

Core Cryolab

Canada's first purpose designed cryopreservation resource, Core Cryolab presents a unique opportunity to attend a series of focused workshops on Cryopreservation. A key component in many research protocols and in the critical area of tissue transplant, fertility and haematopoietic cell transfer, cryopreservation theory and practice is not taught as part of a normal academic curriculum. This course will provide the tools to enable you to improve your practices in this area and hence the long term viability of valuable samples.

Program Facilitators

Ian M Pope

Core founder, over 15 years experience in controlled rate freezing, storage system design and planning



Alison Hubbel

Assistant professor, Biomedical Engineering Institute, University of Minnesota



Leslie Gallagher

Core founder, over 20 years experience in the Medical/Specialty Gas Industry, Cryogenic Gases and Equipment Systems



Shipping of Biological and Potentially Hazardous Materials. Certification to 49 CFR Part 172 (Subpart H)

11.10, 11.24, 12.8 2005



Did you know???

That the **government holds the shipper directly responsible** for the correct and legal transport of dangerous goods by surface or air, or that the regulations require that anyone who transports or handles for transport, hazardous materials must be a trained person pursuant to 49 CFR Part 172—Subpart H. These regulations are upheld by Canadian, US and International governmental bodies.

Core offers a comprehensive training program, consisting of 3 morning sessions, leading to certification as a trained person pursuant to these acts. In addition the attendee will receive training which covers the selection, best practice, validation and maintenance of sub ambient temperature shipping modalities.

\$595 per attendee (group rates available on enquiry)

Core Cryolab Inc.

At UHN General Site
585 University Avenue
Suite BC 8131
Toronto, Ontario, Canada

Phone: 416-260-CORE (2673)
Fax: 416-260-7151

E-mail: greg.leadbeater@corecryolab.com

Cryopreservation Theory and Best Practice

An introduction to BioPhysics, Protocol Design, Controlled Rate Freezing, Storage Systems and Safety; associated with the cryogenic freezing and storage of biological materials

3 - 1/2 Day Workshops



Date: Feb 8-10, 2006

Time: 09:00

Core Cryolab is located at:
UHN— General site
Clinical Services Building

Program Synopsis

This program provides a unique perspective on cryobiology and cryopreservation, with a basis in science, manufacturing and best practice. During the sessions we will explore the fundamentals of cell immortalization from sample preparation, solution selection and addition through freezing and long term storage. The intent is to provide the tools required for a thorough assessment of the cryopreservation protocols and practices within an organization and options for their improvement. The presentations are offered over 3 - 1/2 day sessions and each can, if desired, be booked and attended as stand alone events

A heavy emphasis is placed on hands on practical involvement with the course material, together with in-depth discussion of theory and associated equipment.

Session 1. Theory and Preparation

Introduction to the Bio-Physics of Freezing.

Discussion of the chemistry, physics and thermodynamics of freezing as it pertains to cellular cryopreservation. Influence of aqueous solutions, osmosis and nucleation, sub cooling and the subsequent effect on cell mortality. Cryopreservation solutions and phase diagram considerations, eutectic mixtures and glass transition and their importance in the cryopreservation process.

Before Freezing

Selection of sub populations and cell separation. Preparation and tempering of protective agents, solution equilibration. Selection and addition of Cryoprotective Agents (CPAs) including discussion on water transport, water transport modeling and active water transport. Types and formulations of CPAs, Colligative effects and issues associated with mixing. Mechanisms of cryoprotection, vitrification, optimization of freezing rates and bio toxicity of CPAs.

Session 2. The Freezing Process and Quality Control

Freezing and Thawing

Issues associated with freezing protocol development. Effect of initial temperature and osmolality. Relating cell survival to cooling rate. Control of latent heat release, cooling during desiccation phase. Protocol considerations when comparing freezing cell suspensions and connective tissues. Success criteria – how to qualify a controlled rate freezer run (chamber vs. sample temperature). Heat transfer as it relates to cell biology and mortality, relationship of warming to cooling kinetics. Warming techniques for conventionally frozen vs. vitrified material. Hyperthermic damage and a discussion of thresholds. Removal of CPAs and re-hydration.

Post Thaw Assessment

Validation of freeze thaw protocol, Internal vs. Release criteria, Identification and choice of valid metrics, outcome assessment and identification of strengths and weaknesses of metrics cell to cell.

Session 3. Storage Methods, Equipment Issues, System Design and Regulatory Affairs

Storage

Critical issues (temperature, disaster survivability), liquid vs. vapor vs. mechanical storage, cross contamination, sample containers, costs and cost control, cost effectiveness. Sample handling to minimize cell damage – best practice and practicality. Vendor value management, shipping and transfer best practice. Operation, validation, calibration, SOP, IQ / OQ / PQ for LN2 storage and shipping systems. Design of cryogenic systems including bulk supply, internal cryogenic fluid delivery, safety and personal protective equipment.



To register for the program or for more information, please contact:

greg.leadbeater@corecryolab.com or call us at 416-260-CORE (2673) x122

Fee Schedule

Each individual session: \$ 500

All three sessions: \$1200

Fees include workbook, lecture materials on memory stick, lunch and coffee. In addition a one hour consulting session to discuss individual needs is offered to all participants.

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