

BIOLOG Life Science Institute

- Company and Activity Profile -

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Company Profile

- **Background:** Biolog is an innovative and scientifically orientated enterprise, specialized in tools for research into cellular signalling processes. The privately held company was founded in 1989 as a spin-off from the University of Bremen.
- **Dedication:** Biolog is a ISO-9001-certified bioorganic chemistry laboratory having its focus on the development, production and provision of rare and sophisticated, high quality nucleobase, nucleoside and nucleotide analogues to research institutions, pharmaceutical organisations and well-known suppliers of biochemicals throughout the world.
- **Staff and Facilities:** Biolog's committed team comprises chemists, laboratory technicians as well as marketing and administration personnel. They benefit from fully equipped chemical laboratories for organic syntheses, and from additional instrumentation which is accessible at the University of Bremen by research contract.

Business Activities – 1/2

- ❖ **Research & Development:** Biolog's main expertise is the chemical modification of intracellular second messengers such as adenosine- and guanosine-3',5'-cyclic monophosphate (cAMP, cGMP), which play important roles in multiple signal transduction processes in every organism. In close collaboration with academic and industrial partners Biolog develops sophisticated analogues of these and related structures, exhibiting optimized properties regarding their usability in signal transduction research. Fields of application are cell culture experiments or enzyme assays, amongst others.
- ❖ **Production & Worldwide Marketing:** Biolog's portfolio for the research reagent market comprises 500+ different rare nucleobases, nucleosides and nucleotides. 90%+ of Biolog's products are self-synthesised starting from corresponding starting materials. Several compounds, e.g. high purity triphosphate analogues for genotyping or widely used tools such as dibutyryl cAMP, are produced in bulk quantities.

Business Activities – 2/2

- ❖ **Customized Services:** Biolog's service of customer-specific syntheses, which is offered mainly - but not exclusively - in the field of nucleotide chemistry, has become an important business factor meanwhile. In addition to custom syntheses, purifications of problematic synthetic mixtures and customized modifications of biochemical relevant structures with fluorescent dyes or markers are offered as well.
- ❖ **Scientific Assistance:** Biolog collects scientific data for most of the structures offered. The permanently updated application and reference data base contains published and even unpublished results regarding cAMP- and cGMP-analogues, as well as information on related compounds and applications. Customers and interested scientists are invited to take advantage of Biolog's scientific resources and long standing experience to find the best products for their experiments or to obtain information relating to their fields of research.

Relevant Fields of Research

Biolog's products are of special interest in:

- **Signal transduction research** concerning mechanisms by which procaryotic and eucaryotic cells receive, interpret and act upon information delivered by hormones or other signals.
- **Receptor mapping studies** in order to get important insights in the binding principles of cAMP or cGMP receptor proteins.
- **Drug Development** using chemically modified nucleotide analogues as lead compounds.
- **RNA and DNA analysis**
- **Genotyping** by mass spectrometric or pyrosequencing techniques requiring highly purified 2'-deoxy- or 2',3'-dideoxynucleoside-5'-triphosphates.
- **Antiviral Research** with special emphasis on antiviral drug discovery.

Product Range – 1/2

- ❖ A large collection of **chemically modified high purity analogues of the second messengers cAMP and cGMP** which have optimized properties for use in signal transduction research (i.e. high specificity for desired receptor proteins such as protein kinases A and G, applicable in cell cultures or intact tissues due to their ability to permeate the cell membrane, resistant against metabolic degradation inside or outside the cell).
- ❖ Numerous rare **analogues of nucleobases** such as adenine and guanine and analogues of the corresponding **nucleosides**, suitable e.g. for antiviral research or for DNA/RNA analysis.
- ❖ High purity **nucleoside-5'-mono-, di- and triphosphates** with various chemical modifications, useful for regulation of specific enzymes, characterization of corresponding receptor proteins or for research on DNA, e.g. for incorporation of modified nucleotides into DNA chains or for genotyping.

Product Range – 2/2

- ❖ Diverse cyclic nucleotides as well as mono-, di- and triphosphates which carry a **fluorescent label**, e.g. for visible marking of corresponding binding sites inside the cell.
- ❖ Several cyclic AMP and cyclic GMP analogues immobilized on **agarose beads** for purification of various relevant proteins such as protein kinases or phosphodiesterases by affinity chromatography.
- ❖ A new and expanding product line of **compound libraries** („*Ko-Libri libraries*“), e.g. for high throughput screening. Specific customer requirements regarding the number and nature of included compounds as well as the format of the library can be considered.

Biolog's Highlights and Bestsellers

In collaboration with two other academic groups Biolog developed the first specific modulators for the recently discovered cAMP binding protein „**Epac**“ and made them commercially available. Meanwhile, these novel tools are widely used to shed light on the still rather unknown functions of this new cAMP receptor and to discriminate between protein kinase A-mediated and Epac-mediated signalling pathways. Biolog's popular product range of **Epac activators that do not modulate protein kinase A** comprises:

▶ **8-Bromo-2'-O-methyl-cAMP (Cat. No. B 022)**

Suitable for direct comparison with commonly used 8-Bromo-cAMP (Cat. No. B 007), which activates both protein kinase A and Epac.

▶ **8-(4-Chlorophenylthio)-2'-O-methyl-cAMP (Cat. No. C 041)**

This compound has high membrane permeability and increased stability against phosphodiesterases.

▶ **8-(4-Chlorophenylthio)-2'-O-methyl-cAMPS, Sp-isomer (Cat. No. C 052)**

Phosphodiesterase-resistant analogue of Cat. No. C 041.

▶ **8-(4-Hydroxyphenylthio)-2'-O-methyl-cAMP (Cat. No. H 010)**

Analogue with slightly increased activity compared to Cat. No. C 041.

▶ **8-(4-Methoxyphenylthio)-2'-O-methyl-cAMP (Cat. No. M 034)**

Analogue with highest activity and membrane-permeability, as well as increased phosphodiesterase-stability.

Biolog's Highlights and Bestsellers

In addition to several Epac activators, diverse **cAMP analogues for specific activation of protein kinase A** have been identified as well. These compounds are reliable activators of protein kinase A, but do not stimulate the cAMP receptor protein „Epac“ and thus can be used as Epac-negative controls.

Biolog's product range of **PKA-positive/Epac-negative controls** comprises:

▶ **N⁶-Benzyl-cAMP (Cat. No. B 008)**

Site-selective activator of protein kinase A with increased hydrolytical stability.

▶ **N⁶-Benzoyl-cAMP (Cat. No. B 009)**

Site-selective and membrane-permeant activator of protein kinase A.

▶ **N⁶-Monobutyryl-cAMP (Cat. No. M 003)**

Membrane-permeant activator of protein kinase A with selectivity for site A of protein kinase A type I.

▶ **N⁶-Phenyl-cAMP (Cat. No. P 006)**

Potent site-selective and highly membrane-permeant activator of protein kinase A.

Biolog's Highlights and Bestsellers

Biolog developed innovative as well as cost- and time-saving production procedures for several products and can offer these compounds in **bulk (multigram up to kilogram scale)** at very competitive prices. Target customers are resellers or end users with corresponding requirements. **Bulk sizes** can be offered for a large number of cyclic nucleotides, nucleosides and triphosphates, e.g.:

- ▶ **Rp-cAMPS and Sp-cAMPS (Cat. No. A 002 and A 003)**
- ▶ **8-Bromo-cAMP (Cat. No. B 007)**
- ▶ **8-Bromo-cGMP (Cat. No. B 004)**
- ▶ **8-Chloro-cAMP (Cat. No. C 007)**
- ▶ **N⁶,2'-O-Dibutyryl-cAMP (synonym: Bucladesine, Cat. No. D 009)**
- ▶ **8-Chloroadenosine (Cat. No. C 006)**
- ▶ **2'-Deoxyadenosine-5'-O-(1-thiotriphosphate), separated Rp- and Sp-diastereomers (Cat. No. D 006 and D 007)**
- ▶ **Cyclic adenosine diphosphate ribose (Cat. No. C 005)**

Collaborations

Interested scientists are invited to contact Biolog regarding possible collaborations in the field of nucleoside and nucleotide chemistry, e.g for **EU grant applications**. Biolog is permanently looking for interesting areas of research and is interested in developing new tools for special tasks, including medical, cosmetic and diagnostic applications. Furthermore, Biolog has already participated in EU granted projects and has considerable experience in corresponding paperwork.

Customers who are interested in **outsourcing** their nucleoside or nucleotide production are also invited to benefit from Biolog's comprehensive experience and service.