



## A New Standard in Pre-Analytical Stability for Liquid Biopsy

**Protect Your Science. Perfect Your Signal.**

### The Pre-Analytical Challenge: A Single-Tube Solution

In liquid biopsy, sample degradation begins at collection, obscuring biomarker signals with contaminants from dying cells causing irreproducible results and assay failure.

The TAG FLEX-LB (TFLB BCT) solves this with a novel technology that preserves cfDNA, cfRNA, and total RNA in a single tube for up to 7 days, with compatibility for cell and protein studies. TFLB simplifies phlebotomy, streamlines workflows, and provides an unwavering foundation for reliable results.

## Unwavering Sample Integrity, From Collection to Analysis: Stable for 7 Days at Ambient Temp

**Under standard laboratory conditions, TFLB demonstrates a clear performance advantage over other collection methods, ensuring the highest quality nucleic acids for downstream analysis.**

- Reliable cfDNA Stability Across All Conditions:** TFLB provides 7-day cfDNA stability equivalent to market leaders at ambient temperature and superior yield stability under cold storage (4°C). The comprehensive protection of TFLB ensures sample integrity regardless of shipping conditions. TFLB also streamlines workflows by eliminating the 20-minute Proteinase K digestion required for Streck BCTs with common extraction kits—saving over 32 hours of incubation time per 96-sample batch. TFLB also eliminates the 2-hour processing deadline of EDTA tubes, which show significant gDNA contamination from cellular lysis shortly thereafter. Switching to TFLB allows labs to decouple collection from processing, enabling efficient sample batching, reducing hands-on time, and improving overall throughput.
- Unmatched miRNA Integrity for Reliable Normalization:** TFLB maintains exceptional miRNA stability, with the minimal miRNA:Small RNA ratio changes of only 4% over 7 days. Comparatively, Streck tubes destabilize rapidly, showing significant ratio shifts of 19-30% in just 5 days—a major source of variability that compromises assay normalization and reproducibility. By preventing this shift, TFLB provides a stable baseline essential for developing assays with reliable normalization and consistent QC performance, maximizing sensitivity and reproducibility.
- Best-in-Class Hemolysis Control:** Hemolysis releases potent PCR inhibitors and gDNA contamination, a primary cause of assay failure. TFLB minimizes hemolysis, maintaining consistently low levels of the RBC-specific marker hsa-miR-16 over time. Competitor tubes show a significant increase in this marker, indicating ongoing RBC lysis that release contaminating PCR inhibitors and nucleic acids, leading to assay failure. For a CLIA lab, preventing hemolysis with TFLB means fewer failed runs, lower sample rejection rates, and higher confidence in results.

Feature / Metric	TAG FLEX-LB (TFLB)	Streck BCTs	Standard EDTA
<b>cfDNA Stability (Ambient)</b>	Stable up to 7 days	Stable up to 7 days	Unstable; gDNA contamination after 2 hrs
<b>cfRNA/miRNA Integrity</b>	<b>Exceptional:</b> Stable ratio (4% change in 7 days)	<b>Unstable:</b> Ratio shifts 19-30% in 5 days, compromising normalization	Rapid degradation; Unsuitable for cfRNA analysis
<b>Hemolysis Control (4°C)</b>	<b>Superior:</b> Prevents cold-induced hemolysis, protecting cfDNA yield	<b>Compromised:</b> Significant hemolysis causes cfDNA yield loss	High risk of hemolysis upon storage or delay
<b>Thermal Resilience (37°C)</b>	<b>Robust:</b> Yields 27 ng/µL total RNA after 12 hr heat stress	<b>Failure:</b> Yields <7 ng/µL (unusable) RNA with common silica-column methods	Unstable; Requires immediate processing at 4°C
<b>Workflow Efficiency</b>	<b>Streamlined:</b> Direct plasma isolation (Saves >30 hrs/plate)	<b>Multi-Step:</b> Requires Proteinase K digestion (20 min incubation)	Requires immediate processing (within 2 hrs)

## Engineered for the Real World. Validated for the Most Sensitive Assays.

### Unmatched Performance Across Real-World Temperatures

Biosamples are routinely exposed to temperature extremes during shipping and storage. TFLB's thermo-protective design provides unparalleled resilience against both heat and cold stress, safeguarding irreplaceable samples where other tubes fail.

- **Resilience to Heat Stress (37°C): De-Risk Your Workflow from Catastrophic Sample Loss:** After 12 hours at 37°C, TFLB yielded 27 ng/μL of high-quality total RNA. In stark contrast, Streck tubes suffered a catastrophic failure when paired with a common silica-column extraction workflow, yielding unusable levels (<7 ng/μL) of total RNA and resulting in total sample loss. TFLB provides the thermal resilience needed to protect irreplaceable samples from real-world shipping delays that can be used for RT-qPCR assays.
- **Protection in Cold Storage (4°C): Prevent Artifacts and Preserve Yield:** While refrigeration can induce significant hemolysis in competitor BCTs, TFLB prevents temperature-induced hemolysis. After 6 days at 4°C, TFLB plasma remains clear while Streck plasma shows prominent hemolysis. TFLB offers superior protection, critical for cfDNA yield preservation, where competitor tubes show degradation and sample loss.

### Validated for Next-Generation Sequencing (NGS)

The ultimate test of sample quality is performance in demanding NGS applications, critical for patient diagnosis, prognosis, and treatment. In a spike-in study using synthetic cfDNA with known cancer-associated variants, TFLB proved its ability to identify and preserve nucleic acid integrity for high-sensitivity sequencing.

- **Accurate Variant Detection:** TFLB's performance in identifying key mutations (EGFR, PIK3CA) was comparable to the market-leading Streck BCTs over a 7-day period, providing the foundational accuracy required for reliable NGS-based research.
- **Excellent Signal Integrity for NGS:** TFLB demonstrates robust preservation of cfDNA for demanding NGS workflows. In a 7-day spike-in study, sequencing coverage for key variants declined over time in all tested BCTs, a known pre-analytical challenge. However, TFLB retained higher amplicon coverage up to 7 days, suggesting superior preservation of cfDNA integrity for sequencing applications. This superior preservation of signal integrity provides more robust data at later time points, reducing analytical variability in longitudinal studies.

### The TFLB Advantage for Your Laboratory

- **For Liquid Biopsy Researchers:** Maximize data integrity and enable complex, multi-site studies with confidence in your sample quality, regardless of shipping time or temperature.
- **For Assay Developers:** De-risk development on a stable sample foundation and enhance assay sensitivity with a superior signal-to-noise ratio for both cfDNA and cfRNA.
- **For CLIA Lab Directors:** Improve operational efficiency by eliminating the EDTA processing window, reduce sample rejection rates, and lower overall costs with a competitively priced, single-tube solution.



1) Request a TFLB BCT Evaluation Kit today 2) See detailed results of TAG R&D performance tests @ <https://qrco.de/bgPf0J> 3) Schedule a detailed call with TAG scientists.