Forensic Biology Section

Quality Control of QIAamp Kits

1. Scope

To provide quality control instructions for the kits used to extract DNA through the use of the QIAamp DNA Micro kit from QIAGEN. The kit is quality controlled as a batch, using reagents that have all been prepared at the same time.

2. Safety

2.1. DNA extractions will be performed in a biosafety hood.

2.2. The examiner will wear a disposable laboratory coat and disposable gloves as necessary.

2.3. Do NOT combine bleach with any extraction waste, AL buffer, or AW1 buffer. These contain guanidine hydrochloride (or guanidinium chloride) and can react violently with oxidizing agents or strong alkalis (such as bleach) and produce toxic chlorine gas. Use alcohol and paper towels to clean up spills of QIAamp reagents and extraction waste.

3. Specimen

Known blood reference on FTA paper or filter paper.

4. Reagents and Equipment

Refer to the 'Extraction of DNA with QIAamp Micro Kit' method.

5. Method

5.1. Take samples from a human bloodstain reference of known DNA profile:

5.1.1. Take a single 1/8 inch punch of a heavily stained Known blood reference sample or the HemaTrace positive control sample, and dissect it into 1/4 or 1/8 sections.

5.1.2. Take one or two Harris punches of a heavily stained known blood reference sample or the HemaTrace positive control sample.

5.2. Extract each bloodstain reference as a separate sample, including a Reagent Blank control sample, following the 'Extraction of DNA with QIAamp Micro Kit' method and eluting all of the samples with the same volume of TE buffer (e.g. 50 microliters).

5.3. Quantitate the DNA extracts and Reagent Blank extract using the 'Rotor Gene Real-Time qPCR of DNA Extracts' method.

5.4. Print the quantitation results to observe the DNA concentration obtained from each bloodstain reference and the Reagent Blank.

6. Assessment

6.1. In order for a QIAamp Extraction kit to pass the quality control procedure, the following criteria must be met:

6.1.1. The Reagent Blank control must produce no quantifiable DNA concentration (i.e. 0.0001 ng/ul or less).

6.1.2. The DNA extracts from the bloodstain references should yield DNA concentrations consistent with DNA yields obtained with previous kits (some variation is to be expected).

6.1.3. The DNA extracts from the bloodstain references should NOT appear inhibited in the Rotor Gene analysis (this could indicate a problem with the reagents).

6.1.4. If any of the samples (including the Reagent Blank) produce anomalous results, new aliquots of the DNA extracts should be tested again. If it does not pass the quality control procedure repeatedly, then possible causes must be evaluated.

6.2. Results must be verified by a second qualified individual, preferably the DNA Technical Leader.

6.3. Once a kit passes the quality control procedure, all appropriate scientists will be notified (such as by email) that the kit has passed QC and is available for use, and all kits and components from that lot should be labeled with the corresponding QC lot number and kit expiration date.

6.4. Columns are stored in a refrigerator (1° - 8° C). Reagents are stored at room temperature.

7. Examples of DNA Yields from QIAamp kits

Yield from fractions of 1/8" punch (ng/µl)			
	1/4th punch	1/8th punch	1/16th punch
lot # 8	0.6033	0.2482	0.1507
lot # 9	0.4928	0.3097	0.1239
lot # 11	0.3693	0.2367	0.1882
lot # 12	0.4018	0.1588	0.1484
lot # 13	0.2802	0.1924	0.1077
lot # 13	0.2252	0.2291	0.0646
lot # 15	0.3224	0.1643	0.1114
	Approx. 0.4	**Approx. 0.2**	**Approx. 0.1**

Yield from 1.2 mm Harris punches (ng/µl)			
	1 Harris punch	2 Harris punches	
lot # 22	0.1036	na	na
lot # 23	0.1038	0.0754	0.1469
lot # 24	0.1364	0.3134	0.1627
lot # 25	0.1979	0.3974	0.2149
	Approx. 0.15	**Approx. 0.22**	