Review Period: From:		To:	
Current Review Eff:			

Curriculum Vitae

Section I

Personal Data

Name: Last, First, Middle **Katkov, Igor**
Department Cancer Center Title(s) Project Scientist, Level V

Home Address
Street 9263 Pebblestone Lane Phone: 858-577-0211
City, State, Zip San Diego, CA 92126

Business Address
Street The Burnham Institute
10901 N. Torrey Pines Rd., Bldg 7, 1st Floor, r. 7-105 Phone: 858-822-2039 (home), 858-231-0755 (cell.)
City, State, Zip La Jolla, CA 92037 Mail Code 0816

Date of Birth: 07-24-1957 Country of Citizenship: Ukraine

Are you a citizen or **permanent resident** of the U.S.? Yes **X** No
If no, what is your current Visa status? Permanent Resident of the United States
Date this status began: 03-07-2000 Date this status expires: N/A

Person to be contacted in case of emergency:
Name **Katkova**, Nadezhda (Nadia)
Street 9263 Pebblestone Lane Phone: 858-231-0754 (cell)
City, State, Zip San Diego, CA 92126

Family Members employed by the University:
Name N/A Relationship Department

Previous Applicable Employment

Please show a full account of your time from the date of your first academic (or otherwise relevant) employment up to the present, including any periods when you may not have been employed. Indicate part–time appointments. Show salary or approximate annual earnings in all cases. Please include all previous University of California employment. You may provide supplementary information if necessary.

Months and years of employment	Institution, firm or organization of employment	Location	Rank, title, or position
07/04-present	UCSD Cancer Center	San Diego, CA	Project Scientist V
07/02-06/04	UCSD Cancer Center	San Diego, CA	Project Scientist IV
04/02-06/02	UCSD Cancer Center	San Diego, CA	Researcher X
01/02 – 04/02	UCSD Cancer Center	San Diego, CA	Visiting Scientist
03/01 – 12/01	Ichor Medical Systems, Inc	San Diego, CA	Head of Biophysics
07/98 – 01/01	Universal Preservation Technologies, Inc	San Diego, CA	Project Manager/ Lab Director
10/96 – 07/98	University of Tennessee at Knoxville/Oak Ridge Associated Universities/ Oak Ridge National Laboratory	Oak Ridge, TN	Research Associate

Review Period: From:		To:	
Current Review Eff:			

03/95 - 09/96	ReproMed Sperm Bank/AVR Andrology Clinics	Toronto, ON, Canada	Researcher
05/90 - 11/94	BIOTEK/TIMEL Private Research Company	Kharkov, Ukraine	President and Chief Scientific Officer
04/88- **present**	Institute for Problems of Cryobiology and Cryomedicine	Kharkov, Ukraine	Scientific Consultant
04/88- 05/90	Mechnikov's Research Institute for Microbiology and Immunology	Kharkov, Ukraine	Group Leader/Lab Director
09/87- 04/88	Research Institute for Experimental Veterinary	Kharkov, Ukraine	Senior Scientist
03/85 - 09/87	Research Institute for Animal Husbandry	Kharkov, Ukraine	Research Scientist
10/81 - 03/85	Research Institute for Animal Husbandry	Kharkov, Ukraine	Postgraduate
09/79 - 09/81	Department of Mathematics, Biostatistics, and Biometry, Agriculture University	Kharkov, Ukraine	Lecturer

Education

School, college, university, or hospital (internship, residency, or fellowship)	Dates of attendance	Location	Major subject or field	Degrees or certificates	Date received
CYTOMATION, Inc	12/99 – 01/00	Fort Collins, CO	Flow Cytometry and Cell Sorting	Certificate	01/14/00
Institute for Radio-Electronics	01/88 – 03/88	Kharkov, Ukraine	Programming in "Pascal" and "Basic"	Certificate	03/31/88
Research Institute for Animal Husbandry	10/81 – 03/85	Kharkov, Ukraine	Cell Biology and Physiology, **Cryobiology**	Ph.D.	03/27/85
Kharkov State University	09/74 – 06/79	Kharkov, Ukraine	Cell Biophysics, Biomedical Engineering	M. Sci.	06/21/79

Section II

Professional Data

Provide a list of your activities, with dates of award or service, in each of the following five categories.

(a) University Service (Including Academic Senate, Departmental, College, University-wide).

Kharkov State University, Vice-President of Student Security Organization, 1976-1979

(b) Memberships (Scholarly societies, professional boards, civic organizations, etc.).

Board of Scientific Advisors, **Institute for Problems of Cryobiology and Cryomedicine**, Kharkov, Ukraine- since 1994
The Society for Cryobiology – since 1996
The American Biophysical Society (ABS) – since 1997
Society for Low Temperature Biology (SLTB) – since 1998
The Bioelectrochemical Society (BES) – since 2000
International Institute of Refrigeration (IIR), Biology Section C1 - since 2002

(c) Contracts and Grants Please provide the following information for **current** contract and grants:

Title	Granting Agency	Amount of Total Award	Time period of contract/grant	Role, e.g. PI, co-investigator, project leader, etc.
Factors Affecting Viability and Pluripotency of hESC (Core Facility Grant)	**NIH (Subcontract with Burnham Institute)**		**2005 – 2008**	**Co-Investigator, Project Leader**

(d) External Professional Activities (Examples include, but are not limited to, presentation of papers and lectures, technical service to organizations and agencies, acting as a reviewer of journal or book manuscripts or contract and grant proposals, or professional committee service).

PRESENTATIONS (since 1996)

33th Annual Meeting of the Society for Cryobiology, Indianapolis, Indiana, June 5-10, 1996.

34th Annual Meeting of the Society for Cryobiology, Barcelona, Spain, June 8-12, 1997 (Chairman of the Session).

25th Anniversary of "Frozen Mice": Embryo and Gamete Cryopreservation, Bar Harbor, Maine, September 24-28, 1997

1st Int-l. Workshop on Comparative Gamete Cryopreservation, Atlanta, Georgia, March 24-28, 1998.

35th Annual Meeting of the Society for Cryobiology, Pittsburgh, Philadelphia, July 11-16, 1998.

36th Annual Meeting of the Society for Cryobiology and SLTB, Marcelles, France, July 26-30, 1999.

4th International Conference on Boar Semen Preservation, Beltsville, August 8-11, 1999.

14th International Congress on Animal Reproduction, Stockholm, Sweden, July 2-6, 2000

37th Annual Meeting of the Society for Cryobiology, Boston, Massachusetts, July 30-August 1, 2000 (Chairman of the Session).

16th International Symposium on Bioelectrochemistry and Bioenergetics (BES), Bratislava, Slovakia, June 1-6, 2001.

38th Annual Meeting of the Society for Cryobiology, Edinburgh, UK, July 29-August 1, 2001.

Joined Meeting of SLTB and IIR "*Cryopreservation and Safe Keeping of Cells and Tissues*", Hradec Kralove, Czech Republic, May 13-15, 2002.

39th Annual Meeting of the Society for Cryobiology, Breckenridge, CO, July 28-31, 2002.

40th Annual Meeting of the Society for Cryobiology and SLTB, Coimbra, Portugal, Sept 14-18, 2003.

The 8th "*CRYOGENICS-2004*" IIR Conference, Prague, Czech Republic, April 27-30, 2004.

The Burnham Stem Cell Colloquium, The Burnham Institute, San Diego, CA, May 21, 2004.

3rd Annual Poster Symposium, The Burnham Institute, San Diego, CA, October 8, 2004.

Int-l Conference "*Conservation of Genetic Resources*", St. Petersburg, Russia, October 19-22, 2004.

Int-l Symposium "***Stem Cells, Regeneration, and Cell Therapy***", St. Petersburg, Russia, October 25-27, 2004.

Stem Cell Workshop, Minneapolis, MN, July 23, 2005.

42nd Annual Meeting of the Society for Cryobiology, Minneapolis, MN, July 24-27, 2005.

4th Annual Poster Symposium, The Burnham Institute, San Diego, CA, September 30, 2005.

Int-l Conference "***Actual Problems and Achievements in Cryobiology and Cryomedicine: Structural and Functional Organisation of Stem Cells Under Low Temperature Effect***", Kharkov, Ukraine, November 22-24, 2005 - upcoming

PEER REVIEWING

A. Journals:
- Cryobiology
- Problems of Cryobiology
- Journal of Theoretical Biology
- BBA
- Molecular Reproduction and Development
- International Journal of Refrigeration

B. Grant proposals:
- NIH
- Alberta Heritage Foundation For Medical Research, AB, Canada

(e) Other Activities Those that do not fit into categories (a) – (e) above (including community service).

(g) Student Instructional Activities

Course load information is reported separately in faculty review files. Please list here all students mentored outside of the structured classroom setting. Please list by category (e.g., undergraduate research students, masters or doctoral candidates, postdoctoral or medical fellows, interns, residents) and indicate your role (e.g., thesis adviser, research adviser) for each student. For graduate students, indicate the year of their degree when appropriate.

1. Calculus I and II - Agriculture University, Kharkov, Ukraine, 1979-1981
2. Theory of Probability and Biostatistics I, II, and III - Agriculture University, Kharkov, Ukraine, 1979-1981.
3. Theory of Probability, Biostatistics, and Data Processing for Post-Graduate Students – Institute for Animal Husbandry, Kharkov, Ukraine, 1985-1987.
4. Co-Mentored a Graduate Student from the University of Tennessee at Knoxville/Oak Ridge National Lab, Oak Ridge, TN, 1997-1998.
5. Mentor 3 students from UCSD. 2002-present.

Section III - Bibliography

A. Primary Published or Creative Work

Peer Reviewed Articles

* 1. **Katkov** II, and Ostashko FI. 1982. [High pulse electric field treatment of cell suspensions: some practical

aspects]. *Bulletin of Institute for Animal Husbandry* **33**:78-83, Kharkov, Ukraine.

2. **Katkov** II. 1982. [The method for calculation of the transmembrane potential of cells exposed in homogeneous electric fields]. *Bulletin of Institute for Animal Husbandry* **33**:83-86, Kharkov, Ukraine.

3. **Katkov** II, and Ostashko FI. 1982. [Hemolysis of animal and human erythrocytes in high pulse electric fields]. *Bulletin of Institute for Animal Husbandry* **35**:24-30, Kharkov, Ukraine.

4. **Katkov** II. 1982. [Electrical breakdown of animal and human erythrocyte membrane]. *Bulletin of Institute for Animal Husbandry* **35**: 31-37, Kharkov, Ukraine.

5. **Katkov** II. 1985. [Electromechanical stability of membranes of bull spermatozoa and cryo-resistivity of the cells]**.** *Bulletin of Institute of Physiology, Biochemistry and Nutrition for Husbandry Animals* **77**: 48-51, Borovsk, Russia.

6. **Katkov** II. 1985. [Electrical breakdown of bull spermatozoa membranes]. *Bulletin of Institute for Animal Husbandry*, **40**: 35-42, Kharkov, Ukraine.

7. Goncharenko MS, and **Katkov** II. 1985. [Influence of cholesterol on the resistance of membranes of human erythrocytes to electrical breakdown]. *Biophysics* **30**(3):482-487.

8. Goncharenko MS, **Katkov** II, and Brodskaya OM. 1986. [Electric tolerance of erythrocyte membranes in the normal state and in psoriasis]. *Vestnik Dermatologii I Venerologii* **3**:21-25, Moscow, Russia.

9. **Katkov** II, and Mazur P. 1998. Influence of centrifugation regimes on motility, yield, and cell associations of mouse spermatozoa. *J. Andrology*, **19**(2)*:* 232-241.

10. **Katkov** II, Katkova N, Critser JK, and Mazur P. 1998. Mouse spermatozoa in high concentrations of glycerol: chemical toxicity vs osmotic shock at normal and reduced oxygen concentration. *Cryobiology* **37**:325-338.

11. **Katkov** II, and Mazur P. 1999. Factors affecting yield and survival of cells when suspensions are subjected to centrifugation: I. Influence of centrifugal acceleration, time of centrifugation, and length of suspension column in homogeneous centrifugal fields. *Cell Biochem. and Biophysics* **31**:231-245.

12. **Katkov** II. 1999. Some Aspects of Osmotic Reaction of Cells. I. Main physic events and conditions for existence of the point of maximum volume excursion. *Problems of Cryobiology* (**2**):3-11.

13. **Katkov** II. 1999. Some Aspects of Osmotic Reaction of Cells. II. Water volume and intracellular concentration of permeable cryoprotectants at points of maximum volume excursion. *Problems of Cryobiology* (**3**):3-9.

14. **Katkov** II. 2000. Some Aspects of Osmotic Reaction of Cells. III. Time-Frame of the maximum volume excursion: one- membrane *vs* multi- membrane models. Problems of Cryobiology (**2**):3-9.

15. **Katkov** II. 2000. Some Aspects of Osmotic Reaction of Cells. IV. Influence of cell concentration (cytocrit) on the cell osmotic response. *Problems of Cryobiology* (**4**):22-26.

16. **Katkov** II. 2000. A two-parameter model of cell membrane permeability for multi-solute systems. *Cryobiology* **40**:64-83.

17. **Katkov** II, and Lulat A G-M. 2000. Do conventional CASA-parameters reflect recovery of kinematics after freezing?: "CASA -paradox" in the analysis of recovery after cryopreservation. *CryoLetters* **21**:141-148.

18. Mazur P, **Katkov** II, Katkova N, and Critser JK. 2000. The enhancement of the ability of mouse sperm to

survive freezing and thawing by the use of high concentrations of glycerol and the presence of an *E. coli* membrane preparation Oxyrase™ to lower the oxygen concentration. *Cryobiology* **40**:187-209.

19. **Katkov** II. 2002. Symmetrical relativistic permeability approach simplifies optimization of cryobiological protocols. International Institute of Refrigeration (IIR) International Conference, Joined Meeting of the IIR with the Society for Low Temperature Biology "*Cryopreservation and Safe Keeping of Cells and Tissues*", Hradec Kralove, Czech Republic, May 13-15 **(Accepted)**.

20. **Katkov** II. 2002. The point of maximum cell water volume excursion in case of presence of an impermeable solute. *Cryobiology* **44**:193-203.

21. **Katkov** II. 2002. Electroporation of cells in applications to Cryobiology: summary of 20-year experience. *Problems of Cryobiology* (**2**): 3-8.

22. Isachenko E, Isachenko V, **Katkov** II, Dessole S, and Nawroth F. 2003. Vitrification of spermatozoa n the absence of cryoprotectants: from past practical difficulties to present success. *Reproductive BioMedicine Online* **6:**191-200.

23. Isachenko E, Isachenko V, **Katkov** II, Rahimi G, Mallmann P, and Nawroth F. 2004. DNA integrity of human spermatozoa after slow freezing versus cryoprotectant-free vitrification. *Human Reproduction* **19:**932-939. (From ***Work in Progress***, former C3).

24. **Katkov** II. 2004. Low- and High- Temperature Vitrification of Living Cells: Mechanisms and Applications. The 8th "*CRYOGENISC-2004*" International Institute of Refrigeration (IIR) International Conference, Prague, Czech Republic, April 27-30, p.233-241.

25. **Katkov** II and Levine F. 2004. Prediction of the glass transition temperature of water solutions: comparison of different models. *Cryobiology* **49**:62-82. (From ***Work in Progress***, former C5).

26. Isachenko V, Isachenko E, **Katkov** II, Montag M, Dessole S, Nawroth F, and van der Ven H. 2004. Cryoprotectant-free cryopreservation of human spermatozoa by vitrification and freezing in vapor: effect on motility, DNA integrity, and fertilization ability. *Biology of Reproduction* **71**:1167-73.

27. Isachenko V, Isachenko E, Montag M, Zaeva V, Krivokharchenko I, Nawroth F, Dessole S, **Katkov** II, and van der Ven H. 2005. Clean technique for cryoprotectant-free vitrification of human spermatozoa. *Reproductive BioMedicine* **10:**350-354.

28. **Katkov** II, Isachenko V, Isachenko E, Kim MS, Lulat G-MI, Mackay AM, and Levine F. 2006. Low and high- temperature vitrification as a novel approach for bio-preservation of reproductive and **progenitor cells**. *Int-l J. Refrigeration* (***Accepted***).

29. **Katkov** II. 2006. Introduction into the field of cryobiology and overview of the selected papers. *Int-l J. Refrigeration* (***Accepted***).

30. **Katkov** II. 2006. Novel approaches to cryopreservation and long term stabilization of **stem cells**. *Int-l problems of Cryobiology* (***Accepted***).

B. **Other Work**

1. **Katkov** II. 1979. [Influence of High Pulse Electric Fields on Permeability of Human Red Blood Cells]. Theses of Master Degree Diploma in Cell Biophysics. Department of Radiophysics and Electronics, Kharkov State University, Kharkov, Ukraine.

2. **Katkov** II, and Dibirov MK .1984. [Lipid content of sperm with different cryoresistance of spermatozoa]**.** in: Proc. 2nd Congress on Cryobiology and Cryomedicine, **2**:229-230, Kharkov, Ukraine.

3. Ostashko FI, Bugrov AD, and **Katkov** II. 1984. Multi-factor hypothesis of spermatozoa injury with deep freezing**.** Proc. of 10th Int. Congress on Animal Reproduction and Artificial Insemination, **10**(2): 211, * Urbana-Champaign, Illinois, USA.

4. Ostashko FI, and **Katkov** II. 1984. The role of mechanical tensions on cryo- injuries of human and animal spermatozoa membranes**.** in: Proc. 2nd Congress on Cryobiology and Cryomedicine, **2:**224-225, * Kharkov, Ukraine.

5. **Katkov** II. 1985. [Correlation Between Parameters of Spermatozoon Membranes Before Cryopreservation * and Physiological Status of the Sperm After Thawing]. Theses Ph.D. Degree Dissertation, Institute of Animal Breeding, Kharkov, Ukraine.

6. **Katkov** II. 1985. [Electrical breakdown of cell membranes: possible practical applications]. Proc. of * Institute of Physiology, 165-166, Lvov, Ukraine.

7. Ostashko FI, Grischenko VI, Gen' S.A., and **Katkov** II. *1985 "The Method for Determination of Stability of* * *Erythrocyte Membranes*", USSR Patent Author Certificate No. SU1178410, priority on 10/17/1983, Moscow, Russia.

* 8. Goncharenko MS, and **Katkov** II. 1985. *"The Method for Estimation of Erythrocyte Membrane Status in Psoriasis"*, Inst. of Dermatology Local Patent Certificate No .281, priority on 05/05/1984, Kharkov, Ukraine.

* 9. **Katkov** II. 1988. Correlation between electro- and cryoresistance of cells and possibility of electric breakdown of membranes at freezing. In: Intl. Conf. "Achievements and Perspectives in Cryobiology and Cryomedicine" **1**: 149-150, Kharkov, Ukraine.

10. **Katkov** II, and Rudenko SV. "Electrocytoanalyser ECA-02: A New Approach to Modern Hematology". * Commercial booklet. BIOTEK/TIMEL. Kharkov, Ukraine, 1992.

11. **Katkov** II, and Ostashko FI. 1996. Correlation between electromechanical stability of cytoplasmic membranes and cryoresistance of bovine spermatozoa. *Cryobiology* **33:**680-681.

* 12. **Katkov** II, Gordienko NA, and Ostashko FI. 1996. Influence of lipid content of cytoplasmic membranes on electro- and cryosurvival of bovine spermatozoa. *Cryobiology* **33:**681-682.

13. **Katkov** II, Lulat AG-M, Perez CM, and Del Valle AP. 1996. Superfast thawing can improve cryo-recovery * of human spermatozoa. *Cryobiology* **33:**686-687.

14. **Katkov** II, Lulat AG-M, Perez CM, and Del Valle AP. 1996 Motility of human spermatozoa in different combination of cryo-protective media and thawing regimes. *Fertility and Sterility*, Suppl. 1, 231-232.
*

15. **Katkov** II, Lulat AG-M, Perez CM, Ruberto C, and Del Valle AP. 1996. Influence of cryo-protective media and thawing regimes of motility (WHO) and cryosurvival of human spermatozoa. In: Proc. 42nd Meet. Canadian Fertility and Andrology Society, Lake Louise, AB, Nov 20-23, p.24.
*

16. **Katkov** II, Nevelev BA, Lulat AG-M, Perez CM, Ruberto C, and Del Valle AP. 1996. Recovery of motility and kinematics (CASA) in different combinations of cryo-meida and thawing regimes. In: Proc. 42nd Meet. Canadian Fertility and Andrology Society, Lake Louise, AB, Nov 20-23, p.25.
*

17. Del Valle AP, Eva KW, Scheib JE, Ruberto C, Lulat AG-M, Perez CM, and **Katkov** II. 1996 Secrecy and openness from the perspective of donor insemination recipients. In: Proc. 42nd Meet. Canadian Fertility * and Andrology Society, Lake Louise, AB, Nov 20-23, p.36.

18. Del Valle AP, Lulat AG-M, Perez CM, Ruberto C, Olson JH, and **Katkov** II. 1996. The dynamics of

* human sperm characteristics before and after freezing: five-year analysis. In: Proc. 42nd Meet. Canadian Fertility and Andrology Society, Lake Louise, AB, Nov 20-23, p.26.

19. Eva KW, Scheib JE, Ruberto C, Lulat AG-M, Perez CM, **Katkov** II, and Del Valle AP. 1996 Information
* about semen donors: recipients' and donors' perspective. In: Proc. 42nd Meet. Canadian Fertility and Andrology Society, Lake Louise, AB, Nov 20-23, p.37.

20. Lulat AG-M, **Katkov** II, Perez CM, Ruberto C, and Del Valle AP. 1996. Recovery of motility and
* kinematics (CASA) in different combinations of cryo-meida and thawing regimes. In: Proc. 42nd Meet. Canadian Fertility and Andrology Society, Lake Louise, AB, Nov 20-23, p.40.

21. **Katkov** II, and Mazur P. 1997. Influence of centrifugation on motility, yield, and cell associations of
* mouse spermatozoa. *Cryobiology* **35**:353-354.

22. **Katkov** II, and Mazur P. 1997. Factors affecting yield and survival of cells when suspensions are
* subjected to centrifugation. *Cryobiology* **35**:361.

23. **Katkov** II, and Mazur P. 1997. Influence of centrifugation on motility, yield, and cell associations of mouse sperm. In: "25th Anniversary of "Frozen" Mice: Cryobiology of Reproductive Cells**"**, Bar Harbour,
* Maine, September 24-28, p. 92, 1997.

24. Del Valle AP, **Katkov** II, Shaikh M-AW, Ruberto C, and Lulat AG-M. 1997. Comparative study of post-
* thaw kinematics of human sperm after cryopreservation in straws and cryovials. In: Proc. 43rd Meet. Canadian Fertility and Andrology Society, Fort Erie, ON, Oct 12-15, p.55.

* 25. Del Valle AP, Olson JH, Bierbaum R, Ray P, **Katkov** II, Shaikh M-AW, Ruberto C, and Lulat AG-M. 1997. Results of cystic fibrosis screening in a sperm donor population. In: Proc. 43rd Meet. Canadian Fertility and Andrology Society, Fort Erie, ON, Oct 12-15, p.46.

* 26. **Katkov** II. 1998. Cell suspensions in high centrifugal forces: Yield and survival. Bioph. J. **74** (SII), p. A301.

27. **Katkov** II. 1998. Osmotic reactions of gametes and zygotes: One- vs two-membrane model. In:
"International Workshop on Comparative Gamete and Embryo Cryopreservation", Atlanta, Georgia, March
* 19-20, A6, 1998.

28. **Katkov** II. 1998. Cell suspensions in high concentrations of a permeable cryoprotectant: optimization of
* multi-step addition and dilution protocols. Cryobiology **37**:403-404.

29. **Katkov** II. 1998. Time frame of osmotic response of gametes and zygotes: one-membrane *vs* two-membrane models. Cryobiology **37**:439-440.
*

30. **Katkov** II. 1998. Water volume and intracellular concentration of permeable cryoprotectants at points of maximum volume excursions during addition and dilution of CPA. Cryobiology **37**:441-442.

* 31. **Katkov** II, Katkova N, Critser JK, and Mazur P. 1998. Cryopreservation of mouse sperm by the use of high concentrations of glycerol and the presence of an *Escherichia coli* membrane preparation Oxyrase™ to lower the oxygen concentration. Cryobiology **37**:415-416.

* 32. **Katkov** II, Kleinhans FW, and Mazur P. 1998. Permeabilization of malaria mosquito eggs by electroporation. Cryobiology **37**:393-394.

33. Mazur P, **Katkov** II, Schreuders PD, and Critser JK. 1998. Influence of mechanical sensitivity, glycerol
* concentration, and oxygen concentration on the cryopreservation of mouse sperm: Background. Cryobiology **37**:414-415.

* 34. Isachenko VV, Isachenko EF, Ostashko FI, Grischenko VI, and **Katkov** II. 1998. Vitrification of rat

embryos by the use of ultra-rapid addition and dilution (URAD) of cryoprotective media. *Cryobiology* **37**:435-436.

35. Lulat AG-M, **Katkov** II, Shaikh M-A, and Del Valle AP. 1998. Do conventional CASA-parameters reflect post-thaw recovery of sperm kinematics?: CASA- paradox" in the analysis of cryorecovery of linearity and velocity after cryopreservation. *Cryobiology* **37**:437-438.

36. **Katkov** II, Katkova N, Bronshtein V. 1999. Stability of frozen boar semen at –80^{O}C with the use of different permeable cryoprotectants. 4th International Conference on Boar Semen Preservation, Beltsville, August 8-11, 1999, p.27.

37. **Katkov** II. 1999. Cell water volume and intracellular concentration of CPA's: multi-solute considerations. *Cryobiology* **39**:299-300.

38. **Katkov** II. 1999. Common misuses of permeability models and parameters in Cryobiological literature. Cryobiology **39**:328.

39. **Katkov** II, Bronshtein V, Garcia A, Katkova N, Popplewell J, and Thomas M. 2000. Motility and fertilization ability of boar semen after freezing and storage at –80°C. 14th International Congress on Animal Reproduction, Stockholm, July 2-6, 15:30

40. **Katkov** II. 2000. A relativistic permeability model: summary of development. *Cryobiology*, **41**:366-7.

41. **Katkov** II. 2000. Influence of cell concentration (cytocrit) on the cell osmotic response. *Cryobiology*, **41**:367.

42. **Katkov** II, Katkova N, and Bronshtein V. 2000. Motility and fertilization ability of boar semen frozen and stored at – 80^{O}C. *Cryobiology*, **41**:344-5.

43. Isachenko V, Folch J, Vajta G, **Katkov** II, Cocero MJ, and Alabart JL. 2000. Effect of cooling-thawing rate of the open pulled straw vitrification of GV-ovine oocytes. *Cryobiology*, **41**:385-6.

44. **Katkov** II, Isachenko V, and Critser JK. 2001. Application of Relativistic Permeability approach for optimization of vitrification of rat embryos. *Cryobiology* **43**:345-6.

45. Isachenko V, **Katkov** II, Nawroth E, Isachenko E, and Critser JK. 2001. Optimization of vitrification of rat embryos by the use of ultrarapid addition and dilution (URAD) of cryoprotective solution. *Cryobiology* **43**:372.

46. Bronshtein V, **Katkov** II, and Yang X-M. 2001. Protection of mammalian cells osmotic and desiccation stresses by filling the cells with sugars and sugar derivatives using electroporation. Proc. 38th Annual Meeting Cryobiol, Edinburgh, July 29-Aug 1, p. 46.

47. **Katkov** II. 2001. Electroporation of cells: summary of 20-year experience. 16th International Symposium on Bioelectrochemistry and Bioenergetics, Bratislava, June 1-6, p. 189.

48. **Katkov** II. 2002. Application of relativistic permeability approach for optimization of cryobiological protocols. *Cryobiology* **45**:239.

49. Isachenko E, **Katkov** II, Isachenko V, and Nawroth F. 2003. Vitrification of human sperm without cryoprotectants: Experimental data. *Cryobiology* **47**:288.

50. **Katkov** II, Isachenko E, Isachenko V, and Nawroth F. 2003. Why can we vitrify mammalian spermatozoa without cryoprotectants?: Physical chemistry considerations. *Cryobiology* **47**:267.

51. **Katkov** II, and Levine F. 2003. Thermogravimetrical determination of water content of cells dried in

monolayers: advantages and pitfalls. *Cryobiology* **47**:282.

52. **Katkov** II, Oppenheimer SR, Puhlev I, Mackay AM, and Levine F. 2003. Stabilization of nucleated * mammalian cells by drying at reduced and low water content. *Cryobiology* **47**:257.

53. **Katkov** II. Fundamentals of effective long-term preservation of cells, tissues, and organs. *Burnham Stem Cell Colloquium*. The Burnham Institute, San Diego, CA, May 21, 2004.

54. **Katkov** II, Kim M.S., and Levine F. 2004. Novel approaches for effective stabilization of human * nucleated and pluripotent cells. *The 3rd Annual Poster Symposium of Burnham Science Network*. The Burnham Institute, San Diego, CA, October 8, 2004.

55. **Katkov** II, Isachenko V, Isachenko E, and Levine F. 2004. Low and High- temperature vitrification as a novel approach for bio-preservation. *Tsitologia* **46**:759-60.

56. Clarke JW, Deckert G, **Katkov** II, Snyder EY, and Loring JF. 2005. The Stem Cell Community: a website for sharing information about human embryonic stem cells. Proc. Annual Stem Cell Conference, San Francisco, CA, Poster 649.

57. **Katkov** II, Kim MS, and Levine F. 2005. "Standard" freezing and storage protocols dramatically diminish expression of *oct-4* pluripotency marker in human embryonic stem cells. Proc. 42nd Annual Meeting Cryobiol, Minneapolis, MN, July 24-27, p. 5

58. **Katkov** II, Isachenko V, Isachenko E, van der Ven H, and Montag M. 2005. Cryoprotectants-free cryopreservation of human spermatozoa by ice-free vitrification: direct plunging in LN_2 v.s. fast freezing in vapor. Proc. 42nd Annual Meeting Cryobiol, Minneapolis, MN, July 24-27, p. 58.

59. **Katkov** II, and Levine F. 2005. Drying nucleated cells in monolayers under controlled humidity improves the cell survival and longevity. Proc. 42nd Annual Meeting Cryobiol, Minneapolis, MN, July 24-27, p. 62.

60. **Katkov** II. 2005. Exact solution for the time of maximum volume excursion (2-solute systems). Proc. 42nd Annual Meeting Cryobiol, Minneapolis, MN, July 24-27, p. 73.

61. Kim MS, and **Katkov**. 2005. Electroporation: A Powerful and Simple Tool for Cell Manipulations. I. Basic Biophysics and factor affecting effectiveness. *The 4th Annual Poster Symposium of Burnham Science Network*. The Burnham Institute, San Diego, CA, September 30, 2005, p.53.

62. **Katkov** II, Kim MS, Geron I, Itkin-Ansari P, and Levine F. 2005. Electroporation: A Powerful and Simple Tool for Cell Manipulations. II. Practical applications for electro-transfection (preliminary results). *The 4th Annual Poster Symposium of Burnham Science Network*. The Burnham Institute, San Diego, CA, September 30, 2005, p.54.

C. Work In Progress

1. **Katkov** II. 2006. Relativistic permeability approach for modeling of osmotic response and optimization of cryobiological protocols. I. Theoretical considerations and description of basic processes. *Cryobiology* (***Submitted***).

2. **Katkov** II, and Isachenko V. Relativistic permeability approach for modeling of osmotic response and optimization of cryobiological protocols. II. Practical applications. *Paper for submission to the Cryobiology* (***in preparation***). C1 and C2 may be combined in future.

3. **Katkov** II, Isachenko E, Isachenko V, and Nawroth F. Cryopreservation of human spermatozoa without cryoprotectants: challenging cryobiological dogmas? *Paper for submission to the CryoLetters* (***in preparation***). Former C4.

4. **Katkov** II, and Levine F. Drying Cells in Monolayers. I. Gravimetric considerations and optimization of trehalose loading. *Paper for submission to the Cryobiology* (***in preparation***). Former C5.

5. **Katkov** II, Puhlev I, and Levine F. Drying Cells in Monolayers. II. Effect of cell preconditioning. *Paper for submission to the "Cryobiology"* (***in preparation***). Former C6.

6. **Katkov** II, and Levine F. Drying Cells in Monolayers. III. Effect of drying under controlled humidity. *Paper for submission to the "Cryobiology"* (***in preparation***). Former C7.

7. **Katkov** II, Kim MS, Barcova M, Bajpai R, Altman Y, Terskikh AV, Mercola M, and Levine F. Slow cooling with DMSO and storage at -80^{O}C diminish production of *Oct-4* pluripotency marker in cryopreserved human embryonic **stem cells**. *Paper for submission to CryoLetters* (***in preparation***). Former C8.

8. Pogorelov AG**,** Smolyaninova EI, **Katkov** II, and Goldshtein DV. Changes in intracellular potassium and sodium content of 2-cell mouse embryos induced by exposition to vitrification concentrations of ethylene glycol. *CryoLetters* (***Submitted***).