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ABSTRACT BOOK



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Development of a Standardised Biobanking Workflow for Molecular Samples

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ABSTRACT

Introduction: Biospecimen integrity and traceability are fundamental for reproducible molecular research. This study reports on the initial phase of developing a biobanking workflow to ensure consistent specimen integrity, proper traceability, readiness for long-term storage, and systematic quality verification. **Materials and methods:** Phase I involved three completed components: (i) preliminary verification by cross-referencing sample identifiers against approved transfer documentation and consent records; (ii) visual inspection assessing tube integrity and label legibility; and (iii) sample processing involving quality assessment and aliquoting biospecimen samples (580-600 µL) into 5–6 cryogenic tubes per specimen with standardised labelling. Phase II (planned) includes assigning samples to a –80°C freezer in Biobank Unit, Department of Pathology and Laboratory Medicine, SASMEC @IIUM, entering data into the Laboratory Information System, and implementing supervisory verification protocols. **Results:** The implementation of Phase I was completed successfully without major issues. The initial documentation review showed consistency between biospecimen identifiers and the accompanying records. Visual inspection confirmed that all tubes were intact, with no seal compromise; labels were legible, and samples were suitable for aliquoting. Aliquot preparation produced a uniform stock, which was stored temporarily in cold storage pending Phase II biobank allocation. **Conclusion:** The findings from Phase I demonstrate the feasibility of establishing standardised biospecimen processing and quality verification within an institutional biobanking framework. This documented workflow provides a foundation that, upon integration of Phase II, will enable systematic, long-term biospecimen storage, traceability, and governance to support future research needs.

Keywords: Biobanking; biospecimen processing; quality assurance; standard operating procedure