Subhas Khajanchi

Assistant Professor
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Presidency University,
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PRESIDENCY UNIVERSITY
KOLKATA

EXCELLENCE SINCE 1817

Personal Information

Father Name: **Rabindra Nath Khajanchi**
Date of Birth: **October 07, 1987**
Marital Status: **Married**
Nationality: **Indian**
Sex: **Male**

Research Interests

Dynamical Systems, Mathematical Modeling, Mathematical Biology

- Tumor - immune competitive system
- Game theory & Adaptive dynamics
- Infectious diseases (COVID 19, TB transmission, HTLV-I viral dynamics, SEIR models etc.)
- Ecological modeling

Education

- **Indian Institute of Technology (IIT) Roorkee**, Uttarakhand, India.

    - PhD in Mathematics (July 25, 2011 - March 04, 2016).
    - Dissertation Title: Mathematical Modeling of Malignant Brain Tumor with T11 Target Structure.
    - Thesis Advisor: Dr. Sandip Banerjee, Professor, Department of Mathematics, IIT Roorkee
    - Date of Completion/Defense: February 29, 2016.

- **Jadavpur University**, Kolkata, West Bengal, India.

    - Master of Science in Applied Mathematics (2010) with First class.

- **Jadavpur University**, Kolkata, West Bengal, India.

    - Bachelor of Science; Mathematics (major), Physics, Chemistry & Computer Programming (2008), First class with distinction.

- **Nimpith Ramkrishna Vidyabhavan** (WBCHSE), Nimpith, South 24 Parganas, West Bengal, India.

    - Higher Secondary (HS); Bengali, English, Physics, Chemistry, Mathematics, Biology (2005) with First class.

- **Moukhali Chandiban Fanindra Vidyamandir** (WBBSE), Moukhali, South 24 Parganas, West Bengal, India.

  – Madhyamik; Bengali, English, Physical & Life Science, History, Geography, Mathematics, Additional Mathematics (2003) with First class.

Teaching Experience

Assistant Professor

  – *Department of Mathematics, Presidency University, Kolkata*, August 09, 2018 - Ongoing.

  – *Department of Mathematics, Bankura University*, September 15, 2015 - August 08, 2018.

  – *Faculty of Mathematics, Dinabandhu Andrews College (Calcutta University)*, March 09, 2015 - September 14, 2015.

PhD Guidance

- **Dhiraj Kumar Das**, Mathematical Modelling of some aspects of tuberculosis transmission and its control strategies. **Awarded PhD Degree** (with Prof. T. K. Kar, IIEST Shibpur) (Date of Award: 20.02.2021).

- **Kankan Sarkar**, Dynamical system modeling of nonlinear complex ecological systems. **Awarded PhD Degree** (with Prof. Prakash C. Mali, Jadavpur University) (Date of Award: 10.05.2023).

- **Sovan Bera**, Mathematical modeling of HTLV-I infection with CTL immune response. **Awarded PhD Degree** (with Prof. T. K. Kar, IIEST Shibpur) (Date of Award: 21.09.2023).

- **Mrinmoy Sardar**, Mathematical modeling, analysis of tumor-immune competitive systems and its control strategies. **Awarded PhD Degree** (with Dr. Santosh Biswas, Jadavpur University) (Date of Award: 18.03.2024).

- **Suparna Dash**, Mathematical modeling of ecological system with application to evolutionary game theory (Date of joining 01-11-2021). **Ongoing**.

- **Mitali Maji**, Exploring the Complex Dynamics of Alzheimer's Disease: A Mathematical Approach (Date of joining 30-06-2022). **Ongoing**.

- **Santana Mondal**, Game-theoretic approach to biological systems: insights from mathematical models (Date of joining 31-08-2022). **Ongoing**.

List of Publications

- Sardar M, **Subhas Khajanchi**, Biswas S, Stochastic dynamics of a nonlinear tumor-immune competitive system, **Nonlinear Dynamics**, **(2024)**: https://doi.org/10.1007/s11071-024-09768-5. **(IF: 5.2, Q1)**.

- Mondal S, **Subhas Khajanchi**, A fractional order Bazykin's predator-prey system and its solution, **Iranian Journal of Science and Technology, Transactions A: Science**, 48 **(2024)**: 931—938. **(IF: 1.7, Q2)**.

- Maji M, **Subhas Khajanchi**, Roles of astrocytes and prions in Alzheimer's disease: insights from mathematical modeling, **Journal of Biological Physics**, 50(2) **(2024)**: 149–179. **(IF: 1.8, Q2)**.

- Maji M, **Subhas Khajanchi**, A fractional-order yeast prion mathematical model and its solution, **Journal of Applied Mathematics and Computing**, **(2024)**: https://doi.org/10.1007/s12190-024-02063-x. **(IF: 2.4, Q2)**.

- Sardar M, Biswas S, **Subhas Khajanchi**, Modeling the dynamics of mixed immunotherapy and chemotherapy for the treatment of immunogenic tumor, **The European Physical Journal Plus**, 139(3) **(2024)**: 228. **(IF: 2.8, Q2)**.

- Sardar M, **Subhas Khajanchi**, Biswas S, Ghosh S, A mathematical model for tumor-immune competitive system with multiple time delays, **Chaos, Solitons & Fractals**, 179 **(2024)**: 114397. **(IF: 5.3, Q1)**.

- Dash S, **Subhas Khajanchi**, Dynamics of intraguild predation with intraspecies competition, **Journal of Applied Mathematics and Computing**, 69 **(2023)**: 4877–4906. **(IF: 2.4, Q2)**.

- Jabbari A, Lotfi M, Kheiri H, **Subhas Khajanchi**, Mathematical analysis of the dynamics of a fractional-order tuberculosis epidemic in a patchy environment under the influence of re-infection, **Mathematical Methods in the Applied Sciences**, 46(17) **(2023)**: 17798-17817. **(IF: 3.007, Q1)**.

- Sardar M, **Subhas Khajanchi**, Ahmad B, A tumor–immune interaction model with the effect of impulse therapy, **Communications in Nonlinear Science and Numerical Simulation**, 126 **(2023)**: 107430. **(IF: 3.4, Q1)**

- Silver SD, van den Driessche P, **Subhas Khajanchi**, A dynamic multistate and control model of the COVID-19 pandemic, **Journal of Public Health**, **(2023)**: https://doi.org/10.1007/s10389-023-02014-z. **(IF: 1.80, Q1)**

- **Subhas Khajanchi**, Sardar M, Nieto JJ, Application of non-singular kernel in a tumor model with strong Allee effect, **Differential Equations and Dynamical Systems**, 31 **(2023)**: 687–692. **(IF: 0.8, Q2)**

- Mondal J, **Subhas Khajanchi** Akhtar N, A Mathematical Model for COVID-19 Pandemic with the Impact of Economic Development. **Book Title.: Fractal Signatures in the Dynamics of an Epidemiology**, **(2023)**: 118-134. **(Book Chapter)**

- Sarkar K, **Subhas Khajanchi**, Spatiotemporal dynamics of a predator-prey system with fear effect, **Journal of the Franklin Institute**, 360 **(2023)**: 7380–7414. **(IF: 4.246, Q1)**

- **Subhas Khajanchi**, Mondal J, Tiwari PK, Optimal treatment strategies using dendritic cell vaccination for a tumor model with parameter identifiability, **Journal of Biological Systems**, 13(2) **(2023)**: 487–516. **(IF: 1.30, Q2)**

- Rai RK, Tiwari PK, **Subhas Khajanchi**, Modeling the influence of vaccination coverage on the dynamics of COVID-19 pandemic with the effect of environmental contamination, **Mathematical Methods in the Applied Sciences**, **(2023)**: https://doi.org/10.1002/mma.8749 **(IF: 3.007, Q1)**.

- Biswas S, Ahmad B, **Subhas Khajanchi**, Exploring dynamical complexity of a cannibalistic eco-epidemiological model with multiple time delay, **Mathematical Methods in the Applied Sciences**, 46(4) **(2022)**: 4184–4211. **(IF: 3.007, Q1)**

- Mondal J, **Subhas Khajanchi**, Samui P, Impact of media awareness in mitigating the spread of an infectious disease with application to optimal control, **The European Physical Journal Plus**, 137 **(2022)**: 938. **(IF: 2.8, Q2)**

- Sarkar K, Mondal J, **Subhas Khajanchi**, How do the contaminated environment influence the transmission dynamics of COVID-19 pandemic?, **The European Physical Journal Special Topics**, 231 **(2022)**: 3697–3716. **(IF: 2.6, Q1)**

- Bera S, **Subhas Khajanchi**, Roy TK, Dynamics of an HTLV-I infection model with delayed CTLs immune response, **Applied Mathematics and Computation**, 430 **(2022)**: 127206. **(IF: 3.5, Q1)**

- Sarkar K, **Subhas Khajanchi**, An eco-epidemiological model with the impact of fear, **Chaos**, 32(8) **(2022)**: 083126. **(IF: 3.267, Q1)**

- Dwivedi A, Keval R, **Subhas Khajanchi**, Modeling optimal vaccination strategy for dengue epidemic model: a case study of India, **Physica Scripta**, 97(8) **(2022)**: 085214. **(IF: 3.081, Q1)**

- Sarkar K, **Subhas Khajanchi**, Mali PC, A delayed eco-epidemiological model with weak Allee effect and disease in prey, **International Journal of Bifurcation and Chaos**, 32(8) **(2022)**: 2250122. **(IF: 2.836, Q1)**

- Mollah S, Biswas S, **Subhas Khajanchi**, Impact of awareness program on diabetes mellitus described by fractional-order model solving by homotopy analysis method, **Ricerche di Matematica**, **(2022)**: https://doi.org/10.1007/s11587-022-00707-3. **(IF: 1.1, Q2)**

- Bera S, **Subhas Khajanchi**, Roy TK, Stability analysis of fuzzy HTLV-I infection model: a dynamic approach, **Journal of Applied Mathematics and Computing**, 69 **(2023)**: 171–199. **(IF: 2.4, Q2)**

- Mondal, J, **Subhas Khajanchi**, Mathematical modeling and optimal intervention strategies of the COVID-19 outbreak, **Nonlinear Dynamics**, 109 **(2022)**: 177–202. **(IF: 5.2, Q1)**

- Rai RK, **Subhas Khajanchi**, Tiwari PK, Venturino E, Misra AK, Impact of social media advertisements on the transmission dynamics of COVID-19 pandemic in India, **Journal of Applied Mathematics and Computing**, 68 **(2022)**: 19–44. **(IF: 2.4, Q2)**

- **Subhas Khajanchi**, Sarkar K, Banerjee S, Modeling the dynamics of COVID-19 pandemic with implementation of intervention strategies, **The European Physical Journal Plus**, 137 **(2022)**: 129. **(IF: 2.8, Q2)**

- Sardar M, **Subhas Khajanchi**, Is the Allee effect relevant to stochastic cancer model ?, **Journal of Applied Mathematics and Computing**, 68 **(2022)**: 2293–2315. **(IF: 2.4, Q2)**

- **Subhas Khajanchi**, Nieto JJ, Spatiotemporal dynamics of a glioma immune interaction model, **Scientific Reports**, 11 **(2021)**: 22385. **(IF: 3.8, Q1)**.

- **Subhas Khajanchi**, The impact of immunotherapy on a glioma immune interaction model, **Chaos, Solitons & Fractals**, 152 **(2021)**: 111346. **(IF: 5.3, Q1)**.

- Tiwari PK, Rai RK, **Subhas Khajanchi**, Gupta RK, Misra AK, Dynamics of coronavirus pandemic: effects of community awareness and global information campaigns, **The European Physical Journal Plus**, 136(10) **(2021)**: 994. **(IF: 2.8, Q2)**

- Sardar M, Biswas S, **Subhas Khajanchi**, The impact of distributed time delay in a tumor-immune interaction system, **Chaos, Solitons & Fractals**, 142 **(2021)**: 110483. **(IF: 5.3, Q1)**

- **Subhas Khajanchi**, Bera S, Roy TK, Mathematical analysis of the global dynamics of a HTLV-I infection model, considering the role of cytotoxic T-lymphocytes, **Mathematics and Computers in Simulation**, 180 **(2021)**: 354–378. **(IF: 4.4, Q1)**

- **Subhas Khajanchi**, Sarkar K, Mondal J, Nisar KS, Abdelwahab SF, Mathematical modeling of the COVID-19 pandemic with intervention strategies, **Results in Physics**, 25 **(2021)**: 104285. **(IF: 4.4, Q2)**

- Sardar M, **Subhas Khajanchi**, Biswas S, Abdelwahab SF, Nisar KS, Exploring the dynamics of a tumor-immune interplay with time delay, **Alexandria Engineering Journal**, 60(5) **(2021)**: 4875–4888. **(IF: 6.2, Q1)**

- Rai RK, **Subhas Khajanchi**, Tiwari PK, Venturino E, Misra AK, Impact of social media advertisements on the transmission dynamics of COVID-19 pandemic in India, **Journal of Applied Mathematics and Computing**, 66 **(2021)**: 1–26. **(IF: 2.4, Q2)**

- Tiwari PK, Singh RK, **Subhas Khajanchi**, Kang Y, & Misra AK, A mathematical model to restore water quality in urban lakes using Phoslock, **Discrete and Continuous Dynamical Systems Series B**, 26(6) **(2021)**: 3143–3175. **(IF: 1.3, Q1)**

- Sarkar K, **Subhas Khajanchi**, Mali PC, & Nieto JJ, Rich dynamics of a predator-prey system with different kinds of functional responses, **Complexity**, 2020 **(2020)**. **(IF: 1.7, Q1)**

- Samui P, Mondal J, & **Subhas Khajanchi**, A mathematical model for COVID-19 transmission dynamics with a case study of India, **Chaos, Solitons & Fractals**, 140 **(2020)**: 110173. **(IF: 5.3, Q1)**

- **Subhas Khajanchi**, & Sarkar K, Forecasting the daily and cumulative number of cases for the COVID-19 pandemic in India, **Chaos**, 30 **(2020)**: 071101. **(IF: 3.267, Q1)**

- Sarkar K, **Subhas Khajanchi**, & Nieto JJ, Modeling and forecasting the COVID-19 pandemic in India, **Chaos, Solitons & Fractals**, 139 **(2020)**: 110049. **(IF: 5.3, Q1)**

- **Subhas Khajanchi**, Sarkar K, Mondal J, Dynamics of the COVID-19 pandemic in India, **arXiv preprint arXiv:2005.06286**, **(2020)**.

- Sarkar K, & **Subhas Khajanchi**, Impact of fear effect on the growth of prey in a predator-prey interaction model, **Ecological Complexity**, 42 **(2020)**: 100826. **(IF: 3.1, Q2)**

- Misra AK, Singh RK, Tiwari PK, **Subhas Khajanchi**, & Kang Y, Dynamics of algae blooming: effects of budget allocation and time delay, **Nonlinear Dynamics**, 100 **(2020)**: 1779–1807. **(IF: 5.2, Q1)**

- Das DK, **Subhas Khajanchi**, & Kar TK, Transmission dynamics of tuberculosis with multiple re-infections, **Chaos, Solitons & Fractals**, 130 **(2020)**: 109450. **(IF: 5.3, Q1)**

- Das DK, **Subhas Khajanchi**, & Kar TK, The impact of media awareness and optimal strategy on the prevalence of tuberculosis, **Applied Mathematics and Computation**, 366 **(2020)**: 124732. **(IF: 3.5, Q1)**

- **Subhas Khajanchi**, Chaotic dynamics of a delayed tumor-immune interaction model, **International Journal of Biomathematics**, 13(2) **(2020)**: 2050009. **(IF: 2.4, Q3)**

- **Subhas Khajanchi**, Stability analysis of a mathematical model for glioma-immune interaction under optimal therapy. **International Journal of Nonlinear Sciences and Numerical Simulation**, 20(3-4) **(2019)**: 269–285. **(IF: 2.007, Q1)**

- Das DK, **Subhas Khajanchi**, & Kar TK, Influence of multiple re-infections in tuberculosis transmission dynamics: A mathematical approach, **IEEE Xplore**, **(2019)**: 1–5. (2019 8th International Conference on Modeling Simulation and Applied Optimization (ICMSAO)). **(Conference Paper)**

- **Subhas Khajanchi**, & Banerjee S, A strategy of optimal efficacy of T11 target structure in the treatment of brain tumor. **Journal of Biological System**, 27(2) **(2019)**: 225–255. **(IF: 1.3, Q2)**

- **Subhas Khajanchi**, & Nieto Juan J, Mathematical modeling of tumor-immune competitive system, considering the role of time delay. **Applied Mathematics and Computation**, 340 **(2019)**: 180–205. **(IF: 3.5, Q1)**

- **Subhas Khajanchi**, Perc M, & Ghosh D, The influence of time delay in a chaotic cancer model. **Chaos**, 28 **(2018)**: 103101.doi:10.1063/1.5052496. **(IF: 3.267, Q1)**

- **Subhas Khajanchi**, Modeling the dynamics of glioma-immune surveillance. **Chaos, Solitons & Fractals**, 114 **(2018)**: 108–118. **(IF: 5.3, Q1)**

- **Subhas Khajanchi**, & Banerjee S, Influence of multiple delays in brain tumor and immune system interaction with T11 target structure as a potent stimulator. **Mathematical Biosciences**, 302 **(2018)**: 116–130. **(IF: 1.9, Q1)**

- **Subhas Khajanchi**, Das DK, & Kar TK, Dynamics of tuberculosis transmission with exogenous reinfections and endogenous reactivations. **Physica A**, 497 **(2018)**: 52–71. **(IF: 2.8, Q2)**

- Das DK, **Subhas Khajanchi**, & Kar TK, Dynamical behaviour of tuberculosis transmission, **Biomath Communications Supplement**, **(2018)**: 5(1). (International Conference). **(Conference Paper)**

- **Subhas Khajanchi** & Banerjee S, Quantifying the role of immunotherapeutic drug T11 target structure in progression of malignant gliomas: mathematical modeling and dynamical perspective. **Mathematical Biosciences**, 289 **(2017)**: 69–77.**(IF: 1.9, Q1)**

- **Subhas Khajanchi**, Uniform persistence and global stability for a brain tumor and immune system interaction. **Biophysical Reviews and Letters**, 12(4) **(2017)**: 187–208. **(Q4)**

- Ghosh D, **Subhas Khajanchi**, Mangiarotti S, Denis F, Dana SK, & Letellier C, How tumor growth can be influenced by delayed interactions between cancer cells and the microenvironment?. **BioSystems**, 158 **(2017)**: 17–30. **(IF: 2.0, Q2)**

- **Subhas Khajanchi** & Banerjee S, Role of constant prey refuge on stage structure predator -prey model with ratio dependent functional response. **Applied Mathematics and Computation**, 314 **(2017)**: 193–198. **(IF: 3.5, Q1)**

- **Subhas Khajanchi**, Modeling the dynamics of stage-structure predator-prey system with Monod-Haldane type response function. **Applied Mathematics and Computation**, 302 **(2017)**: 122–143. **(IF: 3.5, Q1)**

- **Subhas Khajanchi**, Bifurcations and oscillatory dynamics in a tumor immune interaction model. **BIOMAT 2015: International Symposium on Mathematical and Computational Biology**, **(2016)**: 241–259. **(Book Chapter)**

- Banerjee S, **Subhas Khajanchi**, & Chaudhuri S, A mathematical model to elucidate brain tumor abrogation by immunotherapy with T11 target structure. **PLOS ONE**, 10(5) **(2015)**: e0123611. doi:10.1371/journal.pone.0123611. **(IF: 2.9, Q1)**

- **Subhas Khajanchi** & Ghosh D, The combined effects of optimal control in cancer remission. **Applied Mathematics and Computation**, 271 **(2015)**: 375–388. **(IF: 3.5, Q1)**

- **Subhas Khajanchi**, Bifurcation analysis of a delayed mathematical model for tumor growth. **Chaos, Solitons & Fractals**, 77 **(2015)**: 264–276. **(IF: 5.3, Q1)**

- **Subhas Khajanchi** & Banerjee S, Stability and bifurcation analysis of delay induced tumor immune interaction model. **Applied Mathematics and Computation**, 248 **(2014)**: 652–671. **(IF: 3.5, Q1)**

- **Subhas Khajanchi**, Dynamic behavior of a Beddington-DeAngelis type stage structured predator-prey model. **Applied Mathematics and Computation**, 244 (2014): 344–360. **(IF: 3.5, Q1)**

- **Subhas Khajanchi** & Banerjee S, Global stability of a tumor immune interaction model. **Mathematical Sciences International Research Journal**, 2(2) (2013): ISSN 2278–8697. **(Conference Paper)**

- Nandi S, **Subhas Khajanchi**, Chatterjee AN, & Roy PK, Insight of viral infection of Jatropha Curcas plant (Future Fuel): A control based mathematical study. **Acta Analysis Functionalis Applicata**, 13(4) (2011): 366–374. **(Conference Paper)**

Editorial Activities

- Associate Editor at the **Journal of Applied Mathematics and Computing (Springer)** (SCIE-indexed) **(IF: 2.4)** from August 26, 2022 - Ongoing.

- Associate Editor at the Journal of **Frontiers in Applied Mathematics and Statistics** (Section: **Dynamical Systems** (Scopus, ESCI-indexed) **(IF: 1.3)** from August 10, 2020 - Ongoing.

- Editorial board member at the **Journal of Applied Mathematics** (Springer) from February 15, 2022 - Ongoing.

Teaching (UG & PG)

- Techniques of Applied Mathematics,

- Ordinary and Partial Differential Equations,

- Numerical Methods,

- Calculus - I & II,

- Linear Algebra,

- PhD Course Work.

Research Projects

Title of the Project: **Mathematical Modeling of hematopoiesis process in application to chronic and acute myelogenous leukemia**
Funding Agency/Institute: **INDO-FRENCH Centre for Applied Mathematics (IFCAM)**
Period: **3 years (2018 – 2021)**
Completed/Ongoing: **Completed**

Title of the Project: **Mathematical Modeling of Tumor Immune Competitive Systems: Model Analysis and Validation**
Funding Agency/Institute: **Science and Engineering Research Board (SERB)**
Period: **3 years (2018 – 2021)**
Completed/Ongoing: **Completed**
Amount: **22,59,060/-**

Title of the Project: **Evolutionary dynamics of a predator-prey model with behavioral refuges"**
Funding Agency/Institute: **Science and Engineering Research Board (SERB) International Research Experience (SIRE) at the University of South Bohemia, Department of Mathematics, Ceske Budejovice, Czech Republic.**
Period: **2 Months (Oct. 16, 2022 – Dec. 15, 2022)**
Completed/Ongoing: **Completed**
Amount: **7,06,213/-**

Awards & Fellowships

- National Board of Higher Mathematics **(NBHM)** Travel Grant to attend 9th International Congress on Industrial and Applied Mathematics (ICIAM - 2019), Universitat de Valencia, Valencia (Spain), July 15-19, 2019.

- **INSA Visiting Scientists** for two months in the year 2017-2018.

- Department of Science and Technology (DST) Travel grants to attend the "Summer School on Mathematics of Infectious Diseases" at York University, Toronto, Canada.

- Research Scholar fellowship from 'IIT Roorkee', from 2013 to 2015 (March 08, 2015).

- Junior Research Scholar fellowship from 'IIT Roorkee', from 2011 to 2013.

- Received National Merit-Cum-Scholarship in Master of Science (M. Sc.), from 2008 to 2010.

- Qualified Graduate Aptitude Test in Engineering (GATE) in the year 2011.

- Qualified National Eligibility Test (NET) for Lectureship (December 2010).

Conference, Workshop, Schools and Talks

Talks: 2024

- "Title of the Talk.: Mathematical models in biological system" as a "Hon'ble guest speaker(Online mode) on occasion to celebrate the Pi-day at the Mathematics Department (Adamas University, Kolkata) on 14.03.2024".

Invited Talks

- "Mathematical modeling of glioma-immune interaction with immunotherapeutic drug", Jahangirnanagar University, Savar, Dhaka, Bangladesh, at "International Workshop on Recent Trends in Mathematical Biology – RTMB 2020", January 14 - 15, 2020.

- "Mathematical Modeling of Brain Tumor - Immune surveillance with immunotherapeutic drug T11 Target Structure", University of Dhaka, Bangladesh, at 20th International Mathematics Conference, December 8 - 10, 2017.

- "Dynamics of Brain Tumor and Immune System Competition with T11 Target Structure: Model Analysis and Validation", Department of Mathematics, Bankura University, West Bengal, India, Indo-German Conference on Modeling, Simulation and Optimization in Applications, February 22 - 24, 2017.

- "A Mathematical Model to Elucidate Brain Tumor Abrogation by Immunotherapy with T11 Target Structure", H. Lee Moffitt Cancer Center, Tampa, Florida, USA, July 18 - 22, 2016.

Contributed Talks

- Optimal treatment strategies using dendritic cell vaccination for a tumor model with parameter identifiability, 9th International Congress on Industrial and Applied Mathematics (ICIAM - 2019), Universitat de Valencia, Valencia (Spain), July 15-19, 2019.

- Bifurcations and Oscillatory Dynamics in a Tumor Immune Interaction Model, Indian Institute of Technology Roorkee, Uttarakhand, India, at BIOMAT 2015, 15th International Symposium on Mathematical and Computational Biology, November 02 - 06, 2015.

- Influence of time delay in a chaotic Tumor - immune interaction model, Indian Statistical Institute (ISI) Kolkata, India, Physics and Applied Mathematics Unit (PAMU), Physics and Applied Mathematics Researchers' Meet - 2015, March 18 - 20, 2015.

School(s)

- Summer School on Mathematics of Infectious Diseases, York University & Field Institute, Toronto, Canada, Department of Mathematics and Statistics, May 19 - 27, 2013.

Conference and Symposiums

- – Mathematical Modeling of Malignant Brain Tumor with T11 Target Structure as a Potent Immune Stimulator, Calcutta University, West Bengal, India, National Seminar on "Recent Advances in Computational Mathematics", December 27 - 29, 2016.
- – Bifurcation analysis of a delayed mathematical model for tumor growth, Department of Mathematics, Indian Institute of Technology Madras (IITM), India, "International Conference on Mathematical Modeling and Computer Simulation (ICMMCS)", December 8 - 10, 2014.
- – The combined effects of optimal control in cancer remission, Jointly Organized by Agricultural and Ecological Research Unit & Physics and Applied Mathematics Unit, "3rd International Symposium on Complex Dynamical Systems and Applications (CDSA - 2014)", March 10 - 12, 2014.
- – "National Conference on Mathematics and its Application (NCMA)", Department of Mathematics, Jadavpur University, January 13 -14 2010.

Workshops

- – "Indo - Canadian Workshop on Mathematics of Infectious Diseases", Department of Mathematics, Indian Institute of Technology (IIT) Roorkee, January 20 - 22, 2014.
- – "Workshop on Nonlinear Differential Equations: Dynamics of Complex Systems (NDEDCS-2013)", under the auspices of National Program on Differential Equations: Theory, Computation and applications (NPDE-TCA), Department of Applied Mathematics, University of Calcutta, September 23 - 28 2013.
- – "Workshop on Nonlinear Dynamics in Biology", Department of Mathematics, Indian Institute of Science (IISc), Bangalore, July 8 - 13 2013.
- – "Advance Level Workshop on Differential Equations in Ecology and Epidemiology" under the auspices of National Program on Differential Equations: Theory, Computation and applications(NPDE-TCA), Department of Mathematics, Indian Institute of Technology (IIT) Roorkee, October 10 - 14 2012.
- – "Workshop on Adaptive Finite Element Method (AFEM)", Department of Mathematics, Indian Institute of Space Science and Technology (IIST), Trivundrum, India, March 16 - 25, 2011.

Computer Proficiency

- *Programming language*: MATLAB, Mathematica, FOTRAN.

- *Typesetting*: Latex, Word.

Professional References

- **Prof. Sandip Banerjee**
  Department of Mathematics,
  Indian Institute of Technology (IIT) Roorkee,
  Uttarakhand - 247667, India.
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- **Prof. Mostafa Adimy**
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  Head of the "DRACULA" project-team,
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- **Prof. Hien Tran**
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  North Carolina State University, USA.
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- **Dr. Dibakar Ghosh**
  Physics and Applied Mathematics Unit (PAMU),
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- **Dr. Bunimovich Svetlana**
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  Ariel University, Israel
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