

Question 2: Gel Electrophoresis – Rubric

10

Wow!

6

Part A (4 points max)

- ✓ • Electrical Charge moves fragments
 - Negatively charged fragments move through gel toward anode (+) / DNA charge results from phosphate groups
- ✓ • Smaller fragments move faster (farther) relative to larger fragments
 - DNA fragments of known molecular weights used as markers

Part B (4 points max)

- ✓ • Treatment I – 4 bands – 400, 1300, 1500, 1700 bp
- ✓ • Treatment II – 2 bands – 900, 4000
- ✓ • Treatment III – 5 bands – 400, 500, 1200, 1300, 1500
- ✓ • Treatment IV – 1 band – 4900

Part C1 and C2 (4 points max)

C1

- ✓ • Recognition – binding of enzyme to target sequence/recognizes specific targets
- ✓ • Cutting – enzyme cuts at every target location
 - Alternate – cuts at a specific point
 - Detail Point – fragment lengths correspond to lengths between cutting sites/may generate blunt or sticky ends

C2

- ✓ • Change in II – Uncut/1 band (looks like IV)
- Change in III – Like I: (4 bands)
- Alternate – Y sequence is no longer recognized and cut
- Detail Point – Describes that RFLPs (markers) might correlate with phenotypic variation
 - ✓ ○ Y site might become X site
 - Deletion/insertion at Y site
 - Silent alteration in some target sequences