November 2012

Dear Allison,

Ask the expert is back. We have a listing of recent review articles from BioCoR faculty. The short course is available on demand for only a few more weeks. There is also a notice on an upcoming survey that we will use to improve cell preservation.

BioCoR is a national resource focused on advancing the science, technology and practice of biospecimen preservation. We are dedicated to developing biopreservation protocols, improving preservation and storage technologies, establishing standards and guidelines and training individuals and institutions in the science and technology of biopreservation.

More information can be found on the BioCoR website: www.biocor.net. Or you may contact us now at biocor@me.umn.edu

Ask the Expert

We regularly get questions from people needing help with preservation. We will try to pass on some of the questions and answers to you in our newsletter.

Question: Our lab is interested in evaluating the viability of the cells we slow freeze in media and DMSO. Do you have any methods to do this?

Answer: Quantifying the viability of cells post thaw is extremely important and may be performed by a variety of methods depending upon the post thaw requirements of the
cells. The process of cryopreservation subjects the cells to significant stresses that can alter metabolic function, membrane structure, etc. Therefore, considerable care should be used in development and validation of post thaw assays. Post thaw function is most commonly assessed using physical integrity (e.g. membrane integrity), metabolic activity, mechanical activity (attachment, contraction), mitotic activity or engraftment potential. The selection of assay depends strongly on the desired post thaw function of the cell. Physical integrity is used most often. It is important to note that there is a movement away from dyes like trypan blue to measure post thaw physical integrity as this dye is difficult to validate on frozen and thawed cells. Fluorescent dyes are used with increasing frequency to determine post thaw physical integrity of a cell. Rigorous methods of post thaw assessment typically involve multiple measures of post thaw viability. It is common to use at least two independent assays to measure post thaw viability. For example, post thaw attachment and proliferation are commonly used to assay viability. As the complexity of the desired function of the cell post thaw increases, so do the demands on post thaw assessment. For example, post thaw assessment of stem cells may require assay of membrane integrity as well as proliferation and the ability of the cells to differentiate into different lineages post thaw. Care should be used in the development and validation of post thaw assays to avoid measurement bias. A certain fraction of cells will lyse during freezing and methods of counting cell recovery should include a complete assessment of cell losses (cells that have lysed as well as cells that are intact but not viable).

If you have questions for the expert, do not hesitate to go to our website and submit your question (Ask the expert).

BioCoR Reviews

BioCoR faculty are committed to providing review articles on relevant topics in preservation. The following is a listing of recent review articles by BioCoR faculty that you may find helpful.

**Biobanking/Biospecimen Science**

_A review of factors that influence quality of frozen biospecimens including plasma and serum, urine, saliva, cerebrospinal fluid, and bronchoalveolar lavage._

_This review describes factors that influence the quality of tissue biospecimens that are either frozen or chemically fixed._

**Preservation of cell therapies**

Hubel A. "Advancing the preservation of cellular therapy products," Transfusion, 51(S1, Supplement 4): 82S-86S, 2011. *This review discusses emerging issues in preservation that are critical for improving preservation of cell therapies.*

We have two other reviews that are in preparation. We will keep you posted as to the status of those review which should be coming out in 2013 as well. Your feedback is important: If you have a suggested topic for a review article, please feel free to email us at biocor@me.umn.edu with your suggestions. The reviews should be in the fields of cell therapy or biospecimen preservation.

**Upcoming survey**

*Do you routinely preserve cells?*
*If so, we could really use your input.*

The mission of BioCoR is to improve the science, technology and practice of preservation. Well, we are currently working on technology that we believe will do just that. We are looking to understand the specific needs of individuals who preserve cells so that we can develop more meaningful solutions to preservation problems. Please look for an email from biocor@me.umn.edu in the near future.

**Preservation of molecular, cellular and tissue biospecimens**

*Short course is available on demand!*

Preservation of molecular, cellular and tissue biospecimens was a great success this year. The course will be available on demand through 31Dec2012.

Participants interested in taking the course on demand will be sent the course binder with all the course materials. They can then watch the recorded lectures on demand.

*Topics covered include:* liquid storage, cryopreservation, fundamentals of preservation, protocol development, debugging protocols, repository design, protein preservation, tissue preservation, clinical preservation, quality control, regulatory issues and more.
As with the regular short course, groups of two or more attending the short course receive a discount.

If you want to take the course on demand, please contact us at biocor@me.umn.edu

The course has been endorsed by ISBER.

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