

Oct 05, 2022

DNA Gel Electrophoresis

DOI

<https://dx.doi.org/10.17504/protocols.io.q26g74j61gwz/v1>

An.Huang¹

¹XJTLU



Qiaowa Gong

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.q26g74j61gwz/v1>

Protocol Citation: An.Huang 2022. DNA Gel Electrophoresis. protocols.io
<https://dx.doi.org/10.17504/protocols.io.q26g74j61gwz/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: July 05, 2022



Last Modified: October 05, 2022

Protocol Integer ID: 66007

Keywords: gel electrophoresi, agarose gel electrophoresi, electrophoresis agarose gel, user conduct gel electrophoresi, electrophoresi, certain dna fragment, agarose gel, dna, gel, agarose

Disclaimer

DISCLAIMER – FOR INFORMATIONAL PURPOSES ONLY; USE AT YOUR OWN RISK

The protocol content here is for informational purposes only and does not constitute legal, medical, clinical, or safety advice, or otherwise; content added to [protocols.io](https://www.protocols.io) is not peer reviewed and may not have undergone a formal approval of any kind. Information presented in this protocol should not substitute for independent professional judgment, advice, diagnosis, or treatment. Any action you take or refrain from taking using or relying upon the information presented here is strictly at your own risk. You agree that neither the Company nor any of the authors, contributors, administrators, or anyone else associated with [protocols.io](https://www.protocols.io), can be held responsible for your use of the information contained in or linked to this protocol or any of our Sites/Apps and Services.

Abstract

Agarose gel electrophoresis can help determine the mass of a certain DNA fragment. This protocol will help user conduct gel electrophoresis appropriately.

Materials

6x Gel Loading Dye, agarose, TAE, 10000x GelRed, DNA ladders, DNA samples



- 1 Mix  1 g agarose with  100 mL electrophoresis buffer (1X TAE) in a flask, then heat and stir until agarose is completely dissolved.

Note

Microwave can be used for heating.

- 2 Wait until the molten agarose cools down to around  40 °C .

Safety information

Temperature too high could warp the plastic tray. Water bath can be used to control the temperature.

- 3 While waiting for the cool down of molten agarose, set up and level the gel casting tray and the gel casting platform on a flat area. Inset the comb.
- 4 Add  10 µL 10000X GelRed nucleic acid stain into molten agarose and mix well.
- 5 Pour the molten agarose onto the tray. Immediately rinse out the flask before any remaining agarose sets in it.
- 6 Wait at least  00:20:00 for gel solidification.

20m

- 6.1 While waiting for gel solidification, prepare the samples as follows:

Mixing the components:

6X gel loading dye	X µL
DNA sample/DNA ladder	5X µL

**Note**

In order to receive a clearer ladder photograph, the recipe for DNA ladder with gel loading dye is recommended as follows:

6X gel loading dye	X μ L
DNA ladder	X μ L
Double distilled water	4X μ L

- 7 Once the gel has completely solidified, gently remove the comb by pulling it up slowly and vertically.
- 8 Carefully place the tray in the gel tank. Add electrophoresis buffer (1X TAE) until covering the whole gel surface.
- 9 Pipette the prepared samples using a P20 (2 μ L-20 μ L) pipette to the wells.

Note

The samples should sink to the bottom of the wells and displace the buffer. The amount for each load should be decided by multiple factors like DNA concentration and gel concentration. The DNA amount we use normally is from 10ng to 100ng, or 5 μ L to 10 μ L in volume.

- 10 Run the gels at 90 V, approximately 50 mA, for 90 min.
- 11 When the run is finished, carefully take the gel tray with gel out from gel tank. Photograph the gel under ultraviolet (UV) light.

Safety information

UV light is harmful to skin and eyes. Avoid directly look into the light source and wear personal protective equipment. Use a gel imaging system if possible.