

Curriculum Vitae



Mohammad Shahnawaz, PhD

*Mitchell Center for Alzheimer's Disease and Related Brain Disorders
MSER 403, Dpt. of Neurology, Medical School
University of Texas Health Science Center at Houston
6431 Fannin St, Houston, Texas-77030, USA
Phone (O): 1- 713-500-7034, Fax (O): 1- 713-500-0773
Email: Mohammad.Shahnawaz@uth.tmc.edu*

AREA OF RESEARCH INTEREST

My current research is aimed at developing a sensitive method to detect seeding-competent oligomers in biological fluids to be used as possible markers for early diagnosis of several diseases including Alzheimer's and Parkinson's diseases. Further, to expand the understanding of possible mechanism(s) involved in these diseases to develop early therapeutic approach, I am also involved in the isolation of toxic aggregates from human AD brains and evaluating the cytotoxic effects in different types of human neurons *in vitro*

EDUCATION

- 2004-2008: **PhD (Protein Biochemistry)**; Chosun University, Republic of Korea
1999-2001: **Master of Science (Biochemistry)**; Jiwaji University, India
1991-1994: **Bachelor of Science (Chemistry)**; Magadh University, India

RESEARCH EXPERIENCE

- 2016- **Instructor**. University of Texas Health Science Center, Houston, Texas.
2009-2015: **Post-doctoral fellow**. University of Texas Health Science Center, Houston, Texas.
2008-2009: **Research Professor**, Chosun University, Republic of Korea.
2004-2008: **Graduate Student**, Chosun University, Republic of Korea.
2002-2004: **Junior Unichem Fellow**, National Botanical Research Institute, India.
March 2001
-July 2001: **Project Fellow**, Center for DNA Fingerprinting and Diagnostics, India.
1999-2001: **Master student**, Jiwaji University, India.

OTHER EXPERIENCE

- 2015-Present: **Reviewer** of Journal “*PLOS ONE*.”
- 2015-Present: **Reviewer** of Journal “*NeuroReport*”
- 2015-Present: **Reviewer** of Journal “*Neuropeptides*.”
- 2015-Present: **Reviewer** of “*Journal of Molecular Neuroscience*.”
- 2014-Present: **Reviewer** of Journal “*Protein Expression and Purification*.”
- 2014-Present: **Reviewer** of Journal “*Advances in Alzheimer’s disease*.”
- 2014 **Reviewer** for “**Postdoctoral Travel Award**” for Spring 2014
- 2013 **Judge** at “**Annual Medical School Research Retreat**”.
- 2013 **Judge** at “**Gulf Coast Consortia Keck Annual Research Conference**”
- 2011-Present: **Teaching** PhD student at **University of Chile, Santiago, Chile**

HONORS AND AWARDS

- 2015 **Spring 2015 Travel Award** by Post-doc Association of University of Texas Health Science Center, Houston.
- 2007 **Best Poster Award**” at 7th International Symposia on Peptide and Protein, Republic of Korea.
- 2002 **Junior Unichem Fellowship**, given by Unichem Laboratory, India
- 2001 **Qualified Graduate Aptitude Test in Engineering (GATE)** conducted by Indian Institute of Technology (IIT),INDIA.

MEMBERSHIP AND AFFILIATION

- 2016 Member of **Biochemical Society**
- 2016 Member of **American Association of Neurology (AAN)**
- 2016 Member of **American Neurological Association (ANA)**
- 2014-Present: Full Membership of **SIGMA XI** (Membership by nomination)
- 2014-Present: Member of **American Association for Science and Technology (AASCIT)**

PAPERS PUBLISHED

1. **Shahnawaz M**, Takahiko Tokuda, Masaaki Waragai, Nicolas Mendez, Ryotaro Ishii, Claudia Trenkwalder, Brit Mollenhauer and Claudio Soto. Biochemical diagnosis of Parkinson's disease by detection of α -synuclein misfolded aggregates in cerebrospinal fluid. **JAMA Neurology**. 2016 Dec 5. doi: 10.1001/jamaneurol.2016.4547

Media Coverage

<https://www.uth.edu/media/story.htm?id=e6c6a056-f29f-46f6-baa1-ec6a7c79ec10>
https://www.eurekalert.org/pub_releases/2016-12/uoth-usd120616.php
<http://www.news-medical.net/news/20161207/New-discovery-paves-way-to-development-of-biochemical-test-for-diagnosing-Parkinsons-disease.aspx>
<http://m.medicalxpress.com/news/2016-12-scientists-parkinson-disease-diagnosis.html>
<http://healthmedicinet.com/i/new-discovery-paves-way-to-development-of-biochemical-test-for-diagnosing-parkinsons-disease/>

2. Moreno-Gonzalez, I., Edwards, G., Salvadores, N., **Shahnawaz, M.**, Diaz-Espinoza, R. and **Soto, C.** (2016) Molecular interaction between type 2 diabetes and Alzheimer's disease through cross-seeding of protein misfolding. *Molecular Psychiatry* (*In press*).
3. **Shahnawaz M**, Kyung-won Park, Rodrigo Diaz-Espinoza and Soto C. Prion-like Characteristics of the bacterial protein Microcin E492. *Scientific Reports* (*Under revision*).
4. Salvadores N*, **Shahnawaz M***, Scarpini E, Tagliavini F, Soto C. Detection of Misfolded A β Oligomers for Sensitive Biochemical Diagnosis of Alzheimer's Disease. *Cell Reports*. 2014 Mar 18. pii: S2211-1247(14)00145-4.

Media Coverage

- <http://www.foxnews.com/health/2014/03/20/early-detection-alzheimers-may-be-possible-through-spinal-fluid-test/>
<http://www.scientificamerican.com/article/prion-detection-method-shows-promise-as-alzheimere28099s-test/>
<http://www.sciencedaily.com/releases/2014/03/140320121854.htm>
<http://www.express.co.uk/news/health/466045/Spinal-fluid-test-to-give-an-early-warning-of-Alzheimer-s>
http://zeenews.india.com/news/health/diseases/spinal-fluid-test-to-spot-alzheimer-s_27238.html#
http://www.business-standard.com/article/pti-stories/spinal-fluid-test-to-spot-alzheimer-s-114032400386_1.html
<http://www.alzforum.org/news/research-news/test-uses-seeding-detect-av-oligomers-cerebrospinal-fluid>
<http://www.thetimes.co.uk/tto/science/article4039761.ece>
5. Sharoar MG, Islam MI, **Shahnawaz M**, Shin SY, Park IS. Amyloid β binds procaspase-9 to inhibit assembly of Apaf-1 apoptosome and intrinsic apoptosis pathway. *Biochim Biophys Acta*. 2014 Apr; 1843(4):685-93.
 6. **Shahnawaz M**, Sharoar MG, Shin SY, Park IS. Wild-type, Flemish, and Dutch amyloid- β exhibit different cytotoxicities depending on A β 40 to A β 42 interaction time and concentration ratio. *J Pept Sci*. 2013 Sep; 19(9):545-53.
 7. Sharoar MG¹, **Shahnawaz M**, Islam MI, Ramasamy VS, Shin SY, Park IS. The inhibitory effects of Escherichia coli maltose binding protein on β -amyloid aggregation and cytotoxicity. *Arch Biochem Biophys*. 2013 Oct 1; 538 (1):41-8
 8. Sharoar MG, Thapa A, **Shahnawaz M**, Ramasamy VS, Woo ER, Shin SY, Park IS. Keampferol-3 O-rhamnoside abrogates amyloid beta toxicity by modulating monomers and remodeling oligomers and fibrils to non-toxic aggregates. *J Biomed Sci*. 2012 Dec 21; 19:04. doi: 10.1186/1423-0127-19-104.
 9. **Shahnawaz M**, Soto Claudio. Microcin amyloid fibrils are a reservoir of toxic oligomeric species. *Journal of Biological Chemistry*. 2012 Apr 6; 287 (15):11665-76.
 10. Thapa A *, **Shahnawaz M***, Karki P, Raj Dahal G, Golam Sharoar M, Yub Shin S, Sup Lee J, Cho B, Park IS. Purification of inclusion body-forming peptides and proteins in soluble form by fusion to Escherichia coli thermostable proteins. *Biotechniques*. 2008 May; 44(6):787-96
 11. Dahal GR, Karki P, Thapa A, **Shahnawaz M**, Shin SY, Lee JS, Cho B, Park IS. Caspase-2 cleaves DNA fragmentation factor (DFF45)/inhibitor of caspase-activated DNase (ICAD). *Arch Biochem Biophys*. 2007 Dec 1; 468(1):134-9. Epub 2007 Sep 19.
 12. **Shahnawaz M ***, Thapa A*, Park IS. Stable activity of a deubiquitylating enzyme (Usp2-cc) in the presence of high concentrations of urea and its application to purify aggregation-prone peptides *Biochem Biophys Res Commun*. 2007 Aug 3; 359(3):801-5. Epub 2007 Jun 4.

- Ashraf S, Singh PK, Yadav DK, **Shahnawaz M**, Mishra S, Sawant SV, Tuli R. High level expression of surface glycoprotein of rabies virus in tobacco leaves and its immunoprotective activity in mice. *J Biotechnology*. 2005 Sep 22; 119(1):1-14.

**Contributed equally*

UNITED STATES PATENTS (Granted/ Filed)

- Chimeric-G Protein Based Rabies Vaccine**
United States Patent No: US 7,901,691 B2
Date: March 8, 2011
- Detection of Misfolded Amyloid Beta Protein**
Publication Number: 20160077110
Publication Date: March 17, 2016
- Detection of Misfolded alpha-Synuclein Protein**
Publication Number: 20160077111
Publication Date: March 17, 2016
- Detection of Misfolded Proteins**
Publication Number: 20160077112
Publication Date: March 17, 2016

PAPERS PRESENTED AT CONFERENCES/ MEETINGS

- Shahnawaz M**, Nicolas Mendez and Claudio Soto. Detection of misfolded protein aggregates for early and sensitive diagnosis of neurodegenerative diseases. *Texas Fresh Air Neuroscience Conference 2016*. Austin, Texas, USA.
- Shahnawaz M**, Park K, Diaz-Espinoza R and Soto C. "Prion-like characteristics of the bacterial protein Microcin E492". *Prion 2015*, Fort Collins, Colorado, USA.
- Shahnawaz M** and Park IS, "Accumulation of oligomeric forms of amyloid beta by chaperone DnaK influencing on multiple steps of the formation of the structural species and its correlation with the cytotoxicity" in *8th International Symposium on Peptide and Protein Materials*, 2008, Gwangju, Republic of Korea.
- Shahnawaz M** and Park IS, "Specific compositions of amyloid beta 40 and 42 enhance or suppress amyloid beta aggregation and toxicity" in *8th International Symposium on Peptide and Protein Materials*, 2008. Gwangju, Republic of Korea.
- Shahnawaz M** and Park IS, "High yield and single step purification of peptides produced in *E.coli*" in *7th International Symposium on Peptide and Protein Materials*, 2007. Gwangju, Republic of Korea.
- Arjun Thapa, **M Shahnawaz** and Park IS, "Use of Thermostable Proteins for the High Yield Purification of Difficult Proteins or Peptides" in *6th International Symposium on Peptide and Protein Materials*, 2006. Gwangju, Republic of Korea.
- Ashraf S, Yadav D, **Shahnawaz M**, Mishra S, Singh PK and Tuli R, *plant derived rabies glycoprotein elicits high-level of immune response in animal model*. Paper presented in XXVII All India Cell biology Conference, University of Pune, India from Jan 7-10, 2004.
- Ashraf S, Yadav D, **Shahnawaz M**, Mishra S, Singh PK and Tuli R, *Plant derived rabies glycoprotein elicits high-level of immune response in animal model*. Poster presented in 10th FAOBMB Congress, Society of Biological Chemists, (India), held at IISC Bangalore, India from Dec 7-11, 2003.

REFEREES

1. *Name:* **Dr. Claudio Soto, PhD**
Designation: **Professor**
Address: Mitchell Center for Alzheimer's Disease and Related Brain Disorders. Department of Neurology, Medical School, University of Texas Health Science Center at Houston, 6431, Fannin St, Houston, Texas-77030
Phone: +1-713-500-7086
Fax: +1-713-303-7019
E-mail: Claudio.Soto@uth.tmc.edu
3. *Name:* **IL Seon Park, PhD**
Designation: **Associate Professor**
Address: Research Center for Proteineous Materials and Department of Bio-materials, Department of Cellular and Molecular Medicine Chosun University, 375 Seosuk-dong, Dong-gu, Kwangju, Republic of Korea
Phone: +82-62-230-6753
Fax: +82-62-227-8345
E-mail: parkis@chosun.ac.kr

Date:

Mohammad Shahnawaz