**G418**

Selection antibiotic; cell culture tested  
Catalog code: ant-gn-1, ant-gn-5  
http://www.invivogen.com/g418  
For research use only  
Version 18C26-MM

**CHEMICAL PROPERTIES**

**CAS number:** 108321-42-2  
**Formula:** C20H38N4O10.2H2SO4  
**Molecular weight:** 692.7

**Structure:**

![Chemical Structure](image)

**SELECTION CONDITIONS**

**Mammalian cells**

The working concentration of G418 Sulfate for selection and maintenance of mammalian cell lines transfected with the neo gene varies with a multitude of factors including cell type. In a starting experiment we recommend to determine optimal concentrations of antibiotic required to kill your host cell line by treating the cells with several concentrations, ranging from 100 μg/ml to 1 mg/ml. After treatment, cell death occurs rapidly, allowing the selection of transfected cells with plasmids carrying the neo gene in as little as 7 days post-transfection.

**WORKING CONCENTRATIONS**

G418 is normally used at a concentration of 400 μg/ml. However, the optimal concentration needs to be determined for your cells. Suggested concentrations of G418 for selection in some examples of mammalian cells are listed below (with references on the next page).

<table>
<thead>
<tr>
<th>Cell line</th>
<th>Medium</th>
<th>G418 conc.</th>
<th>Ref.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B16 (Mouse melanocytes)</td>
<td>RPMI</td>
<td>400-1000 μg/ml</td>
<td>3, 4</td>
</tr>
<tr>
<td>CHO (Chinese hamster ovarian cells)</td>
<td>Ham’s</td>
<td>400-800 μg/ml</td>
<td>5, 6</td>
</tr>
<tr>
<td>HeLa (Human uterine cells)</td>
<td>DMEM</td>
<td>200-400 μg/ml</td>
<td>7, 8</td>
</tr>
<tr>
<td>HEK293 (Human embryonic kidney cells)</td>
<td>DMEM</td>
<td>200-500 μg/ml</td>
<td>9, 10</td>
</tr>
<tr>
<td>THP-1 (Human monocytes)</td>
<td>RPMI</td>
<td>250 μg/ml</td>
<td>11,12</td>
</tr>
</tbody>
</table>

**DESCRIPTION**

G418, also known as G418 sulfate and Geneticin, is used for the selection and maintenance of eukaryotic cells expressing the neo gene. It is an aminoglycoside antibiotic similar in structure to gentamicin B1. G418 is produced by *Micromonospora rhodorangea*. This antibiotic blocks polypeptide synthesis and protein elongation in eukaryotic cells by binding 70S and 80S ribosomes. Resistance to G418 is conferred by the bacterial gene for aminoglycoside-3’-phosphotransferase (APH 3’ II3) that can be expressed in eukaryotic cells.

**SAFETY CONSIDERATIONS**

G418 is a harmful compound. Refer to safety data sheet for handling instructions.

**GENERAL GUIDELINES**

Successful transfection is influenced by many factors. The health and viability of the cell line, the quality of the nucleic acid used, the transfection reagent, the duration of transfection, and the presence or absence of serum can all play a part.

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**PRODUCT INFORMATION**

**Contents:**

G418 is supplied as a sterile filtered solution at 100 mg/ml in HEPES buffer. This product is available in 2 pack sizes:

- **ant-gn-1:** 10 x 1 ml (1 g)
- **ant-gn-5:** 1 x 50 ml (5 g)

**Storage and stability:**

- G418 is shipped at room temperature. Upon receipt it should be stored at 4°C. It may be stored at -20°C. Avoid repeated freeze-thaw cycles.
- The expiry date is specified on the product label.

**QUALITY CONTROL**

Each lot is thoroughly tested to ensure the absence of lot-to-lot variation.

- Purity: ≥ 90% (HPLC)
- Endotoxin level: < 0.5 EU/mg
- Physicochemical characterization (pH, appearance)
- Cell culture tested: potency validated in G418-sensitive and G418-resistant mammalian cell lines
- Non-cytotoxicity of trace contaminants: absence of long-term effects confirmed in G418-resistant cells

**TECHNICAL SUPPORT**

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InvivoGen USA (International): +1 (858) 457-5873  
InvivoGen Europe: +33 (0) 5-62-71-69-39  
InvivoGen Hong Kong: +852 3622-3480  
E-mail: info@invivogen.com
References (articles featuring G418)

RELATED PRODUCTS

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
<th>Catalog Code</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
</tr>
<tr>
<td>Blasticidin</td>
<td>Selection antibiotic for the bsr or BSD genes</td>
<td>ant-bl-1</td>
</tr>
<tr>
<td>Puromycin</td>
<td>Selection antibiotic for the pac gene</td>
<td>ant-pr-1</td>
</tr>
<tr>
<td>Hygromycin B Gold</td>
<td>Selection antibiotic for the hph gene</td>
<td>ant-hg-1</td>
</tr>
<tr>
<td>Zeocin®</td>
<td>Selection antibiotic for the Sh ble gene</td>
<td>ant-zn-1</td>
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<tr>
<td>Plasmids encoding the neo gene</td>
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<td></td>
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<tr>
<td>pMOD2-Neo</td>
<td>Plasmid encoding a synthetic neomycin resistance gene</td>
<td>pmod2-neo</td>
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<tr>
<td>pMONO-neo-GFP</td>
<td>GFP-expression plasmid with neomycin resistance gene</td>
<td>pmonon-gfp</td>
</tr>
<tr>
<td>pMONO-neo-mcs</td>
<td>Expression plasmid with neomycin resistance gene</td>
<td>pmonon-mcs</td>
</tr>
<tr>
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<td>LacZ-expression plasmid selectable with neomycin</td>
<td>psetn-lacz</td>
</tr>
<tr>
<td>pSELECT-neo-mcs</td>
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