



# Sulagna Dutta Ph.D.

Lecturer, Physiology  
MAHSA University, Malaysia

**Major** Physiology

**Master specialization** Immunology and Microbiology

**Doctoral specialization** Immunology

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**Phone** +60-176-369651 (Malaysia)

**Date of Birth** April-18-1987

## EDUCATION

- PhD in Physiology (Immunology), University of Calcutta, India, November 2016
- Qualified National Eligibility Test (NET) for Lectureship in June 2011
- MSc in Physiology (Immunology and Microbiology), University of Calcutta, India, July 2011 (ranked 3<sup>rd</sup> with First Class and Grade 'A+' in Physiology)
- BSc in Physiology (Honors), University of Calcutta, 2009 (obtained First Class)

## RESEARCH INTEREST

Immunology, Microbiology, Infectious Diseases, Inflammation, Reproductive Toxicology, Reproductive Immunology, Male and Female Infertility

## RESEARCH EXPERIENCE

April, 2012 – November, 2016

**(Ph. D. Project)**

**Senior Research Fellow,**  
SRF, awarded by UGC  
(2014-2016);

**Junior Research Fellow,**  
JRF, awarded by UGC  
(2012-2014)

Physiology (Immunology), University of Calcutta, Kolkata, India.

**Dissertation Title:** EFFECTS OF ANTIBIOTICS and INHIBITION OF ENDOGENOUS NITRIC OXIDE AND PROSTAGLANDIN PRODUCTION ON *Staphylococcus Aureus* INFECTION INDUCED SEPTIC ARTHRITIS IN MICE

**Summary:** *Staphylococcus aureus* (*S. aureus*) is an intensely studied organism to cause septic arthritis. Endogenous nitric oxide (NO) and prostaglandins (PG) are involved in the progression of inflammatory diseases. This study aims at using antibiotics to mitigate the bacterial burden in mice infected with pathogenic strain of *S. aureus* which is combined with the *in vivo* inhibition of NO and PG levels via aminoguanidine (AMG) and meclofenamic acid (MFA) respectively to modulate the inflammatory conditions in bacterial arthritis. Synergy between the drugs was performed via Checkerboard. The clinical signs of septic arthritis were recorded on 3<sup>rd</sup>, 9<sup>th</sup> and 15<sup>th</sup> days post-infection (DPI) by assessing the induction of arthritis and measuring bacterial density (CFU count) in blood, spleen and synovial tissue, serum uric acid, creatinine, NO and cytokines (TNF- $\alpha$ , IFN- $\gamma$ , IL-6, IL-10) levels, myeloperoxidase (MPO) and lysozyme activities in synovial tissue and histopathological examinations of the synovial joints. *S. aureus* infection showed significant increase in bacterial densities, synovial tissue enzyme activities and blood parameters, which significantly correlated with induction of arthritis. Diminution of *S. aureus* burden in tissues via antibiotics and suppression of inflammation by AMG or MFA may have shown a visibly potent therapeutic remedy to combat septic arthritis.

June, 2010 – July, 2011

**(M. Sc. Project)**

Physiology (Specialization: Immunology and Microbiology), University of Calcutta, India (**Ranked 3<sup>rd</sup> in University of Calcutta with First Class**)

**Dissertation Title:** GENTAMICINE ALONE OR IN COMBINATION WITH ASCORBIC ACID MODULATES *Staphylococcus aureus* INFECTION INDUCED SEPTIC ARTHRITIS IN MICE

**SUMMARY:** To study the effects of gentamicin in combination with ascorbic acid on septic arthritis, mice were infected with *Staphylococcus aureus* (*S. aureus*) followed by gentamicin administration (5mg/kg body weight), after 24 h of infection, that was followed by ascorbic acid administration (20mg/kg body weight), 2-hour post gentamicin treatment. Mice were sacrificed at 3, 9 days' post infection. Combined treatment of infected mice with gentamicin and ascorbic acid eradicates the bacteria from the blood, spleen and synovial tissue and showed a significant gross reduction in arthritis, reduced serum levels of tumor necrosis factor alpha and interferon gamma. *S. aureus* infected mice have demonstrated the disturbed antioxidant status measured in terms of cellular antioxidants like reduced glutathione and anti-oxidant enzymes such as superoxide dismutase and catalase and were ameliorated when the animals were co-treated with Gentamicin along with ascorbic acid.

February , 2009 – April, 2009  
(B. Sc. Projects)

Honours in Physiology, University of Calcutta, India. **(First Class)**  
**Dissertation Title :** “Comparative Study on Physiological Parameters of the Tribal People of Araku Valley With Residents of Serampore Town”

## TEACHING EXPERIENCE

**Lecturer** Physiology, Faculty of Science, Lincoln University College, Malaysia

May, 2017 – December, 2017

- **Involvement in different academic programs**

1. Physiology (Bachelors)
2. Master of Medical Sciences

- **Supervising project works**

Guided Masters’ and Bachelors’ students’ projects

**Lecturer**

Department of Physiology, Serampore College, University of Calcutta, Kolkata

September, 2011 – May, 2017

- **Involvement in different academic programs**

3. Physiology (Masters)
4. Physiology (Bachelors : Honours)
5. Physiology (Bachelors : General Course)

- **Supervising project works**

Guided students in graduation and post graduation projects in Physiology

## PROJECTS GUIDED

**2017 (Post graduate Level)**

Analysing final year Medical Assistant Officer student in KSKBJB on their knowledge of the effectiveness in crisis prevention and intervention for schizorphenia

**2012 (Under graduate level)**

Assessment of physical fitness and health status of young Fishermen of Araku Valley, Andhra Pradesh, India

**2011 (Under graduate level)**

Evaluation of weight status, physical fitness and health profile of female tea-garden workers in Dooars, West Bengal, India

## UNIVERSITY EXAMINER

**Examiner** Internal Examiner, MD (Physiology), Faculty of Medicine, Lincoln University College, Malaysia  
May, 2017 – Present

**Examiner** Internal Examiner, B. Sc. Honours (Biomedical Sciences), Faculty of Science, Lincoln University College, Malaysia  
May, 2017 – Present

**Examiner** Internal Examiner, B. Sc. Honours and General Examinations (Physiology), Serampore College, University of Calcutta, Kolkata  
September, 2011 – May, 2017

## PROFICIENCY IN LABORATORY TECHNIQUES

**Animal Handling & Pharmacology** Toads: Maintenance, Pithing, Isolated amphibian heart preparation, Nerve muscle preparation.  
Rats and mice: Maintenance, Feeding, Surgery, Treatment through intraperitoneal, intramuscular, oral routes. Histology of different tissues of rats.

**Immunology Techniques**

- Precipitation and agglutination reactions
- Technique of handling mice, rat and rabbit
- Intra-peritoneal and intravenous injections of mice and rat
- Isolation of murine splenic macrophage and peritoneal macrophage
- Assessment of Murine macrophage functions;
- Animal experiments for testing virulence of strain of bacteria
- Separation of human lymphocyte, monocytes and neutrophils
- ELISA
- Cytokine assays
- Determination of oxidative stress parameters
- PCR
- Blotting
- FACS

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- Microbial Techniques**
- Staining of bacteria, fungi
  - Isolation of bacteria from mixed culture
  - Bacterial culture, planting, counting
  - Bacterial growth curve and generation time
  - Determination of MIC of antibiotics
  - Determination of antibiotic resistance by DAD
  - Characterization organism by ureas production activity and nitrate reductase activity
  - Isolation of genomic DNA from Bacterial cell
  - PCR
  - Gel electrophoresis, SDS PAGE
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**Biochemical Techniques** Biochemical parameters analysis from blood, serum, tissue & urine.  
*In vivo* and *In vitro* studies on antioxidant parameters (Total anti-oxidant assay, SOD, Lipid peroxidation, Catalase) by Spectrophotometry.

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**Public Health Research** Physiological and Anthropometric experiments

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- Other techniques**
- Experimental physiology involving kymographic experiments
  - Clinical Biochemistry
  - Applied physiology
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## PUBLICATIONS

1. **Dutta S**, Majzoub A, Agarwal A. Oxidative stress on sperm functions : evaluation and management. *Arab J Urol* : Accepted.
  2. Darbandi M, Darbandi S, Agarwal A, Baskaran S, Sengupta P, **Dutta S**, Khorshid HRK, Esteves S, Gilany K, Hedayati M, Nobakht F, Akhondi MM, Lakpour N, Sadeghi MR. Role of keap 1 gene methylation in oxidative stress-induced alterations in seminal plasma antioxidants - Mystery unraveled. *Andrology* **2018**: Communicated.
  3. Darbandi M, Darbandi S, Agarwal A, Baskaran S, **Dutta S**, Sengupta P, Khorshid HRK, Esteves S, Gilany K, Hedayati M, Nobakht F, Akhondi MM, Lakpour N, Sadeghi MR. Reactive oxygen species-induced alterations in H19-Igf2
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methylation patterns, seminal plasma metabolites and semen quality. *Hum Reprod* **2018**: Communicated.

4. Darbandi S, Darbandi M, Agarwal A, Khorshid HRK, Sadeghi MR, Esteves S, Sengupta P, **Dutta S**, Fathi Z, Zeraati H, Akhondi MM. Comparison of germinal vesicle transfer, synchronous ooplasmic transfer and asynchronous ooplasmic transfer for reconstruction of human aged non-surrounded nucleolus germinal vesicle (NSN-GV) oocytes. *Hum Reprod* **2018**: Communicated.
5. Dutta S, **Sengupta P**. Mapping the age of laboratory rabbit models to humans. *Revista ABCD* : Communicated.
6. **Dutta, S.** and Sengupta, P. Rabbits and men: relating their ages. *Journal of basic and clinical physiology and pharmacology* **2018**.
7. Sengupta, P. and **Dutta, S.** Thyroid Disorders and Semen Quality. *Biomedical and Pharmacology Journal* **2018**, *11*(1), pp.01-10.
8. Sengupta P., **Dutta S.**, Tusimin, M.B., Irez, T. and Krajewska-Kulak, E. Sperm counts in Asian men: Reviewing the trend of past 50 years. *Asian Pacific Journal of Reproduction* **2018** : 7(2), p.87.
9. **Dutta, S.** and Sengupta, P., Medicinal herbs in the management of male infertility. *Journal of Pregnancy and Reproduction* **2018**.
10. **Dutta, S.** and Sengupta, P., 2017. Defining pregnancy phases with cytokine shift. *Journal of Pregnancy and Reproduction* **2017**.
11. **Dutta S**, Sengupta P. Yoga escalates female reproductive health during pregnancy. *J Preg Reprod* **2017**:1(3) :1.
12. Sengupta P, Nwagha U, **Dutta S**, Krajewska-Kulak E, Izuka E. Evidence of decreasing sperm count in African population during past 50 years. *African Health Sciences* **2017** ; 17(2) :418-427.
13. Sengupta P, Borges Jr E, **Dutta S**, Krajewska-Kulak E. Decline in sperm count in European men during the past 50 years. *Hum Exp Toxicol* **2017**.

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14. Sengupta P, **Dutta S**, Krajewska-Kulak E. The disappearing sperms : analysing the reports published between 1980 and 2015. *Am J Men's Health* **2016**;DOI:10.1177/1557988316643383
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15. **Dutta S**, Bishayi B. Combination treatments using aminoguanidine or meclofenamic acid in presence of vancomycin modulates infections caused by *Staphylococcus aureus* induced septic arthritis in mice. *Asian J Phar Clin Res* **2016**; 6:355-361.
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16. **Dutta S**, Sengupta P. Men and mice: relating their ages. *Life Sciences* **2016**;152 :244-248.
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17. **Dutta S**, Bishayi B. Effects of ciprofloxacin in combination with either aminoguanidine or meclofenamic acid in modulating *S. aureus* induced septic arthritis in mice. *Int J Pharm Pharm Sci* **2015**; 7:355-361.
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18. Mal P, **Dutta S**, Bandyopadhyay D, Dutta K, Basu A, Bishayi B. Gentamicin in Combination with Ascorbic Acid Regulates the severity of *Staphylococcus aureus* Infection-Induced Septic Arthritis in Mice. *Scand J Immunol* **2012**; 76:528-540.
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#### AUTHOR OF BOOK CHAPTERS

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1. **Dutta S**, Sengupta P. Chapter 4: Common foods and functional foods: their association with cancer. In '*Functional Foods and Cancer: Cancer Biology and Dietary Factors*', First Edition, Textbook, Volume 3. Martirosyan DM and Zhou JR. ISBN-13: 978-1975761462, ISBN-10: 978-1975761462. Functional Food Centre, USA, September, **2017**.
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2. Sengupta P, **Dutta S**. Chapter 99: Metals. In '*Encyclopedia of Reproduction*', Volume 1 - Male Reproduction. Elsevier, USA, January **2018**.
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#### CONFERENCES / WORKSHOPS / TRAININGS

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1. Darbandi S, Darbandi M, Agarwal A, **Dutta S**, Sengupta P, Sadheghi M, Akhondi M. Oxidative stress induced alterations in seminal plasma antioxidants : is there any association with Keap1 gene methylation in human spermatozoa. Oral Presentation, American Society for Reproductive Medicine 2018 Scientific Congress and Expo :
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'Focus on the next generation', Denver, Colorado, United States, 6-10 October, 2018.

2. Participated in the Malaysian Society of Pharmacology and Physiology (**MSPP**) Teachers Refresher Course 2017.
3. Attended a Lecture in Physiology by Prof Waltar F. Boron on 'Cross-organ principles in Physiology' at Faculty of Medicine, University Malaya on 18th August, 2017.
4. Participated in Teacher's Prize in Physiology, 2017, organized by Malaysian Society of Physiology and Pharmacology (MSPP) at Faculty of Medicine, University Technology MARA (UiTM) on 11st August, 2017.
5. Presented Poster entitled "**Vancomycin alone or in the presence of aminoguanidine modulates *S. aureus* infection induced septic arthritis in mice**" in the *Immunocon* Conference 2015, Patna.
6. Participated at International Conference on Molecules to System Physiology-100 Years Journey- ICMSP 100- Closing ceremony at University of Calcutta on August 28, 2015.
7. Presentation entitled "***Immune Responses Contribute to Hypertension***" in the National Seminar, Socio-Medical National Seminar on Hypertension and its complications, by Indian Medical Association, on July 27, 2013.
8. Participated at the National Science Day symposium on February 28, 2013, organized by ISCA (Indian Science Congress Association).
9. Presented Poster entitled "**Studies on the effects of meclofenamic acid (MFA) ON *Staphylococcus aureus* induced bacterial arthritis in mice**" in the AMI Conference, Bhubaneswar, November, 2012.
10. Presented Poster entitled "**Studies on the effects of aminoguanidine on *Staphylococcus aureus* induced bacterial arthritis in mice**" at the 1st International Meet on Advanced Studies on Cell Signaling Network (CeSiN) at IICB, Kolkata, September, 2012
11. Participated at the seminar organized by Indian Academy of Neuroscience (IAN) on September 11, 2012 at University College of Science and Technology.
12. Participated at symposium, "World Environment Day", organized by Indian Science Congress Association (ISCA) on June 5, 2012.
13. **National Workshop for College Teachers on Flow Cytometry, Cell Sorting and Imaging in Biological Research** in Centre for Nanoscience and Nanotechnology, University of Calcutta, Calcutta.
14. Presented Poster at the International Conference on Molecules to System Physiology, 2011, at the



department of Physiology, University of Calcutta.

15. Presented in the Seminar on Use of Cosmetics, National Environment Science Academy (NESA), West Bengal Chapter, at Bose Institute Auditorium on September 18, 2010.

16. Participated in the DST(W.B) sponsored National Conference on Biodiversity organized by the Bio-Science Departments of Serampore College, February 13<sup>th</sup> and 14<sup>th</sup>, 2009.

17. Participated in the programme, "About Ourselves" on Reproductive and Sexual Health and Rights, designed by the Kolkata based social organization, "Sanhita", on December 10, 2008.

## RESEARCH / ACADEMIC ACHIEVEMENTS

**2012** Awarded with **University Research Fellowship (URF)** by UGC, India, effective since 27<sup>th</sup> July, 2012.

**2011** **Qualified in the joint CSIR-UGC (National Eligibility Test) NET Examination for Lectureship on June, 2011** – from Council of Scientific and Industrial Research (CSIR), India.

**2011** Ranked **3<sup>rd</sup> with First Class in University of Calcutta, in M. Sc. (Physiology)**.

## PROFESSIONAL AFFILIATIONS

**Life Memberships** Immunological Society of India

Indian Science Congress Association (ISCA)

Physiological Society of India, Kolkata (PSI)

**Ordinary Memberships** Malaysian Society for Physiologists and Pharmacologists (MSPP)