

## BIOGRAPHICAL SKETCH

NAME <b>Asit K. Saha</b>	POSITION TITLE <b>Assistant Professor</b>		
eRA COMMONS USER NAME (credential, e.g., agency login)			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
University of Calcutta, Calcutta, India	BSc	1980	Mathematics
Jadavpur University, Calcutta, India	MSc	1984	Applied Mathematics
Jadavpur University, Calcutta, India	PhD	1990	Applied Mathematics
University of South Australia, Adelaide, Australia	PhD	2007	Tissue Engineering

### A. Positions and Honors

#### Positions and Employment

1984	<b>Junior Research Fellow.</b> Burdwan University, Department of Mathematics, India.
1984 – 1989	<b>Research Fellow.</b> Indian Statistical Institute, Calcutta, India.
1989 – 1990	<b>Scientist.</b> H.C. Orsted Institute, University of Copenhagen, Denmark.
1990 – 1991	<b>Senior Technical Assistant.</b> Indian Statistical Institute, Calcutta, India.
1991 – 1995	<b>Lecturer (Assistant Professor).</b> Indian Statistical Institute, Calcutta, India.
1995 – 1997	<b>Scientist.</b> AgResearch, Wallaceville Animal Research, Upper Hutt, New Zealand.
1997 – 1998	<b>Head,</b> Department of Mathematics, Rangitahi College, Murupara, New Zealand.
1999	<b>Visiting Research Fellow.</b> Department of Physics, Auckland University, Auckland, New Zealand.
2000 – 2002	<b>Secondary Teacher.</b> Education Department of Western Australia, Perth, Australia.
2001 – 2002	<b>Tutor.</b> Department of Mathematics and Statistics, University of Western Australia, Perth, Australia.
2002 – 2003	<b>Post-doctoral Research Fellow.</b> Industrial Research Institute, Swinburne University of Technology, Melbourne, Australia.

- 2003 – 2004      **Visiting Research Fellow.** School of Mathematical Sciences, Swinburne University of Technology, Melbourne, Australia.
- 2004 – 2005      **Senior Lecturer.** Department of Mathematics, University of Papua New Guinea, Port Moresby, Papua New Guinea.
- 2006                **Lecturer.** School of Mathematics and Statistics, Curtin University of Technology, Bentley, Australia.
- 2006 – 2007      **Senior Research Associate.** School of Biomedical Engineering, Case Western Reserve University, Cleveland, OH.
- 2007 – present    **Assistant Professor.** Central State University, Department of Mathematics and Computer Science, Wilberforce, OH.

### **Honors**

- Best Journal paper award from University of South Australia, Australia, 2006  
 Best Journal paper award from University of South Australia, Australia, 2004  
 Research Scholarship from Danish Natural Science Research Council, Denmark, 1989  
 Research Scholarship from Carlsberg Research Foundation, Copenhagen, Denmark, 1990

### **Special Professional Activities**

- Associate Editor: International Journal of Applied Mathematics and Statistics, 2004-2005  
 Reviewer: Australian Research Council (ARC) – Discovery Projects, 2005-2007  
 Member: Academic Council, Indian Statistical Institute, India (1994-95)

### **B. Selected peer-reviewed publications (in chronological order).**

1. *Pattern Formation and Morphogenesis - A Reaction Diffusion Model.* P. K. Tapaswi and A. K. Saha, Bulletin of Mathematical Biology, vol: 48, pp:213-228, Pergamon Press, USA, 1986.
2. *Pattern Generation and Morphogenesis – A Bifurcation Analysis.* P.K.Tapaswi and A. K. Saha, Mathematical and Computer Modelling, 8, pp: 599-603, Pergamon Press, USA, 1987.
3. *Model for Epigenetic Mechanism During Embryogenesis: A Study of Oscillations in Multi-loop Biochemical Control Network.* A. K. Saha and P. K. Tapaswi, International Journal of System Sciences, Vol: 19, p: 1699-1718, Taylor and Francis Inc., USA, 1988.
4. *Study of Non-Linear Oscillations In Epigenetic System During Embryogenesis.* A. K. Saha and P. K. Tapaswi. Proceedings of the International Symposium on Non linear Analysis and Applications to Bio-Mathematics, in collaboration with International Centre for Theoretical Physics, Italy and Andhra University, India, pp: section II, 34-41, 1988.
5. *Oscillations in a Multi-loop Negative Feed-back Control Network Model for Transcription and Translation During Embryogenesis.* A. K. Saha and P. K. Tapaswi, Applied Mathematical Modelling, vol: 13, pp: 574-583, Butterworth Publishers, USA, 1989.
6. *Pattern Generation In Reaction Diffusion Systems(Turing Structures).* A. Hunding and A. K. Saha, Models of Self-Organisation in Complex Systems, Mathematical Research, Vol: 64, pp: 142-147, ed. by W. Ebeling, M.Peschel and W. Weidlich, Akademie-Verlag, Berlin, 1991.

7. *A Stochastic Reaction Diffusion Model of the Epigenetic Mechanism: Study of Localized Fluctuations.* A. K. Saha and P. K. Tapaswi, Cybernetica, vol: XXV, pp:181-193, Belgium, 1992.
8. *Bifurcating Pattern Formation During Cellular Differentiation and Morphogenesis.* A. K. Saha and P. K. Tapaswi, Cybernetica, Vol: XXVI, pp:245-262, Belgium, 1993.
9. *Concept of Imposed Gradient on Embryonic Development.* A. K. Saha, Proceedings of RC-IEEE Engineering in Medicine and Biology Society, pp: 2.105-2.106, 1995.
10. *Effect of Pre-assigned Gradient on Pattern Formation and Morphogenesis During Embryogenesis.* A. K. Saha. Mathematical and Computer Modelling, Vol: 24, No: 12, pp:49-65, Pergamon Press, USA, 1996.
11. *Immune System Functions - A Simple Mathematical Approach.* A. K. Saha and S. N. Sarbadhikari, Cybernetica, XL, No: 1, pp: 79-89, Belgium,1997.
12. *The Asymptotic Behaviour of a LogisticEpidemic Model with Stochastic Disease Transmission (1999).* M. G. Roberts and A. K. Saha, Applied Mathematics Letters, 12, pp: 37-41, 1999.
13. *Effect of Environmental Fluctuations on the Dynamic Composition of Engineered Cartilage – A Deterministic Model in Stochastic Environment.* A.K.Saha and J. N. Mazumdar and Y. S. Morsi, IEEE Transactions on NanoBioscience, 2, pp: 158-162, 2003.
14. *Dynamics of Cell and its Extracellular Matrix – A simple Mathematical Approach.* A. K. Saha and J. N. Mazumdar, IEEE Transactions on NanoBioscience, 2, pp:89-93, 2003.
15. *Modeling of HIV mediated derangement of Immune System Dynamics.* S.N. Sarbadhikari, A. K. Saha & M. Singh , Proceedings of the National Conference on Nonlinear Systems & Dynamics, IIT, Kharagpur, India, 28-30 December 2003, pp: 197-200.
16. *Prediction of Growth Factor Effects on Engineered Cartilage Composition – Using Deterministic and Stochastic Modelling.* A.K. Saha , J.N. Mazumdar and S.S. Kohles, Annals of Biomedical Engineering, Vol. 32, No. 6, June 2004 (©2004) pp. 871–879.
17. *Dynamic Matrix Composition in Engineered Cartilage with Stochastic Supplementation of Growth Factors.* A. K. Saha and J. N. Mazumdar , S.S. Kohles, Australasian Journal of Engineering & Physical Sciences, (APESM), Vol. 28, No: 2, pp: 97-104, 2005.
18. *HIV Deranges Immune System Dynamics through Stochastic Fluctuations.* A. K. Saha and S. N. Sarbadhikari, International Journal of Applied Mathematics and Statistics (IJAMAS), Vol. 3, No: J05, pp: 52-81, 2005.
19. *Moderate exercise and chronic stress produce counteractive effects on different areas of the brain by acting through various neurotransmitter receptor subtypes: a hypothesis.* S. N. Sarbadhikari and A. K. Saha , Theoretical Biology and Medical Modeling, 3:33, 2006.

## C. Research Support.

### Active

Research Challenge Grant from Central State University on “Dynamics of CD4+T-cells and HIV” (2007-08)  
Research Grant from RIMI, NIH on Cell-extracellular Matrix Interactions in the Development of Tissue Engineered Cartilage. 2008-2013).

Center for Allaying Health Disparities through Research and Education. Research Infrastructure in Minority Institutions, National Center on Minority Health and Health Disparities, National Institutes of Health. 2008  
About 10% of the population is suffering some kind of joint disease in the world due to cartilage damaged. Our aim is to investigate the cell-extracellular matrix interactions in cartilage which is absolutely necessary to develop an alternate cartilage tissue by Tissue Engineered procedure.

**Research Interests:** Mathematical and computational biology through system science approaches in the following fields – embryonic pattern formation and morphogenesis; human immune system and HIV-AIDS; knowledge based tissue engineering; stress related disorders in the brain; integrated metabolic pathways; and epidemiology.