### Troubleshooting Guide for the Electrophoresis of DNA Markers

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| Faint or no DNA bands | - Quantity of DNA  
- DNA was degrade  
- DNA was electrophoresed off the gel  
- DNA was denatured  
- Small DNA bands were electrophoresed off the gel  
- DNA bands of similar molecular size were not resolved  
- DNA was degraded  
- DNA was denatured  
- To much DNA was loaded on the gel  
- Inproper electrophoresis conditions were used  
- DNA contained too much salt  
- DNA was contaminated by protein  
- DNA was denatured  
- Inproper electrophoresis conditions were used  
- Lambda DNA fragments, the cos site reannealed | Increase the amount of DNA. A low concentration may be due to volume added per well width. Detection of DNA in polyacrylamide is less sensitive than in agarose.  
Avoid nuclease contamination of the DNA markers.  
Electrophorese the gel for less time, at a lower voltage, or in a higher percentage gel.  
Do not heat DNA markers (except Lambda-derived markers) prior to electrophoresis. Dilute markers in TE or in a buffer containing 20mM NaCl.  
Electrophorese the gel for less time, at lower voltage, or in a higher percentage gel.  
Increase the electrophoresis time and check the proper percentage gel for resolution.  
Avoid nuclease contamination of DNA markers.  
Do not heat DNA markers (except Lambda-derived markers) prior to electrophoresis. Dilute markers in TE or in a buffer containing 20mM NaCl.  
Decrease the amount of DNA in the gel.  
Do not allow voltage to exceed ~20 V/cm. Maintain a temperature <30°C during electrophoresis. Check that the electrophoresis buffer used has sufficient buffering capacity.  
Remove excess salt before electrophoresis by ethanol precipitation.  
Remove proteins before electrophoresis by phenol extraction.  
Do not heat DNA markers (except Lambda-derived markers) prior to electrophoresis. Dilute markers in TE or in a buffer containing 20mM NaCl.  
Do not allow voltage to exceed ~20 V/cm. Maintain a temperature <30°C during electrophoresis. Check that the electrophoresis buffer used has sufficient buffering capacity.  
Heat DNA at 65°C for 5 min before electrophoresis. |