

## MES Volvox Medium

Starr and Zeikus 1993

This medium, modified from Provasoli and Pintner (1960), is useful for growing many freshwater algae (Starr and Zeikus 1993).

To prepare, begin with 900 mL dH<sub>2</sub>O, dissolve the MES and calcium nitrate, add the other stock solution quantities, and after thorough mixing, add the vitamins. Adjust pH to 6.7 with NaOH. Autoclave.

Component	Stock Solution	Quantity	Molar Concentration in Final Medium
MES	---	1.95 g	$1.00 \times 10^{-2}$ M
Ca(NO <sub>3</sub> ) <sub>2</sub> 4H <sub>2</sub> O	---	117.8 mg	$5.00 \times 10^{-4}$ M
Na <sub>2</sub> b-glycerophosphate 5H <sub>2</sub> O	60.0 g L <sup>-1</sup> dH <sub>2</sub> O	1 mL	$1.96 \times 10^{-4}$ M
MgSO <sub>4</sub> 7H <sub>2</sub> O	40.0 g L <sup>-1</sup> dH <sub>2</sub> O	1 mL	$1.62 \times 10^{-4}$ M
KCl	50.0 g L <sup>-1</sup> dH <sub>2</sub> O	1 mL	$6.71 \times 10^{-4}$ M
NH <sub>4</sub> Cl	26.7 g L <sup>-1</sup> dH <sub>2</sub> O	1 mL	$5.00 \times 10^{-4}$ M
trace metals solution	(see recipe below)	6 mL	---
biotin (vit. H)	2.5 mg L <sup>-1</sup> dH <sub>2</sub> O	1 mL	$1.02 \times 10^{-8}$ M
cyanocobalamin (vit. B <sub>12</sub> )	1.5 mg L <sup>-1</sup> dH <sub>2</sub> O	1 mL	$1.11 \times 10^{-9}$ M

## Trace Metals Solution

Starr and Zeikus (1993) refer to this as PIV trace metals solution, but it differs slightly from the original PIV trace metals (see Volvox Medium) (Provasoli and Pintner 1960). Prepare the primary stock solution. Into 950 mL of dH<sub>2</sub>O, dissolve the EDTA and then individually add and dissolve the metals. Bring to 1 liter with dH<sub>2</sub>O.

Component	Primary Stock Solution	Quantity	Molar Concentration in Final Medium
Na <sub>2</sub> EDTA	---	750 mg	1.54 x 10 <sup>-5</sup> M
FeCl <sub>3</sub> 6H <sub>2</sub> O	---	97 mg	2.15 x 10 <sup>-6</sup> M
MnCl <sub>2</sub> 4H <sub>2</sub> O	---	41 mg	1.24 x 10 <sup>-6</sup> M
ZnCl <sub>2</sub>	5.0 g L <sup>-1</sup> dH <sub>2</sub> O	1 mL	2.20 x 10 <sup>-7</sup> M
Na <sub>2</sub> MoO <sub>4</sub> 2H <sub>2</sub> O	4.0 g L <sup>-1</sup> dH <sub>2</sub> O	1 mL	9.92 x 10 <sup>-8</sup> M
CoCl <sub>2</sub> 6H <sub>2</sub> O	2.0 g L <sup>-1</sup> dH <sub>2</sub> O	1 mL	5.04 x 10 <sup>-8</sup> M

Provasoli, L. and Pintner, I.J. 1960. Artificial media for fresh-water algae: problems and suggestions. pp. 84-96. *In* Tyron, C.A. Jr. and Hartman, R.T. (eds.) *The Ecology of Algae*. Special Publ. 2, Pymatuning Laboratory of Field Biology, Univ. Pittsburgh, PA.

Starr, R.C. and Zeikus, J.A. 1993. UTEX - the culture collection of algae at the University of Texas at Austin. *J. Phycol.* **29 (suppl.)**: 1-106.