

Apr 03, 2023

Version 1

# Infection of *Biomphalaria glabrata* snails with *Schistosoma mansoni* miracidia V.1

DOI

[dx.doi.org/10.17504/protocols.io.36wgqjkkxvk5/v1](https://dx.doi.org/10.17504/protocols.io.36wgqjkkxvk5/v1)

Sarah K Buddenberg<sup>1</sup>

<sup>1</sup>Wellcome Sanger Institute

Schistosoma mansoni



Sarah K Buddenberg

Wellcome Sanger Institute, University of Cambridge

## Create & collaborate more with a free account

Edit and publish protocols, collaborate in communities, share insights through comments, and track progress with run records.

Create free account

OPEN  ACCESS



DOI: <https://dx.doi.org/10.17504/protocols.io.36wgqjkkxvk5/v1>

**Protocol Citation:** Sarah K Buddenberg 2023. Infection of *Biomphalaria glabrata* snails with *Schistosoma mansoni* miracidia. protocols.io <https://dx.doi.org/10.17504/protocols.io.36wgqjkkxvk5/v1>

**License:** This is an open access protocol distributed under the terms of the **Creative Commons Attribution License**, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited

**Protocol status:** Working

**We use this protocol and it's working**

**Created:** April 03, 2023

**Last Modified:** April 03, 2023

**Protocol Integer ID:** 79942

**Keywords:** miracidia, schistosoma, biomphalaria, biomphalaria glabrata snails with miracidia, schistosoma mansoni miracidia, biomphalaria glabrata snail, schistosoma, biomphalaria glabrata, biomphalaria, mansoni miracidia, snail, miracidia

**Funders Acknowledgements:**

Wellcome Trust

Grant ID: 206194

Wellcome Trust

Grant ID: 098051

## Abstract

To infect *Biomphalaria glabrata* snails with miracidia hatched from *Schistosoma mansoni* eggs

## Materials

⊗ MilliQ water

⊗ 24-well Clear TC-treated Multiple Well Plates Individually Wrapped Sterile **Costar Catalog #3524**

⊗ Blunt featherweight forceps wide tip **BioQuip Catalog #4750**

⊗ 1x DPBS **Gibco - Thermo Fisher Scientific Catalog #14190144**

⊗ Glass Pasteur pipettes with rubber bulbs

1x Aquarium Water (diluted from 10X; see recipes)

1-2L flask

Aluminum foil

B. *glabrata* snails 5-8mm

S. *mansoni*-infected livers in PBS

28°C room or incubator

Incubator at 37°C and 5% CO<sub>2</sub>

Bucket of ice

### Equipment

Zoom stereomicroscope with diascope illumination stand<sup>NAME</sup>

stereomicroscope<sup>TYPE</sup>

Nikon<sup>BRAND</sup>

SMZ800N<sup>SKU</sup>

### 10X AQUARIUM WATER

5.56g CaCl<sub>2</sub>

12.28g MgSO<sub>4</sub>-7H<sub>2</sub>O

0.43g K<sub>2</sub>SO<sub>4</sub>

4.2g NaHCO<sub>3</sub>

480μl FeCl<sub>3</sub>-6H<sub>2</sub>O (0.5g/100ml water)

Fill to 10L and store in 1L bottles

Dilute to 1x: 9L MQ water + 1L 10x

## Troubleshooting

## Lung preparation

- 1 Collect lungs from patent mice into 50ml Falcon tubes containing pre-warmed 37°C 1x DPBS
- 2 Remove lungs from PBS and place in large mortar or laboratory blender
- 3 Gently homogenise lung tissue
- 4 Place homogenised lung slurry into a flask (size of flask depends on how many lungs you have) and fill with diH<sub>2</sub>O or aquarium water

## Hatching miracidia

- 5 Cover flask in aluminum foil and shine light horizontally across the opening of the flask for 1-2 hrs
- 6 Take a small aliquot of water from the top of the flask using a glass Pasteur pipette and place into a petri dish. Using a stereomicroscope, check for swimming miracidia

## Exposing snails to miracidia for regular life cycle maintenance

- 7 Under a microscope, collect 15 miracidia with a glass Pasteur pipette per well  
  
Alternatively (but less preferred) estimate the number of miracidia by counting 12-5µl aliquots in a petri dish. After collecting (shaking the tube in between) and placing the aliquots in the petri dish add 5µl of Lugol to each drop (this kills and stains the miracidia)
- 8 Place individual 5-8mm snails into 24-well culture plates and cover snails completely with 1x aquarium water
- 9 Expose snails to miracidia for at least 3 hours (up to overnight)
- 10 After exposure, remove the snails carefully using featherweight forceps and put them in a new tank with food



## Exposing snails to miracidia for monomiracidium infections

- 11 Dilute miracidia so that one miracidium can easily be collected in ~3-5µl of water
- 12 Collected single miracidium using fresh 10µl pipette each collection and place in 24-well plate
- 13 After a plate is filled, check each well under a microscope to verify there is a single miracidium in each well
- 14 Place individual 5-8mm snails in the wells containing confirmed single miracidium and cover snails completely with 1x aquarium water
- 15 Leave the plate overnight (inside incubator or room at 28°C)
- 16 The following day, transfer the snails to a new tank with food