Cross-Contamination of Samples Stored in Liquid Nitrogen

Although virtually universally agreed upon by recognized authorities, but hardly recognized yet in typical bio research laboratories, is the occurrence of cross-contamination of biological samples when immersed in liquid nitrogen.

The FDA stated in a September 2006 PROPOSAL that laboratories producing products for therapeutic use should consider ***"Storage of cell banks in the vapor phase of liquid nitrogen might reduce the potential from cross-contamination."***

Gary Clark has an interesting paper from 1999, "Sperm cryopreservation: is there a significant risk of cross-contamination" that cites many papers of the subject.

Recognizing the risk:

- ✓ Contamination may mean viruses and bacteria invading your samples (perhaps easy to combat, perhaps not)
- ✓ Contamination may mean mycoplasma (getting tougher to deal with)
- ✓ Contamination may mean the complete over-run of your cell line by something like HeLa cell that could ruin all your experimental conclusions.

{Note: I recall an unfortunate incident in the 1980's when a researcher had to publish a retraction of about 15 years worth of work because the cells he started his work on had been completely overgrown by HeLa cell sometime in the distant past.}

Taking an action:

- ✓ If you continue to use a Dewar style freezer, only keep 6 inches of liquid nitrogen in the bottom and do not use the bottom 3 levels of boxes. This will mean keeping the sample boxes safely in the vapor phase. It does mean, however, that you have to keep a much closer eye on the level and fill more frequently.
- ✓ If you can, invest in the newest Isothermal vapor phase technology from Custom Biogenic Systems (a cryogenic system that has no liquid at all in the sample chamber).

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