

Teacher's Profile

Name: Dr. ABUL HASAN SARDAR

Department [Specialization]: MICROBIOLOGY

Position Holding: Assistant Professor and Head

Position Held [previous service]: (if any)



Name of the Employer	Position Held	Duration/Year	Remarks

Date of Joining in Sarsuna College: 22/09/2016

Contact Information: Email: abulhasansardar82@gmail.com Phone: (optional) 8820122772

Academic Qualification: please do not mention the % of marks/ class/ grade

Degree	College/University/Institution	Year
B.Sc. (Microbiology)	University of Calcutta	2002
M.Sc. (Microbiology)	University of Kalyani	2004

Ph. D.	Title of Thesis/ Project	College/University/Institution	Year
	"Studies on differential proteomic responses of <i>Leishmaniadonovani</i> under exposure to nitrosative and oxidative stress"	University of Calcutta	2015

Post Doctoral Research (if any):

Albany Medical Center, USA

Post Doctoral Fellow

January'2016-September'2016

Supervisor: Prof. Edmund J. Gosselin

Involved in development of recombinant peptide vaccine against deadly BSL-3 pathogen *Francisellatularancis*. In this study a recombinant protein molecule was generated fused with mannose binding protein 2 (MBL-2) and anti-hFcγ receptor. Then the protection efficacy of the vaccine was studied in the murine model using BSL-3 facility.

Indian Institute of Chemical Biology, Kolkata, India

Research Associate

January'2015- December'2015

Supervisor: Dr. Syamal Roy

Investigating the microRNA mediated immune regulation of host cell during *Leishmaniadonovani* infection. In this study first miRNA profiling of the *Leishmaniadonovani* infected vs. uninfected PECs (peritoneal exudate cells) from BALB/c mice was performed. Several miRNAs were found to be up-regulated among which three miRNAs were selected for further studies i.e. miR-30c, miR-33 and miR-155. We are now exploring how miR-155 regulates IFN-g-induced autophagy of the parasites through JAK-STAT signaling during *L. donovani* infection in mice model. We are also exploring how miR-30c and miR-33 regulate cholesterol and triglyceride homeostasis.

Research Interest: Oxidative Stress Biology of Visceral Leishmaniasis. Differential Proteomics, Diagnosis of Visceral Leishmaniasis (VL) and Post-KalaAzar Dermal Leishmaniasis (PKDL). Antimicrobial Peptide biology to develop new chemotherapeutic drugs against VL. Drug Resistance mechanism of Visceral Leishmaniasis, Bacteria.

Area of Teaching: General Microbiology, Molecular Biology, Recombinant DNA technology, Biochemistry and Biophysical Chemistry.

Publication:

1. Books/Chapters:

i) **A. H. Sardar**, S. Das and P. Das. Development of antimicrobial peptide based anti-leishmanial agents: current understandings and future perspective. 5th Microbiology Book Series titled "The Battle Against Microbial Pathogens: Basic Science, Technological Advances and Educational Programs". 2015, Formatex Research Center.

2. Articles:

i) **A. H. Sardar**, A. Jardim, A. K. Ghosh, A. Mandal, S. Das, S. Saini, K. Abhishek, R. Singh, S. Verma, A. Kumar, P. Das. Genetic Manipulation of *Leishmaniadonovani* to Explore the Involvement of Argininosuccinate Synthase in Oxidative Stress Management. *PLoS NTD*, 2016
doi.org/10.1371/journal.pntd.0004308. **Impact factor-4.45, Citation-0.**

ii) **A. H. Sardar**, S. Kumar, A. Kumar, B. Purkait, S. Das, A. Sen, M. Kumar, K. K. Sinha, D. Singh, A. Equbal, V. Ali, P. Das. Proteome changes associated with *Leishmaniadonovani* adaptation to oxidative and nitrosative stress. *Journal of Proteomics*. 81 (2013) 185-189. **Impact factor-3.986, Citation-35.**

iii) **A. H. Sardar**, S. Das, S. Agnihorti, M. Kumar, A. K. Ghosh, K. Abhishek, A. Kumar, B. Purkait, M. Y. Ansari, P. Das. Spinigerin induces apoptotic like cell death in a caspase independent manner in *Leishmaniadonovani*. *Experimental Parasitology*. 135 (2013) 715–725. **Impact factor-1.789, Citation-12.**

iv) A. K. Ghosh, **A. H. Sardar**, A. Mandal, S. Saini, K. Abhishek, A. Kumar, B. Purkait, R. Singh, S. Das, R. Mukhopadhyay, S. Roy and P. Das. Metabolic reconfiguration of the central glucose metabolism: a crucial strategy of *Leishmaniadonovani* for its survival during oxidative stress", *FASEB J*. 29, (2015) doi: 10.1096/fj.14-258624. **Impact factor-5.299, Citation-7.**

v) K. Abhishek, **A. H. Sardar**, S. Das, A. Kumar, A. K. Ghosh, R. Singh, S. Saini, A. Mandal, S. Verma, A. Kumar, B. Purkait, M. R. Dikshit and P. Das. Phosphorylation of translation initiation factor 2 alpha in *Leishmaniadonovani* under stress is necessary for parasite survival. *Molecular and Cellular Biology*, 2016, doi:10.1128/MCB.00344-16. **Impact factor-4.427, Citation-0.**

vi) A. K. Ghosh, S. Saini, S. Das, A. Mandal, **A. H. Sardar**, M. Y. Ansari, K. Abhishek, A. Kumar, R. Singh, S. Verma, A. Equbal, V. Ali, P. Das. Glucose-6-phosphate dehydrogenase and Trypanothione reductase interaction protects *Leishmaniadonovani* from metalloid mediated oxidative Stress. *Free Radical Biology and Medicine*, 106 (2017) 10–23. **Impact factor-5.784, Citation-0.**

vii) B. Purkait, A. Kumar, N. Nandi, **A. H. Sardar**, S. Das, S. Kumar, K. Pandey, V. N. Ravidas, M. Kumar, T. De, D. Singh and P. Das. Mechanism of Amphotericin B resistance in clinical isolates of *Leishmaniadonovani*. *Antimicrobial Agents and Chemotherapy*. 56 (2) (2012) 1031-41. **Impact factor-4.415, Citation-82.**

viii) A. Kumar, S. Das, B. Purkait, **A. H. Sardar**, A. K. Ghosh, M. R. Dikshit, K. Abhishek. Ascorbate Peroxidase: a key molecule regulating the Amphotericin B resistance in clinical isolates of *Leishmaniadonovani*. *Antimicrobial Agents and Chemotherapy*. 58(10) (2014) 6172-6184. **Impact factor-4.415, Citation-8.**

ix) S. Das, K. Pandey, A. Kumar, **A. H. Sardar**, B. Purkait, M. Kumar, S. Kumar, V. N. Ravidas, S. Roy, D. Singh and P. Das. TGF- β 1 re-programs TLR4 signaling in *L. donovani* infection: enhancement of SHP-1 and ubiquitin-editing enzyme A20. *Immunology and Cell Biology*. 90 (2012) 640-654. **Impact factor-4.473, Citation-18.**

x) B. Purkait, R. Sing, K. Wasnik, S. Das, A. Kumar, M. Paine, M. R. Dikshit, **A. H. Sardar**, A. K. Ghosh and P. Das. Up-regulation of Silent Information Regulator 2 is associated with Amphotericin B resistance in clinical isolates of *Leishmaniadonovani*. *J Antimicrob Chemother*, 2015, doi:10.1093/jac/dku534. **Impact factor-4.919, Citation-8.**

xi) A. Equbal, S. S. Suman, S. Anwar, K. P. Singh, A. Zaidi, **A. H. Sardar**, P. Das and Vahab Ali. Stage-Dependent Expression and Up-Regulation of Trypanothione Synthetase in Amphotericin B Resistant *Leishmaniadonovani*. *PLoS ONE* 9(6): e97600, 2014 doi:10.1371/journal.pone.0097600. **Impact factor-4.411, Citation-8.**

xii) A. Mandal, S. Das, S. Roy, A. K. Ghosh, **A. H. Sardar**, S. Verma, S. Saini, R. Singh, K. Abhishek, A. Kumar, C. Mandal, P. Das. Deprivation of L-Arginine Induces Oxidative Stress Mediated Apoptosis in *Leishmaniadonovani* Promastigotes: Contribution of the Polyamine Pathway. *PLoSNTD*. 2016, doi.org/10.1371/journal.pntd.0004373. **Impact factor-4.45, Citation-2.**

xiii) S. Saini, A. K. Ghosh, R. Singh, S. Das, K. Abhishek, A. Kumar, S. Verma, A. Mandal, **A. H. Sardar**, B. Purkait, A. Kumar, K. K. Sinha, P. Das. Glucose deprivation induced upregulation of phosphoenolpyruvate carboxykinase modulates virulence in *Leishmaniadonovani*. *Molecular Microbiology*, 2016, DOI: 10.1111/mmi.13534. **Impact factor-3.761, Citation-0.**

xiv) R. Singh, B. Purkait, K. Abhishek, S. Saini, S. Das, S. Verma, A. Mandal, A. K. Ghosh, Y. Ansari, A. Kumar, **A. H. Sardar**, A. Kumar, P. Parrack and P. Das. Universal minicircle sequence binding protein of *Leishmaniadonovani* regulates pathogenicity by controlling expression of cytochrome-b. *Cell & Bioscience*. 2016, 6:13. DOI: 10.1186/s13578-016-0072-z. **Impact factor-2.883, Citation-3.**

xv) S. Kumar, R. Banerjee, N. Nandi, **A. H. Sardar** and P. Das. Anokis Potential of *Entamebahistolytica* Secretary Proteins Cysteine proteases: Evidence of Contact independent Host Cell Death. *Microbial Pathogenesis*. 52 (1) (2012) 69-76. **Impact factor-1.795, Citation-3.**

xvi) D. Singh, K. Pandey, V. N. R. Das, S. Das, N. Verma, A. Ranjan, S. C. Lal, R. K. Topno, S. K. Singh, R. B. Verma, A. Kumar, **A. H. Sardar**, B. Purkait and P. Das. Evaluation of rk-39 strip test using urine for diagnosis of Visceral Leishmaniasis in an endemic region of India. *Am. J. Trop. Med. Hyg.* 88(2) (2013) 222-226. **Impact factor-2.740, Citation-10.**

3. Communications:

4. Reviews:

5. Seminars/ workshop/ conference publication/ proceedings/ journals/ volumes:

RESEARCH SYMPOSIA ATTENDED

- i) National Symposium on Oxidative Stress in Health and Disease. 30-31st March' 2017. Department of Biochemistry & Biophysics, University of Kalyani, Kalyani, West Bengal.
- ii) 81st Annual Symposium of Society for Biological Chemist (SBC-2012), 8-11 Nov'2012, Kolkata, India.
- iii) 4th Annual Symposium of Canadian National Proteomics Network, April 23-25, 2012, Toronto, Canada.
- iv) 4th Bihar Vigyan Congress at Indira Gandhi Planetarium, 2011, Patna, India.

ABSTRACTS PUBLISHED IN PROCEEDINGS/SYMPOSIA

1. **A. H. Sardar**, K. Abhishek and P. Das. Genetic Manipulation of *Leishmaniadonovani* to Explore the Involvement of Peroxiredoxin in Oxidative Stress Management. National Symposium on Oxidative Stress in Health and Disease. 30-31st March' 2017. Department of Biochemistry & Biophysics, University of Kalyani, Kalyani, West Bengal.
2. **A. H. Sardar**, S. Kumar, A. Jardim, P. Das et. al. "iTRAQ chemistry explore the proteome changes associated *Leishmaniadonovani* promastigote adaptation to oxidative and nitrosative stress at the 81st Annual Symposium of Society for Biological Chemist (SBC-2012), 8-11 Nov'2012, Kolkata, India.
3. **A. H. Sardar**, S. Kumar, A. Kumar, A. Jardim, P. Das et. al. "Proteome changes associated *Leishmaniadonovani* promastigote adaptation to oxidative and nitrosative stress" at the 4th Annual Symposium of Canadian National Proteomics Network, April 23-25, 2012, Toronto, Canada.
4. **A. H. Sardar**, S. Kumar, K. K. Sinha, D. Singh, P. Das et. al. "Proteome profiling explores metabolic changes to adapt *Leishmaniadonovani* on exposure to oxidative and nitrosative stress" at the 4th Bihar Vigyan Congress at Indira Gandhi Planetarium, 2011, Patna, India.
5. **A. H. Sardar**, S. Kumar, K. K. Sinha, D. Singh, P. Das et. al. *Leishmaniadonovani* argininosuccinate synthase is an active enzyme, partially protects parasite from oxidative stress. National Seminar-2013 at NIPER-Hajipur, Patna.
6. A. Kumar, **A.H. Sardar**, M.R. Dikshit, Singh, P. Das et. al. "Ascorbate peroxidase over expression protects drug resistance *L. donovani* cells against reactive oxygen species mediated auto-oxidation of Amphotericin-B" at the Antimicrobial Resistance conference, 6th-8th Feb'2012, Allahabad, India.
7. B. Purkait, A. Kumar, **A. H. Sardar**, S. Das, P. Das et. al. "Amphotericin-B resistance mechanism in clinical isolates of *L. donovani*" at the Antimicrobial Resistance conference, 6th-8th Feb'2012, Allahabad, India.
8. S. Agnihorti & **A. H. Sardar**, S. Das, D. Singh and P. Das et. al., "The cationic AMP spinigerin induces apoptotic like cell death in a caspase independent manner in *Leishmaniadonovani*" at the 4th Bihar Vigyan Congress at Indira Gandhi Planetarium, 2011, Patna, India.
9. Sen, A. Kumar, S. Das, **A. H. Sardar**, B. Purkait, N. Nandi and P. Das "20S Proteasome beta subunit and Amastin are important factors for survival and pathogenesis of leishmaniasis: A DNA microarray study" at Tropacon' 16-19 Nov'2009 at PGIMER, Chandigarh, India.
10. B. Purkait, N. Nandi, A. Kumar, **A. H. Sardar**, S. Kumar, P. Das. "Analysis of the involvement of thiol metabolic pathway in Amb resistant mechanism for *Leishmaniadonovani*." At the 4th Workshop of the Seattle-India Joint Research Training Programme "Research Training on Intracellular Pathogens" 2-7 Feb' 2010, Goa.
11. A. K. Ghosh, **A. H. Sardar**, A. Kumar, A. Mandal, S. Das, B. Purkait, R. Singh and P. Das. "Pentose Phosphate Pathway: A key metabolic module that saves *Leishmaniadonovani* from oxidative stress. National Seminar-2013 at NIPER-Hajipur, Patna.
12. A. K. Ghosh, **A. H. Sardar**, A. Kumar, S. Das, A. Mandal, K. Abhishek, S. Saini, B. Purkait, and P. Das. Metabolic reconfiguration in the central glucose metabolism: A crucial strategy of *Leishmaniadonovani* for its survival during oxidative stress. Tropacon-2013, Lucknow, India
13. S. Saini, **A.H. Sardar**, B. Purkait, A. K. Ghosh, R. Singh, Kr. Abhishek, A. Mandal, S. Verma and P. Das. "Studies on the involvement of Gluconeogenic flux in the *Leishmaniadonovani* survival under nutrient stress conditions". Tropacon-2013, Lucknow, India.
14. S. Verma, S. Das, **A H Sardar**, B. Purkait, A. K. Ghosh, A. Mandal, R. Singh, S. Saini, K. Abhishek, Ajay Kumar, P. Das. Role of Inhibitor of serine proteases (ISPs) of *L. donovani* in its survival. International Conference on host Pathogen Interaction (ICHPI), 12-15 July'2014, NIAB, Hyderabad, India.
15. S. Saini, **A. H. Sardar**, A. K. Ghosh, R. Singh, K. Abhishek, S. Verma, A. Mandal, B. Purkait, A. K. Jha and P. Das. Metabolic adaptation in *Leishmaniadonovani* under nutrient starvation. International conference on host pathogen interaction (ICHPI), 12-15 July'2014, NIAB, Hyderabad, India.

Gene Sequences Submitted in NCBI

1. *Leishmaniadonovani* oleatedesaturase mRNA, partial cds., Kumar, M., Sinha, K., **Sardar, A. H.** and Das, P. (ACCESSION HM454284).
2. *Leishmaniadonovani* NAD-dependent histone deacetylase silent information regulator 2 (Sir2RP) mRNA, complete cds. Purkait, B. Kumar, A. **Sardar, A. H.** Das, S. Kumar, M. and Das, P. (ACCESSION JN621326),
3. *Leishmaniadonovani* thioredoxin mRNA, complete cds., Purkait, B. Kumar, A. **Sardar, A. H.** Das, S. Kumar, M. and Das, P. (ACCESSION JQ796816).
4. *Leishmaniadonovani* ascorbate peroxidase (APx) mRNA, complete cds., Kumar, A. Purkait, B. **Sardar, A. H.** Das, S. Kumar, M. and Das, P. (ACCESSION JN802370).

v) **Patents:**

Projects:

a. **Completed:**

Name and Funding agency	Project Title	Duration/Year	Funding amount(Rs.)	Status/Remarks

b. **Ongoing/ current :**

Name and Funding agency	Project Title	Duration/Year	Funding amount(Rs.)	Status/Remarks
DST-SERB-TARE, Govt. Of India	Study the role of microRNA in the regulation of hypertriglyceridemia associated with active VL cases	3 years	18 lakhs 30 thousands	Ongoing

Ph. D Guidance/ Supervision:

Other Experiences: Post Graduate teaching at this College, or other college(s) / as Resource person / DDE teaching etc.

Technical experiences:

Immunology: Handling mice models (C57BL/6 and BALB/c) and different macrophage cell lines (J774, THP-1), ELISA, ELISPOT, working with PBMCs.

Microscopy: Fluorescence microscopy; Phase contrast microscopy.

Molecular Biology: Microarray; Vector construction and cloning of gene; Isolation DNA and RNA from protozoa and other types of cells; Plasmid DNA isolation; Transformation of bacteria; Expression of recombinant protein; Site-directed mutagenesis, generation of knock-out strains, Western blot; Northern Blot; Southern Blot; PCR; Semiquantitative PCR; Realtime PCR; DNA sequencing using automated DNA sequencer; Transfection by electroporation in Bacteria and Protozoa and other commonly used Molecular Biology techniques.

Biochemistry: Protein isolation and purification, 2-D Gel Electrophoresis, Quantitative proteomics (Mass Spectroscopy, large scale proteome data analysis), Enzyme assay, HPLC, FPLC, SDS and native polyacrylamide gel electrophoresis.

Spectroscopy: Ultraviolet, fluorescence, visible absorption; Spectrofluorimetry.

Invited Lecture:**Other prestigious/ distinguished Post holding:****Membership of Learned Societies:**

- a) Annual Member of “The Indian Science Congress Association” for the year 2017-2018.
- b) Annual Member of the “Association of Microbiologists of India” for the year 2017-2018.
- c) Student member of the “Canadian National Proteomics Networks” for the year 2012

Other notable activities: (i) Convener of Ph. D. Committee/(ii) Coordinator/In charge of Instrument/ Projects, / (iii) Reviewer of various journals like: (a) ACS journals – Inorganic Chemistry; (b) RSC journals – / (iv) Examiner of Ph. D. thesis of other University / IIT./ (v) Reviewer of various Books/ Chapter/ Publisher / (vi) Officer/ Member of NCC/ NSS, (vii) Member of the Governing Body of Sarsuna College and/ or Other college(s) / (viii) Editor of College journals/ Magazine/ (viii) Chairman / Head of any selection committee.

Other notable activities: NSS member of Sarsuna College NSS committee.

Award/ Scholarship/ Fellowship:**Albany Medical Center, Albany, New York, USA**

Post Doctoral Fellow (NIH Grant)

2016

McGill University, Institute of Parasitology, Macdonald campus, Canada

Canadian Commonwealth Fellow

2011-2012

Canadian National Proteomics Travel Award

2012

Rajendra Memorial Research Institute of Medical Sciences, India

Senior Research Fellow

(Intramural Project, funded by Indian Council of Medical Research)

2012-2014

Senior Research Fellow

(LEISHDNAVAX project, Funded by European Commission)

2010-2012