

## **Feng Lin, Ph.D.**

**Extensive experience in therapeutic vaccine (DNA-based) development and delivery methods from preclinical to clinical trial settings. Good at antibody drug preclinical development and immune cell (T and NK ) based therapy in clinic settings. With 20 publications in peer-reviewed prestigious journals and 7 patents and applications.**

### **PROFESSIONAL EXPERIENCE**

#### **Chief Scientific Officer**

Therapeutic Solutions International Inc. (TSOI)

*2019 September 1 to present*

- Evaluating effects of NanoStilbene and other immune modulator compounds developed in TSOI on cancer immunotherapy
- International collaborations for product development and marketing

#### **Chief Scientific Officer**

Superview Biotechnologies, San Diego, California

*2014 May – 2019 August*

Responsible for all projects of R&D

- High affinity antibody development and production using a proprietary super-immunization method
- Therapeutic antibody drug development (Checkpoint antibodies and tumor biomarker antibodies: Preclinical stage monoclonal antibody targets: PDL1, TIM3, CD40, VEGF, ROR1/2)
- Diagnostic antibody development and production, assay development. Diagnostic antibodies developed: IGF1, PCT, Gastrin 17, 25OH-Vitamin D.
- Cell-based immunotherapy development (antigen specific T cell therapy and CAR-T) and clinical application
- Adult stem cell therapy

#### **Director of Chinese Operations**

Medistem Inc.

*2012 December to 2014 May*

- Set up collaboration with Chinese business partners
- Clinical pilot study in China using Endometrial Regenerative Cell ( ERC ) to treat Critical Limb Ischemia (CLI) patients
- Data collection and analysis

#### **Senior Scientist/Principal Scientist**

*Research & Development, Inovio Pharmaceuticals Inc., San Diego, California.*

*2007 January – 2012 November*

Main focus on:

- Optimization of intramuscular and intradermal electroporation-based gene/DNA delivery in small and large animal models.
- Developing therapeutic DNA vaccines for melanoma and cervical cancer
- Developing DNA vaccines for preventing infectious diseases such as HCV and influenza.
- In charge of the collaborations with Wyeth and IAVI (International AIDS Vaccine Initiative) vaccine research groups working on DNA vaccines against chronic infectious diseases such as HIV, on-site presentation and training for DNA delivery in rhesus macaques at several non-human primate centers.

### **Research Scientist**

*Research & Development, Inovio Biomedical Corp., San Diego, California.*

*2006 January – 2006 December*

Main focus on:

- Optimization of electroporation-mediated DNA in vivo delivery in mouse, guinea pig and rabbit models
- Developing and establishing methods for humoral- and cellular-immune response assays

### **Postdoctoral Associate**

*Dept. of Oncogene & Developmental Biology, Burnham Institute for Medical Research, La Jolla, California. 1999 January -- 2005 December.*

Research focused on:

- The role of retinoids and their receptors (RARs) in cancer cells and screening of new retinoids with optimal anti-cancer activities
- Dissecting how RAR $\beta$  exerts anti-cancer effects: cross-regulation of RAR $\beta$  and AP-1, RAR $\beta$  and  $\beta$ -catenin
- The effects of RARs and their ligands on neuronal differentiation of embryonic stem cells.

### **Ph.D. Research Program.**

*Dept. of Hematology & Physiology, Central South University Xiang-Ya School of Medicine (formerly Hunan Medical University), Changsha, China. 1995 September-1998 July*

- Studied the effects and molecular mechanism of histamine receptors on the proliferation and differentiation of leukemic cells and bone marrow hematopoietic stem cells

### **Master Degree's Research Program**

*Dept. of Biochemistry & Molecular Biology, and National Laboratory of Medical Genetics, Central South University Xiang-Ya School of Medicine, Changsha, China.*

*1991 September.-- 1994 July*

- Investigated variant glycoporphins on erythrocyte membranes, and participated in the research project “Gene cloning of genetic multiple cartilaginous exostoses”

## **EDUCATION**

- UCSD Extension Course:
 

Applied Immunology	Grade A, 2006
Stem Cell Biology	Grade A. 2005
Human Molecular Genetics	Grade A, 2001

- Ph.D., Hematology & Physiology, Central South University Xiang-Ya School of Medicine (formerly Hunan Medical University), Changsha, China. 1998
- M.Sc. in Biochemistry & Molecular Biology, Central South University Xiang-Ya School of Medicine, Changsha, China. 1994
- Bachelor Degree in Medicine, Central South University Xiang-Ya School of Medicine, Changsha, China. 1990

## PATENTS

- TIM3 monoclonal antibody and its application  
*Submitted*
- A super-immunization method for antibody production  
*Patent number: ZL2013104376635*
- One type of synthesized consensus EBV molecule vaccine and its application  
*Patent number: ZL2013105887977*
- Variable current density single needle electroporation system and method.  
*Pub. App. No. 20110009807*
- Methods of enhancing immune response using electroporation-assisted vaccination and boosting”.  
*Pub. App. No. 20100285040*
- Multiple tissue layer electroporation applicator and device  
*Pub. App. No. 20120323165*
- Tolerable and minimally invasive skin electroporation device  
*Pub. App. No. 20130066296*

## RECENT PUBLICATIONS

1. Dixon T, Veltmeyer J, Ichim T, Lin F, Kesari S. NanoStilbene enhances anticancer immunity in cancer patients through modulation of inflammatory mediators. Submitted for publication in *Journal of Translational Medicine*, 2019
2. Broderick KE, Chan A, Lin F, Shen X, Kichaev G, Khan AS, Aubin J, Zimmermann TS, Sardesai NY. Optimized in vivo transfer of small interfering RNA targeting dermal tissue using in vivo surface electroporation. *Molecular Therapy- Nucleic Acids*. 2012 Feb 14; 1:e11
3. Lin F, Shen X, Kichaev G, Mendoza JM, Yang M, Armendi P, Yan J, Kobinger GP, Bello A, Khan AS, Broderick KE, Sardesai NY. Optimization of electroporation-enhanced intradermal delivery of DNA vaccine using a minimally invasive surface device. *Human Gene Therapy Methods*. 2012, 23:157-68
4. Bagarazzi ML, Yan J, Morrow MP, Shen X, Parker RL, Lee JC, Giffear M, Pankhong P, Khan AS, Broderick KE, Knott C, Lin F, Boyer JD, Draghia-Akli R, White CJ, Kim JJ, Weiner DB, Sardesai NY. Immunotherapy Against HPV16/18 Generates Potent TH1 and Cytotoxic Cellular Immune Responses. *Science Translational Medicine* 2012, 4:155ra138
5. Hutnick NA, Myles DJ, Ferraro B, Lucke C, Lin F, Yan J, Broderick KE, Khan AS, Sardesai NY, Weiner DB. Intradermal DNA vaccination enhanced by low-current electroporation improves antigen expression and induces robust cellular and humoral immune responses. *Human Gene Therapy*, 2012, 23:943-50

6. Shen XF, Soderholm J, Lin F, Kobinger G, Murray EE, Gregg DA, Weiner DB, Borderick KE, Sardesai NY. Influenza A vaccine using linear expression cassettes delivered via electroporation. *Vaccine*, 2012 30:6946-54
7. Winstone N, Wilson AJ, Morrow G, Boggiano C, Chiuchiolo MJ, Lopez M, Kemelman M, Ginsberg AA, Mullen K, Coleman JW, Wu CD, Narpala S, Ouellette I, Dean HJ, Lin F, Sardesai NY, Cassamasa H, McBride D, Felber BK, Pavlakis GN, Schultz A, Hudgens MG, King CR, Zamb TJ, Parks CL, McDermott AB. Enhanced control of pathogenic SIVmac239 replication in macaques immunized with a plasmid IL12 and a DNA prime, viral vector boost vaccine regimen. *J Virol* 2011, 85:9578-87.
8. Lin F, Shen X, McCoy J, Mendoza JM, Yan J, Kemmerrer S, Khan AS, Weiner DB, Broderick KE, Sardesai NY. A novel prototype device for electroporation-enhanced DNA vaccine delivery simultaneously to both skin and muscle. *Vaccine*, 2011, 29:6771-80
9. Broderick KE, Shen X, Soderholm J, Lin F, McCoy J, Khan AS, Yan J, Morrow MP, Kemmerrer S, Weiner DB and Sardesai NY. Prototype development and preclinical immunogenicity analysis of a novel minimally invasive electroporation device. *Gene Therapy* 2011, 18:258-65
10. Lin F, Josephs SF, Alexandrescu DT, Ramos F, Bogin V, Gammill V, Dasanu CA, Necochea-Campion R, Patel A, Carrier E, Koos DR. Laser, stem cells, and COPD. *J Transl Med*. 2010, 8:16
11. Chan RC, Gutierrez B, Ichim TE, and Lin F. Enhancement of DNA cancer vaccine efficacy by combination with anti-angiogenesis in regression of established subcutaneous B16 Melanoma. *Oncology Reports* 22:1197-1203, 2009
12. Lin F, Tjelle TE, Chan CF, Broderick KE, Bick K, Mathiesen I, Rabussay D, and Kjekken R. Improved “prime-boost” strategy for enhancing immune responses to electroporation-delivered DNA vaccines. *Mol. Ther.* 16:S61, 2008
13. Han YH, Zhou H, Kim JH, Yan TD, Lee KH, Wu H, Lin F, Lu N, Liu J, Zeng JZ, and Zhang XK. A unique cytoplasmic localization of RAR $\gamma$  and its regulations. *J Biol Chem*. 2009, 284:18503-14
14. Kolluri SK, Zhu X, Zhou X, Lin B, Chen Y, Sun K, Tian X, Town J, Cao X, Lin F, Zhai D, Kitada S, Luciano F, O’Donnell E, Cao Y, He F, Lin J, Reed JC, Satterthwait AC, Zhang XK. A short Nur77-derived peptide converts Bcl-2 from a protector to a killer. *Cancer Cell*, 14:285-98, 2008
15. Cao XH, Liu W, Lin F, Li H, Kolluri SK, Dawson MI and Zhang XK. Mitochondrial targeting of retinoid X receptor and its regulation by ligands and dimerization. *Mol. Cell. Biol*, 24:9705-25, 2004
16. Lin B, Kolluri SK, Lin F, Liu W, Han YH, Cao XH, Dawson MI, Reed JC, and Zhang XK. Conversion of Bcl-2 from protector to killer by interaction with nuclear orphan receptor Nur77/TR3. *Cell*, 116:527-540, 2004
17. Kolluri SK, Cao XH, Bruey-Sedano N, Lin B, Lin F, Han YH, Dawson MI, and Zhang XK. Mitogenic effect of orphan receptor TR3 and its regulation by MEKK1 in lung cancer cells. *Mol. Cell. Biol*, 23:8651-67. 2003.
18. James SY, Lin F, Kolluri SK, Dawson MI, and Zhang XK. Regulation of RAR $\beta$  expression by PPAR $\gamma$  ligands in cancer cells. *Cancer Research*, 63:3531-3538, 2003
19. Lin F, Kolluri SK, Chen GQ, and Zhang XK. Regulation of retinoic acid-induced inhibition of AP-1 activity by orphan receptor Chicken Ovalbumin Upstream Promoter-Transcription Factor. *J. Biol. Chem*. 277, 21414-21422, 2002

20. Li H, Kolluli SK, Gu J, Dawson MI, Cao XH, Hobbs PD, Lin B, Lu JS, Lin F, Xie ZH, Fontana JA, Reed JC, Zhang XK. Cytochrome c release and apoptosis induced by mitochondrial targeting of nuclear orphan receptor TR3. *Science*, 289:1097-1244, 2000.
21. Lin F, Xiao DM, Kolluli SK, and Zhang XK. Unique anti-activator protein-1 activity of retinoic acid receptor-beta. *Cancer Research*, 60:3271-3280,2000