

# Plaque Morphology

Date: 2024-11-24 ~ 2024-11-30 | Operator: Yuhang Gong | Status: Completed

## Objective

Observe and document plaque morphology of 5 phage strains (R1, R2, R3, W1, W2) on host bacteria.

## Materials

### Phages:

Name	Host	Notes
R1, R2, R3	EcAZ-2-OVA	R3: High titer
W1, W2	EcAZ-1	W2: Isolated from W1

Reagents: LB agar plates (1.5%), Soft agar (0.7%, 3mL/plate), Log-phase bacteria (OD<sub>600</sub>~0.5, 200uL/plate)

Equipment: 37°C incubator, Ruler/Caliper

## Protocol

### Double-Layer Agar Method:

1. Prepare LB bottom agar plates
2. Soft agar cooled to ~50°C + 200uL bacteria + diluted phage
3. Pour onto bottom layer; Incubate 37°C overnight

Observation: Measure diameter (n≥5), Record clarity (Clear/Turbid), Note halo presence

## Experimental Records

Time	Operation	Notes
11-24~30	Morphology documentation	Observed during titer determination

## Results

### Raw Measurements

Phage	Measurements (mm)	Average
R1	0.1, 0.1, 0.2, 0.1, 0.2, 0.1	0.1-0.2
R2	2, 2, 2, 1.5, 1.5, 2	1.8±0.3
R3	4, 3, 2, 3, 4, 3	3.2±0.8
W1	0.5, 0.5, 0.5, 0.5, 0.5, 0.5	~0.5
W2	2, 3, 2, 2, 2, 2	2.2±0.4

### Morphology Summary

Phage	Diameter (mm)	Clarity	Halo	Characteristics
R1	0.1-0.2	Clear	Yes	Very small
R2	1.8±0.3	Turbid	No	Turbid plaques
R3	3.2±0.8	Clear	Yes	Largest

Phage	Diameter (mm)	Clarity	Halo	Characteristics
W1	~0.5	Clear	Yes	Small
W2	2.2±0.4	Clear	Yes	Medium

## Size Classification

- **Very small (<0.5mm):** R1 (0.1-0.2mm)
- **Small (0.5-1mm):** W1 (0.5mm)
- **Medium (1-2.5mm):** R2 (1.8mm), W2 (2.2mm)
- **Large (>2.5mm):** R3 (3.2mm)

## Conclusions

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1. 5 phages show distinct plaque size differences
2. **R2 produces turbid plaques** → possible temperate/lysogenic phage
3. R3 has largest plaques and highest titer

## Notes

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- Photos needed for documentation
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Recorded: 2025-01-14