



## BG11 medium

Roscoff Culture Collection<sup>1</sup>

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### ABSTRACT

Medium to grow freshwater cyanobacteria.

### STEPS MATERIALS

NAME	CATALOG #	VENDOR
BG11 medium	C3061-500ML	Sigma – Aldrich


### BEFORE STARTING

Please refer to our general recommendations to grow cultures :

<https://www.protocols.io/private/A48906DC1374AD6281495CB86A8F092F>


#### Prepare using Sigma Aldrich stock

- Under hood, to 1L of sterile water, add 20 mL of Cyanobacteria BG-11 Freshwater Solution from Sigma
  - Filter the medium on 0,2 microns



**BG11 medium**  
by Sigma – Aldrich  
Catalog #: [C3061-500ML](#)

#### Prepare from base chemicals

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Recipe for standard BG-11 media  
by **Anna AB. Behle**,  
Institute for Synthetic Microbiology

[PREVIEW](#)
[RUN](#)

- CaCl<sub>2</sub> · 2H<sub>2</sub>O (3.6 g · L<sup>-1</sup>)
  - Citric acid (0.6 g · L<sup>-1</sup>)
  - NaNO<sub>3</sub> (149.58 g · L<sup>-1</sup>)
  - MgSO<sub>4</sub> · 7 H<sub>2</sub>O (7.49 g · L<sup>-1</sup>)
  - 0.25 M Na<sub>2</sub>-EDTA, pH 8.0 (0.56 ml · L<sup>-1</sup>)

For 100x BG11 Stock -N:

- Omit NaNO<sub>3</sub>.

- 2.2
- 1000x Na<sub>2</sub>CO<sub>3</sub>: 20 mg L<sup>-1</sup>
  - 100x TES-buffer, pH 8.0 (1M), adjust with KOH
  - 1000x K<sub>2</sub>HPO<sub>4</sub> x 3 H<sub>2</sub>O: 30 mg · mL<sup>-1</sup>
  - 1000x Fe(III) ammonium citrate (6 mg · L<sup>-1</sup>)
  - 5000x CuSO<sub>4</sub> 5 H<sub>2</sub>O (395 ng · mL<sup>-1</sup>) (sterilize using a filter)

- 2.3 1000x concentration:
- H<sub>3</sub>BO<sub>3</sub> (2.86 g · L<sup>-1</sup>)
  - MnCl<sub>2</sub> · 4 H<sub>2</sub>O (1.81 g · L<sup>-1</sup>)
  - ZnSO<sub>4</sub> · 7 H<sub>2</sub>O (0.222 g · L<sup>-1</sup>)
  - Na<sub>2</sub>MoO<sub>4</sub> · 2 H<sub>2</sub>O (0.390 g · L<sup>-1</sup>)
  - Co(NO<sub>3</sub>)<sub>2</sub> · 6 H<sub>2</sub>O (0.049 g · L<sup>-1</sup>)

For BG11 lacking certain metals (e.g. for working with metal inducible promoters *P<sub>petE</sub>*, *P<sub>coaT</sub>*, *P<sub>ziaA</sub>* etc., trace metal mix can be prepared lacking these chemicals and used instead of standard trace metal mix.

- 2.4 Fill 1 L bottle with 500 mL ultra pure water. Add stock solutions as shown below.

Stock solution	Volume
100x BG11 Stock	10 mL
1000x Na <sub>2</sub> CO <sub>3</sub>	1 mL
1000x K <sub>2</sub> HPO <sub>4</sub> x 3 H <sub>2</sub> O	1 mL
100x TES-buffer	10 mL
1000x Trace Metal Mix	1 mL

Add ultra pure water to 1 L.

Autoclave.

After autoclaving, add 1 mL 1000x Fe(III) ammonium citrate.

Optional: After autoclaving, add 200 µL 5000x CuSO<sub>4</sub>

- 2.5 Fill 1 L bottle with 500 mL ultra pure water. Add stock solutions as shown below.

Stock solution	Volume
100x BG11 Stock -N	10 mL
1000x Na <sub>2</sub> CO <sub>3</sub>	1 mL
1000x K <sub>2</sub> HPO <sub>4</sub> x 3 H <sub>2</sub> O	1 mL
100x TES-buffer	10 mL
1000x Trace Metal Mix	1 mL

Add ultra pure water to 1 L.

Autoclave.

After autoclaving, add 1 mL sterile 1000x Fe(III) ammonium citrate.

Optional: After autoclaving, add 200 µL sterile 5000x CuSO<sub>4</sub>

- 2.6 Fill 500 mL bottle with 250 mL ultra pure water. Add stock solutions as shown below.

Stock solution	Volume
100x BG11 Stock -N	10 mL
1000x Na <sub>2</sub> CO <sub>3</sub>	1 mL
1000x K <sub>2</sub> HPO <sub>4</sub> x 3 H <sub>2</sub> O	1 mL

100x TES-buffer, pH = 8.0	10 mL
1000x Trace Metal Mix	1 mL

Add ultra pure water to 500 mL.

Autoclave.

After autoclaving, add 1 mL sterile 1000x Fe(III) ammonium citrate.

Optional: After autoclaving, add 200  $\mu$ L sterile 5000x CuSO<sub>4</sub>

2.7 Prepare 1.5 % agar: Weigh 4.5 g Bacto Agar. Fill up to 300 mL. Autoclave.

Microwave agar until liquid. Let cool.

2.8 In a 50 mL Falcon, add 1 vol 2x BG11 and 1 vol liquid 1.5 % agar. (Note: Usually, one plate requires 30-40 mL total volume.)

2.9 When mixture is hand warm, add appropriate antibiotics, if required. Quickly pour plate, avoiding air bubbl