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Version 1

CAMbank: Saliva Collection (preservative, v1) V.1

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Protocol status: Working

We use this protocol and it's working

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Keywords: saliva, astronaut, spaceflight, omics, preserved saliva sample, saliva sample, saliva collection, nucleic acid, integrated preservative, microbiome profiling, proteomic, rna, omnigene oral, protein stabilization in both ground, spacex inspiration4 mission, astronaut health research, protein stabilization, downstream analysis

Abstract

This protocol describes the collection of preserved saliva samples using the OMNIgene ORAL (OME-505) kit, optimized for nucleic acid and protein stabilization in both ground-based and spaceflight environments. Participants deposit saliva directly into the OME-505 collection tube until reaching the indicated fill line, after which the integrated preservative is released upon capping and mixed thoroughly by inversion. Samples are stored at -20°C until downstream processing. This method was implemented during the SpaceX Inspiration4 mission at multiple ground timepoints, yielding DNA (28.1–3187.8 ng), RNA (396.0–3544.2 ng), and protein (92.97–93.15 ng) suitable for a wide range of downstream analyses, including genomic, transcriptomic, proteomic, and microbiome profiling. The preservative enables room-temperature stability during transit and mitigates degradation risks associated with delayed processing, making it compatible with mission scenarios lacking immediate cold stowage. This standardized collection approach supports the Space Omics and Medical Atlas (SOMA) initiative's goal of generating high-quality, cross-mission comparable multi-omics datasets for astronaut health research.

Materials

- DNA Genotek OMNIgene•ORAL (OME-505) kit
- Sterile nitrile gloves
- 70% Ethanol in a spray bottle
- VWR KimWipes
- Cryogenic Freezer



Preparation

3m

- 1 Verify that all necessary materials are available and the OMNIgene•ORAL kit is still sterile-sealed.
- 2 Put on nitrile gloves to ensure sterile handling of the samples.

2m

1m

Sample Collection

8m

- 3 Open the DNA Genotek OMNIgene•ORAL (OME-505) kit.
- 4 Spit into the collection tube until the amount of liquid (not including bubbles) reaches the fill line.
- 5 Close the lid tightly to release the stabilizing liquid into the tube.
- 6 Shake the tube for 5 seconds to mix the saliva with the stabilizing liquid.

1m

5m

1m

1m

Sample Handling

4m

- 7 Note the following details:
Subject ID (ex: C###)
Date of Collection (MM-DD-YYYY)
Time of Collection (HH:MM AM:PM)
- 8 Verify that the collection tube is properly sealed and has not leaked.
- 9 Sterilize the outside of the collection tube with 70% ethanol and wipe down with a KimWipe.

2m

1m

1m

Storage

2m

- 10 Place the OME-505 tube in a cryogenic freezer box.

1m



- 11 For long-term storage, keep the samples at -20°C.

1m

Acknowledgements

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