SAMPLE PAGES

Every patient deserves the GOLD STANDARD

Biorepository Accreditation Program Checklist

CAP Accreditation Program

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DNA/RNA
EXTRACTION/AMPLIFICATION

BAP.04500 Specimen Identification Phase II

There is a system to positively identify all participant specimens, specimen types, and aliquots through all phases of the analysis, including specimen receipt, nucleic acid extraction, nucleic acid quantification, hybridization, detection, documentation, and storage.

BAP.04700 Extraction/Purification Methods Phase II

Nucleic acids are extracted and purified by methods reported in the literature, by an established commercially available kit or instrument, or by validation of a method developed in-house.

NOTE: The method should be assessed for it suitability for each source type that requires extraction. Any modification to established procedures must be documented, as well as variations to procedures depending on anatomic site and biospecimen preservation format (e.g. fresh frozen vs. OCT-embedded).

Evidence of Compliance:

✓*Written procedure for each extraction process*

BAP.04800 Nucleic Acid Quantity Phase II

The quantity of nucleic acid is measured.

NOTE: The quantity of nucleic acid must be measured prior to use by a standard procedure that allows for the accurate determination of the concentration/quantity of the nucleic acid.

Evidence of Compliance:

✓*Records detailing the concentration and yield of nucleic acid per specimen, per extraction*

BAP.05000 Integrity/Purity Assessment – Nucleic Acids Phase II

The integrity and purity of nucleic acid is assessed, when appropriate for downstream use.

NOTE: Standard measure for DNA purity is a 260/280 ration of 1.6 to 2.0. Values less than 1.6 are indicative of protein contamination and values of >2.0 are indicative of RNA contamination. RNA should have a 260/280 ratio of greater than 2.0. Analytical measures of NA include, but are not limited to: 260/280 spectrophotometric ration, RNA-specific measures, double-stranded DNA (dsDNA), or integrity by agaroses gel-electrophoresis. RNA integrity assessments should be determined if such a quality indicator would exclude samples from specific downstream methodologies.

RNA in specimens is highly labile because RNase is ubiquitous and difficult to inhibit. For human RNA targets, RNA quality must be assessed. However, depending on the target, it may not be necessary for all specimens to be assessed for RNA quality. RNA quality is not assessed, for example, for many types of viral RNA targets, however the false negative rate must be documented.

BAP.05100 Neoplastic Cell Content Assessment Phase II

There is documentation of histological assessment of neoplastic cell content for tumor specimens from which DNA or RNA is extracted for analysis.

NOTE: In addition to confirming the presence or absence of neoplastic cells by a pathologist, it may be necessary for some assays to assess neoplastic cellularity for some downstream assay to ensure that the percentage of neoplastic cells exceeds the limit of detection for the assay.

A corresponding H&E section from the same tissue block used for DNA or RNA extraction may be used to assess sample adequacy. In the case of a frozen tissue block, a validation formalin-fixed paraffin-embedded mirrored to the frozen tissue specimen may be used for histological examination of sample adequacy. Alternatively, a stain such as toluidine blue may be used to stain the slide that isbeing used for DNA extraction. When assessment of sample adequacy is performed outside of the testing facility, documentation of such assessment should accompany the sample.

BAP.05200 Carryover Phase II

Nucleic acid amplification procedures (e.g. PCR) are designed to minimize carryover (false positive results) using appropriate physical containment and procedural controls.

NOTE: This item is primarily directed at ensuring adequate physical separation of pre- and post-amplification samples to avoid amplicon contamination. The extreme sensitivity of amplification systems requires that special precautions are taken. For example, pre- and post-amplification samples should be manipulated in physically separate areas; gloves must be worn and frequently changed during processing; dedicated pipettes (positive displacement type or with aerosol barrier tips) must be used; and manipulations must minimize aerosolization. In a given run, specimens should be ordered in the following sequence: participant samples, positive controls, negative controls (including "no template" controls in which target DNA is omitted and therefore no product is expected). Enzymatic destruction of amplification products is often helpful, as is real-time measurement of products to avoid manual manipulation of amplification products.

BAP.05300 Internal Controls Nucleic Acid Amplification Phase II

In all nucleic acid amplification procedures, internal controls are run to detect a false negative reaction secondary to extraction failure or the presence of an inhibitor, when appropriate.

NOTE: The facility should be able to distinguish a true negative result from a false negative due to failure of extraction or amplification. Demonstration that another sequence can be successfully amplified in the same specimen should be sufficient to resolve this issue. For quantitative amplification assays, the effect of partial inhibition must also be addressed.

The internal control should not be smaller than the target amplicon. . There are some rare exceptions to this rule due sequence length and design. In this situation the IC should not be more than 10% smaller then the target amplicon and the use of a smaller IC should be justified.

TEMPERATURE MONITORING AND ALARMS

BAP.08900 NIST Thermometer Phase II

An appropriate thermometric standard device of known accuracy (e.g. guaranteed by manufacturer to meet the standards of the National Institute for Standards and Technology [NIST]) is available.

NOTE: Thermometers should be present on all temperature-controlled instruments and environments and checked daily. Thermometric standard devices should be recalibrated or recertified prior to the date of expiration of the guarantee of calibration; documentation of recalibration/certification should be maintained for review.

BAP.09000 Non-Certified Thermometers Phase II

All non-certified thermometers in use are checked against an appropriate thermometric standard device before initial use.

Evidence of Compliance:

- ✓*Written procedure defining validation of non-certified thermometers* ***AND***
- ✓*Records of validation prior to being placed in service*

BAP.09100 Temperature Checks **Phase II**

Temperatures are checked and recorded on each day of use, specifying the unit and location for all temperature dependent instruments and equipment.

NOTE: Controlled-temperature devices used must have temperatures recorded at least daily for units that are within the prescribed temperature range, and at least every 15 minutes if outside of that range.

The two acceptable ways of recording temperatures are: 1) recording the numerical temperature, or 2) placing a mark on a graph that corresponds to a numerical temperature (either manually, or using a graphical recording device). The identity of the individual recording the temperature(s) must be documented (recording the initials of the individual is adequate).

The use of automated (including remote) temperature monitoring systems is acceptable, providing that biorepository personnel have ongoing immediate access to the temperature data, so that appropriate corrective action can be taken if a temperature is out of the acceptable range. The functionality of the system must be documented daily.

BAP.09200 Alarm Response Time **Phase I**

Temperature limits for the alarm are set taking into account anticipated response time.

BAP.09300 Storage Temperature Deviation Procedure **Phase II**

There are documented procedures to follow if there are deviations in the storage temperature limits, with an impact assessment when required.

NOTE: Specific procedures must be documented and understood by personnel regarding handling biological specimens if storage temperature limits cannot be maintained. The primary concern is the preservation of specimen. If there is a failure, arrangements must be made for service, and for alternative storage.

BAP.09400 Emergency Power Supply **Phase II**

Temperature controlled storage equipment have an emergency power supply.

BAP.09600 Alarm System Checks **Phase II**

Alarm systems functionality is tested (e.g. alarm triggers, ability to communicate, etc.) at specified periodic intervals (no less frequently than quarterly) and results recorded.

BAP.09700 Alarm Sensors To Trigger Action Needed **Phase II**

Alarms are adjusted to be triggered before the temperature falls outside the acceptable temperature range.

✓*Evidence of Compliance:*

Records of trigger temperatures during alarm checks AND

Records of corrective action, when appropriate

BAP.09800 Power Failure Back-Up **Phase II**

The alarms will continue to function if the power is interrupted.

NOTE: Alarm systems must continue to function during a power failure. This may be accomplished by having the alarm on a separate circuit, installing battery power back-up, or having a power failure alarm.

BAP.09900 Off-Site Notification Process **Phase II**

If the monitoring system allows for off-site notification, there is a

1. Trained person on-call (24/7) to respond to alarm conditions
2. List of phone numbers or alternate means of contact for trained personnel in case the on-call person fails to respond

BAP.10000 Back-Up Alarm QC **Phase II**

There is a back-up alarm system in place with documentation of regular testing.

BAP.10100 Alarm System Monitoring **Phase II**

There is a mechanism for monitoring the alarm system.

BAP.10200 Alarm System Contingency Plan **Phase II**

There is a contingency plan in place for monitoring if the alarm system fails.

Note: downtime procedures should exist and staff should be trained on these procedures. This contingency procedure should be periodically tested.