Personal information

Name | **Sandeep Krishna**

Address | National Centre for Biological Sciences TIFR,
GKVK-UAS Campus, Bellary Road
Bangalore 560065, India.
Phone: +91 80 23666001; Fax: +91 80 23636662
Email: sandeep@ncbs.res.in

Nationality | Indian

Date of birth | 1st September, 1976

Employment

Position | Associate Professor; Jul. 2013 – present
Employer | National Centre for Biological Sciences TIFR, Bangalore, India

Position | Reader; Mar. 2010 – Jun. 2013
Employer | National Centre for Biological Sciences TIFR, Bangalore, India

Position | Research Associate Professor (lektor); Sept. 2007 – Aug. 2010
Employer | Niels Bohr Institute, Copenhagen, Denmark

Position | Assistant Professor; Nov. 2004 – Aug. 2007
Employer | Niels Bohr Institute, Copenhagen, Denmark

Position | Postdoc; Aug. 2003 – Aug. 2004
Employer | National Centre for Biological Sciences TIFR, Bangalore, India

Education

Degree awarded | Ph.D.; Jun. 2004
Institution | Indian Institute of Science, Bangalore, India
Awards | Martin Foster medal for best thesis in the Division of Physical Sciences in 2004

Degree awarded | M.S. in Physical Sciences; Oct. 2000; Grade 7.4/8 (rank 1)
Institution | Indian Institute of Science, Bangalore, India

Degree awarded | B.Sc. (Hons) Physics; Jul. 1997; 1st division, 1st rank in university
Institution | St. Stephen's College, University of Delhi, New Delhi, India

Research Experience

Publications | 68 (latest list: http://scholar.google.com/citations?user=7XtQF4IAAAAJ&hl=en)
Graduated students | 15 (4 Ph.D., 4 Masters, 3 Bachelors, 4 1st-year)
Current students | 6 (4 Ph.D., 1 Masters)
Additional affiliations | Adjunct Associate Professor, Niels Bohr Institute, Copenhagen; Adjunct Faculty, International Centre for Theoretical Studies, Bangalore.

Grants

2013 | 1 million US dollars for 5 years from the Simons Foundation for setting up the 'Simons Centre for the Study of Living Machines' at NCBS; co-PI with M. Thattai, M. Venkadesan, M. Rao and S. Gosavi (all NCBS).

2013 | Rs. 80 lakhs from the Department of Biotechnology, Govt. of India, for 3 years (2013-2016) for project titled 'Exploring stationary phase genome dynamics in E. coli using next generation sequencing'; co- PI with Aswin Seshasayee (NCBS).

2011 (completed)	1.5 million Danish kroner ($\approx$ 200,000 Euro) for 3 years from the Danish Council for Independent Research, Natural Sciences, for project 'Dynamic features of gene regulatory mechanisms'; co-PI with S. L. Svenningsen (Inst. of Biology, Copenhagen University) and S. Semsey (Center for Models of Life, Niels Bohr Inst., Copenhagen). Publication: see ref. [1]

Current students (at NCBS)

Ph.D.	Vishaka Datta, Rohit Suratekar (jointly with R. Padinjat), Vaibhhav Sinha, Akshit Goyal

Current students (at NBI)

Ph.D.	Mathias Heltberg (jointly with M. H. Jensen)
Masters	Jonas Juul (jointly with M. H. Jensen)

Graduated students

Ph.D.	Lykke Pedersen (jointly with M. H. Jensen), 2012. Thesis title: Biological systems on a small scale.
	Benedicte Mengel (jointly with M. H. Jensen), 2011. Thesis title: Modeling Interaction Patterns at the Level of Proteins, Cells and Humans.
	Alexander Hunziker (jointly with K. Sneppen) 2010. Thesis title: Sense & Sensitivity - Regulation of Genes in Good and Bad Times.
	Mikkel Avlund (jointly with K. Sneppen), 2009. Thesis title: Dynamics of growth – decisions in phages and gene segregation in bacteria.
Masters	Rasmus H. Rasmussen (jointly with J. Ferkinghoff-Borg), 2009. Thesis title: Phase space reduction for biochemical networks. Grade 12/12.
	Jesper Fonslet (jointly with M. H. Jensen and J. Ferkinghoff-Borg), 2009. Thesis title: Amyloid growth kinetics. Grade 10/12.
	Peter B. Jensen (jointly with M. H. Jensen), 2008. Thesis title: Modeling oscillatory gene expressions in Wnt and Notch. Grade: 12/12.
	Benedicte Mengel (jointly with M. H. Jensen), 2007. Thesis title: Modelling genetic regulation in the NF-κB signalling system. Grade 12/12.
Bachelors	Tine Straasø (jointly with M. H. Jensen), 2007. Thesis title: Genetic switches, Grade: 12/12.
	Kristian Rud-Petersen and Jesper Fonslet (jointly with M. H. Jensen), 2006. Thesis title: Pulses and chaos in NF-kB oscillations. Grade: 13/13.
1st year Physics research project	Kamilla Nørregaard, Mette Fløistrup, Jørgen Skancke and Andreas Skielboe, 2006. Thesis title: Modelling the SOS response to DNA damage in E. coli. Grade: 11/13.

Teaching, Mentoring and Organization

2016 (upcoming)	Co-organiser for theory group theme meeting on 'Interface between biology and theoretical computer science' at NCBS, Dec 19-21.
	Co-organiser for discussion meeting on 'Conflict and Cooperation in Cellular Populations' at NCBS, Oct 16-19.
2016	Instructor for tutorial session on 'Game Theory' at Physics of Life, the 4th NCBS-Simons Monsool School for undergraduates at NCBS, Jun 15-24.
2015	Instructor for pre-school courses for the ICTS-ICTP Advanced Winter School on Quantitative Biology.
	Co-organizer of ICTS-ICTP Advanced Winter School on Quantitative Biology.
	Co-organizer (with A. Seshasayee) of an international conference on "Bacterial Expressions" at NCBS, Dec 1-5.
	Co-organizer (with M. Thattai, M. Rao, S. Gosavi) of Physics of Life, the 3rd NCBS-Simons Monsool School for undergraduates at NCBS, Jun 21-27.

	Guest lecturer for course on “Biophysics" at University of Copenhagen, May 2015.
	Instructor (with A. Seshasayee and A. Ramesh) for NCBS course “Bacterial Expressions", Jan semester.
	Instructor (with S. Laxman and R. Padinjat) for NCBS course “Signalling", Jan semester.
2014	Co-instructor for course on “Topics in Complex Systems" at Niels Bohr Institute, Copenhagen, Fall semester.
	Instructor for course on “Game theory in biology" for the Physics of Life Monsoon School at NCBS, Jun 10-21.
	Co-organizer (with M. Thattai, M. Rao, S. Gosavi) of Physics of Life, the 2nd NCBS Monsool School for undergraduates at NCBS, Jul 21-26.
	Member of selection committee for NCBS Fellows (since 2011).
2013	Co-organizer (with A. Seshasayee and D. Agashe) of an international conference on “Bacterial Expressions" at NCBS, Oct 22-25.
	Guest instructor for NCBS course “Evolution", Aug semester.
	Instructor for the course “Nonlinear dynamics" for the workshop on Nonlinear Dynamics in Biology, IISc, Bangalore, July 8-13.
	Instructor for course on “Game theory in biology" for the Physics of Life Monsoon School at NCBS, Jun 10-21.
	Organizer of the Physics of Life, the 1st NCBS-ICTS Monsoon School at NCBS, Jun 10-21.
	Co-organizer of Control in Biological Systems meeting, Jan 3-5, NCBS, Bangalore.
	Guest instructor for NCBS course “Signalling", Jan semester.
	Supervised summer student Akshit Goyal.
	Co-instructor (with M. Thattai) of NCBS course “Dynamical Systems", Jan semester.
	Member of selection committee for NCBS Fellows (since 2011).
	Member of thesis committee for NCBS PhD students Aalap Mogre, Ajoy Aloysius, Avantika Lal and Somya Mani (since 2012).
2012	Instructor of NCBS course “Advanced algorithms", January semester.
	Guest instructor for NCBS course “Genome Biology", January semester.
	Guest instructor for NCBS course “Signalling", January semester.
	Supervised summer student Nishant Udgaonkar and Anjali Jaiman (with K. Vijayraghavan).
	Invited lecturer at the Krogerup summer school on “DNA dynamics and life strategies" at Humlebaek, Denmark.
2011	Co-instructor (with A. Seshasayee) of NCBS course “Algorithms”, August semester.
	Faculty advisor (with M. Venkadesan) for NCBS symposium Sympotein IX: Bioinspired designs.
	Supervised summer students Archishman Raju (KVPY fellowship), Evan Philip (Inspire fellowship) and Anirban Banerjee (KVPY fellowship) jointly with M. Venkadesan.
2009	Invited lecturer for the Paris Interdisciplinary PhD Symposium, ‘Numbers in Living Systems’.
	Instructor (with K. Sneppen) of Masters level course on “Complex systems” at NBI
	Organizer (with S. Pigolotti) of the Wednesday talks and Special lectures for the Biocomplexity group at the Niels Bohr Institute
2008	Instructor (with K. Sneppen) of Masters level course on “Complex systems” at NBI
2007, 2008	Examiner for several Masters and Ph.D. level courses at Copenhagen University and Oslo University
	Organizer (with S. Pigolotti) of the Wednesday talks and Special lectures for the Biocomplexity group at the Niels Bohr Institute
2007	Invited lecturer at a school for Ph.D. students at Holbaek, Denmark
	Invited lecturer at the NATO-ASI winter-school on “Evolution from cellular to social scales”, Geilo, Norway

Invited talks

Aug. 2016	'Effects of Four Different Regulatory Mechanisms on the Dynamics of Gene Regulatory Cascades' at the Aspects of Gene and Cellular Regulation meeting at IMSc Chennai.
Mar. 2016	'Diversity in bacteria-virus ecosystems is facilitated by weak defences against viruses' at the India – Behaviour, Ecology and Evolution Conference, Uttarakhand.
Feb. 2016	'Mode-hopping in entrained biological oscillators' at the 3rd Indian Statistical Physics Community meeting, ICTS, Bangalore.
Feb. 2016	'Diversity in bacteria-virus ecosystems is facilitated by weak defences against viruses', Complex System Approach to Self-Organization meeting at IITM Chennai.
Nov. 2015	'Growth phase dependent regulation of the E. coli RNA polymerase by 6S RNA and Rsd' at the International Conference on Systems Biology, Singapore.
Aug. 2015	'Restriction-modification systems as engines of diversity in bacteria-virus ecosystems' at the Models of Life conference, Krogerup, Denmark.
Jun. 2015	'Oscillations in NFkB, p53 and Wnt' at the Excursions in Complexity meeting, Niels Bohr Institute, Copenhagen.
Apr. 2015	'Counting genomes: the lysis-lysogeny decision in temperate bacteriophage' at the NNMCB meeting on Mathematical Modelling of Biological Systems, Univ. of Kashmir, Srinagar.
Feb. 2015	'Diversity in bacteria-virus ecosystems is facilitated by weak defences against viruses' at the 2nd Indian Statistical Physics meeting, Bangalore.
Dec. 2014	'Mechanical interference of transcription by polymerases' at Aspects of Gene Regulation meeting, Institute of Mathematical Sciences, Chennai.
Jun. 2014	'Optimal strategies for viruses competing for a single bacterial resource' at the Staying Alive: Lessons from Phage and Bacteria meeting, Copenhagen.
Feb. 2014	'Models and simulations' at the School and Discussion Meeting on Population Genetics and Evolution at IISc, Bangalore.
Feb. 2014	'Benefits of cooperation and communication in bacteria' at the TIFR Centre for Interdisciplinary Sciences, Hyderabad.
Oct. 2013	'Benefits of cooperation and communication in bacteria' at the 1st NCBS International Conference on Bacterial Expressions, NCBS, Bangalore.
Aug. 2013	'Counting genomes: the lysis-lysogeny decision in temperate bacteriophage' at the Dynamics of Stem Cell Decisions conference, Niels Bohr Institute, Copenhagen.
Aug. 2013	'Benefits of cooperation and communication in bacteria' at The Centre for Ecological Sciences, IISc, Bangalore.
Jan. 2013	'Benefits of cooperation and communication in bacteria' at the Control in Biological Systems meeting, NCBS, Bangalore.
Dec. 2012	'Benefits of cooperation and communication in bacteria' at the Workshop on Dynamics and Regulation of Biomolecular Networks, Institute for Computational and Theoretical Studies, Hong Kong Baptist University.
Oct. 2012	'Benefits of cooperation and communication in bacteria' at JNCASR, Bangalore.
Aug. 2012	'Combining theory and experiments to understand sugar regulation in bacteria' at the Krogerup summer school on "DNA dynamics and life strategies" at Humlebaek, Denmark.
Jul. 2012	'Bacteriophage networks that can count genomes' at the International Conference on Networks in Biology, Social Science and Engineering, Indian Institute of Science, Bangalore.
Jan. 2012	'Sustainability of virulence in a phage-bacteria ecosystem' at the International Conference on Mathematical and Theoretical Biology, Pune.
Dec. 2011	'Combining theory and experiments to understand sugar regulation in bacteria' at an ICTS discussion meeting on Systems Biology/Systems Neuroscience, Bangalore.
Nov. 2011	'Counting genomes: the lysis-lysogeny decision in temperate bacteriophage' at IISER, Pune.
Aug. 2011	'Counting genomes: the lysis-lysogeny decision in temperate phage' at a workshop on Signals and Space: Spatio-temporal patterns in simple bio-systems, at the Niels Bohr Institute, Copenhagen.

Feb. 2011	'Feedback and decision-making in regulatory networks' at a discussion meeting on Computational Biology in India - status and prospects, Orange County, Coorg.
Nov. 2010	'Why do phage play dice?' at the Center for Neural and Cognitive Sciences, University of Hyderabad.
Oct. 2010	'Counting genomes: the lysis-lysogeny decision in phage lambda' at CCMB, Hyderabad.
Sept. 2010	'Modelling SOS response in E. coli' at a workshop on Genome Maintenance and Consequences, at the Niels Bohr Institute, Copenhagen.
May. 2010	'Why do Phage Play Dice?' at the Small Systems Biology conference, Dragoer.
Jan. 2010	'Why do Phage Play Dice?' at Breaking Barriers: from Physics to Biology, NCBS.
Dec. 2009	Invited lecturer for the Paris Interdisciplinary PhD Symposium on Numbers in Living Systems.
Jan. 2009	'Why do Phage Play Dice?' at the Center for Theoretical Biological Physics, UCSD.
Aug. 2008	'Phage-Ecology Modelling' at the Joint Princeton-NBI Mini-workshop, Niels Bohr Institute, Copenhagen, Denmark.
Mar. 2008	'Similarities and differences between the NF-kB and p53 feedback loops' at the Annual American Physical Society meeting, New Orleans, USA.
Dec. 2007	'Counting genomes: the lyis-lysogeny decision in phage lambda' at the Phenotypic and Developmental Plasticity conference, Trivandrum, India.
Nov. 2007	'Similarities and differences in NF-κB and p53' at the NF-κB–p53 Oscillations Workshop, Institute for Advanced Studies, Princeton, USA.
Oct. 2007	'Uptake and usage motifs in bacteria and society' at the Computational Philosophy conference, Niels Bohr Institute, Denmark.
May 2007	'Theoretical models in biophysics' at a school for PhD. students, Holbaek, Denmark.
Apr. 2007	'Evolution of bacteria-phage ecologies' at the NATO-ASI School on Evolution from Cellular to Social Scales, Geilo, Norway.
Dec. 2006	'A model of spiky oscillations in NF-κB signalling' at the 10th Transcription Assembly meeting, Kolkata, India.
Nov. 2006	'Modelling cellular oscillations: the role of negative feedback', Danish Technical University, Kgs. Lyngby, Denmark.
May 2006	'Modelling UV-induced mutagenesis in the E. coli SOS response' at Workshop on Phages: Experiments and Modelling, Dragør, Denmark.
Dec. 2004	'Self-disorganization in models of evolving networks' at Nordic Workshop on Networks, NORDITA, Copenhagen, Denmark.
Dec. 2001	'Self-organisation' at Discussion meeting on Selected Topics in Genetics and Molecular Biology (sponsored by the Indian Academy of Sciences), Orange County, Coorg, India.

Publications

Peer-reviewed journal articles

2015 Hansen, S., Krishna, S., Semsey, S. & Svenningsen, S. L. (2015) Effects of four different regulatory mechanisms on the dynamics of gene regulatory cascades, **Sci. Rep. 5**, **12186.**

Bendtsen, K. M., Jensen, M. H., Krishna, S. & Semsey, S. (2015) The role of mrna and protein stability in the function of coupled positive and negative feedback systems in eukaryotic cells, **Sci. Rep. 5**, **13910.**

Sneppen, K., Semsey, S., Seshasayee, A. & Krishna, S. (2015) Restriction modification systems as engines of diversity, **Front. Microbiol. 6**, **528.**

2014 Hao, N., Krishna, S., Ahlgren-Berg, A., Cutts, E. E., Shearwin, K. E. & Dodd, I. B. (2014) Road rules for traffic on dna – systematic analysis of transcriptional roadblocking in vivo, **Nucl. Acids Res. 42**, **8861–8872.**

2013 Sipos, L., Pers, B. M., Kalmar, M., Toth, I., Krishna, S., Jensen, M. H. & Semsey, S. (2013) Comparative network analysis of preterm vs. full-term infant-mother interactions, **PLoS ONE 8**, **e67183.**

Semsey, S., Pedersen, L. J., Csiszovszki, Z., Erdossy, J., Steger, V., Hansen, S. & Krishna, S. (2013) The effect of laci autoregulation on the performance of the lactose utilization system in escherichia coli, **Nucl. Acids Res. 41**, **6381–6390.**

Srinivasan, R., Chandraprakash, D., Krishnamurthi, R., Singh, P., Scolari, V., Krishna, S. & Seshasayee, A. (2013) Genomic analysis reveals a bi-layered epistatic control of “expensive" genes in escherichia coli k-12, **Mol. Biosyst. 9**, **2021–2033.**

Singh, S., Samal, A., Giri, V., Krishna, S., Raghuram, N. & Jain, S. (2013) Flux-based classification of reactions reveals a functional bow-tie organization of complex metabolic networks, **Phys. Rev. E 87**, **052708.**

Semsey, S & Krishna, S. (2013) Combining theory and experiments to understand sugar regulation in bacteria, **Curr. Chem. Biol. 7**, **224–233.**

2012 Heilmann, S., Sneppen, K. & Krishna, S. (2012) A life on the edge: Coexistence of virulent phage and bacteria on the boundary of self-organized refuges, **Proc. Natl. Acad. Sci. (USA) 109**, **12828–12833.**

Mengel, B., Krishna, S., Chakraborty, S., Pigolotti, S., Sekara, V., Semsey, S. & Jensen, M. H. (2012) Effects of growth and mutation on pattern formation in tissues, **PLoS ONE 7**, **e48772**

Seshasayee, A. S. N., Singh, P. & Krishna, S. (2012) Context-dependent conservation of dna methyltransferases in bacteria, **Nucl. Acids. Res. 40**, **7066–7073.**

Chakraborty, S., Jensen, M. H., Krishna, S., Mengel, B., Pigolotti, S., Sekara, V. & Semsey, S. (2012) Limit cycle oscillations and stable patterns in repressor lattices, **Phys. Rev. E 86**, **031905.**

Jensen, M. H & Krishna, S. (2012) Inducing phase-locking and chaos in cellular oscillators by modulating the driving stimuli, **FEBS Lett. 586**, **1664–1668.**

Li, W., Krishna, S., Pigolotti, S., Mitarai, N. & Jensen, M. (2012) Switching between oscillations and homeostasis in competing negative and positive feedback motifs, **J. Theor. Biol. 307**, **205–210.**

2011 Csiszovszki, Z., Krishna, S., Orosz, L., Adhya, S. & Semsey, S. (2011) Structure and function of the d-galactose network in enterobacteria, **mBio 2**, **e00053–11.**

Yde, P., Mengel, B., Jensen, M. H., Krishna, S. & Trusina, A. (2011) Modeling the nf-kb mediated inflammatory response predicts cytokine waves in tissue, **BMC Sys. Biol. 5**, **115.**

Pedersen, L., Jensen, M. H. & Krishna, S. (2011) Dickkopf1 - a new player in modelling the wnt pathway, **PLoS ONE 6**, **e25550.**

Bendtsen, K. M., Erdossy, J., Csiszovszki, Z., Svenningsen, S. L., Sneppen, K., Krishna, S. & Semsey, S. (2011) Direct and indirect effects in the regulation of overlapping promoters, **Nucl. Acids Res. 39**, **6879–6885.**

Mengel, B., Krishna, S., Jensen, M. H. & Trusina, A. (2011) Nested feedback loops in gene regulation, **Physica A 391**, **100–106.**

2010 Horvath, P., Hunziker, A., Erdossy, J., Krishna, S. & Semsey, S. (2010) Timing of gene transcription in the galactose utilization system of escherichia coli, **J. Biol. Chem. 285**, **38062–38068.**

Sneppen, K., Pedersen, S., Krishna, S., Dodd, I. B. & Semsey, S. (2010) Economy of operon formation: Cotranscription minimizes shortfall in protein complexes, **mBio 1**, **e00177–10.**

Mengel, B., Hunziker, A., Pedersen, L., Trusina, A., Jensen, M. H. & Krishna, S. (2010) Modelling oscillatory control in nf-kb, p53 and wnt signalling, **Curr. Opin. Gen. Devel. 20**, **656–664.**

Hunziker, A., Tuboly, C., Horvath, P., Krishna, S. & Semsey, S. (2010) Genetic flexibility of regulatory networks, **Proc. Natl. Acad. Sci. (USA) 107**, **12998–13003.**

Ferkhgingoff-Borg, J., Fonslet, J., Andersen, C. B., Krishna, S., Pigolotti, S., Yogi, H., Goto, Y., Otzen, D. & Jensen, M. H. (2010) Stop-and-go kinetics in amyloid fibrillation, **Phys. Rev. E 82**, **010901(R).**

Hunziker, A., Jensen, M. H. & Krishna, S. (2010) Stress-specific response of the p53-mdm2 feedback loop, **BMC Syst. Biol. 4**, **94.**

Avlund, M., Krishna, S., Semsey, S., Dodd, I. B. & Sneppen, K. (2010) Minimal gene regulatory circuits for a lysis-lysogeny choice in the presence of noise, **PLoS ONE 5**, **e15037.**

Sneppen, K., Krishna, S. & Semsey, S. (2010) Simplified models of biological networks, **Annu. Rev. Biophys. 39**, **43–59.**

Jensen, P. B., Pedersen, L., Krishna, S. & Jensen, M. H. (2010) A wnt oscillator model for somitogenesis, **Biophys. J. 98**, **943–950.**

Heilmann, S., Sneppen, K. & Krishna, S. (2010) Sustainability of virulence in a phage-bacterial ecosystem, **J. Virol. 84**, **3016–3022.**

2009 Jensen, M. H., Pigolotti, S. & Krishna, S. (2009) Genetic oscillation patterns, **Eur. Phys. J. Special Topics 178**, **45–56.**

Avlund, M., Dodd, I., Sneppen, K. & Krishna, S. (2009) Minimal gene regulatory circuits that can count like bacteriophage lambda, **J. Mol. Biol. 394**, **681–693.**

Avlund, M., Dodd, I., Semsey, S., Sneppen, K. & Krishna, S. (2009) Why do phage play dice? **J. Virol. 83**, **11416–11420.**

Mitarai, N., Benjamin, J.-A. M., Krishna, S., Semsey, S., Csiszovszki, Z., Masse, E. & Sneppen, K. (2009) Dynamics of the recovery from srna-mediated gene silencing, **Cell Cycle 8**, **2863–2864.**

Jensen, M. H., Krishna, S. & Pigolotti, S. (2009) Repressor lattice: Feedback, commensurability, and dynamical frustration, **Phys. Rev. Lett. 103**, **11810.**

Semsey, S., Krishna, S., Erdossy, J., Horvath, P., Orosz, L., Sneppen, K. & Adhya, S. (2009) Dominant negative autoregulation limits steady-state repression levels in gene networks, **J. Bacteriol. 191**, **4487–4491.**

Krishna, S., Orosz, L., Sneppen, K., Adhya, S. & Semsey, S. (2009) Relation of intracellular signal levels and promoter activities in the gal regulon of escherichia coli, **J. Mol. Biol. 391**, **671–678.**

Mitarai, N., Benjamin, J.-A. M., Krishna, S., Semsey, S., Csiszovszki, Z., Masse, E. & Sneppen, K. (2009) Dynamic features of gene expression control by small regulatory rnas, **Proc. Natl. Acad. Sci. (USA) 106**, **10655–10659.**

Krishna, S., Semsey, S. & Jensen, M. H. (2009) Frustrated bistability as a means for engineering spiky genetic oscillations, **Phys. Biol. 6**, **036009.**

Maslov, S., Krishna, S., Pang, T. Y. & Sneppen, K. (2009) Toolbox model for the evolution of metabolism and its regulation, **Proc. Natl. Acad. Sci. (USA) 106**, **9743–9748.**

Pigolotti, S., Krishna, S. & Jensen, M. H. (2009) Symbolic dynamics of biological feedback networks, **Phys. Rev. Lett. 102**, **088701.**

Werner, M., Krishna, S., Semsey, S. & Sneppen, K. (2009) Dynamics of uptake and metabolism of small molecules in cellular response systems, **PLoS ONE 4**, **e4923.**

2008 Axelsen, J. B., Krishna, S. & Sneppen, K. (2008) Cost and capacity of signalling in the escherichia coli reaction network, **J. Stat. Mech., P01018.**

2007 Tiana, G., Krishna, S., Pigolotti, S., Jensen, M. H. & Sneppen, K. (2007) Oscillations and temporal signalling in cells, **Phys. Biol. 4**, **R1–R17.**

Krishna, S., Semsey, S. & Sneppen, K. (2007) Combinatorics of feedback in cellular uptake and metabolism of small molecules **Proc. Natl. Acad. Sci. (USA) 104**, **20815–20819.**

Mitarai, N., Andersson, A. M. C., Krishna, S., Semsey, S. & Sneppen, K. (2007) Efficient degradation and expression prioritization with small rnas, **Phys. Biol. 4**, **164–171.**

Fonslet, J., Rud-Petersen, K., Krishna, S. & Jensen, M. H. (2007) Pulses and chaos: dynamical response in a simple genetic oscillator, **Int. J. Mod. Phys. B, 21**, **4083–4090.**

Semsey, S., Krishna, S., Sneppen, K. & Adhya, S. (2007) Signal integration in the galactose network of escherichia coli, **Mol. Microbiol. 65**, **465–476.**

Singh, S., Samal, A., Giri, V., Krishna, S., Raghuram, N. & Jain, S. (2007) A universal power law and proportionate change process characterize the evolution of metabolic networks, **Eur. Phys. J. B 57**, **75–80.**

Pigolotti, S., Krishna, S. & Jensen, M. H. (2007) Oscillation patterns in negative feedback loops, **Proc. Natl. Acad. Sci. (USA) 104**, **6533–6537.**

Krishna, S., Maslov, S. & Sneppen, K. (2007) Uv induced mutagenesis in escherichia coli: a quantitative model, **PLoS Comput. Biol. 3**, **451–462.**

2006 Rosvall, M., Dodd, I., Krishna, S. & Sneppen, K. (2006) Network models of phage-bacteria coevolution, **Phys. Rev. E 74**, **066105.**

Semsey, S., Andersson, A. M. C., Krishna, S., Jensen, M. H., Massé, E. & Sneppen, K. (2006) Genetic regulation of fluxes: iron homeostasis of escherichia coli, **Nucl. Acids Res. 34**, **4960–4967.**

Krishna, S., Andersson, A. M. C., Semsey, S. & Sneppen, K. (2006) Structure and function of negative feedback loops at the interface of genetic and metabolic networks, **Nucl. Acids Res. 34**, **2455–2462.**

Samal, A., Singh, S., Giri, V., Krishna, S., Raghuram, N. & Jain, S. (2006) Low degree metabolites explain essential reactions and enhance modularity in biological networks, **BMC Bioinformatics 7**, **118.**

Krishna, S., Jensen, M. H. & Sneppen, K. (2006) Minimal model of spiky oscillations in nf-kb signalling, **Proc. Natl. Acad. Sci. (USA) 103**, **10840–10845.**

2005 Krishna, S., Banerjee, B., Ramakrishnan, T. V. & Shivashankar, G. V. (2005) Stochastic simulations of the origins and implications of long-tailed distributions in gene expression, **Proc. Natl. Acad. Sci. (USA) 102**, **4771–4776.**

2002 Jain, S & Krishna, S. (2002) Large extinctions in an evolutionary model: the role of innovation and keystone species, **Proc. Natl. Acad. Sci. (USA) 99**, **2055–2060.**

Jain, S & Krishna, S. (2002) Crashes, recoveries and “core-shifts" in a model of evolving networks, **Phys. Rev. E 65**, **026103.**

2001 Jain, S & Krishna, S. (2001) A model for the emergence of cooperation, interdependence and structure in evolving networks, **Proc. Natl. Acad. Sci. (USA) 98**, **543–547.**

1999 Jain, S & Krishna, S. (1999) Emergence and growth of complex networks in adaptive systems, **Comput. Phys. Commun. 121**, **116–121.**

1998 Jain, S & Krishna, S. (1998) Autocatalytic sets and the growth of complexity in an evolutionary model, **Phys. Rev. Lett. 81**, **5684–5687.**

Chapters in collections

Jain, S & Krishna, S. (2011) Can we recognize an innovation? perspective from an evolving network model, in *Principles of Evolution: From the Planck Epoch to Complex Multicellular Life*, eds. Meyer-Ortmanns, H & Thurner, S. (Springer, Berlin), pp. 145–172

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