

## Curriculum Vitae



**Name:** Tahere Taheri

**Date of birth:** 05/11/1967

**Nationality:** Iranian

**Qualification:** B.Sc. on Biology, Azad University, Tehran, Iran, 1997.  
M.Sc. on Genetics, Azad University, Tehran, Iran, 1999.  
Ph.D. candidate on Molecular Genetics in NIGEB, 2005-present.  
(National Institute for Genetic Engineering and Biotechnology)

**Title of thesis:** Gene disruption of Type I signal peptidase and evaluation of its role in growth, survival, infectivity and protection in *Leishmania major*.

**Supervisors:** Prof. Sima Rafati and Dr. Ali-Hatef Salmanian.

**Address:** Molecular Immunology and Vaccine Research Lab, Pasteur Institute of Iran, Tehran, Iran

**E.mail:** [Tahereh\\_t@yahoo.com](mailto:Tahereh_t@yahoo.com)

### Study Aims:

In general, all secretory proteins contain a signal sequence at their amino terminal which directs them toward the secretory pathway of cells. The signal sequence is removed by a SPase either during or shortly after translocation across the membrane of the rough endoplasmic reticulum. In the absence of SPase, protein precursors accumulate on the outer surface of the endoplasmic reticulum inner membrane and cause eventual death.

In previous studies by our group, type I signal peptidase gene has been isolated from *L. major* and its sequence analysis showed similarities both at the level of nucleotides and amino acids with other eukaryotic and prokaryotic SPases. This protein has immunogenic properties and induced a parasite specific Th1 response and emerged partial protection against parasite challenge in mice. There is no data available to show the role of this gene in *Leishmania*. One of the important tools in genetic and gene function studies is gene disruption by homologous recombination which is able to inhibit specifically the gene expression. In this study, we attempt to evaluate the precise role of SPase type I by homologous recombination method. Also, function and phenotype of SPase mutant parasites will be evaluated both *in vivo* and *in vitro*. *Leishmania* genera are diploid throughout its life cycle with asexual cycle. In order to test if the gene is essential for

survival of promastigote *L. major*, two sequential rounds of targeted gene disruption is necessary by targeting with two different selectable marker genes such as Neo<sup>r</sup> and Hyg<sup>r</sup>. Selected clones will be confirmed by southern blot with specific probes for genomic organization and proper occurrence of replacement. The expression of *Lmjsp* gene will be analyzed by Northern and Western blot analysis. The  $\Delta$ SPase mutants will be evaluated for growth, differentiation, infectivity properties in culture and mice model. Part of the present study, is to investigate the vaccine potential of this genetically knock out parasite in BALB/c mice.

#### **Publication:**

- 1- S. Rafati , F. Zahedifard, M.K. Azari, Y. Taslimi, **T. Taheri**. *Leishmania infantum*: Prime boost vaccination with C-terminal extension of cysteine proteinase type I displays both type 1 and 2 immune signatures in BALB/c mice. **Exp Parasitol.** **2008** Mar;118(3):393-401.
- 2- S. Rafati, E. Gholami, N. Hasani, F. Ghaemimanesh, Y. Taslimi, **T. Taheri**, L. Soong. *Leishmania major* heat shock protein 70 (HSP70) is not protective in murine models of cutaneous leishmaniasis and stimulates strong humoral responses in cutaneous and visceral leishmaniasis patients. **Vaccine.** **2007** May 22;25(21):4159-69. Epub 2007 Mar 19.
- 3- A. Nakhaee, S. Rafati, A-H. salmania , M. Taghikhani, M. Mohebbali, **T. Taheri**. Immunological responses of naturally infected dogs to Type I and II recombinant cysteine proteinases of *Leishmania infantum*. **Modares Journal of medical Sciences**, **2005**, 8 (1), 55-56.
- 4- S. Rafati, A. Nakhaee, **T. Taheri**, Y. Taslimi, H. Darabi, D. Eravani, S. Sanos, P.Kaye, M. Taghikhani, S. Jamshidi, M. A. Rad. Protective vaccination against experiment canine visceral Leishmaniasis using a combination of DNA and protein immunization with cysteine proteinases type I and II of *L.infantum*. **Vaccine** **23** **2005** **3716-3725**.
- 5- M. Golkar, S. Rafati, Y. Taslimi, **T. Taheri**, F. Doustdari, M. Assmar. High-level expression and evaluation the antigenicity of a recombinant *Toxoplasma gondii* GRA2 protein. **Iranian J. Biotechnology**, **Vol 2, No 3, July 2004**.
- 6- A. Zadeh-Vakili, **T. Taheri**, Y. Taslimi, F. Doustdari, A-H. salmanian, S. Rafati. Bivalent DNA vaccination with genes encoding *Leishmania major* cysteine proteinases type I and II protects mice against infectious challenge. **Iranian Journal of Biotechnology**, **January 2004**, Vol. 2, No.1, 35-43.
- 7- S. Rafati, A-H. salmanian, **T. Taheri**, S. Masina, C. Schaff, Y. Taslimi, N. Fasel. Type I signal peptidase from *Leishmania major* is a target of the

immune response in human cutaneous and visceral leishmaniasis. **Molecular and Biochemical Parasitology** , **135(2004)**, 13-20.

- 8- A. Zadeh-Vakili, **T. Taheri**, Y. Taslimi, F. Doustdari, A-H. salmanian, S. Rafati. Immunization with a hybrid protein vaccine consisting of *Leishmania major* cysteine proteinases type I (cpb) and type II (cpa) partially protects against leishmaniasis. **Vaccine** **22** **2004**, 1930-1940.
- 9- A. Nakhaee, **T. Taheri**, M. Taghikhani, , M. Mohebbali , A-H. salmanian, N. Fasel, S. Rafati. Humoral and cellular immune responses against Type I cysteine proteinase of *Leishmania infantum* are higher in asymptomatic than symptomatic dogs selected from a naturally infected population. **Veterinary Parasitology** **119(2004)** 107-123.
- 10- S. Rafati, A. Nakhaee, **T. Taheri**, A. Ghashghaii , A-H. salmanian, M. Jimenez, M. Mohebbali, S. Masina, N. Fasel. Expression of Cysteine Proteinase Type I and II of *Leishmania infantum* and their recognition by Sera during Canine and Human Visceral Leishmaniasis. **Experimental Parasitology** **103(2003)** 143-151.
- 11- S. Rafati, A. Kariminia, Sh. Seyde-Eslami, M. Narimani, **T. Taheri**, M. Lebbatard. Recombinant Cysteine Proteinases-based vaccines against *Leishmania major* in BALB/c mice: The partial protection relies on IFN- $\gamma$  producing CD8<sup>+</sup> T lymphocyte activation. **Vaccine** **20(2002)** 2439-2447.
- 12- S. Rafati, A-H. Salmanian, **T. Taheri**, M. Vafa, N. Fasel. A protective cocktail vaccine against murine cutaneous Leishmaniasis with DNA encoding cysteine proteinases of *Leishmania major*. **Vaccine** **19** (2001) 3369-3375.

### **National and International Congress**

- 1- XVth international congress for tropical medicine and malaria. Colombia, August 20-25, **2000**. A protective cocktail vaccine against murine cutaneous leishmaniasis with DNA encoding cysteine proteinases of *leishmania major*. S. Rafati, A.H. Salmanian, **T.Taheri**, M. Vafa, N. Fasel.
- 2- Second world congress on Leishmaniasis, WorldLeish 2, May 20-24, **2001**, Greece. A protective cocktail vaccine against murine cutaneous leishmaniasis with DNA encoding cysteine proteinases of *Leishmania major*. S. Rafati, A.H. Salmanian,

**T.Taheri**, M. vafa, N. Fasel.

- 3-11<sup>th</sup> International congress of Immunology, 22- 27 July **2001**, Stockholm.  
Immunogenicity of recombinant *Leishmania major* cysteine proteinases in human cutaneous leishmaniasis. Sima Rafati, **Tahereh Taheri** , Yasaman Taslimi, Mahnaz Doustary, Nicolas Fasel.
- 4- The second national biotechnology congress Islamic republic of Iran. Oct. 9-11, **2001**, Karaj. Iran. A protective cocktail vaccine against murine cutaneous leishmaniasis with DNA encoding cysteine proteinases of *Leishmania major*. **Tahere Taheri**, Sima Rafati, A.H. Salmanian.
- 5- The tenth international congress of parasitology, 4-9 august, **2002**, Vancouver, Canada. Cysteine proteinase type I and II of *Leishmania infantum* are recognized by sera during canine and human visceral leishmaniasis. S. Rafati , A. Ghashghaii, M. ghalamkar, A. Nakheii, **T. Taheri**, M. Jimenez, A. Salmanian.
- 6- 6<sup>th</sup> Iranian congress of Immunology and allergy. 7-9, May, **2002**, Tehran.  
Immunological evaluation of recombinant Cysteine proteinase vaccine against *L.major* in BALB/c mice. S. Rafati , Sh. Seyde-Eslami, M. Narimani, A. Kariminia, **T. Taheri**.
- 7- The 3<sup>th</sup> National Congress of Biotechnology, 8-10, September, **2004**, Mashhad, Iran.
  - a-Type I signal peptidase from *Leishmania* is a target of the immune response in human cutaneous and visceral leishmaniasis. **Tahere. Taheri**, S.Rafati, AH. Salmanian, Y.Taslimi, F. Doustdari, S. Eslami, N. Fasel.
  - b- Partial protection against *Leishmania major* by vaccination with a bivalent DNA vaccine consisting of Cysteine proteinases type I and type II. A. Zade-Vakili, S. Rafati, AH. Salmanian, N. Fasel, **T. Taheri**, Y. Taslimi, F. Doustdari.
  - c- Immunological evaluation of naturally infected dogs to recombinant type I and type II cysteine proteinases of *Leishmania infantum*. A.R. Nakhaee, S. Rafati, A.H. Salmanian, **T. Taheri**, M.Taghikhani, M. Mohebbali, Y. Taslimi, F. Doustdari.
- 8- The 7<sup>th</sup> Congress of Immunology and Allergy. 4-7 May, **2004**, Mashhad, Iran.
  - a- Protective capacity of cysteine proteinases types I and II against experimental *L.infantum* infection in BALB/c mice. F.Zahedifard, F. Nazgouee, Y. Taslimi, F. Doustdari, **T. Taheri**, S. Rafati.
  - b- Preparation of DNA vaccine against visceral Leishmaniasis and their evaluation in Dog. A.R. Nakhaee, S. Rafati, M. Rafati, M. Taghikhani, A.H. Salmanian,

**T. Taheri**, M. Mohebbali, Y. Taslimi, F. Doustdari, M. A. Rad, B. Jamshidi.

- 9- 6<sup>th</sup> Iranian congress of microbiology, 16-18 February, **2004**, Tehran.  
Immunogenicity of L7/L12 gene in BALB/c mice against *Brucella abortus*. H. Abtahi, A. H. Salmanian, S. Rafati, GH. Behzadian Nejad, **T. Taheri**, Z. M. Hassan, A. Kazem Nejad.
- 10- The 7<sup>th</sup> Iranian Congress of Immunology and Allergy. 4-7 May, **2004**, Mashhad, Iran.
- a- Evaluation of humoral and cellular Immune responses in human active and recovered Leishmaniasis against cysteine Proteinases Type I. **T. Taheri**, Y. Taslimi, F. Doustdari, D. Eravani, Z. Babaloo, S. Rafati.
  - b- Immunological evaluation of naturally infected dogs to type I and type II recombinant Cysteine Proteinases of *Leishmania infantum*. A.R. Nakhaee, S.Rafati, **T. Taheri**, M.Taghikhani, M Mohebbali, Y.Taslimi, F. Doustdari.
  - c- Immunization with the Hybrid protein vaccine, consisting of *Leishmani major* cysteine proteinases type I(CPB) and Tye II (CPA), partially protects BALB/c mice against Leishmaniasis. A.Zade-Vakili, **T.Taheri**, Y. Taslimi, F. Doustdari, A. H. Salmanian, S. Rafati.
  - d- Bivalent DNA vaccination with genes encoding *Leishmania major* cysteine proteinases CPA and CPB protects mice against infection challenge. A.Zade-Vakili, **T.Taheri**, Y. Taslimi, F. Doustdari, H. Salmanian, S. Rafati.
  - e- Immunogenicity of P39 gene in BALB/c mice against *Brucella abortus*. H.Abtahi. A.H. Salmanian, S. Rafati, GH. Behzadian Nejad, **T. Taheri**, Z. Mohammad Hassan, A. Kazem Nejad.
- 11- 12<sup>th</sup> International congress of immunology and 4<sup>th</sup> Annual conference of FOCIS. July 18-23, **2004**.
- a- Immunization with the hybrid protein vaccine, consisting of *leishmania major* cysteine proteinases type I(CPB) and type II (CPA), partially protects BALB/c mice against leishmaniasis. A. Zadeh-Vakili, **T. Taheri**, Y. Taslimi, F. Doustdari, A.Salmanian, S. Rafati.
  - b- Bivalent DNA vaccination with genes encoding *leishmania major* cysteine proteinases CPA and CPB protects mice against infectious challenge. **T. Taheri** , A. Zadeh-Vakili, Y. Taslimi, F. Doustdari, A. Salmanian, S. Rafati.
  - a- Immunological evaluation of naturally infected dogs to recombinant type I and type II cysteine proteinases of *Leishmania infantum*. A. Nakhaee, S. Rafati, M. Taghikhani, **T. Taheri**, M. Mohebbali, Y. Taslimi, F. Doustdari.

- b-** Combination of DNA and protein immunization with cysteine proteinases type I and II of *L.infantum* protects dogs against experimental visceral Leishmaniasis. S. Rafati, A. Nahkaee, **T. Taheri**, Y. Taslimi, H. Darabi, H.Davis, M. Taghikhani, M Rad, J.Jamshidi.
  - c-** Protective capacity of cysteine proteinases type I & II against experimental *L.infantum* infection in BALB/c mice. F. Zahedifard, F. Nazgouee, Y. Taslimi, F. Doustdary, D. Eravani, **T. Taheri**, S. Rafati.
- 12-** Third world congress on Leishmaniasis, WorldLeish3. 10-15 April **2005**, Palermo-Terrasini, Sicily, Italy.
- a-** Protective vaccination against experimental canine visceral Leishmaniasis using combination of DNA and protein immunization with cysteine proteinases type I and II of *L.infantum*. S.Rafati, Nahkaee, Y. Taslimi, **T. Taheri**, H. Darabi, D. Eravani, S. Sanos, P. Kaye, M. Taghikhani, SH. Jamshidi, M. A. Rad.
  - b-** Type I signal peptidase from leishmania is a target of the immune response in both human and mice model. S. Rafati, AH. Salmanian, F. Ghaemi Manesh, **T. Taheri**, Y. Taslimi, S. Masina, C. Schaff, N. Fasel.
- 13-** The 4<sup>th</sup> National Biotechnology Congress Islamic Republic of Iran Kerman, august **2005**.
- a-** Isolation, Induction and purification Immunogen region of cysteine proteinase type I of *Leishmania infantum*. **T. Taheri**, M. Azari, F. Doustdary, S. Rafati.
  - b-** Prime-boost vaccination using Cysteine Proteinases Type I and Type II of *L.infantum* confers protective immunity in murine visceral leishmaniasis. F.Zahedifard, S. Rafati, F. Nazgouee, **T. Taheri**, Y. Taslimi, F. Doustdary.
- 14-** 13<sup>th</sup> Iranian Biology conference & 1st International Biology Conference that was held in university of Guilan, August **2005**.
- a-** Protective capacity of cysteine proteinases type I & II against experimental *L.infantum* in BALB/C mice. Zahedifard F, Nazgouee F, Taslimi Y, Doustdari F, **Taheri T** and Rafati S.
  - b-** Isolation, Induction and purification Immunogen region of cysteine proteinase type I of *Leishmania infantum*. **T. Taheri**, M. Azari, F. Doustdary, S. Rafati.
- 15-** The 1<sup>st</sup> International Congress on Health Genomics and Biotechnology. 24-26 Nov **2007**, Tehran, Iran.  
*Leishmana major* heat shock protein 70 (HSP70) stimulates strong humoral responses in cutaneous and visceral leishmaniasis patients but not protective in mice model of experimental cutaneous leishmaniasis. E. Gholami, N. Hassani, F. Ghaemimanesh, Y. Taslimi, T. Taheri and S. Rafati.

16- 4<sup>th</sup> world congress on Leishmaniasis, WorldLeish4, 3-7 February 2009, Luchnow, India.

- a- Analysis of survival and growth rate of *Leishmania major* heterozygote mutant of signal peptidase type I. **Tahereh Taheri**, Elham Gholami, Fatemeh Doustdari, Ali-Hatef Salmanian, Sima Rafati.
- b- The effect of A2 gene on infectivity of the non-pathogenic parasite *L.tarentolae*. Amir mizbani, **Tahereh Taheri**, Hiva Azizi and Sima Rafati.

**Grants:**

- 1- Research training grant of WHO/TDR, ID A61113, 2008. As title: Gene disruption of Type I signal peptidase and evaluation of its role in growth, survival, infectivity and protection in *Leishmania major*.

**Training and courses:**

- 1- Coursework, Protein purification in downstream process, Pasteur institute of Iran, 2002.
- 2- RNAi workshop, Pasteur institute of Iran, 2005.
- 3- Pasteur institute of Iran, Pasteur institute of Iran, 2005.
- 4- First international symposium on Molecular Technology, Tehran, 2005.
- 5- International workshop on Leishmaniasis, 1-6 March, Tehran, Iran, 2008.
- 6- Pasteur Institute of Paris, France, April-Jun 2008.

**Teaching:**

- 1- Practical Immunology of infection disease for PhD students, Pasteur institute of Iran, 2004.
- 2- Practical Immunology of infection disease for MS students, Pasteur institute of Iran, 2005.
- 3- Practical advance Immunology for PhD students, Pasteur institute of Iran, 2006.
- 4- Practical advance Immunology for PhD students, Pasteur institute of Iran, 2007.