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Posted by Anonymous on Thu, 2017-08-10 11:33

Mitosis in onion root tip: Are there alternative stains for mitosis in root tips please? It needs to be inexpensive (I've been quoted \$150 for 5 gm orcein, including postage), not too hazardous, easy to prepare, and the method of staining not too time consuming.

Voting:



No votes yet

Year Level:

7
8
9
10

Senior Secondary

Laboratory Technicians:

Laboratory Technicians

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Mitosis in onion root tip

Submitted by sat on 01 September 2017

Aceto-orcein stain is an effective procedure for the visualisation of mitosis in root tips of onions or garlic. Orcein can be purchased in solid form, the solution is prepared with acetic acid. A full method for stain preparation and procedure can be found at [Mitosis in Growing Root Tips](#)¹.

Alternatively, Aceto-orcein can be purchased as a 1% solution to be used undiluted². Each student group requires one drop of stain, so the prepared stain is cost effective. The cost of the stain and delivery charges vary between suppliers, and is moderately priced. Refer to our [School science suppliers](#) list for suppliers of biological chemicals. Aceto-orcein solution is suitable for laboratory use for students in Years 11 and 12³.

Alternative stains: The following stains will also show mitosis in root tips. The cost of these stains is similar to Orcein. Methylene Blue and Toluidine Blue stains are relatively quick to prepare, and staining procedures are similar in each.

1. Toluidine blue: http://www.gtac.edu.au/wp-content/uploads/2016/01/Mitosis_Roottips_LabPr...
2. Methylene blue: <https://www.flinnsci.com/making-mitosis-slides/dc10945/>
3. Shiffs Reagent (also known as Feulgen stain⁴): <http://w3.marietta.edu/~biol/introlab/Onion%20root%20mitosis.pdf> Whilst the preparation of this reagent is more complicated, this procedure does include a good method for softening the roots, by using a micro-tube placed in a water bath at 60°C.

Science ASSIST recommends you consult the relevant Safety Data Sheet first and our [List of recommended chemicals for science in Australian schools](#) to ascertain the suitability of these stains for your staff and students.

References:

¹ 'Mitosis in growing root tips'. Gene Technology Access Centre website. http://www.gtac.edu.au/wp-content/uploads/2016/01/Mitosis_Roottips_LabPr... (accessed August 2017)

² 'Aceto-orcein 1% SI1' product description. Southern Biological. <https://www.southernbiological.com/chemicals/stains-and-indicators/si1-aceto-orcein-1/> (Link updated July 2019)

³ Science ASSIST. 2016. List of recommended chemicals for science in Australian schools. <https://assist.asta.edu.au/sites/assist.asta.edu.au/files/ListOfRecommen...>

⁴ Reader S. February 2003. A modified method of preparing Feulgen stain or Schiff's Reagent. <https://web.archive.org/web/20130903160922/http://www.jic.ac.uk:80/staff...> (The original resource is no longer available on this website, this copy made available by the Internet Archive, December 2018).

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