.

M 021 ❄



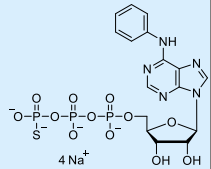
2- Methylthioadenosine- 5'- O- triphosphate (2-MeS-ATP)

[43170-89-4]; $C_{11}H_{18}N_5O_{13}P_3S$; MW 553.3 (free acid); λ_{max} 277 nm, ε 14700 (pH 11); sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Agonist of P2Y purinoceptors. Inhibits soluble guanylate cyclase. Detailed technical information available. Reference: Ruiz-Stewart et al., *Eur. J. Biochem.*, **269**, 2186 - 2193 (2002).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.8 mg € 72.- (M 021 - 05)	5 x 5 µmol € 254.- (M 021 - 25)

P 044 ❄



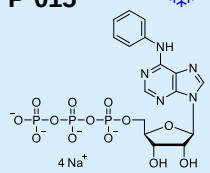
N^6- Phenyladenosine- 5'- O- (3- thiotriphosphate) (6-Phe-ATP-γ-S)

$C_{16}H_{20}N_5O_{12}P_3S$; MW 599.4 (free acid); λ_{max} 288 nm; ε 20800; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Analogue useful for specific interaction with modified receptor proteins (chemical genetics approach). 6-Bn-ATP-γ-S (Cat. No. B 072), 6-cHe-ATP-γ-S (Cat. No. C 127), 6-cPe-ATP-γ-S (Cat. No. C 116), 6-Fu-ATP-γ-S (Cat. No. F 008), 6-(1-MeBu)-ATP-γ-S (Cat. No. M 074) and 6-PhEt-ATP-γ-S (Cat. No. P 026) are offered as well. Detailed technical information available. For information on related compounds as well as on the "chemical genetics approach" compare: Allen et al., *J. Am. Chem. Soc.*, **127**, 5288 - 5289 (2005); Allen et al., *Nature Meth.*, **4**, 511 - 516 (2007).

Vial containing 500 µl of 10 mM aqueous solution of pH 8.5. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3 mg € 348.- (P 044 - 05)	5 x 5 µmol € 1,428.- (P 044 - 25)

P 015



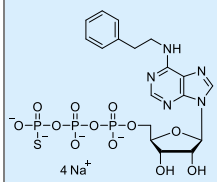
N^6- Phenyladenosine- 5'- O- triphosphate (6-Phe-ATP)

[105740-47-4]; $C_{16}H_{20}N_5O_{13}P_3$; MW 583.3 (free acid); λ_{max} 288 nm; ε 20800; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Analogue useful for specific interaction with modified receptor proteins (chemical genetics approach). The corresponding diphosphate 6-Phe-ADP (Cat. No. P 014) is offered as well. Detailed technical information available. Reference: Gillespie et al., *J. Biol. Chem.*, **274**, 31373 - 31381 (1999).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.9 mg € 272.- (P 015 - 05)	5 x 5 µmol € 1,116.- (P 015 - 25)

P 026



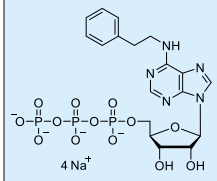
N^6- (2- Phenylethyl)adenosine- 5'- O- (3- thiotriphosphate) (6-PhEt-ATP-γ-S)

[944834-43-9]; $C_{18}H_{24}N_5O_{12}P_3S$; MW 627.4 (free acid); λ_{max} 269 nm; ε 20500; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Analogue useful for specific interaction with modified receptor proteins (chemical genetics approach). 6-Bn-ATP-γ-S (Cat. No. B 072), 6-cHe-ATP-γ-S (Cat. No. C 127), 6-cPe-ATP-γ-S (Cat. No. C 116), 6-Fu-ATP-γ-S (Cat. No. F 008), 6-(1-MeBu)-ATP-γ-S (Cat. No. M 074) and 6-Phe-ATP-γ-S (Cat. No P 044) are offered as well. Detailed technical information available. References: Allen et al., *J. Am. Chem. Soc.*, **127**, 5288 - 5289 (2005) & *Nature Meth.*, **4**, 511 - 516 (2007).

Vial containing 500 µl of 10 mM aqueous solution of pH 8.5. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3.1 mg € 348.- (P 026 - 05)	5 x 5 µmol € 1,428.- (P 026 - 25)

P 012



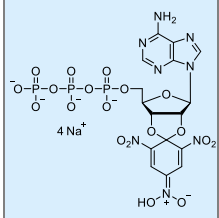
N^6- (2- Phenylethyl)adenosine- 5'- O- triphosphate (6-PhEt-ATP)

[181705-62-4]; $C_{18}H_{24}N_5O_{13}P_3$; MW 611.3 (free acid); λ_{max} 269 nm; ε 20500; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Analogue useful for specific interaction with modified receptor proteins (chemical genetics approach) and for studying CFTR gating. The corresponding diphosphate (Cat. No. P 013) is offered as well. Detailed technical information available. References: Gillespie et al., *J. Biol. Chem.*, **274**, 31373 - 31381 (1999); Jih et al., *J. Physiol.*, **589**, 2719 - 2731 (2011).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3.1 mg € 272.- (P 012 - 05)	5 x 5 µmol € 1,116.- (P 012 - 25)

T 025



2', 3'- O- (2, 4, 6- Trinitrophenyl)adenosine- 5'- O- triphosphate (TNP-ATP)

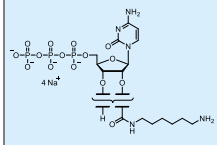
[120360-48-7]; $C_{16}H_{17}N_8O_{19}P_3$; MW 718.3 (free acid); λ_{max} 408 nm; ε 26400; sodium salt; purity > 95% HPLC.
For other salt forms please inquire. Fluorescent analogue of ATP with λ_{exc} 408 nm and λ_{em} 561 nm, which can substitute for ATP in the interaction with various enzymes and proteins. It is sensitive to indicators of local environment such as polarity and viscosity, and frequently exhibits a spectral shift and fluorescence enhancement upon binding to a protein. Potent, selective P2X receptor antagonist and potent inhibitor of soluble guanylyl cyclase (sGC). Detailed technical information available. References: Hiratsuka, T., *Biochim. Biophys. Acta*, **719**, 509 - 517 (1982); Virginio et al., *Mol. Pharmacol.*, **53**, 969 - 973 (1998); Suryanarayana et al., *J. Pharmacol. Exp. Ther.*, **330**, 687 - 695 (2009).

Vial containing 500 µl of 10 mM aqueous solution of pH 8 ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3.6 mg € 348.- (T 025 - 05)	5 x 5 µmol € 1,428.- (T 025 - 25)

Triphosphates with Cytosine Nucleobases

A 157



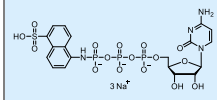
2'- / 3'- O- (6- Aminohexylcarbamoyl)cytidine- 5'- O- triphosphate (2'-/3'-AHC-CTP)

$C_{16}H_{30}N_5O_{15}P_3$; MW 625.4 (free acid); λ_{max} 271 nm; ε 9000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Ligand for affinity chromatography and suitable for modification with fluorophores and other markers. Detailed technical information available.

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3.1 mg € 164.- (A 157 - 05)	5 x 5 µmol € 692.- (A 157 - 25)

C 106



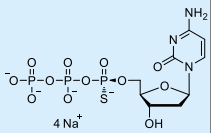
Cytidine- 5'- O- triphosphoro- γ- 1- (5- sulfonic acid)naphthylamidate (CTP-γ-AmNS)

[84230-52-4]; $C_{19}H_{23}N_4O_{16}P_3S$; MW 688.4 (free acid); λ_{max} 246 nm; ε 31000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Fluorescent analogue of CTP useful for an assay of enzymes specialized to cleave α/β-phosphodiester bonds. Detailed technical information available. Reference: Yarbrough & Bock, *J. Biol. Chem.*, **255**, 9907 - 9911 (1980).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3.4 mg € 295.- (C 106 - 05)	5 x 5 µmol € 1,211.- (C 106 - 25)

D 046 ❄



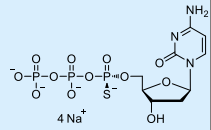
2'- Deoxycytidine- 5'- O- (1- thiotriphosphate), Rp- isomer (Rp-dCTP-α-S)

[80951-76-4]; $C_9H_{16}N_3O_{12}P_3S$; MW 483.2 (free acid); λ_{max} 271 nm; ε 9000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Useful for modulation of dCTP-responsive receptors and determination of their stereospecificity. Increased metabolic stability compared to dCTP. Not accepted by DNA polymerases. Detailed technical information available. Reference: Abbotts et al., *J. Biol. Chem.*, **263**, 15094 - 15103 (1988).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.4 mg € 199.- (D 046 - 05)	5 x 5 µmol € 845.- (D 046 - 25)

D 047 ❄



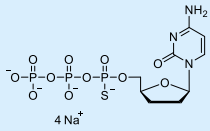
2'- Deoxycytidine- 5'- O- (1- thiotriphosphate), Sp- isomer (Sp-dCTP-α-S)

[80951-75-3]; $C_9H_{16}N_3O_{12}P_3S$; MW 483.2 (free acid); λ_{max} 271 nm; ε 9000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Useful for modulation of dCTP-responsive receptors and determination of their stereospecificity. Increased metabolic stability compared to dCTP. Accepted by DNA polymerase for incorporation of phosphorothioate into DNA. Detailed technical information available. References: Abbotts et al., *J. Biol. Chem.*, **263**, 15094 - 15103 (1988); Nakamaye et al., *Nucl. Acids Res.*, **16**, 9947 - 9959 (1988); Nyrén et al., *Anal. Biochem.*, **244**, 367 - 373 (1997); Choi et al., *J. Biol. Chem.*, **281**, 38244 - 38256 (2006).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.4 mg € 174.- (D 047 - 05)	5 x 5 µmol € 739.- (D 047 - 25)

D 027 ❄



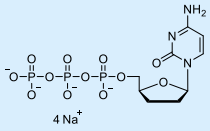
2', 3'- Dideoxycytidine- 5'- O- (1- thiotriphosphate) (ddCTP-α-S)

[154771-49-0]; $C_9H_{16}N_3O_{11}P_3S$; MW 467.2 (free acid); λ_{max} 271 nm; ε 9000; sodium salt; purity > 95% HPLC for mixture of Rp-/Sp-isomers. For other salt forms or higher purity please inquire. Useful in mass spectrometry genotyping. Detailed technical information available. Reference: Sauer et al., *Nucleic Acids Res.*, **28** (5), e13 (2000).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.3 mg € 202.- (D 027 - 05)	5 x 5 µmol € 859.- (D 027 - 25)

D 037 ❄



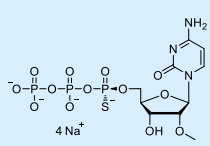
2', 3'- Dideoxycytidine- 5'- O- triphosphate (ddCTP)

[132619-66-0]; $C_9H_{16}N_3O_{12}P_3$; MW 451.2 (free acid); λ_{max} 271 nm; ε 9000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Inhibits DNA polymerase I- dependent chain elongation. Detailed technical information available. Reference: Sanger et al., *Proc. Natl. Acad. Sci. USA*, **74**, 5463 - 5467 (1977).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.3 mg € 118.- (D 037 - 05)	5 x 5 µmol € 503.- (D 037 - 25)

M 121 ❄



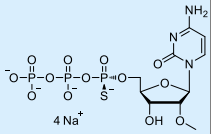
2'- O- Methylcytidine- 5'- O- (1- thiotriphosphate), Rp- isomer (Rp-2'-O-Me-CTP-α-S)

[143029-01-0]; $C_{10}H_{18}N_3O_{13}P_3S$; MW 513.3 (free acid); λ_{max} 271 nm; ε 9000; sodium salt; purity > 95% HPLC.
For other salt forms or a guaranteed higher purity please inquire. Phosphorothioate analogue of CTP with modified 2'-OH group. The corresponding Sp-isomer is also offered (Sp-2'-O-Me-CTP-α-S, Cat. No. M 112). Detailed technical information available.

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.6 mg € 191.- (M 121 - 05)	5 x 5 µmol € 814.- (M 121 - 25)

M 112 ❄



2'- O- Methylcytidine- 5'- O- (1- thiotriphosphate), Sp- isomer (Sp-2'-O-Me-CTP-α-S)

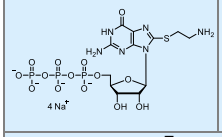
[132619-66-0]; $C_{10}H_{18}N_3O_{13}P_3S$; MW 513.3 (free acid); λ_{max} 271 nm; ε 9000; sodium salt; purity > 95% HPLC.
For other salt forms or a guaranteed higher purity please inquire. Analogue of CTP which can be useful for enzymatic introduction of phosphorothioate and modified 2'-OH groups into RNA, e.g. for Nucleotide Analogue Interference Mapping. Detailed technical information available.

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.6 mg € 191.- (M 112 - 05)	5 x 5 µmol € 814.- (M 112 - 25)

Triphosphates with Guanine Nucleobases

A 192



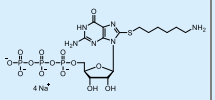
8- (2- Aminoethylthio)guanosine- 5'- O- triphosphate (8-AET-GTP)

$C_{12}H_{21}N_6O_{14}P_3S$; MW 598.3 (free acid); λ_{max} 272 nm; ε 14000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Ligand for affinity chromatography and suitable for modification with fluorophores and other markers. Detailed technical information available.

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3 mg € 207.- (A 192 - 05)	5 x 5 µmol € 880.- (A 192 - 25)

A 191



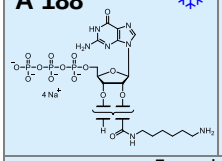
8- (6- Aminohexylthio)guanosine- 5'- O- triphosphate (8-AHT-GTP)

$C_{16}H_{29}N_6O_{14}P_3S$; MW 654.4 (free acid); λ_{max} 275 nm; ε 14000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Ligand for affinity chromatography and suitable for modification with fluorophores and other markers. Detailed technical information available.

Vial containing 100 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

1 µmol / ~0.7 mg € 207.- (A 191 - 01)	5 x 1 µmol € 880.- (A 191 - 05)

A 188



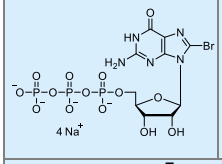
2'- / 3'- O- (6- Aminohexylcarbamoyl)guanosine- 5'- O- triphosphate (2'-/3'-AHC-GTP)

$C_{17}H_{30}N_7O_{15}P_3$; MW 665.4 (free acid); λ_{max} 252 nm; ε 13500; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Ligand for affinity chromatography and suitable for modification with fluorophores and other markers. Detailed technical information available.

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3.3 mg € 164.- (A 188 - 05)	5 x 5 µmol € 692.- (A 188 - 25)

B 012



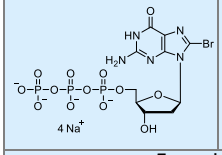
8- Bromoguanosine- 5'- O- triphosphate (8-Br-GTP)

[23197-98-0]; $C_{10}H_{15}BrN_5O_{14}P_3$; MW 602.1 (free acid); λ_{max} 260 nm; ε 16200; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Analogue of GTP with changed syn/anti ratio for receptor mapping studies and starting structure for 8-modified GTP derivatives. Detailed technical information available. References: Kapuler & Reich, *Biochemistry*, **10**, 4050 - 4061 (1971); Uno et al., *Biochim. Biophys. Acta*, **228**, 282 - 288 (1971).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3 mg € 154.- (B 012 - 05)	5 x 5 µmol € 615.- (B 012 - 25)

B 070



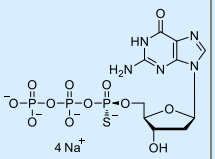
8- Bromo- 2'- deoxyguanosine- 5'- O- triphosphate (8-Br-dGTP)

[66891-23-4]; $C_{10}H_{15}BrN_5O_{13}P_3$; MW 586.1 (free acid); λ_{max} 260 nm; ε 16200; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Analogue of dGTP with changed syn/anti ratio for receptor mapping studies and starting structure for 8-modified dGTP derivatives. Detailed technical information available. References: Helfman et al., *Biochemistry*, **17**, 1607 - 1611 (1978); Kamiya et al., *J. Mol. Biol.*, **336**, 843 - 850 (2004).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.9 mg € 171.- (B 070 - 05)	5 x 5 µmol € 726.- (B 070 - 25)

D 030



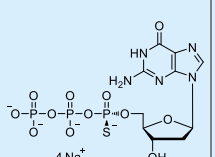
2'- Deoxyguanosine- 5'- O- (1- thiotriphosphate), Rp- isomer (Rp-dGTP-α-S)

[80902-29-0]; $C_{10}H_{16}N_5O_{12}P_3S$; MW 523.3 (free acid); λ_{max} 252 nm; ε 14300; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Useful for modulation of dGTP-responsive receptors and determination of their stereospecificity. Increased metabolic stability compared to dGTP. Not accepted by DNA polymerases. Detailed technical information available. References: Kunkel et al., *Proc. Natl. Acad. Sci. USA*, **78**, 6734 - 6738 (1981); Abbotts et al., *J. Biol. Chem.*, **263**, 15094 - 15103 (1988).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.6 mg € 199.- (D 030 - 05)	5 x 5 µmol € 845.- (D 030 - 25)

D 031



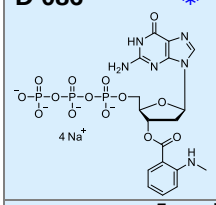
2'- Deoxyguanosine- 5'- O- (1- thiotriphosphate), Sp- isomer (Sp-dGTP-α-S)

[80902-28-9]; $C_{10}H_{16}N_5O_{12}P_3S$; MW 523.3 (free acid); λ_{max} 252 nm; ε 14300; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Useful for modulation of dGTP-responsive receptors and determination of their stereospecificity. Increased metabolic stability compared to dGTP. Accepted by DNA polymerase for incorporation of phosphorothioate into DNA. Detailed technical information available. References: Abbotts et al., *J. Biol. Chem.*, **263**, 15094 - 15103 (1988); Nakamaye et al., *Nucl. Acids Res.*, **16**, 9947 - 9959 (1988); Nyrén et al., *Anal. Biochem.*, **244**, 367 - 373 (1997).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.6 mg € 174.- (D 031 - 05)	5 x 5 µmol € 739.- (D 031 - 25)

D 086



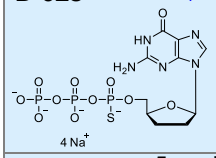
2'- Deoxy- 3'- O- (N'- methylanthraniloyl)guanosine- 5'- O- triphosphate (MANT-dGTP)

[124615-99-2]; $C_{18}H_{23}N_6O_{14}P_3$; MW 640.3 (free acid); λ_{max} 252 nm (pH 8); ε 22600; sodium salt; purity > 95% HPLC. For other salt forms please inquire. Fluorescent analogue of 2'-deoxyguanosine-5'-triphosphate (λ_{exc} 350 nm; λ_{em} 442 nm), useful for research into 5'-dGTP-dependent receptor proteins. The MANT fluorophore has a certain sensitivity for its environment and can change its spectral properties upon binding. Detailed technical information available. For reference compare: Hiratsuka, *Biochim. Biophys. Acta*, **742**, 496 - 508 (1983).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3.2 mg € 152.- (D 086 - 05)	5 x 5 µmol € 647.- (D 086 - 25)

D 025



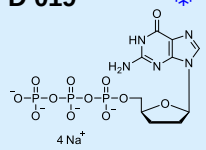
2', 3'- Dideoxyguanosine- 5'- O- (1- thiotriphosphate) (ddGTP-α-S)

[154771-50-3]; $C_{10}H_{16}N_5O_{11}P_3S$; MW 507.3 (free acid); λ_{max} 252 nm; ε 14300; sodium salt; purity > 95% HPLC for mixture of Rp-/Sp-isomers. For other salt forms or higher purity please inquire. Useful in mass spectrometric genotyping. Detailed technical information available. Reference: Sauer et al., *Nucleic Acids Res*., **28** (5), e13 (2000).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.5 mg € 202.- (D 025 - 05)	5 x 5 µmol € 758.- (D 025 - 25)

D 019



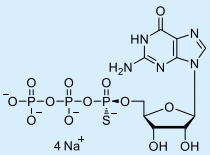
2', 3'- Dideoxyguanosine- 5'- O- triphosphate (ddGTP)

[68726-28-3]; $C_{10}H_{16}N_5O_{12}P_3$; MW 491.2 (free acid); λ_{max} 252 nm; ε 13500; sodium salt; purity > 95% HPLC. For other salt forms please inquire. Inhibits DNA polymerase I-dependent chain elongation. Detailed technical information available. Reference: Sanger et al., *Proc. Natl. Acad. Sci. USA*, **74**, 5463 - 5467 (1977).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.5 mg € 118.- (D 019 - 05)	5 x 5 µmol € 444.- (D 019 - 25)	**Inquiries for bulk quantities welcome!**

G 014



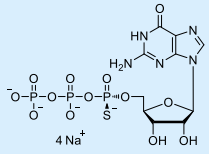
Guanosine- 5'- O- (1- thiotriphosphate), Rp- isomer (Rp-GTP-α-S)

[81570-50-5]; $C_{10}H_{16}N_5O_{13}P_3S$; MW 539.3 (free acid); λ_{max} 252 nm; ε 14300; sodium salt; purity > 95% HPLC. For other salt forms or higher purity please inquire. Modulator of GTP binding proteins with often increased metabolic stability. Useful for characterization of GTP-responsive receptors and determination of their stereospecificity. Detailed technical information available. References: Koch et al., *J. Biol. Chem*., **265**, 9659 - 9663 (1990); Von zur Muehlen et al., *Int. Arch. Allergy Appli. Immunol*., **94**, 74 - 75 (1991).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.7 mg € 135.- (G 014 - 05)	5 x 5 µmol € 571.- (G 014 - 25)

G 015



Guanosine- 5'- O- (1- thiotriphosphate), Sp- isomer (Sp-GTP-α-S)

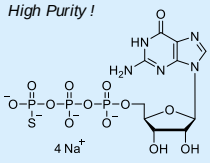
[81570-51-6]; $C_{10}H_{16}N_5O_{13}P_3S$; MW 539.3 (free acid); λ_{max} 252 nm; ε 14300; sodium salt; purity > 95% HPLC. For other salt forms or higher purity please inquire. Useful for modulation of GTP-responsive receptors and determination of their stereospecificity (Eckstein, F., *Ann. Rev. Biochem*., **54**, 367 - 402 (1985)). Increased metabolic stability compared to GTP. Accepted by RNA polymerase for incorporation of phosphorothioate into RNA, by guanylate cyclase for cyclisation to Sp-cGMPS and by tubulin (Xu et al., *Biochim. Biophys. Acta,* **1383**, 111 - 122 (1998)). Detailed technical information available.

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.7 mg € 128.- (G 015 - 05)	5 x 5 µmol € 545.- (G 015 - 25)

G 019

High Purity !



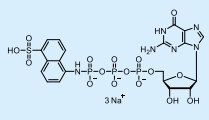
Guanosine- 5'- O- (3- thiotriphosphate) (GTP-γ-S)

[37589-80-3]; $C_{10}H_{16}N_5O_{13}P_3S$; MW 539.3 (free acid); λ_{max} 252 nm; ε 14300; sodium salt; purity > 95% HPLC. For other salt forms or higher purity please inquire. GTP analogue with increased metabolic stability which activates G proteins. Useful for modification with SH-reactive reporters or for connection to structures with SH-groups via a disulfide bond. Detailed technical information available. Reference: Gilman, *Ann. Rev. Biochem.*, **56**, 615 - 649 (1987).

Vial containing 500 µl of 10 mM aqueous solution of pH 8.5. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.7 mg € 83.- (G 019 - 05)	5 x 5 µmol € 290.- (G 019 - 25)	**Inquiries for bulk quantities welcome!**

G 026



Guanosine- 5'- O- triphosphoro- γ- 1- (5- sulfonic acid)naphthylamidate (GTP-γ-AmNS)

[76724-84-0]; $C_{20}H_{23}N_6O_{16}P_3S$; MW 728.4 (free acid); λ_{max} 246 nm; ε 31000; sodium salt; purity > 95% HPLC. For other salt forms or higher purity please inquire. Fluorescent analogue of GTP, useful for an assay of enzymes specialized to cleave α/β-phosphodiester bonds. Detailed technical information available. References: Yarbrough et al., *J. Biol. Chem*., **256**, 112 - 117 (1981); Pollack & Auld, *Anal. Biochem.*, **127**, 81 - 88 (1982).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

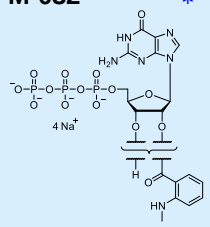
5 µmol / ~3.6 mg € 295.- (G 026 - 05)	5 x 5 µmol € 1,211.- (G 026 - 25)

D 086

3'- O- (N'- Methylanthraniloyl)- 2'- deoxyguanosine- 5'- O- triphosphate (MANT-dGTP)

Please refer to 2'- Deoxy- 3'- O- (N'- methylanthraniloyl)guanosine- 5'- O- triphosphate listed above.

M 032 ❄



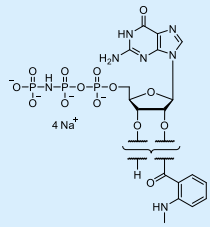
2'- / 3'- O- (N'- Methylanthraniloyl)guanosine- 5'- O- triphosphate (MANT-GTP)

[148821-03-8]; $C_{18}H_{23}N_6O_{15}P_3$; MW 656.3 (free acid); λ_{max} 252 nm (pH 8); ε 22600; sodium salt; purity > 95% HPLC. For other salt forms please inquire. Fluorescent analogue of guanosine-5'-triphosphate (λ_{exc} 350 nm; λ_{em} 442 nm), useful for research into GTP-dependent receptor proteins. The MANT fluorophore has a certain sensitivity for its environment and can change its spectral properties upon binding. Potent inhibitor of adenylate cyclase. Detailed technical information available. References: Hiratsuka, *Biochim. Biophys. Acta*, **742**, 496 - 508 (1983); Gille & Seifert, *J. Biol. Chem.*, **278**, 12672 - 12679 (2003).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3.3 mg € 196.- (M 032 - 05)	5 x 5 µmol € 831.- (M 032 - 25)

M 047 ❄



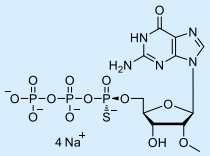
2'- / 3'- O- (N'- Methylanthraniloyl)guanosine- 5'- O- [(β, γ)- imidotriphosphate] (MANT-GppNHp)

[148821-01-6]; $C_{18}H_{24}N_7O_{14}P_3$; MW 655.4 (free acid); λ_{max} 252 nm (pH 8); ε 21500; sodium salt; purity > 90% HPLC. For other salt forms please inquire. Fluorescent analogue of the hydrolysis-resistant guanosine-5'-O-[(β,γ)- imido]triphosphate (λ_{exc} 350 nm; λ_{em} 442 nm), useful for research into GTP-dependent receptor proteins. The MANT fluorophore has a certain sensitivity for its environment and can change its spectral properties upon binding. Potent inhibitor of adenylate cyclase. Detailed technical information available. References: Herrmann et al., *J. Biol. Chem.*, **270**, 2901 - 2905 (1995); Gille & Seifert, *J. Biol. Chem.*, **278**, 12672 - 12679 (2003); Zhang et al., *J. Biol. Chem.*, **280**, 33200 - 33205 (2005).

Vial containing 100 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

1 µmol / ~0.7 mg € 196.- (M 047 - 01)	5 x 1 µmol € 831.- (M 047 - 05)

M 122 ❄



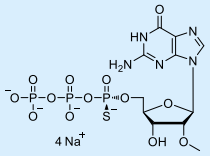
2'- O- Methylguanosine- 5'- O- (1- thiotriphosphate), Rp- isomer (Rp-2'-O-Me-GTP-α-S)

[143028-96-0]; $C_{11}H_{18}N_5O_{13}P_3S$; MW 553.3 (free acid); λ_{max} 252 nm; ε 14300; sodium salt; purity > 95% HPLC. For other salt forms or a guaranteed higher purity please inquire. Phosphorothioate analogue of GTP with modified 2'-OH group. The corresponding Sp-isomer is also offered (Sp-2'-O-Me-GTP-α-S, Cat. No. M 113). Detailed technical information available.

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.8 mg € 191.- (M 122 - 05)	5 x 5 µmol € 814.- (M 122 - 25)

M 113 ❄



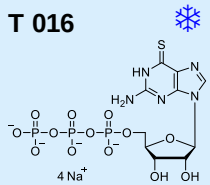
2'- O- Methylguanosine- 5'- O- (1- thiotriphosphate), Sp- isomer (Sp-2'-O-Me-GTP-α-S)

[143029-02-1]; $C_{11}H_{18}N_5O_{13}P_3S$; MW 553.3 (free acid); λ_{max} 252 nm; ε 14300; sodium salt; purity > 95% HPLC. For other salt forms or a guaranteed higher purity please inquire. Analogue of GTP which can be useful for enzymatic introduction of phosphorothioate and modified 2'-OH groups into RNA, e.g. for Nucleotide Analogue Interference Mapping. Detailed technical information available.

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.8 mg € 191.- (M 113 - 05)	5 x 5 µmol € 814.- (M 113 - 25)

T 016 ❄



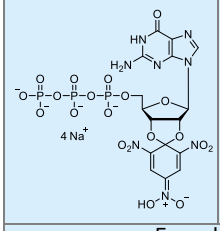
6- Thioguanosine- 5'- O- triphosphate (6-T-GTP)

[17670-19-8]; $C_{10}H_{16}N_5O_{13}P_3S$; MW 539.3 (free acid); λ_{max} 340 nm; ε 26000; sodium salt; purity > 95% HPLC. For other salt forms or higher purity please inquire. 6-T-GTP is a metabolite of azathioprine, an immunosuppressive drug. Detailed technical information available. Reference: Hawwa et al., *Br. J. Clin. Pharmacol.*, **66**, 517 - 528 (2008).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.7 mg € 196.- (T 016 - 05)	5 x 5 µmol € 831.- (T 016 - 25)

T 026 ❄



2', 3'- O- (2, 4, 6- Trinitrophenyl)guanosine- 5'- O- triphosphate (TNP-GTP)

[612837-26-0]; $C_{16}H_{17}N_8O_{20}P_3$; MW 734.3 (free acid); λ_{max} 408 nm; ε 26500; sodium salt; purity > 95% HPLC. For other salt forms please inquire. Fluorescent analogue of GTP with λ_{exc} 408 nm and λ_{em} 552 nm, which can substitute for GTP in the interaction with various enzymes and proteins. It is sensitive to indicators of local environment such as polarity and viscosity, and frequently exhibits a spectral shift and fluorescence enhancement upon binding to a protein. Inhibitor of soluble guanylyl cyclase (sGC). Detailed technical information available. References: Hiratsuka, T., *J. Biol. Chem.*, **260**, 4784 - 4790 (1985); Suryanarayana et al., *J. Pharmacol. Exp. Ther.*, **330**, 687 - 695 (2009).

Vial containing 500 µl of 10 mM aqueous solution of pH 8. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~0.7 mg € 196.- (T 026 - 01)	5 x 1 µmol € 831.- (T 026 - 05)

Triphosphates with Thymine Nucleobases

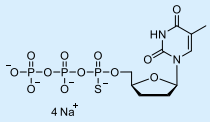
T 002

2'- Deoxythymidine- 5'- O- (1- thiotriphosphate), Rp- isomer (Rp-dTTP-α-S)
Since thymidine already describes a 2'-deoxy nucleoside, the term "2'-deoxythymidine" is redundant. Please refer to thymidine- 5'- O- (1- thiotriphosphate), Rp- isomer listed below (T 002).

T 003

2'- Deoxythymidine- 5'- O- (1- thiotriphosphate), Sp- isomer (Sp-dTTP-α-S)
Since thymidine already describes a 2'-deoxy nucleoside, the term "2'-deoxythymidine" is redundant. Please refer to thymidine- 5'- O- (1- thiotriphosphate), Sp- isomer listed below (T 003).

D 029 ❄

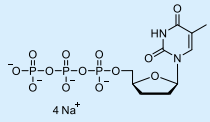


3'- Deoxythymidine- 5'- O- (1- thiotriphosphate) (dTTP-α-S) / 2', 3'- Dideoxythymidine- 5'- O- (1- thiotriphosphate) (ddTTP-α-S)
[154771-48-9]; $C_{10}H_{17}N_2O_{12}P_3S$; MW 482.2 (free acid); λ_{max} 267 nm; ε 9600; sodium salt; purity > 95% HPLC for mixture of Rp-/Sp-isomers. For other salt forms or higher purity please inquire. Useful in mass spectrometric genotyping. Detailed technical information available. Reference: Sauer et al., *Nucleic Acids Res.*, **28** (5), e13 (2000).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.4 mg € 202.- (D 029 - 05)	5 x 5 µmol € 808.- (D 029 - 25)

D 038 ❄



3'- Deoxythymidine- 5'- O- triphosphate (dTTP) / 2', 3'- Dideoxythymidine- 5'- O- triphosphate (ddTTP)
[128524-26-5]; $C_{10}H_{17}N_2O_{13}P_3$; MW 466.2 (free acid); λ_{max} 267 nm; ε 9600; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Inhibits DNA polymerase I-dependent chain elongation. Detailed technical information available. Reference: Sanger et al., *Proc. Natl. Acad. Sci. USA*, **74**, 5463 - 5467 (1977).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.3 mg € 129.- (D 038 - 05)	5 x 5 µmol € 549.- (D 038 - 25)

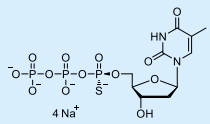
D 029

2', 3'- Dideoxythymidine- 5'- O- (1- thiotriphosphate) (ddTTP-α-S)
Since thymidine already describes a 2'-deoxy nucleoside, the term "2'- deoxythymidine" is redundant. Please refer to 3'- deoxythymidine- 5'- (1- thiotriphosphate) listed above (D 029).

D 038

2', 3'- Dideoxythymidine- 5'- O- triphosphate (ddTTP)
Since thymidine already describes a 2'-deoxy nucleoside, the term "2'- deoxythymidine" is redundant. Please refer to 3'- deoxythymidine- 5'- triphosphate listed above (D 038).

T 002 ❄

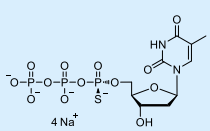


Thymidine- 5'- O- (1- thiotriphosphate), Rp- isomer (Rp-TTP-α-S) / 2'- Deoxythymidine- 5'- O- (1- thiotriphosphate), Rp- isomer (Rp-dTTP-α-S)
[83199-35-3]; $C_{10}H_{17}N_2O_{13}P_3S$; MW 498.2 (free acid); λ_{max} 267 nm; ε 9600; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Useful for modulation of TTP-responsive receptors and determination of their stereospecificity. Increased metabolic stability compared to TTP. Not accepted by DNA polymerases. Detailed technical information available. Reference: Abbotts et al., *J. Biol. Chem.*, **263**, 15094 - 15103 (1988).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.5 mg € 199.- (T 002 - 05)	5 x 5 µmol € 845.- (T 002 - 25)

T 003 ❄



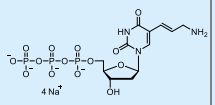
Thymidine- 5'- O- (1- thiotriphosphate), Sp- isomer (Sp-TTP-α-S) / 2'- Deoxythymidine- 5'- O- (1- thiotriphosphate), Sp- isomer (Sp-dTTP-α-S)
[83199-32-0]; $C_{10}H_{17}N_2O_{13}P_3S$; MW 498.2 (free acid); λ_{max} 267 nm; ε 9600; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Useful for modulation of TTP-responsive receptors and determination of their stereospecificity. Increased metabolic stability compared to TTP. Accepted by DNA polymerase for incorporation of phosphorothioate into DNA. Detailed technical information available. References: Abbotts et al., *J. Biol. Chem.*, **263**, 15094 - 15103 (1988); Nakamaye et al., *Nucl. Acids Res.*, **16**, 9947 - 9959 (1988); Nyrén et al., *Anal. Biochem.*, **244**, 367 - 373 (1997).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.5 mg € 174.- (T 003 - 05)	5 x 5 µmol € 739.- (T 003 - 25)

Triphosphates with Uracil Nucleobases

A 116



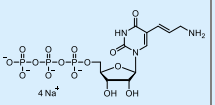
5- (3- Aminoallyl)- 2'- deoxyuridine- 5'- O- triphosphate (AA-dUTP)

[85280-65-5]; $C_{12}H_{20}N_3O_{14}P_3$; MW 523.2 (free acid); λ_{max} 290 nm; ε 8100; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Substrate for DNA polymerase; the free amino group can be subsequently labelled with a fluorescent dye, biotin or other markers. Detailed technical information available. Reference: Wang et al., *Plant J.*, **32**, 723 - 733 (2002).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.6 mg € 217.- (A 116 - 05)	5 x 5 µmol € 924.- (A 116 - 25)	**Inquiries for bulk quantities welcome!**

A 117



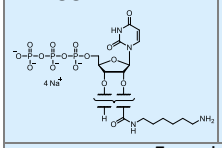
5- (3- Aminoallyl)uridine- 5'- O- triphosphate (AA-UTP)

[85280-66-6]; $C_{12}H_{20}N_3O_{15}P_3$; MW 539.2 (free acid); λ_{max} 290 nm; ε 8100; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Substrate for RNA polymerase; the free amino group can be subsequently labelled with a fluorescent dye, biotin or other markers. Detailed technical information available. References: Aleksandrova et al., *Bioorg. Khim.*, **13**, 643 - 647 (1987); Wang, *Diagn. Mol. Pathol.*, **14**, 59 - 64 (2005).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.7 mg € 136.- (A 117 - 05)	5 x 5 µmol € 574.- (A 117 - 25)	**Inquiries for bulk quantities welcome!**

A 155



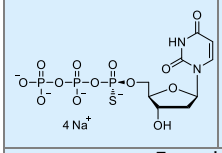
2'- / 3'- O- (6- Aminohexylcarbamoyl)uridine- 5'- O- triphosphate (2'-/3'-AHC-UTP)

$C_{16}H_{29}N_4O_{16}P_3$; MW 626.3 (free acid); λ_{max} 262 nm; ε 10000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Ligand for affinity chromatography and suitable for modification with fluorophores and other markers. Detailed technical information available.

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3.1 mg € 164.- (A 155 - 05)	5 x 5 µmol € 692.- (A 155 - 25)

D 048



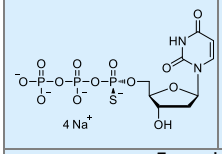
2'- Deoxyuridine- 5'- O- (1- thiotriphosphate), Rp- isomer (Rp-dUTP-α-S)

[876068-86-9]; $C_9H_{15}N_2O_{13}P_3S$; MW 484.2 (free acid); λ_{max} 262 nm; ε 10200; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Detailed technical information available. Reference: Bergman et al., *FEBS Lett.*, **441**, 327 - 330 (1998).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.4 mg € 174.- (D 048 - 05)	5 x 5 µmol € 739.- (D 048 - 25)

D 049



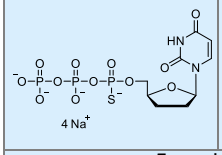
2'- Deoxyuridine- 5'- O- (1- thiotriphosphate), Sp- isomer (Sp-dUTP-α-S)

[876068-87-0]; $C_9H_{15}N_2O_{13}P_3S$; MW 484.2 (free acid); λ_{max} 262 nm; ε 10200; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Detailed technical information available. Reference: Bergman et al., *FEBS Lett.*, **441**, 327 - 330 (1998).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.4 mg € 174.- (D 049 - 05)	5 x 5 µmol € 739.- (D 049 - 25)

D 028



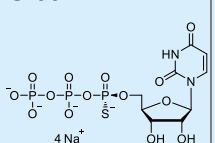
2', 3'- Dideoxyuridine- 5'- O- (1- thiotriphosphate) (ddUTP-α-S)

[1053668-88-4]; $C_9H_{15}N_2O_{12}P_3S$; MW 468.2 (free acid); λ_{max} 262 nm; ε 10200; sodium salt; purity > 95% HPLC for mixture of Rp-/Sp-isomers. For other salt forms or higher purity please inquire. Useful in mass spectrometric genotyping. Detailed technical information available.

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.3 mg € 231.- (D 028 - 05)	5 x 5 µmol € 982.- (D 028 - 25)

U 002



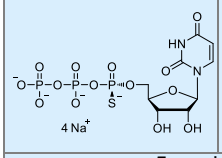
Uridine- 5'- O- (1- thiotriphosphate), Rp- isomer (Rp-UTP-α-S)

[71214-30-7]; $C_9H_{15}N_2O_{14}P_3S$; MW 500.2 (free acid); λ_{max} 262 nm; ε 10200; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Useful for modulation of UTP-responsive receptors and determination of their stereospecificity. Increased metabolic stability compared to UTP. Not accepted by RNA polymerases. Detailed technical information available. Reference: Sheu et al., *Biochemistry,* **18**, 5548 - 5556 (1979).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.5 mg € 147.- (U 002 - 05)	5 x 5 µmol € 623.- (U 002 - 25)

U 003



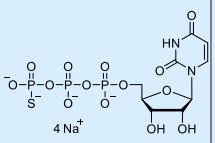
Uridine- 5'- O- (1- thiotriphosphate), Sp- isomer (Sp-UTP-α-S)

[71214-29-4]; $C_9H_{15}N_2O_{14}P_3S$; MW 500.2 (free acid); λ_{max} 262 nm; ε 10200; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Useful for modulation of UTP-responsive receptors and determination of their stereospecificity. Increased metabolic stability compared to UTP. Accepted by RNA polymerases. Detailed technical information available. Reference: Armstrong et al., *Biochemistry,* **18**, 4120 - 4123 (1979).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.5 mg € 128.- (U 003 - 05)	5 x 5 µmol € 545.- (U 003 - 25)

U 010



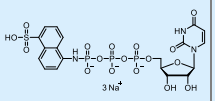
Uridine- 5'- O- (3- thiotriphosphate) (UTP-γ-S)

[79049-97-1]; $C_9H_{15}N_2O_{14}P_3S$; MW 500.2 (free acid); λ_{max} 262 nm; ε 10200; sodium salt; purity > 95% HPLC.
Potent agonist of the $P2Y_2$ and $P2Y_4$ receptors with increased metabolic stability. Useful as well for modification with SH-reactive reporters or for connection to structures with SH-groups via a disulfide bond. Detailed technical information available. References: Lazarowski et al., *Br. J. Pharmacol.*, **117**, 203 - 209 (1996); Malmsjö et al., *Eur. J. Pharmacol.*, **458**, 305 - 311 (2003).

Vial containing 500 µl of 10 mM aqueous solution of pH 9. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.5 mg € 299.- (U 010 - 05)	5 x 5 µmol € 1,228.- (U 010 - 25)	**Inquiries for bulk quantities welcome!**

U 014



Uridine- 5'- O- triphosphoro- γ- 1- (5- sulfonic acid)naphthylamidate (UTP-γ-AmNS)

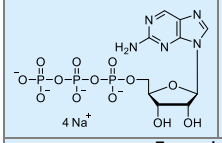
[72218-69-0]; $C_{19}H_{22}N_3O_{17}P_3S$; MW 689.4 (free acid); λ_{max} 246 nm; ε 31000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Fluorescent analogue of UTP useful for an assay of enzymes specialized to cleave α/β-phosphodiester bonds. Detailed technical information available. Reference: Yarbrough & Bock, *J. Biol. Chem.*, **255**, 9907 - 9911 (1980).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3.4 mg € 295.- (U 014 - 05)	5 x 5 µmol € 1,211.- (U 014 - 25)

Triphosphates with Purine and Other Nucleobases

A 124



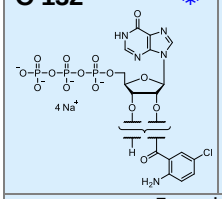
2- Aminopurine riboside- 5'- O- triphosphate (2-NH_2-PuTP)

[23001-60-7]; $C_{10}H_{16}N_5O_{13}P_3$; MW 507.2 (free acid); λ_{max} 243 nm; ε 8000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Fluorescent triphosphate analogue, λ_{exc} 305 nm; λ_{em} 370 nm. Detailed technical information available. Reference: McClure & Scheit, *FEBS Lett.*, **32**, 267 - 269 (1973).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.5 mg € 186.- (A 124 - 05)	5 x 5 µmol € 792.- (A 124 - 25)

C 132



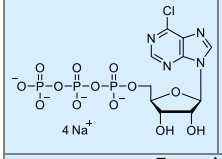
2'- / 3'- O- (5- Chloroanthraniloyl)inosine- 5'- O- triphosphate (Cl-ANT-ITP)

[1350521-48-0]; $C_{17}H_{19}ClN_5O_{15}P_3$; MW 661.7 (free acid); λ_{max} 255 nm; ε 14600; sodium salt; purity > 95% HPLC.
For other salt forms please inquire. Analogue of inosine-5'-triphosphate with only moderate intrinsic fluorescence (λ_{exc} 350 nm; λ_{em} 431 nm), increasing considerably within hydrophobic environment. Inhibitor of mammalian adenylate cyclases. Detailed technical information available. Reference: Geduhn et al., *J. Pharmacol. Exp. Ther.*, **336**, 104 - 115 (2011).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~3.3 mg € 212.- (C 132 - 05)	5 x 5 µmol € 901.- (C 132 - 25)

C 049



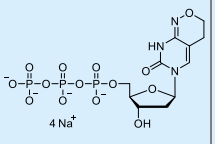
6- Chloropurine riboside- 5'- O- triphosphate (6-Cl-PuTP)

[55673-61-5]; $C_{10}H_{14}ClN_4O_{13}P_3$; MW 526.6 (free acid); λ_{max} 263 nm; ε 8900; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. ATP analogue with reactive chlorine function. Detailed technical information available. References: Patzelt et al., *Hoppe Seylers Z. Physiol. Chem.*, **355,** 1237 (1974); Pares et al., *Eur. J. Biochem.*, **105**, 571 - 579 (1980).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.6 mg € 193.- (C 049 - 05)	5 x 5 µmol € 819.- (C 049 - 25)

D 114



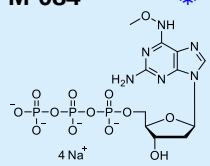
6- (β- D- 2- Deoxyribofuranosyl)- 3, 4- dihydro- 8H- pyrimido- [4, 5- c]- [1, 2]- oxazin- 7- one- 5'- O- triphosphate (2'-Deoxy-P-nucleoside-5'-O-triphosphate / dPTP)

[173964-83-5]; $C_{11}H_{18}N_3O_{14}P_3$; MW 509.2 (free acid); λ_{max} 293 nm; ε 6473; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Triphosphate analogue with artificial base for directed mutagenesis experiments. Detailed technical information available. References: Zaccolo et al., *J. Mol. Biol.*, **255,** 589 - 603 (1996); Wong et al., *Biotechnol. J.*, **3**, 74 - 83 (2008).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.5 mg € 362.- (D 114 - 05)	5 x 5 µmol € 1,488.- (D 114 - 25)

M 084



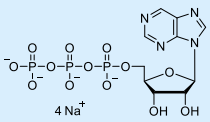
N^6- Methoxy- 2, 6- diaminopurine- 2'- deoxyriboside- 5'- O- triphosphate (dKTP)

[189278-08-8]; $C_{11}H_{19}N_6O_{13}P_3$; MW 536.2 (free acid); λ_{max} 280 nm; ε 14800; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Triphosphate analogue with artificial base for directed mutagenesis experiments. Detailed technical information available. References: Hill et al., *Proc. Natl. Acad. Sci. USA*., **95,** 4258 - 4263 (1998); Wong et al., *Biotechnol. J.*, **3**, 74 - 83 (2008).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.7 mg € 300.- (M 084 - 05)	5 x 5 µmol € 1,233.- (M 084 - 25)

P 009



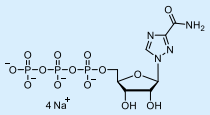
Purine riboside- 5'- O- triphosphate (PuTP)

[23197-96-8]; $C_{10}H_{15}N_4O_{13}P_3$; MW 492.2 (free acid); λ_{max} 263 nm; ε 8000; sodium salt; purity > 95% HPLC.
For other salt forms or higher purity please inquire. Analogue useful for ATP receptor mapping. Competes with ATP and thus could be the reason for purine riboside toxicity. Detailed technical information available. Reference: Kozlowska et al., *Toxicol. Lett.*, **104**, 171 - 181 (1999).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.5 mg € 129.- (P 009 - 05)	5 x 5 µmol € 549.- (P 009 - 25)

R 001



1- β- D- Ribofuranosyl- 1, 2, 4- triazole- 3- carboxamide- 5'- O- triphosphate (Ribavirin-5'- O- triphosphate / RTP)

[63142-71-2]; $C_8H_{15}N_4O_{14}P_3$; MW 484.1 (free acid); λ_{max} 230 nm; ε 3600; sodium salt; purity > 95% HPLC.
Potent competitive inhibitor of inosine monophosphate (IMP) dehydrogenase, viral RNA polymerase and viral mRNA guanylyltransferase, causes mutagenesis and reduction of viral infectivity. Reference: Patterson & Fernandez-Larsson, *Rev. Infect. Dis*., **12**, 1139 - 1146 (1990).

Vial containing 500 µl of 10 mM aqueous solution of pH 7.6. ❄ Shipment on dry ice is recommended to maintain original quality.

5 µmol / ~2.4 mg € 331.- (R 001 - 05)	5 x 5 µmol € 1,360.- (R 001 - 25)

Inquire

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- Additional 1, N^6-etheno modifications of many triphosphate analogues listed
- Fluorescent methylanthraniloyl (MANT) modification of 2'/3'-ribose hydroxyl groups
- 5'-O-Triphosphates with spacers attached to positions 2, 6, 8, 2'/3' and reactive terminal group for immobilization as affinity ligands and for labelling
- 5'-O-Triphosphates with attached fluorescent dyes
- Affinity chromatography gels with immobilized 5'-NTP ligands
- 5'-O-Triphosphates with α/β-methylene bridges

For phosphate oxygen isotopes O^{17} and O^{18} please inquire as well.

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- **Feed-back** on performance of our products is very much appreciated, be it positive or negative. It encourages us, helps us to improve, and leads to better and more qualified service for our customers. Also, we would like to hear about your new papers with our products, in order to have the citation included in the corresponding technical information.

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Last updated: May 20, 2017

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4. The client accepts that personal data are recorded by us within the scope of the provisions of the BDSG (German Federal Data Protection Law).

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6. A set-off or other retention of payment in view of counter claims of the client is admissible only if the counter-claims have been acknowledged by us or the claims have been finally determined by court order.
7. We are entitled to demand, in our choice, the provision of security through letter of credit or other securities such as prepayment. Should the client not comply with this demand within ten days, we have the rights, after expiry of an additional term of 5 days to repudiate the contract.

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1. We are not obliged to comply with the agreed delivery term until the client has fulfilled his contractual obligations or duties imposed on him in particular the stipulated financial commitments. The term of delivery shall be complied with if the products to be delivered have left our premises or readiness for despatch has been announced.
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1. We despatch products on account and risk of our clients. The risk shall pass to the client, even with freight prepaid shipments, at the time the products are handed over to the carrier or with commencement of transit by ourselves or by acceptance by the persons instructed by the client. We undertake to assign existing rights and remedies against the carrier on first simple demand and unconditional payment of the contract price by the client.
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1. We retain the right of property in the products delivered until all our present or accessory claims against the client, irrespective of their cause, are settled. In acceptance of drafts or of bills of exchange or in assuming the liability under a bill of exchange by acceptance or issue of a bill of exchange the title in the products does not pass to the client before the draft or bill of exchange has been finally honoured and it has been ascertained that no claims can be lodged against us based upon the documentary credits. Inserting claims in a current account as well as acknowledgment of a balance does not affect the retention of title.
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VI. Guaranty and Liability

1. We do not assume liability for oral advices of any kind - which are non-binding in any event - to the client. Any advice, oral or written, regarding the area of application of our products does not dispense the client from a self-responsible examination regarding the qualification of the products for the intended purposes or methods as well as of any infringement with issued or pending intellectual property rights belonging to third parties.
2. Our products are for laboratory research use only if not otherwise confirmed in writing. They must not be used with human subjects or for clinical diagnosis or therapeutic use in humans or animals, including, but not limited to, commercial purposes, *in vitro* diagnostic purposes, ex vivo or in vivo therapeutic purposes, investigational use, in foods, drugs, devices or cosmetics of any kind, or for consumption by or use in connection with or administration or application to humans or animals.
3. Our products are not sterile and are not regularly checked for endotoxins. Products carrying a charge are essentially desalted by common standard techniques for nucleotides. Please be aware, that efficacy of all known desalting methods is limited and dependent on properties of the particular product. Final preparations of products may therefore contain a minor residual salt content.
4. The product descriptions on our web site and in our catalogue are accurate to the best of our knowledge. Since research applications are subjected to variable influences beyond our control, the products are offered without performance warranty, expressed or implied. In any case we reserve the right, from time to time, to modify composition and purity, in response to changes in the market conditions, raw material supply or other factors. Many products are new and experimental and have not been tested for toxicity. PLEASE NOTE THAT THE ABSENCE OF A WARNING STATEMENT DOES NOT IMPLY THAT THE PRODUCT IS NOT HAZARDOUS. Research products should be used only by qualified investigators or by technically trained personnel working under the direct supervision of such investigators. It is the investigator's responsibility to ensure the safe handling of all products.
5. If any research product fails to meet the physical criteria ascribed to it on the catalogue, our web site or by any other analysis or description issued by us in writing, we will, after validating the deficiency, at the option of the client, either replace the deficient product in kind or will issue a Euro credit equivalent to the purchase price of the deficient product.
6. We will not be liable under any legal theory (including but not limited to contract, negligence, strict liability in tort or warranty of any kind) for any indirect, special, incidental, consequential or exemplary damages (including but not limited to lost profits), even if we had notice of the possibility of such damages. We shall not be liable for any loss, damage or penalty as a result of any delay in or failure to deliver or otherwise perform hereunder. In any event the extent of our liability is restricted to the damage to the product itself.
7. If the fault or omission of the ascribed quality is caused by the delivery or performance of a sub-supplier our liability is restricted to an assignment of our rights and remedies we have against the sub-supplier. We undertake to assign these rights and remedies on first simple demand. If the client is not able to recover from the sub-supplier, he is entitled to keep us liable according para. VI. 4. in a subsidiary way.
8. Refund, replacement or any other claims is conditioned on client giving written notice to us within thirty (30) days after arrival of the products at its destination. Failure of client to give said notice within said thirty (30) days shall constitute a waiver by the client of all claims hereunder with respect to said material. Our liability under VI. 9. below remains unaffected.
9. In any event, any claim of the client against us for, but not limited to refund, replacement, remuneration for consequential damages or otherwise is excluded under the statute of limitations after one year after arrival of the products at its destination. Our liability under VI. 9. below remains unaffected.
10. Our liability for intention or gross negligence, for an expressed warranty, for the violation of an obligation which was of absolute material importance for the intended purpose of the contract, under the statute for the liability for defect products, and for personal injury or death remains unaffected. In cases of gross negligence and in cases of our failure to fulfil an obligation which was of absolute material importance for the intended purpose of the contract we are liable only for the immediate and foreseeable damage.
11. As our products are delivered to the clients for research purposes only, the client shall indemnify us, without prejudice to our continuing legal rights and waiving any defence of limitation, without limit against any and all claims of third parties which are brought against us on the grounds of product liability, to the extent the claim is based on circumstances which were caused after risk passed to the client.

VII. Legal Clauses

1. The sole and exclusive place of performance for all contractual or other obligations under the contract as well as the sole and exclusive place of jurisdiction shall be Bremen for both parties.
2. Any dispute between the parties shall be governed by German law.
3. In case one of the above stipulations has been proved invalid the validity of the remaining provisions remain unaffected.

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