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# F A Q : PCRopsis™ BCS Nano

1. **How does PCRopsis™ BCS Nano work?**
  - a. PCRopsis™ BCS Nano consists of a set of proprietary substrates engineered to selectively precipitate red blood cells (RBC) from whole blood. As a result, an enrichment of nucleated cells (particularly white blood cells (WBC)) remains on the top portion of the processed sample.
2. **Can PCRopsis™ BCS Nano isolate specific cell types?**
  - a. BCS Nano can be used in combination with cell-specific depletion products (e.g., RosetteSep™ Human Granulocyte Depletion Cocktail) that cross link RBC to undesired cells. In this scenario, PCRopsis™ BCS Nano forces RBC, along with undesired cells, to the bottom of the tube. PCRopsis™ BCS Nano allows for the enrichment of nucleated without the need for centrifugation, filters, or antibodies, and thereby streamlines automated sample processing and results in unlabeled cells.
3. **Can the resulting supernatant be used for direct PCR without RNA / DNA extraction or combination with other PCRopsis™ products?**
  - a. Yes. BCS Nano simultaneously precipitates RBCs and sequesters PCR inhibitors found in blood. As such, the resulting supernatant can be used directly into your PCR mixture without RNA / DNA isolation. You should use 1~3 µL of the supernatant into your PCR mixture. Higher volumes of supernatant are normally inhibitory and may result in higher Ct values.
4. **Can circulating epithelial / tumor cells or circulating DNA be detected using PCRopsis™ BCS Nano?**
  - a. BCS Nano selectively precipitates RBCs. An enrichment of non-RBCs remains in the top layer (supernatant). However, we have not tested whether BCS Nano can enrich for epithelial / tumor cells or circulating DNA.
5. **Can I use an alternative ratio of BCS Nano : whole blood that differs from the recommended 1:5 ratio?**
  - a. Yes. A ratio of 1:10 BCS Nano : whole blood will precipitate RBCs from 0.1 ~ 2 mL of whole blood. If you intend to use the supernatant for direct PCR applications, then you should use 1~2 µL of the supernatant into your PCR mixture. Higher volumes of supernatant are normally inhibitory and may result in higher Ct values.
6. **Can I use BCS Nano for whole blood samples greater than 2 mL?**
  - a. Yes, if using a tube with a diameter no greater than 10 mm. However, you may need to let the RBCs precipitate for 20~25 minutes, instead of the normal ~15 minutes. You may observe incomplete precipitation of RBCs when using >5 mL of whole blood.



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**7. Are enriched nucleated cells viable after RBCs are precipitated?**

- a. The majority of enriched nucleated cells are viable immediately after collection. Cellular viability will depend on the blood sample, how the sample was stored, the age of the sample, how long the sample was incubated with BCS Nano, and other factors.

**8. Can I precipitate RBCs using PCRopsis™ BCS Nano at 4°C?**

- a. Yes, however, you may need to let RBCs precipitate for 25~30 minutes (instead of ~15 minutes) to observe decent cellular separation.