

iSWAB™ - Cells

OMICs from a Single Sample: Non-invasive device for room temperature collection, transport and storage of Intact Buccal Cells



To create a more comprehensive profile of our health and wellness vs. disease, multiple analytes need to be included in the analytical mix such as DNA, RNA, proteins, and cell morphology. Unfortunately due to the limitations of current sample collection practices this means multiple samples need to be collected per individual to achieve this objective, with heavy cold chain involvement in both transport and storage. These limitations can make this type of analysis not only expensive but sometimes non-accessible which yields inconclusive research outcomes.

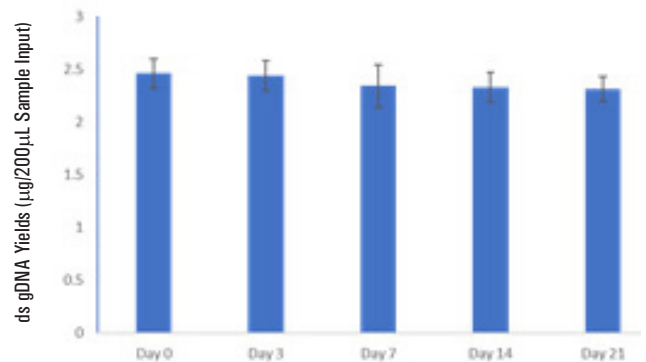
To address this need Mawi DNA Technologies has developed iSWAB-Cells, a universal non-invasive cell collection device, from which gDNA, RNA, proteins, and cell morphology can be analyzed from the same sample.

Features & Benefits

- Enables full genomics, proteomics, and transcriptomics analysis from a single sample including DNA, RNA, proteins, and cell morphology
- Stabilizes intact cells for up to 4 weeks at room temperature
- Room temperature stable: Reduce storage and transport costs by eliminating cold chain requirements
- Swab-free sample transport: Decrease sample processing time without compromising sample integrity
- Self collection or assisted collection in less than 5 minutes: Suitable for all population segments including infants, toddlers, and elderlies
- Scalable: iSWAB Cells buffer can be purchased separately in 1 or 5 liter volumes for stabilization of larger samples
- Purified DNA, RNA, or proteins from collected samples are compatible with qPCR, microarray, NGS, and cell based assays
- No organic hazardous solvent fixatives
- Traceable and reliable chain of custody: LIMS compatible unique barcodes included on each collection device for efficient traceability during transport and storage

Efficient Stabilization of Human gDNA in iSWAB-Cells

iSWAB Cells Stabilizes Double Stranded Human gDNA at Room Temperature for Several Weeks



Experiment: Evaluation of the ability of iSWAB-Cells to stabilize human gDNA at room temperature for extended periods of time. Pooled buccal cell samples collected with iSWAB-Cells from 10 subjects (age: 21-60 years) was tested at various time points; Day 0, Day 3, Day 7, and Day 21 post collection; while stored at room temperature.

Human gDNA Extraction: QIAamp DNA Blood Mini Kit (Cat. nos. 51104/51106) from 200ml input as starting material from iSWAB-Cells.



Biosampling Reinvented™

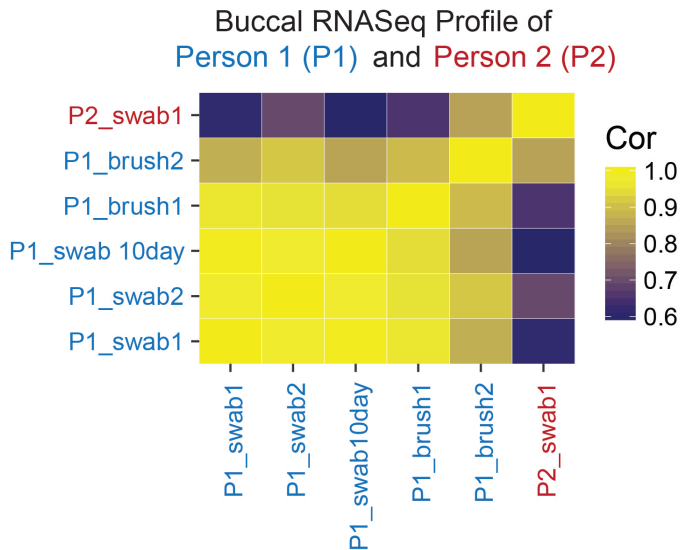


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RNASeq Profile of Buccal Cells from iSWAB-Cells: 1 day vs 10 days at Room Temperature Storage



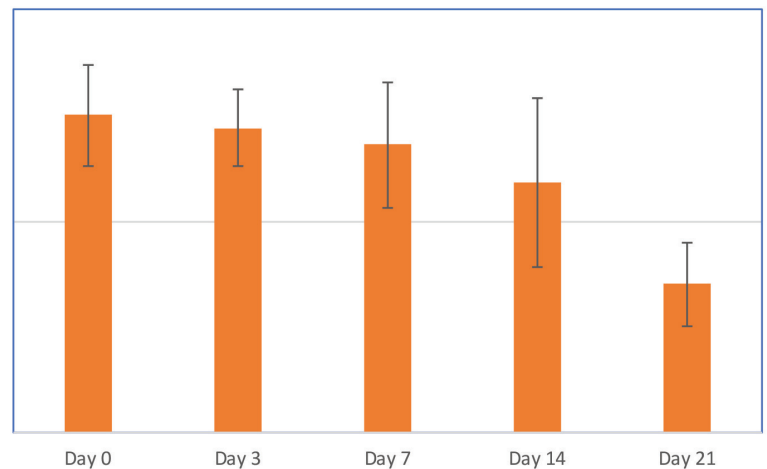
Experiment: Comparison of Person 1 and Person 2, and repeated buccal cell collection with iSWAB-Cells of Person 1 by flocked swabs, or cyto-brushes one day and after 10 days post-collection at room temperature storage.

RNA Extraction: Zymo Quick-RNA MiniPrep Plus (cat. nos. R1057/R1058)

Data Analysis: The figure is a correlation matrix of the FPKM read counts for every gene expressed in the RNASeq data, clustered by similarity (Pearson correlation).

RNASeq Conditions: 60 million single end 50 base pair reads on an Illumina TruSeq RiboZero stranded RNASeq kit.

Epidermal Growth Factor Receptor Levels Remain Relatively Unchanged in iSWAB-Cells



Experiment: Evaluation of the performance of iSWAB-Cells stabilization of membrane proteins at room temperature for extended periods of time utilizing cell-based colorimetric ELISA. Cell-based ELISA analysis allows for protein analysis without the need for cell lysis and thus chosen accordingly. Pooled buccal cells collected with iSWAB-Cells from 10 subjects (ages: 21-60 years) was tested at various time points for the stability of Epidermal Growth Factor Receptor (EGFR) at Day 0, Day 3, Day 7, and Day 21 post-collection while remaining stored at room temperature. The stability level was measured in correlation to the intensity of the colorimetric intensity of each well at OD 450nm (1000 buccal cells/well).

Cell-based ELISA: Human EGFR In-Cell ELISA Kit from abcam (cat. no. ab126419)

EGFR Stability Assessment: Measurement of the loss of colorimetric intensity of the HRP substrate over time at OD 450nm. All OD readings were normalized to iSWAB-Cells buffer before use.

Data Analysis: There is insignificant change in Epidermal Growth Factor Receptor levels in iSWAB-Cells after 14 days of room temperature storage.



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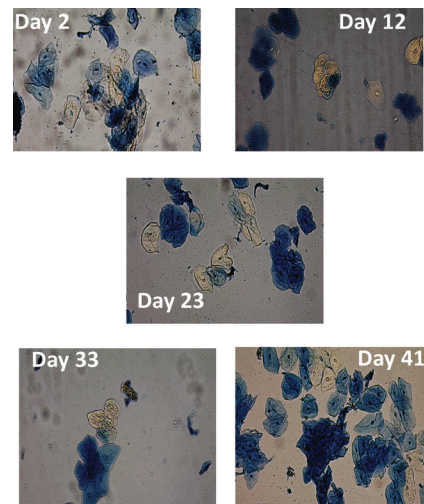
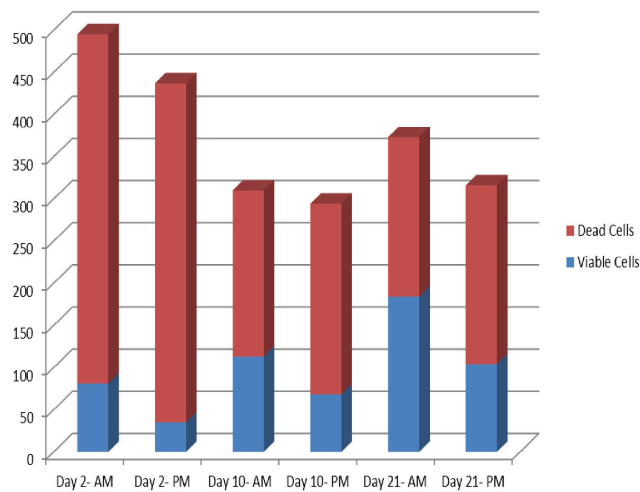
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iSWAB-Cells maintains cells viable and intact for up to 4 weeks at room temperature

Time Course of Collected Buccal Cells with iSWAB-Cells: Viable vs Dead Cells at Room Temperature Storage



Buccal cells were collected from 6 volunteers (ages 19-50) following iSWAB-Cells collection procedure. Each volunteer provided a sample early in the morning before brushing their teeth (AM) and a second set of samples before dinner (PM). The cells were counted by light microscopy using a hemocytometer and Trypan Blue. The numbers of cells are the average of cells of the AM and PM collected samples. Buccal cells that did not take Trypan Blue appear colorless and counted as viable, while the blue colored cells took up Trypan Blue and were counted as dead cells.

Part No.	Product
ISWAB-CELLS-1200	iSWAB Cells Collection Kit, 1.0 ml
ISC-T-1200-R	iSWAB Cells Collection Tube Rack, 1.0ml x 50



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