CURRICULUM VITAE

Name: Tom C. Tsang

Degree: Ph.D.

Place and Date of Birth: Taiwan, China, May 3, 1964

Citizenship: USA (Naturalized 1984).

EDUCATION:

1987-1994 Doctor of Philosophy,
Microbiology and Immunology (minor in Cancer Biology)

University of Arizona,
Tucson, Arizona, USA.

1982-1985 Bachelor of Arts,
Biochemistry
University of Arizona,
Tucson, Arizona, USA.

EMPLOYMENT:

Academia:

6/2008-present Associate Investigator,
Cancer Biology and Genetics Program,
Arizona Cancer Center
University of Arizona
Tucson, Arizona, USA.

10/2004-9/2008 Research Assistant Professor,

Dept. of Immunobiology
College of Medicine
University of Arizona, USA
美国亚利桑那大学医学院

8/1997-10/2004 Assistant Research Scientist,
Gene Therapy Group,
Dept. of Microbiology and Immunology,
College of Medicine
University of Arizona, USA

3/1994-7/1997 Postdoctoral Research Associate**,**
Gene Therapy Program,
Arizona Cancer Center
University of Arizona, USA

9/1987-1/1994 Graduate Research Assistant,
Dept. of Radiation Oncology,
Dept. of Microbiology and Immunology,
Arizona Cancer Center
University of Arizona, USA

PATENTS:

US Patent 6,709,858 "Hyperthermic Inducible Expression Vectors for Gene Therapy and Methods of Use Thereof." 2004.

US Patent 7,056,897 "Inducible Expression Vectors and Methods of Use Thereof." 2006.

US Patent 7,285,542 "Hyperthermic Inducible Expression Vectors for Gene Therapy and Methods of Use Thereof." 2007.

US Patent 8,158,126 "Stem Cell Fusion Model of Carcinogenesis", Patents granted for US, China, Singapore and about 50 other countries.

EXTRAMURAL RESEARCH FUNDING:

"Cancer Immunotherapy by TCR-Modified HSC Transfer"
Principle Investigator
Arizona Biomedical Research Commission(ABRC)
Project Period: Sept. 1, 2005 - Aug. 31, 2008.
TOTAL COSTS: $150,000

"Bone Marrow Stem Cells in Injury Repair Response"
Co-Investigator
NIH/NINR P20
Center on Injury Mechanisms and Related Responses.
TOTAL COSTS: $20,000

"Genetic Influences of Exercise Adherence"
Co-Investigator
NIH/NINR P20
Center on Injury Mechanisms and Related Responses.
TOTAL COSTS: $20,000

"Combining Hyperthermia with Gene Therapy and Tumor Immunology"
Principle Investigator
Thermosurgery Technologies Inc.
Project Period: Oct 1, 2003 - Sept 30, 2005.
TOTAL COSTS: $15,000

PUBLICATIONS: (peer-reviewed articles)

1. *Tsang, T.C.*, V. Copeland and G. T. Bowden. A Set of Cassette Cloning Vectors for Rapid and Versatile Adaptation of Restriction Fragments. BioTechniques 10: 330, 1991.

2. *Tsang, T.C.* New Model for 70kDa Heat Shock Proteins' Potential Mechanism of Function. Federation of European Biochemistry Society (FEBS) Letters 323:1-3, 1993.

3. *Tsang, T.C.,* Y-W Chu, M. B. Powell, J. Kittelson, L. Meade-Tollin, M. J. C. Hendrix and G. T. Bowden. V-jun Oncogene Suppresses Both Phorbol Ester Induced Cell Invasion and Stromelysin Gene Expression in a Mouse Papilloma Cell Line. Cancer Research 54:882-886, 1994.

4. *Tsang, T. C.*, D. T. Harris, E. T. Akporiaye, S. F. Schluter, G. T. Bowden and E. M. Hersh. A Simple Method for Adapting DNA Fragments and PCR Products to All of the Commonly Used Restriction Sites. BioTechniques 20:51-52, 1996.

5. *Tsang, T. C.*, D. T. Harris, E. T. Akporiaye, R. S. Chu, J. Brailey, F. Liu, F. H. Vasanwala, S. F. Schluter and E. M. Hersh. Mammalian Expression Vector with Two Multiple Cloning Sites for Expression of Two Foreign Genes. BioTechniques 22:68, 1997.

6. Meade-Tollin, L.C., P. Boukamp, N. E. Fusenig, C. P. R. Bowen, *T. C. Tsang* and G.T. Bowden. Differential Expression of Matrix Metalloproteinases in Activated c-Harvey-ras-Transfected Immortalized Human Keratinocytes. British J. of Cancer 77:724-730, 1998.

7. *Tsang, T.C,* F.H. Vasanwala and D.T. Harris. New Vectors for Very High Levels of Gene Expression, Inducible Gene Expression and Expression of Two Genes Simultaneously. Gene Therapy and Molecular Biology 2:462-470, 1998.

8. Gerner, E.W., E.M. Hersh, M. Pennington, *T.C. Tsang*, D. Harris, F. Vasanwala and J. Brailey. Heat-inducible Vectors for Use in Gene Therapy. Int. J. Hyperthermia 16:171-181, 2000.

9. Vasanwala, F.H., *T.C. Tsang,* A. Fellah, P. Yorgin and D.T. Harris. A Novel Expression Vector Induced by Heat, Gamma-Radiation and Chemotherapy. Gene Therapy and Molecular Biology 5:1-7, 2000.

10. *Tsang, T.C.*, J.L. Brailey, F.H. Vasanwala, R.S. Wu, F. Liu, P.R. Clark, L. Meade-Tollin, L. Luznick, A.T. Stopeck, E.T. Akporiaye and D.T. Harris. Construction of New Amplifier Expression Vectors for High Levels of IL-2 Gene Expression. Int. J. Molecular Medicine5:295-300, 2000.

11. Zhang, T., *T.C. Tsang* and D.T. Harris. Comparison of Cis and Trans Tat Gene Expression in HIV LTR-Based Amplifier Vectors. BioTechniques 33:1146-51, 2002.

12. Luo, P., *T.C. Tsang,* C.A. Takeuchi, J. Dekker, M. Badowski and D.T. Harris. High Efficiency Cloning Systems for Versatile Adaptation of DNA Fragments. BioTechniques 33:738-42, 2002.

13. Zhang, T., *T.C. Tsang* and D.T. Harris. Efficient Transduction of Murine Primary T Cells Requires a Combination of High Viral Titer, Preferred Tropism, and Proper Timing of Transduction. J. Hematotherapy & Stem Cell Research 12:123-30, 2003.

14. He, X., *T.C. Tsang*, P. Luo, T. Zhang and D.T. Harris. Enhanced Tumor Immunogenicity through Coupling Cytokine Expression with Antigen Presentation. Cancer Gene Therapy 10:669-677, 2003.

15. Luo, P., X. He, *T.C. Tsang* and D.T. Harris. A Novel Inducible Amplifier Expression Vector for High and Controlled Gene Expression. Int. J. Molecular Medicine 13:319-325, 2004.

16. Zhang, T., X. He, *T.C. Tsang* and D.T. Harris. SING: a novel strategy for identifying tumor-specific, cytotoxic T lymphocyte-recognized tumor antigens. The FASEB Journal 18:600-602, 2004.

17. Zhang, T., X. He, *T.C. Tsang* and D.T. Harris. Transgenic TCR Expression: Comparison of Single Chain with Full-Length Receptor Constructs for T Cell Function. Cancer Gene Therapy 11:487-496, 2004.

18. He, X., F.H. Vasanwala, *T.C. Tsang*, P. Luo, T. Zhang and D.T. Harris. Decreased Tumor Growth using an IL-2 Amplifier Expression Vector. Gene Therapy and Molecular Biology 8:487-494, 2004.

19. Pipes, B., F.H. Vasanwala, *T.C. Tsang*, T. Zhang, P. Luo and D.T. Harris. A Brief Heat Shock Increases Stable Integration of Lipid Mediated DNA Transfections. BioTechniques 38:48-52, 2005.

20. He, X., *T.C. Tsang*, T. Zhang, P. Luo and D.T. Harris. Antigen Epitope-Expressing Cytokines for DNA Immunization. Vaccine 23:1966-72, 2005.

21. He, X., V. Gonzalez, A.H. Tsang, J. Thompson, *T.C. Tsang* and D.T. Harris. Differential Gene Expression Profiling of CD34+ CD133+ Umbilical Cord Blood Hematopoietic Stem Progenitor Cells. Stem Cells and Development 14:188-198, 2005.

22. He, X., P. Luo, *T.C. Tsang*, T. Zhang and D.T. Harris. Immuno-Gene Therapy of Melanoma by Tumor Antigen Epitope Modified IFN-gamma. Cancer Immunology Immunotherapy 54:741-9, 2005.

23. He, X., *T.C. Tsang*, B.L. Pipes, R.J. Ablin and D.T. Harris. A Stem Cell Fusion Model of Carcinogenesis. J. Exp. Therapeutics and Oncology 5:101-109, 2005.

24. Luo, P., *T.C. Tsang*, X. He, V. Gonzalez-Pena, M. Jaramillo, C. Takeuchi and D.T. Harris. Novel Amplifier Expression Vectors Producing Higher Levels of IL-2 Led to Slower Tumor Growth and Longer Survival *in vivo*. DNA Cell Biol 24:595-604, 2005.

25. Pipes, B.L., *T.C. Tsang,* S-X Peng, M. Graham, R. Fiederlein and D.T. Harris. Telomere Length Changes After Umbilical Cord Blood Transplant. Transfusion 46:1038-1043, 2006.

26. Dammeyer, P., M.C. Jaramillo, B.L. Pipes, M.S. Badowski, *T.C. Tsang* and D.T. Harris. Heat-inducible Amplifier Vector for High-level Expression of Granulocyte-Macrophage Colony Stimulating Factor. Int. J. Hyperthermia 22:407-419, 2006.

27. Luo, P., *T.C. Tsang*, B. Reed, R.A. Flavell and D.T. Harris. A Self-Augmenting Gene Expression Cassette for Enhanced and Sustained Transgene Expression in the Presence of Pro-inflammatory Cytokines. DNA Cell Biol 25:659-667, 2006.

28. Davis, A.H.T., J. Wang, *T.C. Tsang* and D.T. Harris. Direct Sequencing is More Accurate and Feasible in Detecting Single Nucleotide Polymorphisms than RFLP: Using Human Vascular Endothelial Growth Factor Gene as a Model. Biological Research for Nursing 9:170-178, 2007.

29. Badowski, M.S., T. Zhang, *T.C. Tsang* and D.T. Harris. Chimeric Antigen Receptors for Stem Cell Based Immunotherapy. J. Exp. Therapeutics and Oncology 8:53-63, 2009.

30. Li, H., Z. Feng, *T.C. Tsang*, T. Tang, X. Jia, X. He, M.E. Pennington, M.S. Badowski, A.K.M. Liu, D. Chen, D.T. Harris, J. Martinez, L.C. Meade-Tollin. Fusion of HepG2 Cells with Mesenchymal Stem Cells Increases Cancer-associated and Malignant Properties: An *in vivo* Metastasis Model. Oncology Reports 32:539-547, 2014.