Plasmid DNA Amplification & Purification

Grade Level: 11 & 12 Summer Intern

Subject: Biotechnology / Molecular Biology/ Techniques

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Overview & Purpose	**Education Standards Addressed**
Interns will learn how to make plasmid DNA to be used for a variety of manipulations and genetic constructions.	

	Teacher Guide	**Student Guide**	
Objectives (Specify skills/information that will be learned.)	Working knowledge of plasmid biology. Aseptic technique. DNA gel electrophoresis Safety	Setting up bacterial cultures. Maintaining bacterial stocks. Extracting and analyzing DNA.	**Materials Needed** • Bacteria with plasmid • Media & antibiotic • Qiagen plasmid extraction kit • Spectrometer • SOP
Information (Give and/or demonstrate necessary information)	Plasmid descriptions: size, restriction map, selection marker, host. Gel electrophoresis DNA spectrometer analysis UV Eye protection	Demonstrate size of Plasmid on agarose gel. Measure purity of plasmid preparation using spectrometer.	
Verification (Steps to check for student understanding)	Understand calculating DNA size by counting base pairs.	Comparison of plasmid preparation and DNA ladder. UV eye protection	**Other Resources** (e.g. Web, books, etc.) Short Protocols in Molecular Biology. Wiley Copyrighted 1999.
Activity (Describe the independent activity to reinforce this lesson)	Restriction digestion and resultant hypothetical fragment pattern.	Digest plasmid DNA with specific enzyme: what fragments are expected.	
Summary	Bread & butter molecular biology. Interns need to make and analyze plasmid DNA.	Extraction of plasmid DNA from bacteria and gel analysis.	**Additional Notes** Start overnight cultures day before.