Forensic Biology Section

Quality Control of PowerPlex STR Kits

1. Scope

1.1. To verify the quality of the Promega PowerPlex kits (PowerPlex Y-23 and PowerPlex-Fusion) used in the amplification and detection of DNA profiles before being used in casework or data basing.

1.2. The kits may be quality controlled individually or in batches.

2. Safety

2.1. Chemical Hazard: Formamide is a teratogen and is harmful by inhalation, skin contact and ingestion. Use in well-ventilated area. Use chemical resistant gloves when handling.

3. Specimen

3.1. Samples of known DNA concentrations and profiles.

4. Testing

4.1. Open the PowerPlex kits and record the lot number on the kits and all of the contents in the kits on the corresponding Kit Lot Number logs.

4.2. If the same lot numbers have been previously tested for quality control, the previous lot number can be assigned to the new shipment.

4.3. Otherwise, perform the corresponding Amplification & Detection method with a negative PCR control and at least two samples with known DNA profiles (one being the positive control) at various amounts of input DNA (e.g. the recommended input amount and one-tenth of that amount).

5. Assessment

5.1. For a PowerPlex kit to pass the quality control procedure, the following criteria must be met:

5.1.1. The negative control must provide acceptable results as outlined in the "Expected Control Values" section of the appropriate 'Analysis and Interpretation' protocol.

5.1.2. The typing results must be consistent with the genotypes of the known reference samples. All loci should give reportable results at the recommended input amount of DNA. However, it is not necessary for all of the loci to give results at the lower range of detection; the low-level DNA input is used to gain insight to the relative sensitivity of the kit.

5.2. If a kit does not pass the quality control procedure, the analysis must be repeated. If a kit does not pass the quality control procedure repeatedly, possible causes must be evaluated and documented.

5.3. Results must be verified by a second qualified individual (preferably the DNA Technical Leader). All worksheets must be properly filled out and stored in a Quality Control case folder.

5.4. Once a PowerPlex kit passes the quality control procedure, open all of the kits with the same lot number and label the components with the appropriate QC lot number and kit expiration date.

5.5. Store the amplification reagents in the freezer (-10º C or below) in the PCR Setup laboratory. The allelic ladder must be stored in the freezer (-10º C or below) in the PCR laboratory.

5.6. Once a kit passes the quality control procedure, all appropriate scientists should be notified (such as by email) that the kit has passed QC and is available for use.