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# **WARD'S<sup>TM</sup>**

## **DNA Fingerprinting**

**Refill Kit**  
**36 W/ 6054**

# **WARD'S<sup>TM</sup>**

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# **WARD'S<sup>TM</sup>**

# DNA Fingerprinting

## 36 W 6054

### Introduction:

This refill kit provides all of the consumable components needed to perform the investigation described in WARD'S class-sized lab activity "DNA Fingerprinting," catalog number 36 W 5167.

### Lab Objectives:

Students will electrophorese four DNA samples and compare their genetic "fingerprints" using a simplified version of the more technically demanding DNA fingerprinting procedure. Each DNA sample digested with a particular restriction enzyme has a unique banding pattern. The number and position of bands formed on each lane of a gel is the actual genetic "fingerprint" of that DNA sample.

### Refill Kit Contents:

- 1 Lambda DNA/Hind III Digest, 80 µl (DNA Marker Standard)
- 1 Crime Scene DNA Sample—Lambda DNA/EcoRI/Hind III Digest, 80 µl
- 1 Suspect 1 DNA Sample—Lambda DNA/EcoRI Digest, 80 µl
- 1 Suspect 2 DNA Sample—Lambda DNA/EcoRI/Hind III Digest, 80 µl
- 1 Bottle of Pre-Cooked Agarose 0.8%, 200ml
- 1 Bottle of 10X TBE Running Buffer, 250ml
- 1 Bottle of WARD'S DNA Stain, 500ml

### Materials Needed but Not Provided:

Description	Catalog Number
Battery-Powered Electrophoresis Apparatus	36 W 5164
Batteries, Pkg. of 5	14 W 5420
Microfuge Tubes, Pkg. of 500	18 W 1361
Micropipets, Pkg. of 30	15 W 3000
Staining Tray	18 W 0031
Gel Electrophoresis Training Video	193 W 5300

### Pre-Lab Preparation:

Prepare TBE running buffer (1X) by adding 180ml distilled water to 20ml TBE buffer concentrate (10X), making a working buffer solution of 1X. This 200ml quantity is enough to run one gel.

#### Casting an Agarose Gel:

1. Melt pre-cooked 2.0% agarose using a hotwater bath or a microwave. Be sure to loosen bottle cap prior to heating the agarose. When using a microwave, use low power and heat in one-minute intervals until agarose is melted.

**NOTE:** The agarose may boil before being completely melted. Stop microwaving and swirl bottle if this occurs.

Liquid agarose temperature should be 55°C or higher.

**SAFETY:** Always handle bottle with heat-protective gloves—boiling may occur following microwaving.

2. Seal the ends of the gel casting tray with tape. Insert well-forming comb; position and align the gel comb in the center of the casting tray.
3. Pour melted agarose into the gel tray until the gel is approximately 3mm thick.
4. Allow the melted agarose to solidify (about 20 minutes). Do not disturb the gel or the comb during this time.
5. When the agarose has solidified (it will turn opaque), carefully remove the comb and the tape from the ends of the tray. The gel can now be used immediately or stored for later use. Gels may be cast and stored in 1X buffer in a refrigerator for several days.

### Personal Protective Equipment:

WARD'S recommends your students wear the following personal protective equipment when working with this exercise.

Description	Catalog Number
Disposable Latex Gloves, Pkg. of 100	15 W 1071
Disposable Aprons, Pkg. of 100	15 W 1050
Lab Safety Goggles	15 W 3046

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# WARD'S<sup>TM</sup>

## QUICKVIEW DNA Stain

**Concentrate, 60ml**  
**38 W 9014**

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# WARD'S<sup>™</sup>

## QUIKView DNA Stain

### Concentrate, 60ml

38 W 9014

### **Fast-Acting, Safe, and Highly Sensitive DNA Stain**

WARD'S QUIKView DNA Stain provides a distinct and measurably clearer alternative to standard blue DNA stains, revealing the unique banding patterns of the DNA without the use of hazardous chemicals.

With WARD'S QUIKView DNA Stain, you can easily stain and destain gels in under one hour, or incorporate WARD'S QUIKView DNA Stain into your gel and buffer to make DNA bands visible during electrophoresis.

### **Key Features**

- **Highly Sensitive:** Detects as low as 0.3µg of DNA.
- **Fast Acting:** Stains in only 25 to 30 minutes.
- **Versatile:** Can be incorporated into the gel and buffer to make DNA bands visible as they migrate down the gel.
- **Easy to Destain:** Requires only water. Background becomes totally clear, revealing distinct DNA banding that can be viewed without the use of a light table, typically needed to view faint bands when using standard blue DNA stains.
- **Resists Fading:** Finished gels can be stored for months without fading.

### **Procedure**

1. (Optional) Prestain the DNA: Add WARD'S QUIKView DNA Stain to the running buffer and agarose gel to make the DNA bands partially visible as the gel is being run.
  - Add 1µl per 1ml of 1X TBE running buffer.
  - Add 1µl per 1ml of liquefied agarose.
2. Prepare Dilute Stain: Add 5ml WARD'S QUIKView DNA Stain concentrate to 95ml warm (50° to 55°C) distilled or tap water to obtain 100ml of dilute stain.
3. At the end of your electrophoresis run, lift the tray with the gel from the chamber and gently place the gel in the staining tray.
4. Wearing protective gloves, pour approximately 100ml warm dilute stain into the staining tray so the stain just covers the gel.
5. Cover and let gel stain for 25 to 30 minutes.
6. When the gel has completed staining, carefully decant the used stain directly to a sink drain and flush with water.

*Note: The dilute DNA stain may be saved and reused several times. For best results, reheat the stain before using.*

7. Add warm (50° to 55°C) distilled or tap water to the staining tray. To accelerate destaining, gently rock the tray. Destain until bands are distinct, with little background color. This will take between 20 and 30 minutes, depending on the amount of agitation. Change the water several times, or destain the gel in water overnight. Destaining overnight will produce dark blue DNA bands and a colorless background.
8. View the gel against a light background such as white paper. Gels can be stored in self-sealing plastic bags. For long-term storage, add several drops of dilute stain to the bag to preserve the DNA bands.

# Material Safety Data Sheet

May be used to comply with  
OSHA's Hazard Communication Standard  
29 CFR 1910.1200. Standard must be  
consulted for specific requirements.

## U.S. Department of Labor

Occupational Safety and Health Administration  
(Non-Mandatory Form)  
Form Approved  
OMB No. 1218-0072



### IDENTITY

WARD'S DNA Stain

Note: Blank spaces are not permitted. If any item is not applicable, or no  
information is available, the space must be marked to indicate that.

### Section I

Manufacturer's Name

Ward's Natural Science

Emergency Telephone Number

800-424-9300 (CHEMTREC)

Address (Number, Street, City, State, and ZIP Code)

5100 W. Henrietta Rd.

Telephone Number for Information

716-359-2502

P.O. Box 92912

Date Prepared

9/1/97

Rochester, NY 14692-9012

Signature of Preparer (Kenneth G. Rainis)

### Section II - Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	%
Proprietary Cationic Dye	N/A	N/A	N/A	0.1
Distilled Water CAS 7732-18-5	N/A	N/A	N/A	99.9

LOW HAZARD

### Section III - Physical/Chemical Characteristics

Boiling Point 212°C	Specific Gravity (H <sub>2</sub> O = 1) 1 (Water)
Vapor Pressure (mm Hg) 14 (Water)	Melting Point 0°C
Vapor Density (AIR = 1) 0.7 (Water)	Evaporation rate (Butyl Acetate = <1)
Solubility in Water Complete	
Appearance and Odor Dark blue liquid, No odor	

### Section IV - Fire and Explosion Hazard Data

Flash Point (Method Used) N/A	Flammable Limits	LEL N/A	UEL N/A
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Extinguishing Media

Water spray, carbon dioxide, dry chemical powder or appropriate form.

Special Firefighting Procedures

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin.

Unusual Fire and Explosion Hazards

Emits fumes of carbon monoxide, carbon dioxide, nitrogen oxides, and sulfur oxides under fire conditions.

### Section V - Reactivity Data

Stability	Unstable	Conditions to Avoid Protect from light and excessive heat.
	Stable	
	X	

Incompatibility (Materials to Avoid)

Strong Oxidizing Agents

Hazardous Decomposition or Byproducts

Thermal decomposition may produce carbon monoxide, carbon dioxide, and nitrogen oxides. Sulfur oxides.

Hazardous Polymerization	May Occur	Conditions to Avoid N/A
	Will Not Occur	
	X	

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**Section VI - Health Hazard Data**

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Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
	No	Yes	Yes

Health Hazards (Acute and Chronic)

Inhalation: Not an inhalation hazard in the form provided.

Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
No	No	No	No

Signs and Symptoms of Exposure

May be irritating to eyes and skin. Exercise appropriate procedures to minimize potential hazards.

Medical Conditions

Generally aggravated by exposure. The toxicological properties of this material have not been thoroughly investigated.

Emergency and First Aid Procedure

Contact: Flush skin with copious amounts of water.

Ingestion: Give 1-2 glasses of water and contact physician.

Eyes: Flush with water for 15 minutes, lifting lower and upper eyelids. If irritation develops or persists, get medical attention.

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**Section VII - Precautions for Safe Handling and Use**

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Steps to be Taken in Case Material is Released or Spilled

Absorb with vermiculite, paper towelling, or other absorbent material. Place in suitable container.

Waste Disposal Method

Flush down sanitary sewer with copious amounts of water. Discharge may be subject to Federal, State and Local laws.

Precautions to be Taken in Handling and Storage

Storage Code--&gt;Green (General) Store in a cool dry place. Wash thoroughly after handling. Keep container tightly closed when not in use.

Other Precautions:

For lab use only. Not for drug, food, or cosmetic use. Keep out of reach of children.

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**Section VIII - Control Measures**

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Respiratory Protection (Specify Type)

None required

Ventilation	Local Exhaust	Special
None	Not Needed	No
	Mechanical (General)	Other
	Not Needed	No

Protective Gloves

Rubber (butyl/nitrile) Gloves

Other Protective Clothing or Equipment

Chemical safety goggles, lab coat, apron, eye wash station in close proximity, within 15 sec. of work station.

Work/Hygenic Practices

Wear protective equipment. Wash hands with soap and water following the handling of this material.

Use under direct supervision of a qualified individual knowledgeable in all aspects of laboratory safety. This product is intended for lab use only.

Not for drug, food, or cosmetic use.

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