



# 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. Upon passing the QC test, new kits will be approved for 12 months of use (starting upon delivery of kit, per manufacturer). If kit components remain after the first 12 months, the QC Lot can be repeatedly re-qualified for additional 6-month periods by performing the Kit QC test again.

### 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 replicate samples from a human bloodstain reference of known DNA profile by taking one and two punches (e.g., 3mm Harris punch) 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 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 or the “PowerQuant 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.



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### 6. Assessment

- 6.1. 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 quantified again and/or new punches taken for QC testing. If the lot 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 have the kit expiration date.
- 6.4. Columns are stored in a refrigerator (1° - 8° C). Reagents are stored at room temperature.