

# Establishing Standard Operating Procedures for Isolation, Characterizing and Preservation of Cells from Oral Potentially Malignant Disorders - A Concept Project Proposal

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## Rationale

Standard operating procedures (SOP) are crucial for the isolation, characterization, and biobanking of cells from tissues due to several key reasons:

**Consistency and Reproducibility:** SOP ensure that the processes involved in isolating, characterizing, and biobanking cells are performed consistently and accurately every time. This enhances the reproducibility of results, making it easier for other researchers to validate findings.

**Quality Control:** SOP establish specific protocols and criteria for cell isolation, characterization, and storage. This helps maintain high-quality samples and data integrity by minimizing variations and errors that could impact the reliability of research outcomes.

**Data Integrity and Traceability:** SOP define proper documentation practices, including record-keeping of procedures, materials, and conditions. This ensures data traceability and integrity, aiding in the validation of research outcomes and compliance with regulations.

**Safety and Ethics:** SOP outline safety measures and ethical considerations, ensuring the well-being of laboratory personnel and adherence to ethical guidelines for using human or animal tissues.

**Resource Efficiency:** Following a well-defined SOP streamlines processes, reduces unnecessary steps, and optimizes resource utilization. This can lead to cost savings in terms of time, reagents, and equipment usage.

**Cross-Training and Knowledge Transfer:** SOP facilitate training of new lab members by providing a standardized guide for carrying out procedures.

**Regulatory Compliance:** In many cases, research involving cells and tissues is subject to regulatory oversight. Having SOP in place helps ensure compliance with relevant regulations, such as those related to biosafety, ethics, and data privacy.

**Publication and Collaboration:** Many journals require detailed descriptions of experimental procedures to ensure transparency and reproducibility. Well-documented SOP can simplify the process of preparing methods sections for publications and foster collaboration with other researchers.

**Long-Term Research:** Proper biobanking of cells and tissues allows for long-term storage and future research. SOPs guide the preservation and cataloging of samples, maintaining their viability and usefulness over time.

## Purpose

The aim of this project is to establish standard operating procedures (SOP) for isolating, characterizing and biobanking cells from oral potentially malignant disorders (OPMDs).

## Methods

Various methods used to isolate OPMD cells from tissue samples from patients or from experimental animal models, such as tissue dissociation techniques (enzymatic or mechanical digestion), explant techniques, cell sorting methods, etc. will be evaluated and SOP will be elaborated. Ethical considerations and obtaining necessary approvals from relevant institutional review boards or ethics committees will be addressed as well. Appropriate methods that should be employed to characterize OPMD cells (e.g., flow cytometry, cell growth parameters, gene expression analysis, protein profiling, functional assays, etc.) will be outlined. The process of establishing a biobank for OPMD cells will be defined, as well as the storage conditions for long-term preservation. Logistical considerations, including sample labeling, tracking, and database management will be also established. A detailed guideline for the procedure of applying for allowance to utilize the isolated OPMD cells from the biobank will be elaborated.

## Expected Results

The SOPs created in this project will ensure standardized methods and guidelines for proper isolation, characterization, and storage of OPMD cells for biobanking, as well as their responsible usage.

## Conclusions

SOP are essential tools for maintaining consistency, quality, safety, and compliance throughout the processes of isolating, characterizing, and biobanking cells from OPMDs, contributing to the overall success and impact of scientific research performed.

In long term, SOP will facilitate a deeper understanding of the OPMDs, identify biomarkers, develop personalized treatments, and drug development for OPMD. Ultimately, these efforts aim to improve risk assessment, management and patient outcomes in individuals affected by OPMDs.

