

Overview

This standard covers the skills you need to amplify DNA and analyse DNA/RNA samples using Polymerase Chain Reaction (PCR) and quantitative PCR (qPCR). You must work to the relevant standard operating procedures, legislation and organisational policy.

You must carry out all the necessary preparations which will include preparing the work area so that it is a safe condition to carry out the procedure and ensuring that reagents, materials, equipment and other resources that you need are available and in a safe and useable condition. After the procedure you must dispose of any waste appropriately, leave your work area in an acceptable condition and complete all the necessary paperwork and documentation.

Your underpinning knowledge will provide a good understanding of your work including the approach to drawing blood specimens and dealing with any problems.

Who this standard is for

The standard is recommended for more experienced laboratory staff possibly staff who are about to complete an apprenticeship.

**Performance
criteria**

- You must be able to:
- P1 ensure that your work is carried out in accordance with workplace procedures to protect yourself and others
 - P2 ensure that all equipment and materials are prepared and ready for operation
 - P3 ensure that all reagents are stored correctly and are maintained at the correct temperature during use
 - P4 prepare and load samples/specimens and run the procedure/programs correctly
 - P5 record and evaluate data using the workplace information system
 - P6 dispose of spent materials in accordance with standard operating procedure and laboratory instructions
 - P7 communicate the required information about the work done, to authorised people, in accordance with departmental and organisational procedures

Knowledge and understanding

You need to know and understand:

- K1 the health and safety requirements of the area in which you are carrying out the activities
- K2 the standard operating procedures, as set down in local laboratory manuals
- K3 the limits of your own authority and to whom you should report if you have problems that you cannot resolve
- K4 the minimum size/volume/DNA concentration of laboratory sample required for the PCR amplifications/investigations
- K5 the range of samples amplified/analysed, the containers used for sample storage and PCR amplification/analysis and other essential resources needed for each investigation
- K6 the importance of keeping the work area clean and tidy, and of avoiding cross contamination of samples
- K7 the main features of the PCR thermocycler/analyser and the underlying action of the reagents involved in the reaction mixture
- K8 the various PCR thermocycler/analyser operations that can be performed and the methods and reaction mixtures used
- K9 the manufacturer's instructions for changing programs and maintenance items in the thermal cycler
- K10 how to interpret the cycler visual display and understand the various messages displayed
- K11 the typical thermal cycler faults, and the actions to be taken if they occur
- K12 the procedures to be followed when dealing with broken or leaking samples and disposing of harmful chemicals and contaminated equipment

COGLS316

Amplifying and analysing dna or rna samples using pcr or qpcr in life sciences and related industries



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