Harsh Vardhan Jain

Curriculum Vitae

Contact Address
Department of Mathematics,
Florida State University
1017 Academic Way, 208 Love Building
Tallahassee, FL 32306

Tel : +1 (850) 645-0523
Fax : +1 (850) 644-4053
hjain@fsu.edu
www.math.fsu.edu/∼jain

Qualifications

2002 - 2008 *Ph.D., The University of Michigan, Ann Arbor, USA*
Thesis topic: "Multiscale models of VEGF-mediated molecular signaling pathways in intra-tumoral angiogenesis".
Supervisor: Trachette L. Jackson, Ph.D.

2000 - 2002 *B.A., Cambridge University, England*
Major: Mathematics

1997 - 2000 *B.A., St. Stephen's College, Delhi University, India*
Major: Mathematics

Appointments

2012 - present *Assistant Professor*
Department of Mathematics, Florida State University, Tallahassee, FL, USA

Jun-Jul 2018 *Visiting Researcher*
Centre Systems Biology, University of Stuttgart, Germany

Jun-Jul 2015 *Visiting Developer*
SAUER Gmbh, Pfronten, Germany

Jun-Jul 2014 *Visiting Researcher*
Centre Systems Biology, University of Stuttgart, Germany

Jun-Jul 2013 *Visiting Researcher*
Centre Systems Biology, University of Stuttgart, Germany

May-Jun 2012 *Visiting Postdoctoral Fellow*
Oxford Centre for Collaborative and Applied Mathematics, Oxford University, England

2009 - 2012 *Postdoctoral Research Fellow*
Mathematical Biosciences Institute, The Ohio State University, Columbus, OH, USA

2008 - 2009 *Postdoctoral Research Fellow*
Frankfurt Institute for Advanced Studies, Frankfurt am Main, Germany

Awards and Honors

2015 MBI Early Career Award, Mathematical Biosciences Institute, The Ohio State University

2012 OCCAM Visiting Postdoctoral Research Assistantship, Mathematical Institute, Oxford University, England

Awards and Honors (continued)

2000 - 2002 Chevening Cambridge Scholarship, Foreign Commonwealth Office, England

Grants

May-Aug 2017 FSU CRC COFRS Award, *A Quantitative Approach to Understanding the Relationship between Serum PSA and Tumor Angiogenesis in Prostate Cancer*, $14,000, PI.

2013 - 2018 Simons Foundation Collaboration Grant for Mathematicians, *Mathematical models for cancer growth and treatment*, $35,000, PI.

May-Aug 2013 FSU CRC First Year Assistant Professor Award, *Mathematical modeling of personalized androgen ablation therapy for advanced metastatic prostate cancer*, $20,000, PI.

Editorial Duties

2018 - Associate Editor, Mathematical Biosciences and Engineering

Graduate Students

2015 - 2019 Inmaculada Sorribes, *Glioma diagnosis, progression and treatment: A mathematical approach*

2015 - 2019 Johnna Barnaby, *Mathematical models of prostate cancer progression and response to treatment*

Publications

Under Review

- Perfahl HP, Jain HV, Joshi, T et al. *Hybrid modelling of transarterial chemoembolisation therapies (TACE) for hepatocellular carcinoma (HCC)*, under revision for Nature Scientific Reports.

Accepted

- Sorribes IC, Handelman SK, Jain HV, *Mitigating temozolomide resistance in glioblastoma via DNA damage-repair inhibition*, to appear in Journal of the Royal Society Interface.

Published Papers

2019
- Sorribes IC, Moore MNJ, Byrne HM, Jain HV, *A biomechanical model of tumor-induced intracranial pressure and edema in brain tissue*, Biophysical Journal, 116:1560–1574.

2018
- Poole M, Sorribes, I, Jain HV, *Modeling p53-HCV protein interactions in hepatocytes: Implications for carcinogenesis*, Mathematical Biosciences, 306:186–196.

- Jain HV, Jackson TL, *Mathematical modeling of cellular cross-talk between endothelial and tumor cells highlights counterintuitive effects of VEGF-targeted therapies*, Bulletin of Mathematical Biology, 80:971–1016.

Published Papers (continued)

2017 · Eisenberg M, Jain HV, *Data and identifiability in models of cancer chemotherapy: a confidence building exercise*, Journal of Theoretical Biology, 431:63–78.

2014 · Jain HV, Meyer-Hermann M, Richardson A, Byrne HM, *Exploiting the synergy between carboplatin and ABT-737 in the treatment of ovarian carcinomas*, PLoS ONE, 9(1):e81582.

2013 · Friedman A, Jain HV, *A partial differential equation model of metastasized prostatic cancer*, Mathematical Biosciences and Engineering, 10(3):591–608.

· Jain HV, Jackson TL, *A hybrid model of the role of VEGF binding in endothelial cell migration and capillary formation*, Frontiers in Oncology, 3:102.

· Jain HV, Friedman A, *Modeling prostate cancer response to continuous versus intermittent androgen ablation therapy*, Discrete and Continuous Dynamical Systems-B, 18(4):945–67.

2012 · Jain HV, Byrne HM, *Qualitative analysis of an integro-differential equation model of periodic chemotherapy*, Applied Mathematics Letters, 25(12):2132-6.

· Jain HV, Moldovan NI, Byrne HM, *Modelling stem/progenitor cell-induced neovascularization and oxygenation around solid implants*, Tissue Engineering Part C Methods, 18(7):4497-501.

2011 · Jain HV, Clinton SK, Bhinder A, Friedman A, *Mathematical modeling of prostate cancer progression in response to androgen ablation therapy*, Proceedings of the National Academy of Sciences, 108(49):19701-6.

· Jain HV, Meyer-Hermann M, *The molecular basis of synergism between carboplatin and ABT-737 therapy targeting ovarian carcinomas*, Cancer Research, 71(3):705-15.

2009 · Jain HV, Nor JE, Jackson TL, *Quantification of endothelial cell-targeted anti Bcl-2 therapy and its suppression of tumor growth and vascularization*, Molecular Cancer Therapeutics, 8(10):2926-36.

2008 · Jain HV, Nor JE, Jackson TL, *Modelling the VEGF-Bcl-2-CXCL8 pathway in intra-tumoral angiogenesis*, Bulletin of Mathematical Biology, 70(1):89-117.

2007 · Dong Z, Zeitlin BD, Song W, Sun Q, Karl, E, Spencer DM, Jain HV, Jackson TL, Nunez G, Nor JE, *Level of endothelial apoptosis required for a significant decrease in microvessel density*, Experimental Cellular Research, 313(16): 3645-3657.

Book Chapters

2012 · Jain HV, Jackson TL, *Linking EC stimulation to tumor growth and vascular density: The VEGF-Bcl2-CXCL8 pathway* in Modeling Tumor Vasculature: Molecular, Cellular and Tissue Level Aspects and Implications, ed Jackson TL, Springer, pp 55-78.

2006 · Jackson TL, Ashkenazi R, Heusel S, Jain HV, *Cancer modelling: A perspective on what's new and what's next* in Mathematical Studies on Human Disease Dynamics: Emerging Paradigms and Challenges, eds Gumel A, Castillo-Chavez C, Mickens R and Clemens DP, Contemporary Mathematics (AMS) 410:153-172.

Teaching

Courses Taught (past 5 years)

Fall 2019
- MAP 5932 - Biomathematics I (Graduate Qualifier Course, 5 students)

Spring 2018
- Parental leave

Fall 2018
- MAP 5932 - Biomathematics I (Graduate Qualifier Course, 6 students)
- MAP 6939 - Seminar in Biomathematics (Graduate Level, 9 students)
- MAC 2313 - Calculus and Analytical Geometry III (Multivariable Calculus, 30 students)

Fall 2017
- MAP 5932 - Biomathematics I (Graduate Course, 4 students)
- MAP 4934 - Honors Work (Undergraduate Directed Research, 1 student)

Spring 2017
- MAP 4934 - Honors Work (Undergraduate Directed Research, 1 student)

Fall 2016
- MAP 5932 - Biomathematics I (Graduate Course, 6 students)
- MAP 5932 - Stochastic Models in Biology (Special Topics Course for Advanced Graduates, 10 students)

Spring 2016
- MAP 4481 - Modeling in Biology (Undergraduate Course, 18 students)
- MAC 2313 - Calculus and Analytical Geometry III (Multivariable Calculus, 33 students)

Fall 2015
- MAP 5932 - Biomathematics I (Graduate Course, 4 students)
- MAP 5933 - Applied Mathematics Topics (Partial Differential Equations for Graduate Students, 2 students)
- MAP 4341 - Elementary Partial Differential Equations I (Undergraduate Course, 27 students)

Presentations (past 5 years)

Invited Talks at Conferences

2019
- Seventh International Conference on Mathematical Modeling and Analysis of Populations in Biological Systems, Tempe, AZ, USA. *Exploiting androgen deprivation-induced inflammation in prostate cancer treatment.*
- The 19th Mathematical Methods and Models in Biosciences Conference (BIOMATH19), Będlewo, Poland. *Intracranial pressure dynamics in brain cancer: A biomechanical perspective.*
- The Fifth International Conference on Computational and Mathematical Population Dynamics, Fort Lauderdale, FL, USA. *Overcoming chemotherapy resistance in GBM via cell-repair inhibition.*

Invited Talks at Conferences (continued)

2018 · Society for Mathematical Biology Annual Meeting, Sydney, Australia. *A multiphase model of glioblastoma multiform onset and growth.*

· Frontiers of Mathematical Biology: Modeling, Computation and Analysis Conference, Orlando, FL, USA. *Data and identifiability in a model of cancer treatment.*

2016 · 11th AIMS Conference on Dynamical Systems, Orlando, FL, USA. *Identifiability in compartmental models of cancer chemotherapy.*

· 11th AIMS Conference on Dynamical Systems, Orlando, FL, USA. *The potential for immunotherapy in combination with androgen ablation for the treatment of prostate cancer.*

2015 · 8th ICIAM Meeting, Beijing, China. *Identifiability and nature of solutions in models of tumor growth and treatment.*

· International Symposium on Application of Nonlinear Partial Differential Equations in Life Science, Nankai University, Tianjin, China. *Models of prostate cancer growth and response to hormonal therapy.*

· Micro and Macro Systems in Life Sciences, Bedlewo, Poland. *Endothelial-tumor cell crosstalk and its implications for therapy.*

Invited Workshops

2019 · Workshop on *Evolutionary Dynamics in Cancer* held at Mathematical Biosciences Institute, Columbus, OH, USA.

· Workshop on *Identifiability problems in systems biology* held at the American Institute of Mathematics, San Jose, CA, USA.

2018 · Workshop on *Rules of Life in the Context of Future Mathematical Sciences* organized by the National Science Foundation, Washington D.C., USA.

Invited Seminars and Colloquiums

2019 · Department of Scientific Computing, Florida State University, Tallahassee, FL, USA. *A biomechanical model of intracranial pressure dynamics in brain cancer.*

2015 · Department of Mathematics, University of Michigan, Ann Arbor, MI, USA. *Differential equation models of tumor growth and treatment.*

· Mathematical Biosciences Institute, The Ohio State University, Columbus, OH, USA. *Differential equation models of solid tumor treatment with taxanes and platinum pompounds.*

· Department of Mathematics, The Ohio State University, Columbus, OH, USA. *Differential equation models of tumor growth and treatment.*

Contributed Talks

2019 · The 19th Mathematical Methods and Models in Biosciences Conference (BIOMATH19), Będlewo, Poland. *GBM treatment with temozolomide and DNA damage-repair inhibitors.*

Contributed Talks (continued)

2018 · Biology and Medicine Through Mathematics? BAMM, Richmond, VA, USA. *Modeling HCV interactions with p53: implications for carcinogenesis.*

2017 · Biomathematics Seminar, Florida State University. Mathematical models of cancer – From oncogenesis to treatment response and biomarker refinement.

2016 · Society for Mathematical Biology Annual Meeting, Nottingham, England. *Data and identifiability in models of cancer chemotherapy.*

Poster Presentations

2018 · NSF-CBMS Regional Conference Mathematical Biology: Modeling and Analysis, Washington DC, USA. *Biomechanical model of gliobastoma multiforme onset and growth.*