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Catalogue Number Index

Catalogue Content

BIOLOG Product List

Nucleoside- 2' , 3' & 5'- O- monophosphates

	Cat. No.	Page
Adenosine- 5'- O- phosphosulfate (APS)	A 061	7
2- Amino- 6- chloropurine riboside- 5'- O- monophosphate (2-NH_2-6-Cl-5'-PuMP)	A 084	7
2'- / 3'- O- (2- Aminoethylcarbamoyl)adenosine- 5'- O- monophosphate (2'-/3'-AEC-5'-AMP)	A 172	7
2'- / 3'- O- (2- Aminoethylcarbamoyl)guanosine- 5'- O- monophosphate (2'-/3'-AEC-5'-GMP)	A 170	7
2'- / 3'- O- (6- Aminohexylcarbamoyl)adenosine- 5'- O- monophosphate (2'-/3'-AHC-5'-AMP)	A 171	7
2'- / 3'- O- (6- Aminohexylcarbamoyl)guanosine- 5'- O- monophosphate (2'-/3'-AHC-5'-GMP)	A 174	7
5- Aminoimidazole- 4- carboxamide- 1- β- D- ribofuranoside- 5'- O- monophosphate (AICAR-5'-MP / ZMP)	A 105	8
8- Azidoadenosine- 5'- O- monophosphate (8-N_3-5'-AMP)	A 179	8
N^6- Benzoyladenosine- 5'- O- monophosphate (6-Bnz-5'-AMP)	B 109	8
8- Bromoadenosine- 5'- O- monophosphate (8-Br-5'-AMP)	B 066	8
8- Bromoguanosine- 5'- O- monophosphate (8-Br-5'-GMP)	B 057	8
2- Chloroadenosine- 5'- O- monophosphate (2-Cl-5'-AMP)	C 054	8
8- Chloroadenosine- 5'- O- monophosphate (8-Cl-5'-AMP)	C 016	8
8- (4- Chlorophenylthio)adenosine- 5'- O- monophosphate (8-pCPT-5'-AMP)	C 101	8
8- (4- Chlorophenylthio)- 2'- O- methyladenosine- 5'- O- monophosphate (8-pCPT-2'-O-Me-5'-AMP)	C 078	9
6- Chloropurine riboside- 5'- O- monophosphate (6-Cl-5'-PuMP)	C 032	9
N^6- Cyclopentyladenosine- 5'- O- monophosphate (6-cPe-5'-AMP)	C 089	9
Cytidine- 2'- O- monophosphate (2'-CMP)	C 093	9
Cytidine- 3'- O- monophosphate (3'-CMP)	C 094	9
7- Deazaadenosine- 5'- O- monophosphate (7-CH-5'-AMP / 5'-TuMP)	D 032	9
7- Deaza- 2'- deoxyadenosine- 5'- O- monophosphate (7-CH-5'-dAMP / 5'-dTuMP)	D 058	9
2'- Deoxy- 1, N^6- ethenoadenosine- 5'- O- monophosphate (ε-5'-dAMP)	D 077	10
2'- Deoxy- 3'- O- (N'- methylanthraniloyl)adenosine- 5'- O- monophosphate (MANT-5'-dAMP)	D 081	10
2'- Deoxy- 3'- O- (N'- methylanthraniloyl)guanosine- 5'- O- monophosphate (MANT-5'-dGMP)	D 082	10
1, N^6- Ethenoadenosine- 5'- O- monophosphate (ε-5'-AMP)	E 005	11
2'- / 3'- O- (6- [Fluoresceinyl]aminohexylcarbamoyl)adenosine- 5'- O- monophosphate (2'-/3'-Fluo-AHC-5'-AMP)	F 010	11
Guanosine- 2'- O- monophosphate (2'-GMP)	G 022	11
Guanosine- 3'- O- monophosphate (3'-GMP)	G 021	11
N^6- Methyladenosine- 5'- O- monophosphate (6-Me-5'-AMP)	M 038	11
2'- / 3'- O- (N'- Methylanthraniloyl)adenosine- 5'- O- monophosphate (MANT-5'-AMP)	M 037	11
2'- / 3'- O- (N'- Methylanthraniloyl)guanosine- 5'- O- monophosphate (MANT-5'-GMP)	M 042	12
2'- / 3'- O- (N'- Methylanthraniloyl)inosine- 5'- O- monophosphate (MANT-5'-IMP)	M 072	12
2- Methylthioadenosine- 5'- O- monophosphate (2-MeS-5'-AMP)	M 031	12
Purine riboside- 5'- O- monophosphate (5'-PuMP)	P 011	12
2'- / 3'- O- (6- [TAMRA]- aminoethylcarbamoyl)guanosine- 5'- O- monophosphate (2'-/3'-TAMRA-AEC-5'-GMP)	T 020	12
6- Thioguanosine- 5'- O- monophosphate (6-T-5'-GMP)	T 014	12
Uridine- 2'- O- monophosphate (2'-UMP)	U 015	13
Uridine- 3'- O- monophosphate (3'-UMP)	U 016	13
Analogues of nucleoside- 5'- O- monophosphates not specially listed.	Inquire	13

Phosphorothioate- modified Nucleoside- 5'- O- monophosphates

	Cat. No.	Page
Adenosine- 5'- O- monophosphorothioate (5'-AMPS)	A 005	7
Cytidine- 5'- O- monophosphorothioate (5'-CMPS)	C 053	9
2'- Deoxyadenosine- 5'- O- monophosphorothioate (5'-dAMPS)	D 003	10
2'- Deoxycytidine- 5'- O- monophosphorothioate (5'-dCMPS)	D 059	10
2'- Deoxyguanosine- 5'- O- monophosphorothioate (5'-dGMPS)	D 056	10
2'- Deoxyinosine- 5'- O- monophosphorothioate (5'-dIMPS)	D 060	10
2'- Deoxyuridine- 5'- O- monophosphorothioate (5'-dUMPS)	D 057	10
Guanosine- 5'- O- monophosphorothioate (5'-GMPS)	G 018	11
Thymidine- 5'- O- monophosphorothioate (5'-TMPS)	T 004	12
Uridine- 5'- O- monophosphorothioate (5'-UMPS)	U 006	13
Phosphorothioate analogues of nucleoside- 5'- O- monophosphates not specially listed.	Inquire	13

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 x 10^{-1} M)	10 µl	50 µl	100 µl	250 µl	500 µl	1 ml
50 mM (5 x 10^{-2} M)	20 µl	100 µl	200 µl	500 µl	1 ml	2 ml
20 mM (2 x 10^{-2} M)	50 µl	250 µl	500 µl	1.25 ml	2.5 ml	5 ml
10 mM (1 x 10^{-2} M)	100 µl	500 µl	1 ml	2.5 ml	5 ml	10 ml
5 mM (5 x 10^{-3} M)	200 µl	1 ml	2 ml	5 ml	10 ml	20 ml
1 mM (1 x 10^{-3} M)	1 ml	5 ml	10 ml	25 ml	50 ml	100 ml
500 µM (5 x 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.

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- phosphodiesterase hydrolysis data
- protein kinase binding, activation and inhibition data
- application references
- potential analogue pitfalls
- selection of suitable structures for respective biological systems

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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.**

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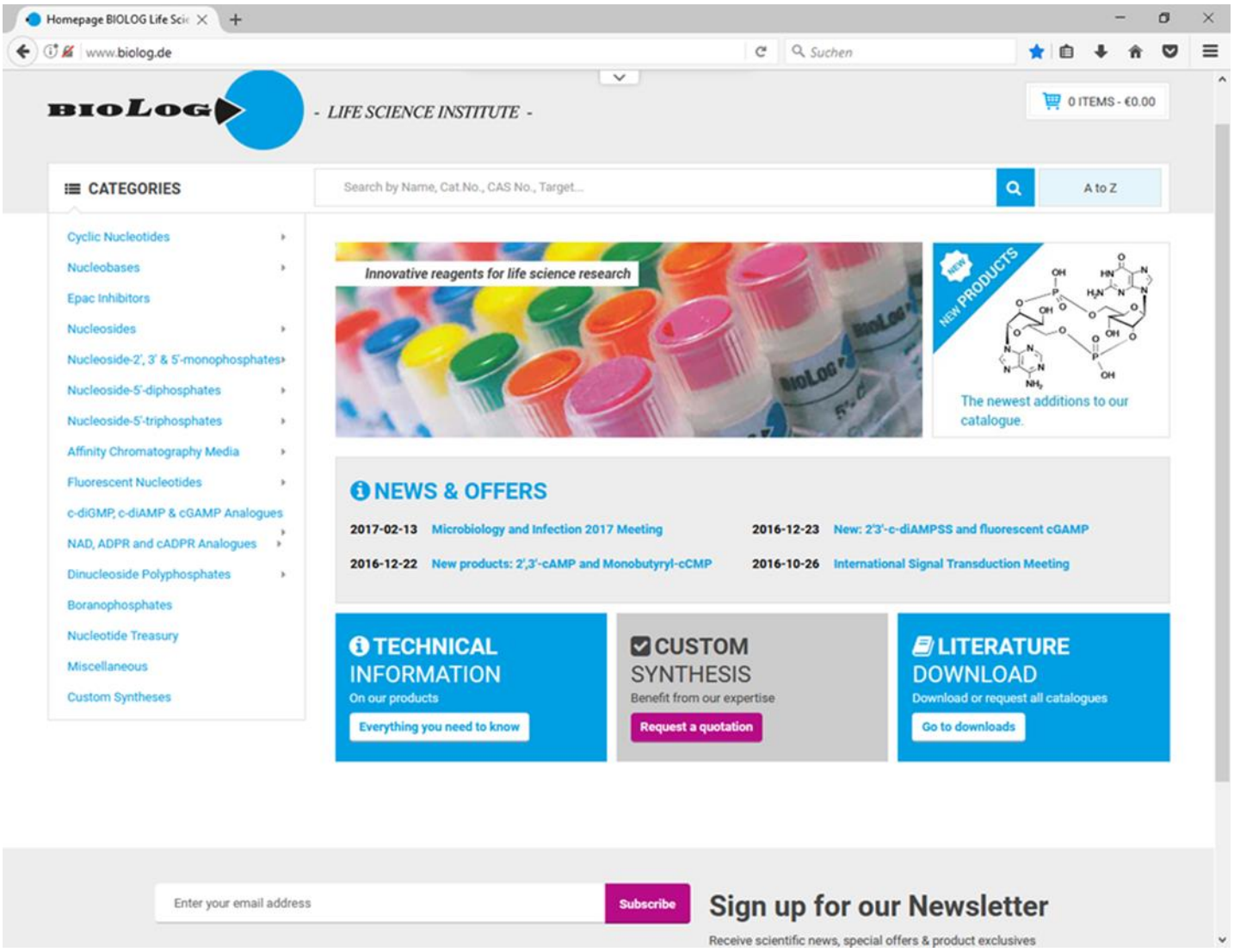
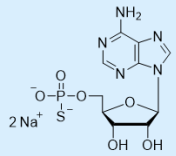


Nucleoside- 2', 3' & 5'- O- monophosphates and 5'- phosphorothioates

A 005



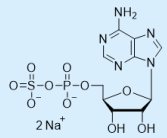
Adenosine- 5'- O- monophosphorothioate (5'-AMPS)

[19341-57-2]; $C_{10}H_{14}N_5O_6PS$; MW 363.3 (free acid); λ_{max} 259 nm; ε 15200; sodium salt; purity > 98% HPLC.
Substrate, competitive inhibitor or regulator of enzymes that interact with adenosine-5'-monophosphate. Can be modified with SH-reactive reporters or linked to structures with SH-groups via a disulfide bond. $P2y_{11}$ receptor antagonist. Detailed technical information and reference list available. Reference: Swennen et al., *Biochem. Biophys. Res. Commun.*, **348**, 1194 - 1199 (2006).

50 µmol / ~18 mg € 118.- (A 005 - 50)	5 x 50 µmol € 502.- (A 005 - 250)	**Inquiries for bulk quantities welcome!**

A 061

❄ *High Purity!*



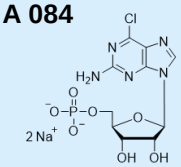
Adenosine- 5'- O- phosphosulfate (APS)

[102029-95-8]; $C_{10}H_{14}N_5O_{10}PS$; MW 427.3 (free acid); λ_{max} 259 nm; ε 15000; sodium salt; purity > 97% HPLC.
For the corresponding phosphorothioate-modified structures please inquire. APS is a sulfate ester of adenosine-5'-O-monophosphate (5'-AMP) and represents an active form of sulfate. Useful in pyrosequencing and bioluminescence applications. Detailed technical information and references available. References: Ronaghi et al., *Science*, **281**, 363 - 365 (1998); Hofgen et al., *Amino Acids*, **20**, 291 - 299 (2001); Eriksson et al., *Anal. Biochem.*, **293**, 67 - 70 (2001).

Vial containing 1 ml of 10 mM aqueous solution of pH 5.5. ❄ Shipment on dry ice is essential to maintain original quality!

10 µmol / ~4.3 mg € 97.- (A 061 - 10)	5 x 10 µmol € 412.- (A 061 - 50)	**Inquiries for bulk quantities welcome!**

A 084

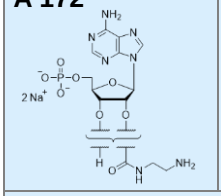


2- Amino- 6- chloropurine riboside- 5'- O- monophosphate (2-NH_2-6-Cl-5'-PuMP)

[16321-98-5]; $C_{10}H_{13}ClN_5O_7P$; MW 381.7 (free acid); λ_{max} 309 nm; ε 6880; sodium salt; purity > 97% HPLC.
Analogue of guanosine-5'-O-monophosphate, useful as precursor for 6-modified 5'-GMP derivatives. Inhibits IMP dehydrogenase. Detailed technical information available. Reference: Anderson & Sartorelli, *Biochem. Pharmacol.*, **18**, 2747 - 2757 (1969).

5 µmol / ~1.9 mg € 164.- (A 084 - 05)	5 x 5 µmol € 692.- (A 084 - 25)	**Inquiries for bulk quantities welcome!**

A 172

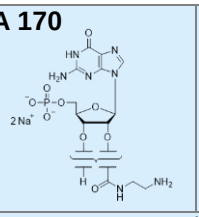


2'- / 3'- O- (2- Aminoethylcarbamoyl)adenosine- 5'- O- monophosphate (2'-/3'-AEC-5'-AMP)

$C_{13}H_{20}N_7O_8P$; MW 433.3 (free acid); λ_{max} 259 nm; ε 15000; sodium salt; purity > 97% HPLC.
Analogue of adenosine-5'-O-monophosphate, useful as ligand for immobilization and for coupling of various dyes and labels. Detailed technical information available. This ligand is also available with a longer spacer (2'-/3'-AHC-5'-AMP; Cat. No. A 171, below).

5 µmol / ~2.2 mg € 155.- (A 172 - 05)	5 x 5 µmol € 660.- (A 172 - 25)

A 170

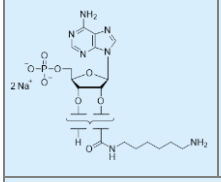


2'- / 3'- O- (2- Aminoethylcarbamoyl)guanosine- 5'- O- monophosphate (2'-/3'-AEC-5'-GMP)

$C_{13}H_{20}N_7O_9P$; MW 449.3 (free acid); λ_{max} 252 nm; ε 13500; sodium salt; purity > 97% HPLC.
Analogue of guanosine-5'-O-monophosphate, useful as ligand for immobilization and for coupling of various dyes and labels. Detailed technical information available. This ligand is also available with a longer spacer (2'-/3'-AHC-5'-GMP; Cat. No. A 174, below).

5 µmol / ~2.2 mg € 171.- (A 170 - 05)	5 x 5 µmol € 726.- (A 170 - 25)

A 171

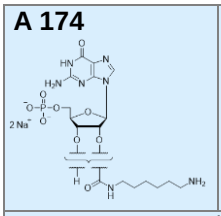


2'- / 3'- O- (6- Aminohexylcarbamoyl)adenosine- 5'- O- monophosphate (2'-/3'-AHC-5'-AMP)

$C_{17}H_{28}N_7O_8P$; MW 489.4 (free acid); λ_{max} 259 nm; ε 15000; sodium salt; purity > 97% HPLC.
Analogue of adenosine-5'-O-monophosphate, useful as ligand for immobilization and for coupling of various dyes and labels. Detailed technical information available. This ligand is also available with a shorter spacer (2'-/3'-AEC-5'-AMP; Cat. No. A 172, above).

5 µmol / ~2.4 mg € 155.- (A 171 - 05)	5 x 5 µmol € 660.- (A 171 - 25)

A 174

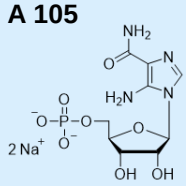


2'- / 3'- O- (6- Aminohexylcarbamoyl)guanosine- 5'- O- monophosphate (2'-/3'-AHC-5'-GMP)

$C_{17}H_{28}N_7O_9P$; MW 505.4 (free acid); λ_{max} 252 nm; ε 13500; sodium salt; purity > 97% HPLC.
Analogue of guanosine-5'-O-monophosphate, useful as ligand for immobilization and for coupling of various dyes and labels. Detailed technical information available. This ligand is also available with a shorter spacer (2'-/3'-AEC-5'-GMP; Cat. No. A 170, above).

5 µmol / ~2.5 mg € 171.- (A 174 - 05)	5 x 5 µmol € 726.- (A 174 - 25)

A 105

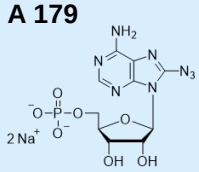


5- Aminoimidazole- 4- carboxamide- 1- ß- D- ribofuranoside- 5'- O- monophosphate (AICAR-5'-MP / ZMP)

[3031-94-5]; $C_9H_{15}N_4O_8P$; MW 338.2 (free acid); λ_{max} 265 nm; ε 12500; sodium salt; purity > 97% HPLC.
For other salt forms please inquire. Analogue of AICA-riboside (Cat. No. A 103) that mimics 5'-AMP and acts as an activator of AMP-activated protein kinase. Detailed technical information available. References: Fryer et al., *Biochem. J.,* **363,** 167 - 174 (2002); Musi & Goodyear, *Acta Physiol. Scand*., **178**, 337 - 345 (2003).

10 µmol / ~3.4 mg € 55.- (A 105 - 10)	5 x 10 µmol € 231.- (A 105 - 50)

A 179

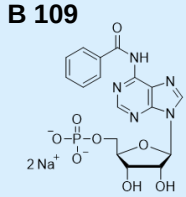


8- Azidoadenosine- 5'- O- monophosphate, sodium salt (8-N_3-5'-AMP)

[60731-47-7]; $C_{10}H_{13}N_8O_7P$; MW 388.2 (free acid); λ_{max} 281 nm; ε 13000 (pH 6); sodium salt; purity > 97% HPLC.
Analogue of 5'-AMP, useful for covalent photoaffinity labelling of AMP-binding sites. Detailed technical information available. References: Czarnecki et al., *Methods Enzymol*., **56**, 642 - 653 (1979); Seery, *Biochim. Biophys. Acta*, **612**, 195 - 204 (1980); Larsen & Preiss, *Biochemistry*, **25**, 4371 - 4376 (1986); Patil & Datta, *Eur. J. Biochem*., **177**, 569 - 574 (1988).

5 µmol / ~1.9 mg € 181.- (A 179 - 05)	5 x 5 µmol € 770.- (A 179 - 25)

B 109

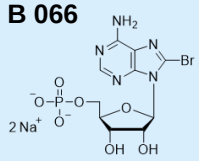


N^6- Benzoyladenosine- 5'- O- monophosphate (6-Bnz-5'-AMP)

[40871-55-4]; $C_{17}H_{18}N_5O_8P$; MW 451.3 (free acid); λ_{max} 279 nm; ε 17000; sodium salt; purity > 97% HPLC.
Lipophilic analogue of adenosine-5'-O-monophosphate and potential metabolite of N^6-Benzoyl-cAMP (Cat. No. B 009). For the corresponding nucleoside or nucleobase please inquire. 6-Bnz-5'-AMP shows some cytokinin activity in tobacco and soybean tissue culture assays. Detailed technical information available. Reference: Martin et al., *Phytochem*., **12**, 749 - 752 (1973).

5 µmol / ~2.3 mg € 166.- (B 109 - 05)	5 x 5 µmol € 704.- (B 109 - 25)

B 066

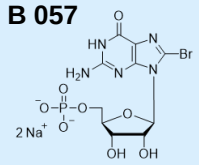


8- Bromoadenosine- 5'- O- monophosphate (8-Br-5'-AMP)

[23567-96-6]; $C_{10}H_{13}BrN_5O_7P$; MW 426.1 (free acid); λ_{max} 264 nm; ε 17000; sodium salt; purity > 97% HPLC.
For other salt forms or higher purity please inquire. Analogue of 5'-AMP with changed syn/anti ratio for receptor mapping studies and as starting structure for 8-modified 5'-AMP derivatives. Detailed technical information available. References: Lascu et al., *Biochemistry*, **18**, 4818 - 4826 (1979); Carr & Thompson, *J. Comp. Physiol.*, **153**, 47 - 53 (1983).

10 µmol / ~4.3 mg € 49.- (B 066 - 10)	5 x 10 µmol € 135.- (B 066 - 50)	**Inquiries for bulk quantities welcome!**

B 057

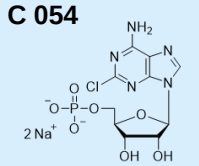


8- Bromoguanosine- 5'- O- monophosphate (8-Br-5'-GMP)

[21870-09-7]; $C_{10}H_{13}BrN_5O_8P$; MW 442.1 (free acid); λ_{max} 260 nm; ε 16200; sodium salt; purity > 97% HPLC.
For other salt forms or higher purity please inquire. Analogue of 5'-GMP with changed syn/anti ratio for receptor mapping studies and as starting structure for 8-modified 5'-GMP derivatives. Detailed technical information available. References: Lassota et al., *Z. Naturforsch.*, **39C**, 55 - 63 (1984); Collier & Wagner, *Org. Biomol. Chem*., **4**, 4526 - 4532 (2006).

10 µmol / ~4.4 mg € 62.- (B 057 - 10)	5 x 10 µmol € 264.- (B 057 - 50)

C 054

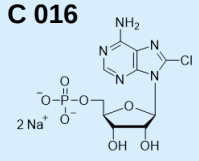


2- Chloroadenosine- 5'- O- monophosphate (2-Cl-5'-AMP)

[21466-01-3]; $C_{10}H_{13}ClN_5O_7P$; MW 381.7 (free acid); λ_{max} 262 nm; ε 14200; sodium salt; purity > 97% HPLC.
Analogue of 5'-AMP with a reactive chlorine for introduction of modifications in position 2 of the adenine nucleobase. Detailed technical information available. Reference: Gough et al., *J. Med. Chem.*, **12**, 494 - 498 (1969).

10 µmol / ~3.8 mg € 113.- (C 054 - 10)	5 x 10 µmol € 480.- (C 054 - 50)

C 016

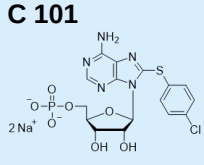


8- Chloroadenosine- 5'- O- monophosphate (8-Cl-5'-AMP)

[37676-40-7]; $C_{10}H_{13}ClN_5O_7P$; MW 381.7 (free acid); λ_{max} 262 nm; ε 17000; sodium salt; purity > 97% HPLC.
Potential metabolite of 8-chloroadenosine-3',5'-cyclic monophosphate (8-Cl-cAMP, Cat. No. C 007). For other metabolites not listed in this catalogue, please inquire. Detailed technical information available. References: Han et al., *J. Pharmacol. Exper. Ther.*, **265**, 790 - 794 (1992); Halgren et al., *Blood*, **92**, 2893 - 2898 (1998).

5 µmol / ~1.9 mg € 93.- (C 016 - 05)	5 x 5 µmol € 397.- (C 016 - 25)

C 101

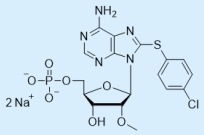


8- (4- Chlorophenylthio)adenosine- 5'- O- monophosphate (8-pCPT-5'-AMP)

[78710-84-6]; $C_{16}H_{17}ClN_5O_7PS$; MW 489.8 (free acid); λ_{max} 282 nm; ε 16000; sodium salt; purity > 97% HPLC.
Potential metabolite of 8-pCPT-cAMP (Cat. No. C 010), inhibits 5'-IMP dehydrogenase. The corresponding nucleoside 8-pCPT-Ado (Cat. No. C 086) and the nucleobase 8-pCPT-Ade (Cat. No. C 069) are available as well. Detailed technical information available. Reference: Skibo et al., *J. Med. Chem.*, **24**, 1155 - 1161 (1981).

5 µmol / ~2.4 mg € 46.- (C 101 - 05)	5 x 5 µmol € 194.- (C 101 - 25)

C 078

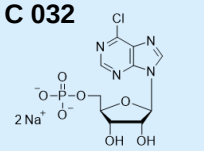


8- (4- Chlorophenylthio)- 2'- O- methyladenosine- 5'- O- monophosphate (8-pCPT-2'-O-Me-5'-AMP)

[1187179-94-7]; $C_{17}H_{19}ClN_5O_7PS$; MW 503.9 (free acid); λ_{max} 282 nm; ε 16000; sodium salt; purity > 97% HPLC.
Potential metabolite of the specific Epac activator 8-pCPT-2'-O-Me-cAMP (Cat. No. C 041). The corresponding nucleoside 8-pCPT-2'-O-Me-adenosine (Cat. No. C 070) and the nucleobase 8-pCPT-adenine (Cat. No. C 069) are available as well. Detailed technical information available. Reference: Laxman et al., *Proc. Natl. Acad. Sci. USA*, **103**, 19194 - 19199 (2006).

5 µmol / ~2.5 mg € 109.- (C 078 - 05)	5 x 5 µmol € 460.- (C 078 - 25)

C 032

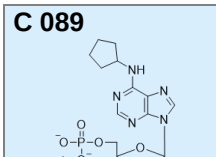


6- Chloropurine riboside- 5'- O- monophosphate (6-Cl-5'-PuMP)

[5843-59-4]; $C_{10}H_{12}ClN_4O_7P$; MW 366.7 (free acid); λ_{max} 263 nm; ε 8900; sodium salt; purity > 97% HPLC.
Analogue of 5'-AMP with reactive chlorine for introduction of modifications in position 6 of the adenine nucleobase. Detailed technical information available. Reference: Pares et al., *Eur. J. Biochem*., **105**, 571 - 579 (1980).

10 µmol / ~3.7 mg € 106.- (C 032 - 10)	5 x 10 µmol € 450.- (C 032 - 50)

C 089

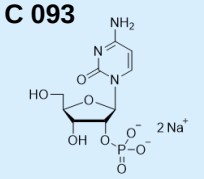


N^6- Cyclopentyladenosine- 5'- O- monophosphate (6-cPe-5'-AMP)

[117778-38-8]; $C_{15}H_{22}N_5O_7P$; MW 415.3 (free acid); λ_{max} 270 nm; ε 19900; sodium salt; purity > 97% HPLC.
N^6-modified analogue of adenosine-5'-O-monophosphate (AMP). Potential metabolite of 6-cPe-ATP (Cat. No. C 062) and 6-cPe-ADP (Cat. No. C 061). Detailed technical information available. Reference: Mlejnek & Dolezel, *Toxicol. In Vitro*, **19**, 985 - 990 (2005).

5 µmol / ~2.1 mg € 125.- (C 089 - 05)	5 x 5 µmol € 531.- (C 089 - 25)

C 093

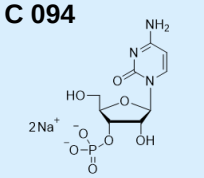


Cytidine- 2'- O- monophosphate (2'-CMP)

[85-94-9]; $C_9H_{14}N_3O_8P$; MW 323.2 (free acid); λ_{max} 271 nm; ε 9000; sodium salt; purity > 95% HPLC.
Metabolite formed during enzymatic hydrolysis of cytidine-2',3'-cyclic monophosphate by 2',3'-cyclic nucleotide 3'-phosphodiesterase. Detailed technical information available. Reference: Diaz & Heredia, *Biochim. Biophys. Acta*, **1472**, 404 - 407 (1999).

5 µmol / ~1.6 mg € 155.- (C 093 - 05)	5 x 5 µmol € 660.- (C 093 - 25)

C 094

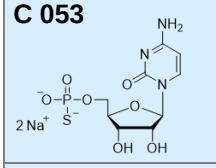


Cytidine- 3'- O- monophosphate (3'-CMP)

[84-52-6]; $C_9H_{14}N_3O_8P$; MW 323.2 (free acid); λ_{max} 271 nm; ε 9000; sodium salt; purity > 95% HPLC.
Metabolite formed during enzymatic hydrolysis of cytidine-2',3'-cyclic monophosphate by 2',3'-cyclic nucleotide 2'-phosphodiesterase and RNAse. Detailed technical information available. References: Morishima, *Biochim. Biophys. Acta,* **370**, 227 - 241 (1974); Fernandez-Centeno & Heredia, *Comp. Biochem. Physiol. B Biochem. Mol. Biol.*, **125**, 161 - 167 (2000).

5 µmol / ~1.6 mg € 155.- (C 094 - 05)	5 x 5 µmol € 660.- (C 094 - 25)

C 053

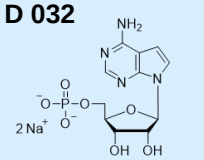


Cytidine- 5'- O- monophosphorothioate (5'-CMPS)

[47151-76-8]; $C_9H_{14}N_3O_7PS$; MW 339.3 (free acid); λ_{max} 271 nm; ε 9200; sodium salt; purity > 97% HPLC.
Potential substrate, competitive inhibitor or regulator of enzymes that interact with cytidine-5'-monophosphate. Can be modified with SH-reactive reporters or linked to structures with SH-groups via a disulfide bond. Detailed technical information available. Reference: Basu et al., *Meth. Mol. Biol.*, **252**, 57 - 75 (2004).

5 µmol / ~1.7 mg € 129.- (C 053 - 05)	5 x 5 µmol € 549.- (C 053 - 25)

D 032

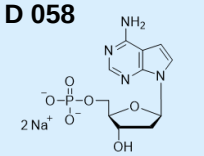


7- Deazaadenosine- 5'- O- monophosphate (7-CH-5'-AMP / 5'-TuMP)

[16719-46-3]; $C_{11}H_{15}N_4O_7P$; MW 346.2 (free acid); λ_{max} 269 nm; ε 12000; sodium salt; purity > 97% HPLC.
Synonym: Tubercidin-5'-O-monophosphate. Potential substrate, competitive inhibitor or regulator of enzymes that interact with adenosine-5'-monophosphate. Detailed technical information available. Reference: Minelli et al., *Mol. Genet. Metab*., **66**, 49 - 55 (1999).

10 µmol / ~3.5 mg € 90.- (D 032 - 10)	5 x 10 µmol € 383.- (D 032 - 50)

D 058

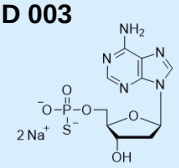


7- Deaza- 2'- deoxyadenosine- 5'- O- monophosphate (7-CH-5'-dAMP / 5'-dTuMP)

[103078-56-4]; $C_{11}H_{15}N_4O_6P$; MW 330.2 (free acid); λ_{max} 269 nm; ε 12000; sodium salt; purity > 97% HPLC.
Synonym: 2'-Deoxytubercidin-5'-O-monophosphate. Potential substrate, competitive inhibitor or regulator of enzymes that interact with 2'-deoxyadenosine-5'-monophosphate. Detailed technical information available. Reference: Seela & Kehne, *Tetrahedron,* **41**, 5387 - 5392 (1985).

5 µmol / ~1.7 mg € 135.- (D 058 - 05)	5 x 5 µmol € 572.- (D 058 - 25)

D 003

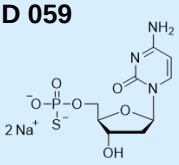


2'- Deoxyadenosine- 5'- O- monophosphorothioate (5'-dAMPS)

[64145-26-2]; $C_{10}H_{14}N_5O_5PS$; MW 347.3 (free acid); λ_{max} 259 nm; ε 15200; sodium salt; purity > 97% HPLC.
Potential substrate, competitive inhibitor or regulator of enzymes that interact with 2'-deoxyadenosine-5'- monophosphate. Can be modified with SH-reactive reporters or linked to structures with SH-groups via a disulfide bond. Detailed technical information available. Reference: Vosberg & Eckstein, *J. Biol. Chem.*, **257**, 6595 - 6599 (1982).

5 µmol / ~1.7 mg € 125.- (D 003 - 05)	5 x 5 µmol € 530.- (D 003 - 25)

D 059

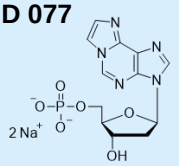


2'- Deoxycytidine- 5'- O- monophosphorothioate (5'-dCMPS)

[64145-27-3]; $C_9H_{14}N_3O_6PS$; MW 323.3 (free acid); λ_{max} 271 nm; ε 9200; sodium salt; purity > 97% HPLC.
Potential substrate, competitive inhibitor or regulator of enzymes that interact with 2'-deoxycytidine-5'-monophosphate. Can be modified with SH-reactive reporters or linked to structures with SH-groups via a disulfide bond. Detailed technical information available. Reference: Cummins & Potter, *Phosphorus Sulfur*, **30**, 589 - 592 (1987).

5 µmol / ~1.6 mg € 129.- (D 059 - 05)	5 x 5 µmol € 549.- (D 059 - 25)

D 077

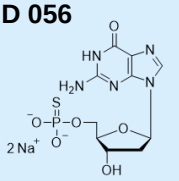


2'- Deoxy- 1, N^6- ethenoadenosine- 5'- O- monophosphate (ε-5'-dAMP)

[60508-81-8]; $C_{12}H_{14}N_5O_6P$; MW 355.3 (free acid); λ_{max} 275 nm; ε 6000; sodium salt; purity > 97% HPLC.
Fluorescent analogue of 2'-deoxyadenosine-5'-monophosphate; λ_{exc} 300 nm, λ_{em} 415 nm. Detailed technical information available. References: Vandenbunder et al., *Proc. Nat. Acad. Sci. USA*, **73**, 2696 - 2700 (1976); Chabbert et al., *J. Biol. Chem.*, **266**, 5395 - 5400 (1991).

5 µmol / ~1.8 mg € 104.- (D 077 - 05)	5 x 5 µmol € 440.- (D 077 - 25)	**Inquiries for bulk quantities welcome!**

D 056

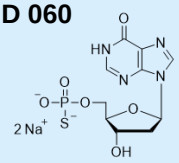


2'- Deoxyguanosine- 5'- O- monophosphorothioate (5'-dGMPS)

[87358-26-7]; $C_{10}H_{14}N_5O_6PS$; MW 363.3 (free acid); λ_{max} 252 nm; ε 14300; sodium salt; purity > 97% HPLC.
Potential substrate, competitive inhibitor or regulator of enzymes that interact with 2'-deoxyguanosine-5'-monophosphate. Can be modified with SH-reactive reporters or linked to structures with SH-groups via a disulfide bond. Detailed technical information available. References: Vosberg et al., *Biochemistry*, **16**, 3633 - 3640 (1977); Olsen et al., *Biochemistry*, **29**, 9546 - 9551 (1990).

5 µmol / ~1.8 mg € 129.- (D 056 - 05)	5 x 5 µmol € 549.- (D 056 - 25)

D 060

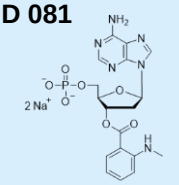


2'- Deoxyinosine- 5'- O- monophosphorothioate (5'-dIMPS)

[771477-45-3]; $C_{10}H_{13}N_4O_6PS$; MW 348.3 (free acid); λ_{max} 249 nm; ε 12000; sodium salt; purity > 97% HPLC.
Potential substrate, competitive inhibitor or regulator of enzymes that interact with 2'-deoxyinosine-5'-monophosphate. Can be modified with SH-reactive reporters or linked to structures with SH-groups via a disulfide bond. Detailed technical information available. Reference: Buschle & Lingnau, *PCT Int. Appl.* (2004), 33 pp., WO 2004084937.

5 µmol / ~1.7 mg € 129.- (D 060 - 05)	5 x 5 µmol € 549.- (D 060 - 25)

D 081

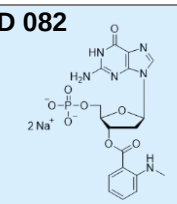


2'- Deoxy- 3'- O- (N'- methylanthraniloyl)adenosine- 5'- O- monophosphate (MANT-5'-dAMP)

$C_{18}H_{21}N_6O_7P$; MW 464.4 (free acid); λ_{max} 255 nm (pH 8); ε 23300; sodium salt; purity > 97% HPLC.
For other salt forms please inquire. Fluorescent analogue of 2'-deoxyadenosine-5'-monophosphate (λ_{exc} 350 nm, λ_{em} 446 nm), useful for research into 5'-dAMP-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).

5 µmol / ~2.3 mg € 109.- (D 081 - 05)	5 x 5 µmol € 462.- (D 081 - 25)

D 082

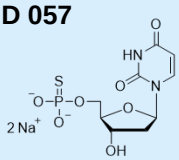


2'- Deoxy- 3'- O- (N'- methylanthraniloyl)guanosine- 5'- O- monophosphate (MANT-5'-dGMP)

$C_{18}H_{21}N_6O_8P$; MW 480.4 (free acid); λ_{max} 252 nm (pH 8); ε 22600; sodium salt; purity > 97% HPLC.
For other salt forms please inquire. Fluorescent analogue of 2'-deoxyguanosine-5'-monophosphate (λ_{exc} 350 nm, λ_{em} 442 nm), useful for research into 5'-dGMP-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).

5 µmol / ~2.4 mg € 109.- (D 082 - 05)	5 x 5 µmol € 462.- (D 082 - 25)

D 057

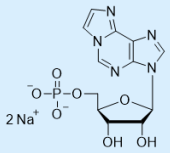


2'- Deoxyuridine- 5'- O- monophosphorothioate (5'-dUMPS)

[205379-91-5]; $C_9H_{13}N_2O_7PS$; MW 324.3 (free acid); λ_{max} 262 nm; ε 10000; sodium salt; purity > 97% HPLC.
Potential substrate, competitive inhibitor or regulator of enzymes that interact with 2'-deoxypyrimidine-5'-monophosphates. Can be modified with SH-reactive reporters or linked to structures with SH-groups via a disulfide bond. Detailed technical information available. Reference: Golos et al., *Biol. Chem.*, **382**, 1439 - 1445 (2001).

5 µmol / ~1.6 mg € 129.- (D 057 - 05)	5 x 5 µmol € 549.- (D 057 - 25)

E 005

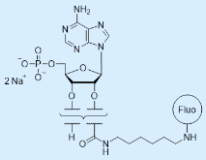


1, N^6- Ethenoadenosine- 5'- O- monophosphate (ε-5'-AMP)

[103213-41-8]; $C_{12}H_{14}N_5O_7P$; MW 371.3 (free acid); λ_{max} 275 nm; ε 6000; sodium salt; purity > 97% HPLC.
Fluorescent analogue of adenosine-5'-monophosphate; λ_{exc} 300 nm, λ_{em} 415 nm. Useful in assays for ecto-5'-nucleotidase (CD73). Detailed technical information available. References: Vandenbunder et al., *Proc. Nat. Acad. Sci. USA*, **73**, 2696 - 2700 (1976); Jamal et al., *Biochem. J.*, **250**, 369 – 373 (1988); Latchezar et al., *J. Pharmacol. Exp. Ther.*, **298**, 623 - 633 (2001).

10 µmol / ~3.7 mg € 129.- (E 005 - 10)	5 x 10 µmol € 550.- (E 005 - 50)	**Inquiries for bulk quantities welcome!**

F 010



2'- / 3'- O- (6- [Fluoresceinyl]aminohexylcarbamoyl)adenosine- 5'- O- monophosphate (2'- / 3'-Fluo-AHC-5'-AMP)

$C_{38}H_{38}N_7O_{14}P$; MW 847.7 (free acid); λ_{max} 494 nm; ε ~79000/pH 9; sodium salt; purity > 95% HPLC.
For other salt forms please inquire. Fluorescent analogue of 5'-AMP with λ_{exc} 494 nm, λ_{em} 517 nm. Useful as a calibrator in phosphodiesterase (PDE) assays using 2'-Fluo-AHC-cAMP (FAM-cAMP, Cat. No. F 003) as a substrate. Detailed technical information available. Reference: Schafer et al., *Br. J. Pharmacol.*, **159**, 842 - 855 (2010).

1 µmol / ~0.8 mg € 124.- (F 010 - 01)	5 x 1 µmol € 528.- (F 010 - 05)

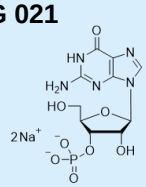
G 022

Guanosine- 2'- O- monophosphate (2'-GMP)

[130-50-7]; $C_{10}H_{14}N_5O_8P$; MW 363.2 (free acid); λ_{max} 252 nm; ε 13500; sodium salt; purity > 95% HPLC.
Metabolite formed during enzymatic hydrolysis of guanosine-2',3'-cyclic monophosphate (Cat. No. G 025) by 2',3'-cyclic nucleotide 3'-phosphodiesterase. Forms complexes with ribonuclease T1. Detailed technical information available. Reference: Heinemann et al, *Eur. J. Biochem.*, **109**, 109 - 114 (1980).

10 µmol / ~3.6 mg € 155.- (G 022 - 10)	5 x 10 µmol € 660.- (G 022 - 50)

G 021

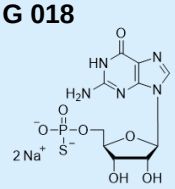


Guanosine- 3'- O- monophosphate (3'-GMP)

[6027-83-4]; $C_{10}H_{14}N_5O_8P$; MW 363.2 (free acid); λ_{max} 252 nm; ε 13500; sodium salt; purity > 95% HPLC.
Metabolite formed during enzymatic hydrolysis of guanosine-2',3'-cyclic monophosphate (Cat. No. G 025) by 2',3'-cyclic nucleotide 2'-phosphodiesterase and RNAse. Forms complexes with ribonuclease T1. Detailed technical information available. References: Zegers et al., *J. Biol. Chem.*, **269**, 127 - 133 (1994); Fernandez-Centeno & Heredia, *Comp. Biochem. Physiol. B Biochem. Mol. Biol.*, **125**, 161 - 167 (2000).

10 µmol / ~3.6 mg € 155.- (G 021 - 10)	5 x 10 µmol € 660.- (G 021 - 50)

G 018

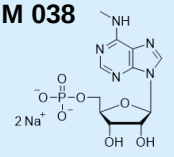


Guanosine- 5'- O- monophosphorothioate (5'-GMPS)

[76310-16-2]; $C_{10}H_{14}N_5O_7PS$; MW 379.3 (free acid); λ_{max} 252 nm; ε 14300; sodium salt; purity > 97% HPLC.
Substrate, competitive inhibitor or regulator of enzymes that interact with guanosine-5'-monophosphate. Can be modified with SH-reactive reporters or linked to structures with SH-groups via a disulfide bond. Detailed technical information and reference list available. References: Macosko et al., *RNA*, **5**, 1158 - 1166 (1999); Wu et al., *Bioconjugate Chem.*, **12**, 842 - 844 (2001).

10 µmol / ~3.8 mg € 141.- (G 018 - 10)	5 x 10 µmol € 600.- (G 018 - 50)

M 038

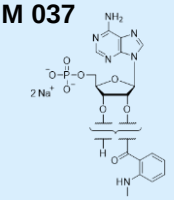


N^6- Methyladenosine- 5'- O- monophosphate (6-Me-5'-AMP)

[81921-35-9]; $C_{11}H_{16}N_5O_7P$; MW 361.3 (free acid); λ_{max} 265 nm; ε 18000; sodium salt; purity > 97% HPLC.
For other salt forms please inquire. Activator of glycogen phosphorylase b. Detailed technical information available. Reference: Morange et al., *Eur. J. Biochem.*, **65**, 553 - 563 (1976).

10 µmol / ~3.6 mg € 104.- (M 038 - 10)	5 x 10 µmol € 439.- (M 038 - 50)

M 037



2'- / 3'- O- (N'- Methylanthraniloyl)adenosine- 5'- O- monophosphate (MANT-5'-AMP)

[85287-53-2]; $C_{18}H_{21}N_6O_8P$; MW 480.4 (free acid); λ_{max} 255 nm (pH 8); ε 23300; sodium salt; purity > 97% HPLC for mixture of isomers. For other salt forms please inquire. Fluorescent metabolite of MANT-cAMP (Cat. No. M 008) and probe for 5'-AMP-binding receptors (λ_{exc} 350 nm, λ_{em} 446 nm). 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).

10 µmol / ~4.8 mg € 141.- (M 037 - 10)	5 x 10 µmol € 600.- (M 037 - 50)

D 081

3'- O- (N'- Methylanthraniloyl)- 2'- deoxyadenosine- 5'- O- monophosphate (MANT-5'-dAMP)

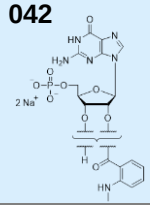
Please refer to 2'- Deoxy- 3'- O- (N'- methylanthraniloyl)adenosine- 5'- O- monophosphate listed above.

D 082

3'- O- (N'- Methylanthraniloyl)- 2'- deoxyguanosine- 5'- O- monophosphate (MANT-5'-dGMP)

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

M 042

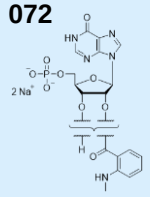


2'- / 3'- O- (N'- Methylanthraniloyl)guanosine- 5'- O- monophosphate (MANT-5'-GMP)

[85287-54-3]; $C_{18}H_{21}N_6O_9P$; MW 496.4 (free acid); λ_{max} 252 nm (pH 8); ε 22600; sodium salt; purity > 97% HPLC for mixture of isomers. For other salt forms please inquire. Fluorescent metabolite of MANT-cGMP (Cat. No. M 009) and probe for 5'-GMP-binding receptors (λ_{exc} 355 nm, λ_{em} 448 nm). 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).

10 µmol / ~5 mg € 135.- (M 042 - 10)	5 x 10 µmol € 572.- (M 042 - 50)

M 072

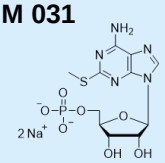


2'- / 3'- O- (N'- Methylanthraniloyl)inosine- 5'- O- monophosphate (MANT-5'-IMP)

$C_{18}H_{20}N_5O_9P$; MW 481.4 (free acid); λ_{max} 355 nm (pH 8); ε 5700; sodium salt; purity > 97% HPLC for mixture of isomers. For other salt forms please inquire. Fluorescent analogue of inosine-5'-monophosphate (λ_{exc} 355 nm, λ_{em} 448 nm). The MANT fluorophore has a certain sensitivity for its environment and can change its spectral properties upon binding. Detailed technical information available. Reference: Geduhn et al. , *J. Pharmacol. Exp. Ther.,* **336**, 104 - 115 (2011).

10 µmol / ~4.8 mg € 160.- (M 072 - 10)	5 x 10 µmol € 682.- (M 072 - 50)

M 031

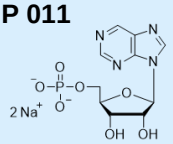


2- Methylthioadenosine- 5'- O- monophosphate (2-MeS-5'-AMP)

[22140-20-1]; $C_{11}H_{16}N_5O_7PS$; MW 393.3 (free acid); λ_{max} 277 nm, ε 14700 (pH 11); sodium salt; purity > 97% HPLC. For other salt forms please inquire. Potent adenylate cyclase-coupled platelet ADP P2Y purinoceptor antagonist. Detailed technical information and reference list available. References: Brammer & Maguire, *Brit. J. Pharmacol.,* **82**, 61 - 72 (1984); Swennen et al., *Biochem. Biophys. Res. Commun*., **348**, 1194 - 1199 (2006).

10 µmol / ~3.9 mg € 199.- (M 031 - 10)	5 x 10 µmol € 845.- (M 031 - 50)

P 011

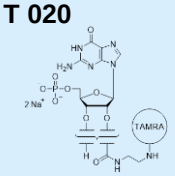


Purine riboside- 5'- O- monophosphate (5'-PuMP)

[13484-60-1]; $C_{10}H_{13}N_4O_7P$; MW 332.2 (free acid); λ_{max} 263 nm; ε 8000; sodium salt; purity > 97% HPLC.
Potential substrate, competitive inhibitor or regulator of enzymes that interact with adenosine-5'-monophosphate. Detailed technical information available. Reference: Kozlowska et al., *Toxicol. Lett.*, **104**, 171 - 181 (1999).

5 µmol / ~1.6 mg € 79.- (P 011 - 05)	5 x 5 µmol € 332.- (P 011 - 25)

T 020

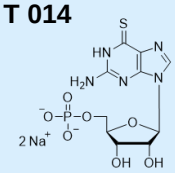


2'- / 3'- O- (6- [Tetramethylrhodaminyl]aminoethylcarbamoyl)guanosine- 5'- O- monophosphate (2'-/3'-TAMRA-AEC-5'-GMP)

$C_{38}H_{40}N_9O_{13}P$; MW 861.8 (free acid); λ_{max} 543 nm; ε 95000 (MeOH); sodium salt; purity > 95% HPLC.
Fluorescent analogue of guanosine-5'-monophosphate (λ_{exc} 555 nm, λ_{em} 580 nm). Detailed technical information available.

0.5 µmol / ~0,4 mg € 114.- (T 020 - 005)	5 x 0.5 µmol € 484.- (T 020 - 025)

T 014

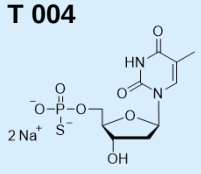


6- Thioguanosine- 5'- O- monophosphate (6-T-5'-GMP)

[74686-78-5]; $C_{10}H_{14}N_5O_7PS$; MW 379.3 (free acid); λ_{max} 340 nm; ε 26000; sodium salt; purity > 97% HPLC.
6-T-5'-GMP is a metabolite of azathioprine, an immunosuppressive drug. Detailed technical information available. Reference: Hawwa et al., *Br. J. Clin. Pharmacol.*, **66**, 517 - 528 (2008).

5 µmol / ~1.9 mg € 186.- (T 014 - 05)	5 x 5 µmol € 792.- (T 014 - 25)

T 004

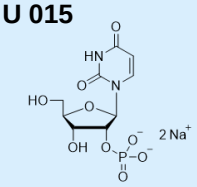


Thymidine- 5'- O- monophosphorothioate (5'-TMPS)

[15548-51-3]; $C_{10}H_{15}N_2O_7PS$; MW 338.3 (free acid); λ_{max} 267 nm; ε 9600; sodium salt; purity > 97% HPLC.
Potential substrate, competitive inhibitor or regulator of enzymes that interact with thymidine-5'-monophosphate. Can be modified with SH-reactive reporters or linked to structures with SH-groups via a disulfide bond. Detailed technical information available. Reference: Golos et al., *Biol. Chem*., **382**, 1439 - 1445 (2001).

5 µmol / ~1.7 mg € 141.- (T 004 - 05)	5 x 5 µmol € 599.- (T 004 - 25)

U 015

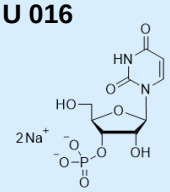


Uridine- 2'- O- monophosphate (2'-UMP)

[131-83-9]; $C_9H_{13}N_2O_9P$; MW 324.2 (free acid); λ_{max} 262 nm; ε 10000; sodium salt; purity > 95% HPLC.
Metabolite formed during enzymatic hydrolysis of uridine-2',3'-cyclic monophosphate (Cat. No. U 004) by 2',3'-cyclic nucleotide 3'-phosphodiesterase. Detailed technical information available. Reference: Suzuki et al., *Biochem. Biophys. Res. Commun.*, **275**, 572 - 576 (2000).

5 µmol / ~1.6 mg € 155.- (U 015 - 05)	5 x 5 µmol € 660.- (U 015 - 25)

U 016

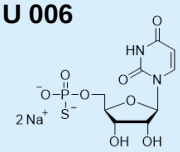


Uridine- 3'- O- monophosphate (3'-UMP)

[84-53-7]; $C_9H_{13}N_2O_9P$; MW 324.2 (free acid); λ_{max} 262 nm; ε 10000; sodium salt; purity > 95% HPLC.
Metabolite formed during enzymatic hydrolysis of uridine-2',3'-cyclic monophosphate (Cat. No. U 004) by 2',3'-cyclic nucleotide 2'-phosphodiesterase. Detailed technical information available. References: Bronk & Hastewell, *J. Physiol.*, **408**, 129 - 135 (1989); Fernandez-Centeno & Heredia, *Comp. Biochem. Physiol. B Biochem. Mol. Biol.*, **125**, 161 - 167 (2000); Suzuki et al., *Biochem. Biophys. Res. Commun.*, **275**, 572 - 576 (2000).

5 µmol / ~1.6 mg € 155.- (U 016 - 05)	5 x 5 µmol € 660.- (U 016 - 25)

U 006



Uridine- 5'- O- monophosphorothioate (5'-UMPS)

[15548-52-4]; $C_9H_{13}N_2O_8PS$; MW 340.3 (free acid); λ_{max} 262 nm; ε 10000; sodium salt; purity > 95% HPLC.
Potential substrate, competitive inhibitor or regulator of enzymes that interact with uridine-5'-monophosphate. Can be modified with SH-reactive reporters or linked to structures with SH-groups via a disulfide bond. Detailed technical information available. Reference: Eckstein & Sternbach, *Biochim. Biophys. Acta*, **146**, 618 - 619 (1967).

5 µmol / ~1.7 mg € 129.- (U 006 - 05)	5 x 5 µmol € 549.- (U 006 - 25)

Inquire

Updated speciality list on the web !

Special monophosphates and - monophosphorothioates not listed as regular products

- 5'-Monophosphates of most nucleosides and nucleobase modifications listed in this catalogue
- 5'-Monophosphorothioates and boranophosphates of most nucleosides and nucleobase modifications listed
- Disulfides of various nucleoside-5'-monophosphorothioates
- Additional 1,N^6-etheno modifications of many monophosphate analogues listed
- Fluorescent methylanthraniloyl (MANT) modification of 2'/3'- ribose hydroxyl groups
- Prodrug structures
- 5'-Monophosphates with attached spacers and reactive terminal group as affinity ligands and for labelling
- 5'-Monophosphates with attached fluorescent dyes
- Affinity chromatography gels with immobilized 5'-NMP ligands

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Alphabetical listing of products and abbreviations

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Terms and Conditions of Sale and Synthesis

Last updated: May 20, 2017

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2. All our quotations are subject to change. The conclusion of the contract can be regarded final only after the client has received our order confirmation. Oral agreements, amendments or additions to the contract are binding only if confirmed by us in writing.
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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).

II. Prices and Payment

1. Prices shown on the web and in the printed catalogue are in Euro. For price information and our acceptance of other currencies such as US Dollar, please inquire.
2. Prices shall be understood without value added tax. Shipping costs are extra charged (approx. Euro 30.00 within Germany; approx. Euro 40.00 - 100.00 within Europe, and for the rest of the world according to destination). Please note, that some products, e.g. all triphosphates, require courier transport with blue or dry ice in order to maintain their original high quality and purity. This will lead to extra costs, please inquire for details. Airmail postal service may be available for some destinations without any additional costs.
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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.

III. Terms of Delivery

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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3. Delivery of products which are not produced by us is subject to obtaining punctual and complete supply ourselves.
4. Goods may not be returned to us except with our prior permission. Goods can only be accepted for return if they are unopened and in good condition. Transport costs for returned goods are for the purchaser's account. Any returned items may be subject to a processing fee.

IV. Transition of Risk

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.
2. By unconditional acceptance of the products by the carrier or by the person instructed by the client all subsequent claims regarding the external condition (packing, leakage etc.) are precluded.
3. Even if the delivered products show considerable faults, they have to be accepted by the client, however, without prejudice for subsequent guaranty claims concerning the product. The client must, however, examine the delivery in every respect for any lack of conformity with the contract and shall give notice of any lack of conformity with the contract or will be excluded with all subsequent claims.
4. In the event the client defaults in the acceptance of the products or providing security, we are entitled, without prejudice to our rights for repudiation of the contract, to demand a lump sum indemnity of 5 % of the total delivery value. We as well as the client are not precluded from claiming and proving a higher or lower damage.

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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.
2. The client is authorized to use the products supplied for research purposes only if not otherwise confirmed in writing. He is also entitled to mix or synthesize with the products at his own risk. The title in our products is extended to new products synthesized by our client. In case our title in the products is extinguished by combination, mixture up or incorporation of other products the client herewith transfers title in the new synthesized products to us which is held as security for all claims as per para. 1 above. The products we obtained title in are stored free of charge by the client without giving any cause of action against us in view of the mixing up, the synthesis or the storage of the products.
3. In any case, the client agrees that any and all intellectual property or other rights, know-how, and methods relating to the synthesis or purchase contract remain our sole property.

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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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