



VERSION 1  
SEP 28, 2023

OPEN ACCESS



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**Protocol status:** In development  
We are still developing and optimizing this protocol

**Created:** Sep 28, 2023

## 🌐 DNA Isolation V.1

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### ABSTRACT

2023 NUS-Singapore iGEM team followed this protocol to isolate the DNA fragments from the agarose gel after the gel electrophoresis.

### PROTOCOL MATERIALS

⊗ Buffer QG Qiagen Catalog #19063 Step 5

⊗ Buffer PE Qiagen Catalog #19065 In [3 steps](#)

### SAFETY WARNINGS

- ❗
  - Proper lab PPE must be worn at all times.
  - When using the LED transilluminator, wear eyewear that is designed to block blue light to protect the eyes.

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**PROTOCOL integer ID:**  
88509

**Keywords:** DNA Isolation,  
DNA, Gel, Gel  
Electrophoresis, Buffer QG,  
Buffer PE









- 1 Prepare and label an Eppendorf tube.
- 2 Place the agarose gel onto the LED Transilluminator (blue light) to observe the DNA band(s).






#### Safety information

- Wear protective eyewear to protect the eyes from blue light.
- Turn off the LED transilluminator immediately when it is not in use.


- 3 Cut out the target DNA band from the agarose gel.
- 4 Put the gel piece into the Eppendorf tube.
- 5 Add  450 µL of  Buffer QG Qiagen Catalog #19063 into the Eppendorf tube.
- 6 Heat the Eppendorf tube at  55 °C for  00:20:00 in the Thermo-Shaker.

20m

- 7 Add  150 µL of 100% isopropanol (IPA) into the Eppendorf tube and shake the tube to mix the solution well.
- 8 Transfer the whole solution into a QIAquick Spin Column (purple tube with a maximum volume of  750 µL ).
- 9 Centrifuge it for  13 rpm, 00:01:00 . 1m
- 10 Discard the flow-through and place the QIAquick column back into the same tube.
- 11 Add  700 µL of  Buffer PE QIAGEN Catalog #19065 into the QIAquick column.
- 12 Centrifuge it for  13 rpm, 00:01:00 .
- 13 Discard the flow-through and place the QIAquick column back into the same tube.
- 14 Add  700 µL of  Buffer PE QIAGEN Catalog #19065 again into the QIAquick column.

- 15 Centrifuge it for  13 rpm, 00:01:00 .
- 16 Discard the flow-through and place the QIAquick column back into the same tube.
- 17 Centrifuge the emptied QIAquick column at  13 rpm, 00:01:00 to remove residual  Buffer PE Qiagen Catalog #19065 . 1m
- 18 Transfer the QIAquick column into the newly labelled Eppendorf tube.
- 19 Add  30 µL of DI water into the QIAquick column.
- 20 Centrifuge the tube at  13 rpm, 00:01:00 , ensuring that the direction of the Eppendorf tube's cap is the same as the direction of spinning to avoid breaking. 1m
- 21 Discard the QIAquick column, the solution left in the Eppendorf tube contains the DNA fragment of interest.
- 22 Use the Nanodrop to measure and record the purity and concentration of the DNA fragment.

Equipment	
<b>NanoDrop™ One/OneC Microvolume UV-Vis Spectrophotometer</b>	NAME
UV-Vis Spectrophotometer	TYPE
Thermo Scientific	BRAND
ND-ONE-W	SKU

**23** Keep the isolated DNA fragment in the  Room temperature .