

MOHSEN AMIN

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Career interests: Academic and executive positions blending scientific expertise and knowledge transfer activities in the field of pharmaceutical sciences

Education

April, 2009 – December 2011

Post-doctoral Fellow

Department of Molecular Genetics
Faculty of Medicine, University of Toronto
Research title: Humanized mouse models of gonococcal infections

September 2002 – June 09

PhD in Pharmaceutical Microbiology

University of Toronto
Supervisor: Dr. Richard P. Ellen
Thesis: Identifying actin-perturbing peptide domains of *Treponema denticola* major outer sheath membrane protein

September 1995 – September 1998

Master of Science in Medical Microbiology

Tehran University of Medical Sciences
Tehran, Iran
Supervisor: Dr. Saeed Eshraghi
Thesis: The study of *nocardial* infection in pulmonary patients

Academic and Research Experience

- September 2013 – Present **Assistant Professor**
Department of Drug and Food Control
Faculty of Pharmacy
Tehran University of Medical Sciences
- December 2011 – September 2013 **Faculty member**
Institute of Holistic Nutrition
Toronto, Canada
- January 2012 – September 2013 **Research Scientist**
Matrix Dynamics Group, University of Toronto
Toronto, Canada
- March, 1998 – September 2001 **Research Scientist (Department of Biological Products)**
Food and Drug Control Laboratories
Ministry of Health
Tehran, Iran
- May, 1995 – January 1998 **Lab Technician (Microbiology laboratory)**
Central Clinical Diagnostic Laboratory
Tehran, Iran

Executive Experience

- Deputy of Research and Technology, (The Institute of Pharmaceutical Sciences, TIPS)
- Head of International Desk for Iran-Pakistan Education and Research Development, Tehran University of Medical Sciences
- Head of Commercialization Group at the Technology Development Office, Tehran University of Medical Sciences
- Chief Adviser of International Affairs, Faculty of Pharmacy, Tehran University of Medical Sciences

Entrepreneurship Experience

- **Co-founder and member of board of directors at Yas Daru Pharmaceutical Company in Tehran, Iran (since 1998).** Yas Daru Herbal Pharmaceutical Company was founded in 1998 and has grown to a wide-range of capacities including conducting basic science research, manufacturing plant-based medications, food supplements and cosmetics. Our company is also capable of developing medicinal products and feed additives for animals. Through a knowledge transfer strategy, we have succeeded to develop and transfer our research knowledge to the pharmaceutical industry and to formulate our ideas into finished products (www.yasdaru.com).
- **Founder of AVA Phytoceuticals in Toronto, Canada (since 2009).** In Ava Phytoceuticals we develop novel Natural Health Products (NHP) to help different health conditions including depression, hormonal imbalances in women, cold and flu symptoms, gum diseases and chronic inflammation. Comprehensive research has been conducted at the University of Toronto to get a better understanding of the effect of certain Natural Health Products such as turmeric, ginger and green tea extract along with their bioactive components on the inflammatory reactions. Our products have Canadian licenses and are manufactured in collaboration with Natures Formula which is a progressive Canadian product development and manufacturing company with over 30 years in Natural Health Products. Banting Medical is the major shareholder of Ava Phytoceuticals company (<http://www.bantingmedical.ca/ava-phytoceuticals.html>).

United States Patent

Peptide with putative role in cytoskeletal protection. U.S. patent No. US 7,659,366 B2. Date of patent: February 9, 2010; Inventors: Richard P. Ellen and Mohsen Amin. The invention relates to a novel peptide conjugate useful for stabilizing the actin cytoskeleton of mammalian cells. More particularly, the invention relates to a conjugate of a peptide found within the sequence of a bacterium's major outer sheath protein and bovine serum albumin (BSA), and the use of this conjugate for stabilizing the actin cytoskeleton of mammalian cells, and for preventing or controlling the migration of mammalian cells.

PERIOVAX3, a vaccine candidate for periodontitis. U.S. Patent Application No. 2020/0108134 A1. Apr. 9, 2020. Inventors: Mohsen Amin and Saba Hashemi. The disclosure relates to a recombinant polypeptide having protection potential against periodontitis. *PerioVax3*, is a recombinant polypeptide encompassing amino acids 194 - 288 of the major outer sheath protein (Msp) of the periodontopathic bacterium, *Treponema denticola*. The corresponding gene to *PerioVax3* was cloned and expressed in

E. coli. The purified recombinant polypeptide has a molecular weight of 9772 Dalton and an isoelectric point (pI) of 9.19. *PerioVax3* carries epitopes that triggers protective humoral immunity against *T. denticola*.

Granted Fundings

- Principal investigator in Research Council Grant of Tehran University of Medical Sciences. Granted in 2016. Project title: **Investigation of the impact of recombinant arazyme on inflammation and cancer using animal model and cancer cell lines.**
- Principal investigator in Research Council Grant of Tehran University of Medical Sciences. Granted in 2015. Project title: **Cloning and expression of antigenic determinants of the periodontal pathogen, *Treponema denticola*.**
- Principal investigator in Research Council Grant of Tehran University of Medical Sciences. Granted in 2015. Project title: **The investigation of *in vitro* effects of essential oils of *Mentha pulegium* and *Zataria multiflora* on antigenic determinants of *Helicobacter pylori*.**
- Co-investigator in BioDiscovery Toronto Grant. Granted in 2007. Project title: **Therapeutic application by modulating neutrophil chemotaxis in acute pneumonia.**
- Co-investigator in MaRS Innovation Proof of Principle Grant. Granted in 2012. Project title: **Impact of P34_{BSA}, a novel anti-inflammatory bacterial-derived peptide: Effectiveness in preventing periodontal disease in a murine model.**

Teaching and Instruction Experience

- **Undergraduate instruction** (Sep. 2005-June 2008): Teacher assistant, Oral Microbiology (DEN124Y). University of Toronto, Faculty of Dentistry
- **Undergraduate/graduate instruction** (Sep. 2004-June 2006): Research project instructor of undergraduate and graduate students. University of Toronto, Faculty of Dentistry
- **Faculty member at the Institute of Holistic Nutrition** (May 2011 – Sep. 2013): Course instructor: Biological Chemistry BC001, Body Metabolism 002, Advanced Nutrition Research NR006
- **Assistant Professor at Tehran University of Medical Sciences** (September 2013 – present): Systematic bacteriology for pharmacy students; Oral microbiology for PhD students of bacteriology program; Research methodology for PhD students of Traditional Medicine; Molecular biology and Genetics for pharmacy students; Health care services for pharmacy students; Quality control of biopharmaceuticals and vaccines for graduate students

Attended Workshops and Trainings

- January, 2015 **International Training Course on Food Safety and Quality Standards for Market Access**
Held by Asian Productivity Organization (APO)
Islamabad, Pakistan
- June, 2014 **e-learning Course on Risk Management of Foodborne Pathogens**
Held by National Productivity Organization (APO)
Tehran, Iran
- February, 2012 **Workshop on Good Manufacturing Practices**
Held by Natural Health Products Directorate
Health Canada, Toronto, Canada
- April, 2009 **Training Course on Animal Care**
Held by Division of Comparative Medicine
Faculty of Medicine, University of Toronto
Toronto, Canada
- August, 2007 **Training on Laboratory Biosafety**
Held by Office of Environmental Health and Safety
University of Toronto, Toronto, Canada
- May, 2007 **Workshop on Real-Time PCR for the Clinical Microbiology Laboratory**
Held by American Society for Microbiology
Metro Toronto Convention Centre, Toronto, Canada
- February, 2000 **Workshop on HLA Typing**
Held by the Department of Immunology
Faculty of Medicine, Tehran University of Medical Sciences, Tehran, Iran
- October, 2000 **Workshop on the Current Good Manufacturing Practice**
Held by UNDP/World Bank/WHO special programme for Research and Training in Tropical Disease (TDR)
Pasture Institute of Iran, Tehran, Iran
- November, 2000 **Training Course on Capillary Electrophoresis**
Held by Bio-Rad
Food and Drug Control Laboratories
Ministry of Health, Tehran, Iran

Professional Memberships

- American Society for Microbiology, since 1992
- International Association for Dental Research, 2002-08
- Cell Signaling in Mucosal Inflammation & Pain (a strategic research training program of the Canadian Institute of Health Research), 2005-09
- Health and Safety Committee, Faculty of Dentistry, University of Toronto, 2004-09
- Health and Safety Committee, Faculty of Pharmacy, Tehran University of Medical Sciences, 2015
- Iranian Society for Bacteriology, since 2013

Scholarships and Fellowships

- U of T open fellowship, Toronto, Canada (2002 and 2003)
- Harron scholarship, Toronto, Canada (2004)
- CIHR strategic training fellowship, Toronto, Canada (2005)

Laboratory Skills

- Antibiotic susceptibility testing; quality control of antibacterial and antifungal agents
- Potency and safety tests of bacterial and viral vaccines
- Identification and measurement of ingredients of bacterial and viral vaccines
- Cellulose acetate electrophoresis, western blotting, capillary electrophoresis, isoelectric focusing, and densitometry image analysis
- ELISA
- Immunodiffusion techniques
- Identification of bacteria by biochemical, molecular and serological methods
- Animal cell culture techniques
- Laser confocal microscopy and deconvolution microscopy
- Protein purification from bacteria
- DNA/RNA extraction and PCR techniques
- Image analysis by computer software (NIH-Image, Image-Pro Plus, Image J)
- Laboratory animal handling/animal experimentation
- Immunohistochemistry

Publications

Book chapter

Jobin MC, **Amin M**, RP Ellen. 2008. Chapter 8: The molecular biology of the survival and virulence of *Treponema denticola*. In A. H. Rogers (Ed.), *Molecular oral microbiology* (pp. 177-194). Adelaide, Australia: Caister Academic Press

Research Articles

1. Taghizadeha, T., Talebian-Kiakalaieh, A., Jahandar, H., **Amin, M.**, Tarighi, S., Faramarzi, MA. 2020. Biodegradation of bisphenol A by the immobilized laccase on some synthesized and modified forms of zeolite Y. *J Hazardous Materials*. 386: 121950
2. Azimzadeh Asiabi, P., Ramazani, A., Khoobi, M., **Amin, M.**, Shakoobi, M., Mirmohammad Sadegh, N., Farhadi, R. 2020. Regenerated silk fibroin-based dressing modified with carnosine-bentonite nanosheets accelerates healing of second-degree burn wound. *Chemical Papers*. April.
3. Eftekhari, M., Ardekani, M.R.S., **Amin, M.**, (...), Isman, M., Khanavi, M. 2019. *Oliveria decumbens*, a bioactive essential oil: Chemical composition and biological activities. *Iran J Pharm Res*. 18(1): 412-421
4. Araghi, A., Hashemi, S, Akhavan Sepahi A., Faramarzi MA., **Amin M.** 2019. Purification and study of anti-cancer effects of *Serratia marcescens* serralysin. *Iran J Microbiol*. 11(4): 320-327
5. Hashemi, S., Seppehrizadeh, Z., Setayesh, N., (...), Glogauer, M., **Amin, M.** 2019. *PerioVax3*, a key antigenic determinant with immunoprotective potential against periodontal pathogen. *Microbial Pathogenesis*. 135.
6. Goleij, Z., Hosseini, H.M., **Amin, M.**, (...), Behzadi, E., Fooladi, A.A.I. 2019. *In silico* evaluation of two targeted chimeric proteins based on bacterial toxins for breast cancer therapy. *Intern J Cancer Management*. 12(2).
7. Sedighian, H., Halabian, R., Amani, J., (...), **Amin, M.**, Fooladi, A.A.I. 2018. Staggered Target SELEX, a novel approach to isolate non-cross-reactive aptamer for detection of SEA by apta-qPCR. *J Biotech*.
8. Baery, N., Ghasemi Nejad, A., **Amin, M.**, (...), Karimi Darmiyan, M., Amin, G. 2018. Effect of vaginal suppository on bacterial vaginitis based on Persian medicine (Iranian traditional medicine): a randomised double blind clinical study. *J Obstet Gyn*. 38(8): 1110-1114
9. Sabernavaei, M., Kobarfard, F., Hadjiakhoondi, A., (...), **Amin, M.**, Yassa, N. 2018. Biological evaluation of the isolated compounds from methanol fraction of *Leutea avicennia* mozaff. *Iran J Pharm Res*.
10. Khoshnevis, N., Rezaei, S., Samaei-Nouroozi, A., (...), Khoshayand, M.R., Faramarzi, **Amin M.** 2018. Enhanced production and characterization of a highly stable extracellular protease from an extreme halophilic isolate *Salicola marasensis*. *Iran J Pharm Res*. 17(14): 1392-1412

11. Satarian, F., Hosseini, H.M., Ghadaksaz, A., **Amin, M.**, Fooladi, A.A.I. 2018. Multi-drug resistant clinical *Pseudomonas aeruginosa* inhibited by *Ferula gummosa* boiss. *Recent Patents on Anti-Infective Drug Discovery*.
12. Nasiri, M.J., Zamani, S., Pormohammad, **Amin, M.**, (...), Halabian, R., Imani Fooladi, A.A. 2018. The reliability of rifampicin resistance as a proxy for multidrug-resistant tuberculosis: a systematic review of studies from Iran. *European Journal of Clinical Microbiology and Infectious Diseases*.
13. Islam EA, Anipindi VC, Francis I, Shaik-Dasthagirisaheb Y, Xu S, Leung N, Sintsova A, **Amin M**, Kaushic C, Wetzler LM, Gray-Owen SD. 2018. Specific Binding to Differentially Expressed Human Carcinoembryonic Antigen-Related Cell Adhesion Molecules Determines the Outcome of Neisseria gonorrhoeae Infections along the Female Reproductive Tract. *Infect Immun*.
14. Mahmoodzadeh Hosseini, H., kiyani, N., **Amin, M.**, Hedayati Ch, M., Imani Fooladi, A.A. 2017. Distribution of high-level mupirocin resistance among clinical MRSA. *J Chemotherapy*.
15. Goleij, Z., Mahmoodzadeh Hosseini, H., **Amin, M.**, Halabian, R., Imani Fooladi, A.A. 2017. Prokaryotic toxins provoke different types of cell deaths in the eukaryotic cells. *Toxin Rev*.
16. Fooladi, A.A.I., Ch, M.H., **Amin, M.**, Amani, J. Applications and modifications of aptamers: Potential tool for medical microbiology. 2016. *Reviews in Medical Microbiology*. 27(3): 107-120
17. Maspi, H., Mahmoodzadeh Hosseini, H., **Amin, M.**, Imani Fooladi, A.A. 2016. High prevalence of extensively drug-resistant and metallo beta-lactamase-producing clinical *Acinetobacter baumannii* in Iran. *Microbial Pathogenesis*. 98: 155-159
18. Hedayati Ch, M., Amani, J., Sedighian, H., **Amin, M.**, (...), Halabian, R., Imani Fooladi, A.A. 2016. Isolation of a new ssDNA aptamer against staphylococcal enterotoxin B based on CNBr-activated sepharose-4B affinity chromatography. *J Molecular Recognition*.
19. Fooladi, A.A.I., Ch, M.H., **Amin, M.**, Amani, J. 2016. Applications and modifications of aptamers: Potential tool for medical microbiology. *Rev Med Microbiol*.
20. Javad Nasiri, M., Chirani, A.S., **Amin, M.**, Halabian, R., Imani Fooladi, A.A. 2016. Isoniazid-resistant tuberculosis in Iran: A systematic review. *Tuberculosis*.
21. Imani Fooladi, A.A., Halabian, R., Mahdavi, M., **Amin, M.**, Mahmoodzadeh Hosseini, H. 2016. Staphylococcal enterotoxin B/texosomes as a candidate for breast cancer immunotherapy. *Tumor Biology*.
22. Farid-Afshar, F., Saffarian, P., Mahmoodzadeh-Hosseini, H., (...), **Amin, M.**, Fooladi, A.A.I. 2016. Antimicrobial effects of *Ferula gummosa* boiss gum against extended-spectrum β -lactamase producing *Acinetobacter* clinical isolates. *Iran J Microbiol*.
23. Ghadaksaz, A., Imani Fooladi, A.A., Hosseini, H.M., **Amin, M.** 2015. The prevalence of some *Pseudomonas* virulence genes related to biofilm formation and alginate production among clinical isolates. *J Appl Biomedicine*. 13(1): 61-68.

24. Yousefbeyk, F., Golfakhrabadi, F., Amouei, A., (...), Amini, M., Amin, G. 2015. Phytochemical investigation and antifungal activity of *Daucus littoralis* Smith sub sp. hyrcanicus Rech.f. *Res J Phytochem.* 9(1): 33-40
25. Koh A, **Amin M**, Visser MB, Sima C, Ellen RP, Glogauer M. 2015. Inhibition of neutrophil chemotaxis by a multivalent reagent based on a short peptide sequence in *Treponema denticola* major outer sheath protein. *J Pharm Biol.* 5(2) : 56-65.
26. Mahmood zadeh Hosseini H, Halabian R, **Amin M**, Imani Fooladi AA. 2015. Texasome-based drug delivery system for cancer therapy : From past to present. *Cancer Biol Med.* September ; 12(3) : 150-162
27. Imani Fooladi AA, Ashrafi E, Tazandareh SG, Koosha RZ, Rad HS, **Amin M**, Soori M, Larki RA, Choopani A, Hosseini HM. 2015. The distribution of pathogenic and toxigenic genes among MRSA and MSSA clinical isolates. *Microb Pathog.* Apr; 81: 60-6.
28. Badmasti F, Shahcheraghi F, Siadat SD, Bouzari S, Ajdary S, **Amin M**, Halabian R, Imani Fooladi AA. 2015. Heterologous expression of 3-O-deacylase in *Acinetobacter baumannii* modulates the endotoxicity of lipopolysaccharide. *J Mol Microbiol Biotechnol.* 25(1): 37-44.
29. Mahmoodzadeh Hosseini H, Soleimanirad J, Mehdizadeh Aghdam E, **Amin M**, Imani Fooladi AA. 2015. Texasome-anchored superantigen triggers apoptosis in original ovarian cancer cells. *Med Oncol.* Jan; 32(1): 409.
30. Imani Fooladi AA, Bagherpour G, Khoramabadi N, Fallah Mehrabadi J, Mahdavi M, Halabian R, **Amin M**, Izadi Mobarakeh J, Einollahi B. Cellular immunity survey against urinary tract infection using pVAX/fimH cassette with mammalian and wild type codon usage as a DNA vaccine. *Clin Exp Vaccine Res.* Jul; 3(2): 185-93.
31. Yahaghi E, Imani Fooladi AA, **Amin M**, Mirnejad R, Nezamzade R, Amani J. 2014. Detection of class I integrons in *Staphylococcus aureus* isolated from clinical samples. *Iran Red Crescent Med J.* Nov 10;16(11).
32. Sintsova A, Sarantis H, Islam EA, Sun CX, **Amin M**, Chan CH, Stanners CP, Glogauer M, Gray-Owen SD. 2014. Global analysis of neutrophil responses to *Neisseria gonorrhoeae* reveals a self-propagating inflammatory program. *PLoS Pathogen.* Sep 4;10(9)
33. Yousefbeyk F, Gohari AR, Hashemighahderijani Z, Ostad SN, Salehi Sourmaghi MH, Amini M, Golfakhrabadi F, **Amin M**, Jamalifar H, Amin GR. 2014. Bioactive terpenoids and flavonoids from *Daucus littoralis* Smith subsp. *hyrcanicus* Rech.f, an endemic species of Iran. *Daru J of Pharm Sci.* Jan. 22(1): 12
34. Chege D, Higgins SJ, McDonald CR, Shahabi K, Huibner S, Kain T, Kain D, Kim CJ, Leung N, **Amin M**, Geddes K, Serghides L, Philpott DJ, Kimani J, Gray-Owen S, Kain KC, Kaul R. 2014. Murine *Plasmodium chabaudi* malaria increases mucosal immune activation and the expression of putative HIV susceptibility markers in the gut and genital mucosa. *J Acquir Immune Defic Syndr.* Apr 15;65(5):517-25
35. **Amin M**, Magnusson KE, Kápus A, Glogauer M, Ellen RP. 2008. *Treponema denticola* Msp-deduced peptide conjugate, P34_{BSA}, promotes RhoA-dependent

- actin stress fiber formation independent of its internalization. *Cell Motility and the Cytoskeleton*. 65(5): 406-21
36. **Amin M**, Grove DA, Kápus A, Glogauer M, Ellen RP. 2007. An actin-stabilizing peptide conjugate deduced from the major outer sheath protein of the bacterium *Treponema denticola*. *Cell Motility and the Cytoskeleton*. 64(9): 662-674
 37. **Amin M**, Ho AC, Lin JY, Batista da Silva AP, Glogauer M, and Ellen RP. 2004. Induction of *de novo* subcortical actin filament assembly by *Treponema denticola* major outer sheath protein. *Infection and Immunity*. 72(6): 3550-3654
 38. Amin GR, Dehmoobed Sharifabadi A, Salehi Surmaghi MH, Yasa N, Aynechi Y, Emami M, Shidfar MR, **Amin M**, Moghadami M, Kordbacheh P, Zeini F. 2002. Screening of Iranian plants for antifungal activity: Part 1. *DARU J Pharm Sci*. 10(1) : 34-37
 39. Eshraghi S, **Amin M**. 2001. *Nocardia asteroides* complex in patients with symptomatic pulmonary Nocardiosis. *Iranian Journal of Public Health*. 30 (3-4).

Conference Presentations

1. 19th International Conference of Microbiology, Tehran, Iran, September, 2018
2. 18th International Conference of Microbiology, Tehran, Iran, September, 2017
3. Biointerfaces International Conference, Zurich, Switzerland, September, 2016
4. 16th International Conference of Microbiology, Tehran, Iran, September, 2015
5. Seminar on the Role of Bacterial Infections in Cancer Patients
Anzali, Iran, September, 2014
6. 14th International Iranian Congress of Microbiology
Tehran, Iran, August, 2013
7. 9th Annual Natural Health Product Conference
Kelowna, British Columbia, May, 2012
8. International Pathogenic Neisseria Conference
Banff, Alberta, September, 2010

9. Gordon Research Conference on Biology of Spirochetes
Ventura, California, January, 2008
10. 107th American Society for Microbiology General Meeting
Toronto, Ontario, May, 2007
4. Gordon Research Conference on Biology of Spirochetes
Il Ciocco, Tuscany, April, 2006
5. ASM Conference on Cell-Cell Communication in Bacteria
Banff, Alberta, July, 2004
6. Gordon Research Conference on Biology of Spirochetes
Ventura, California, January, 2004
7. 101st American Society for Microbiology General Meeting
Orlando, Florida, May, 2001