Jan 14, 2026

Plasma isolation for cell-free DNA analysis from dogs using Streck tubes

Cancer Research Communications

DOI
https://dx.doi.org/10.17504/protocols.io.x54v9541ml3e/v1

Patricia Filippsen Favaro[1], Muhammed Murtaza[1]

[1]Center for Precision Medicine, University of Wisconsin-Madison

ctdnalab

Muhammed Murtaza

OPEN ACCESS

DOI: https://dx.doi.org/10.17504/protocols.io.x54v9541ml3e/v1

External link: https://doi.org/10.1158/2767-9764.CRC-25-0373

Protocol Citation: Patricia Filippsen Favaro, Muhammed Murtaza 2026. Plasma isolation for cell-free DNA analysis from dogs using Streck tubes. **protocols.io** https://dx.doi.org/10.17504/protocols.io.x54v9541ml3e/v1

Manuscript citation:
Favaro PF, Wang Y, McDonald BR, Wang TX, Jadhav S, Cheng HH, Marcinak CT, Pan X, Murtaza M (2026) Comparative Analysis of Cell-Free DNA Fragmentation Patterns in Canines with Sarcoma and Tumor-Free Canines and Humans. Cancer Research Communications 6(2). doi: 10.1158/2767-9764.CRC-25-0373

Protocol status: Working
We use this protocol and it's working

Created: November 08, 2025

Last Modified: January 14, 2026

Protocol Integer ID: 231794

Keywords: canine, liquid biopsy, plasma, cell-free DNA, free dna analysis in dog, free dna analysis from dog, plasma isolation for cell, tubes laboratory protocol for blood processing, free dna tube, using blood sample, free dna analysis, blood sample, plasma isolation, tubes laboratory protocol, streck cell, blood processing, laboratory, dna

Abstract

Laboratory protocol for blood processing and plasma isolation for cell-free DNA analysis in dogs using blood samples collected in Streck cell-free DNA tubes.

Guidelines

1. After blood collection, turn the tube gently 10 times to homogenize the blood and place at room temperature, in upright position, until processing. **Do not place Streck tubes in fridge or freezer.**
2. It is critical that blood samples are centrifuged twice as described, ideally within 24 hours of collection (and up to 7 days based on manufacturer guidelines) to minimize the possibility of white blood cells (WBCs) lysis that can affect our ability to measure circulating tumor DNA (ctDNA).
3. Collect the buffy coat in a separate 2 mL sterile screw-capped DNase-free microcentrifuge tube.
4. Collect plasma aliquotes in separate 2 mL sterile screw-capped DNase-free microcentrifuge tubes.

Procedure

1 Collect blood in Streck tubes.
Note: The tube should be filled during collection to assure the correct proportion of additive and blood.

2 Gently invert the tube 10 times, and leave it upright at room temperature prior to centrifugation.

3 Ideally within 24 hours (and up to 7 days based on manufacturer recommendations), centrifuge the tubes at 1,600 x g for 10 minutes at room temperature, with the centrifuge brake off (gentle slowdown speed).

4 Collect the supernatant (plasma), transferring 1 mL aliquots to microtubes, taking care not to disturb the whitish band, which is the buffy coat.
Label the tubes: #1 #2 #3 (...) in the order of aliquoting the plasma.
Use these in Step 6.

5 Collect the buffy coat (700 µL) in a separate microtube (cryotube, screw-capped). Start collecting this layer slightly above (~2 mm) the visible white band.
Note: It is expected to pipette some amount of red blood cells during the buffy coat collection.
Store the microtube at -80˚C.

6 Centrifuge the plasma aliquots (from step 4) at 16,000 x g for 10 minutes at room temperature, with the centrifuge brake off (gentle slowdown speed).
Record the time that the centrifugation started (centrifugation #2).
Note: following centrifugation, a pellet will likely be formed.

7 Collect the supernatant (plasma), transferring 900 µL of each aliquot to a new microtube (cryotube, screw-capped), taking care not to disturb the pellet.
Store microtubes at -80˚C.