

PAWAN K. DHAR, Ph.D.

Professor & Former Dean
School of Biotechnology
Jawaharlal Nehru University
New Delhi 110067

email pawandhar@mail.jnu.ac.in
cell + 91 9953 345 001
Ph.D. 1993, Human Genetics, BHU
Age: 56 y, Indian citizen



SUMMARY

1. Dean, School of Biotechnology, JNU (4 years) and Chair, Intellectual Property Cell, JNU (2 yrs)
2. Established labs in Japan, Singapore and India in Systems & Synthetic Biology leading to publications, patents, training programs, networks and spinning off a biotech company.
3. Delivered invited talks at the *US National Academies of Sciences*, *Chinese Academy of Sciences (Beijing)*, *Organization for the Prohibition of Chemical Weapons (Hague)*, *IUPAC (Zurich)*, *United Nations Institute of Disarmament Research (UNIDIR)*, Geneva, in the area of synthetic biology
4. Led a team to design and develop a Systems Biology platform (Cellware) at the Bioinformatics Institute, Singapore. *Cellware was chosen as top 12 best systems biology platforms among >110 computational systems biology platforms available* (Nature Biotech <https://www.nature.com/articles/nbt0606-667>).
5. Founded “*Systems and Synthetic Biology Journal*” with Springer and managed it for 9 years with Prof. Ron Weiss (MIT, USA) <https://link.springer.com/journal/11693/volumes-and-issues/1-1>
6. Designed and initiated Government sponsored competition to select best teams for representing in the annual iGEM (International Genetically Engineered Machines) competition at MIT, Boston.

SELECTED INVITED TALKS

1. United Nations Institute for Disarmament Research Aug 2020
2. INSA-National Academies of Sciences (USA) workshop on biosafety Nov 2014, Mar 2015, May 2016 (N.Delhi and Seychelles)
3. Speiz Convergence workshop, Switzerland, Apr 2014
4. Organization for the Prohibition of Chemical Weapons, The Hague, Apr 2013
5. IUPAC-National Academies of Sciences, USA, Speiz Laboratory, Zurich, Feb 2012
6. Chinese Academy of Sciences and US National Acad. of Sciences, Beijing, Nov 2010
7. European Science Commission meeting on Synthetic Biology, Brussels, Mar 2010
8. Pathways and Networks Conference, Corfu Island, Greece, May 2009
9. 19th FAOBMB conference, Seoul, Korea, May 2007
10. Asia Pacific Bioinformatics Conference, Singapore, Jan 2005
11. HUGO Pacific conference, Singapore, Nov. 2004

ADMINISTRATIVE EXPERIENCE

Within Jawaharlal Nehru University, New Delhi

Member	Executive Council, 2 nd term	(completed)
Member	Academic Council, 2 nd term	(completed)
Member	The Court, 2 nd term	(completed)
Member	Selection Committee, Faculty & Admin	(completed)
Member	Corpus Fund Committee	(ongoing)
Member	Screening Committee, ABV School of Management	(completed)
Member	Special Committee, Special Centre for Nanosciences	(ongoing)
Chair	Intellectual Property Cell	(completed)
Chair	Research Excellence Award Committee	(completed)
Chair	Distinguished Alumni Award Committee	(completed)
Chair	Research Publications Review Committee	(completed)
Chair	Resource Mobilization Committee	(ongoing)
Chair	EDU ERP Committee	(ongoing)
Chair	Finance Committee, JNU Foundation for Innovation	(ongoing)

Feb-Mar 2019: Participated in the *Leadership for Academicians Program (LEAP)*, organized by the Ministry of Human Resource Development, Govt of India and National University of Singapore. LEAP program was aimed at training senior academic heads who are likely to assume leadership roles in the future. The program was about problem-solving, handling stress, team building work, conflict management, developing communication skills, understanding and coping with the complexity and challenges of governance in Higher Educational Institutions, financial & general administration.

Outside JNU

Member	Academic Committee, Raman Research Institute, Bangaluru	(ongoing)
Member	Academic Committee, DRDO, New Delhi	(ongoing)
Member	Advisory Committee, Hunt for Vaccine, Govt. of India & UK Govt.	(ongoing)
Member	Academic Committee, CDRI, Lucknow	(ongoing)
Member	Academic Committee, LBS NAA, Mussoorie	(ongoing)
Member	JNU-Indian Naval Academy Kerala, Academic Committee	(ongoing)
Member	IMTECH Research Council, Chandigarh	(ongoing)
Member	Academic Committee, THSTI, Faridabad	(ongoing)
Member	JNU-NII Academic Committee, New Delhi	(ongoing)
Member	Academic Advisory Council, CEC, IUAC, New Delhi	(ongoing)
Member	NIPGR Academic Committee, New Delhi	(ongoing)
Member	THSTI Academic Committee, Faridabad	(ongoing)
Member	DBT Task Force, Genome Engineering, New Delhi	(ongoing)
Member	DBT Human Resource Development Program, New Delhi	(ongoing)
Member	Indian Oil Company, Faridabad - Biosafety committee	(ongoing)
Member	Oversight Committee, <u>DBT Bioenergy Centres</u>	(completed)
Member	MHRD, Selection Committee, Commonwealth Scholarship UK	(completed)
Member	MHRD, Selection Committee, Scholarship, Japan	(completed)
Member	DBT, Task Force, Marine Biotechnology, New Delhi	(completed)
Member	JNU-CCMB Hyderabad Academic Committee	(ongoing)
Member	NII, Faculty promotion Screening Committee, New Delhi	(completed)

PROFESSIONAL HISTORY

1. Professor and Head, Synthetic Biology group, March 2015 – ongoing
School of Biotechnology, **Jawaharlal Nehru University**, New Delhi
2. Professor & Dean, School of Biotechnology, May 2016 - May 2021
Jawaharlal Nehru University, New Delhi
3. Professor, Synthetic Biology. 2013-2015
Dept. of Life Sciences, School of Natural Sciences, **Shiv Nadar University**, Greater Noida
4. Professor and Head, Dept of Genetics and Molecular Biology, 2011-2012
School of Biomedical Sciences, **Symbiosis International University**, Pune
5. Director (Prof. level), Centre for Systems and Synthetic Biology, 2010 - 2011
University of Kerala, Trivandrum, Kerala
6. Senior Scientist, Synthetic Biology, 2006 – 2009
RIKEN Advanced Sciences Institute, Yokohama, Japan
Adjunct Faculty, Tokyo Medical and Dental University
7. Senior Scientist & Group Leader, Systems Biology, 2002 – 2005
Bioinformatics Institute, A*STAR, (Adjunct Faculty, NUS), Singapore
8. Assistant Professor, Systems Biology, 2001-2002
Institute of Advanced Biosciences, Tsuruoka, Japan, **Keio University**, Japan
9. Visiting Scientist, 2000 – 2001
Dept. of Radiation Genetics, **Kyoto University**, Japan
10. Associate Professor & Lab Head 1997 - 2000
Human Genetics Division, **Manipal University**, Karnataka
11. Visiting Scientist, 1997
Institute for Medical Radiation Biology, **University of Essen**, Essen, Germany
12. Assistant Professor & Lab Head, 1993- 1996
Human Genetics Division, **Manipal University**, Karnataka

INDUSTRY EXPERIENCE

1. Led a RIKEN Institute (Yokohama) and **Tata Consultancy Services** (Hyderabad) project on computational metagenomics (2007-2009). The aim of this project was to develop a computational pipeline from a DNA sequence input to a metabolic pathway prediction.
2. Led an **Intel – Symbiosis University** project on computational study of H1N1 (2011-2012). The aim of this project was to predict the future stable variants of the H1N1 virus using a number of computational structure and molecular interaction prediction methods.

3. Co Founder & Chief Mentor, **Foresight Biotech Pvt Ltd**, (FSB) JNU, New Delhi. FSB is the first biotech company incubated at JNU. It is a DIPP recognized, spin-off and works on the model of licensing / selling molecules and creating patent bank

FUNDING HISTORY

Extramural funding

ONGOING

Title	<i>Capacity building for marine synthetic biology in India</i>
Amount	~ USD 260 K
Team	Pawan K. Dhar (<i>Co-ordinator and PI</i>), Co PIs: Prof. Bright Singh (CUSAT), Dr. Joseph Selvin (Pondicherry University)
Agency	Dept. of Biotechnology, Govt. of India
Duration	3 years (completed, June 2021)
Title	<i>Policy and Research planning for synthetic biology</i>
Amount	USD ~ 40 K
Team	Pawan K. Dhar (<i>Co-ordinator and PI</i>), Co PI: Dr. Balakrishna Pisupati (FLEDGE)
Agency	Dept. of Biotechnology, Govt. of India
Duration	1 year (completed, Dec 2020)
Title	<i>Designing next generation platform for recombinant protein production in E.coli</i>
Amount	USD ~ 111 K
Team	Pawan K. Dhar (<i>PI</i>), Co PI: Dr. Gaurav Pandey (IP University)
Agency	Dept. of Biotechnology, Govt. of India
Duration	3 year (completed, Dec 2020)

Intramural funding

Title:	<i>Design, synthesis and application of artificial enzymes derived from noncoding DNA towards therapeutic purposes (ongoing)</i>
Amount:	USD ~ 30 K
Agency:	JNU, UPE II (ID: 184)
Duration	5 years (completed 2020)
Title:	<i>Synthetic Biology</i>
Amount:	~ USD 3 million
Agency:	RIKEN, Yokohama, Japan
Duration	3 years (2006-2009)
Title:	<i>Computational Systems Biology</i>
Amount:	~ USD 1 million
Agency:	ASTAR, Biopolis, Singapore
Duration	3 years (2002 - 2005)

PATENTS SUMMARY

1. Oct. 16, 2015 Ref: PCT/IB2015/057964 (US Patent office)
A BIOMOLECULE BASED DATA STORAGE SYSTEM
 Girik MALIK and Pawan K. DHAR, IP filing company: SS Rana, New Delhi
2. Apr 28, 2016 Ref: 2016/11014807 (Indian Patent Office)
 July 19, 2016 PCT/IB2016/054294 (International Patent)
METHOD OF DATA COMPRESSION AND DECOMPRESSION
 Girik MALIK, and Pawan K. DHAR, IP filing company: SS Rana, New Delhi
3. Dec 30, 2020. Ref. no. 4801594 Registry of Trademarks, India)
CLEARX9 - CULTURE MEDIA SUPPLEMENT
 Co-Inventors: Siddharth Manvati, Pawan K. Dhar, IP filing company: SS Rana, New Delhi

TEACHING

PHILOSOPHY: To offer practical skills, train students to think beyond and encourage social responsibility. Paper degrees are getting increasingly redundant. Grades do not reflect hands-on skills in many cases. The key is to focus on practical skills that are usable in academia and industry. Students have a better innate ability to take risks than guides. The key is to motivate them to think beyond. Our lectures are based on research publications. The purpose is to generate good unanswered questions in the class. We are not used to predicting and designing the future. This needs to change. Every innovation comes at some cost to the planet. We need all-inclusive and socially responsible innovations that improve quality of life, causing least damage to the environment and uses renewable natural resources.

COURSE CONTENT: Historical perspective of synthetic biology, logic gates, analog and digital systems, biobricks, MIT Registry of standard Biological parts, synthetic genes and proteins, repressilator, bacterial camera, toggle switch, minimal synthetic cell, synthetic genome, health, environment and industry applications (therapeutic, biosensors, bioenergy), bioCAD platforms, iGEM, ethics, safety, applications.

2015-2021	School of Biotechnology, Jawaharlal Nehru University, New Delhi Masters and Ph.D. students: Course Code BT 222
2014	Department of Life Sciences, Shiv Nadar University, Greater Noida, UP Course Code: BIO 524, 4 credits, 60 hrs, level: PhD
2012	Symbiosis School of Biomedical Sciences, Symbiosis International University, Pune, Maharashtra Course code: 040342209, 5 credits, 75 hours, level M.Sc.

LEARNING OBJECTIVES

By completing this course, students understand:

- Engineering concepts and approaches that made the foundation of this new discipline.
- Success stories, struggles and failures in the field
- Practical skills of relevance to the emerging needs of the community
- Emerging regulatory bottlenecks, ethical, safety and security issues

EDUCATION

- 1993 Ph.D. in Human Genetics, Banaras Hindu University, Varanasi, UP
- 1986 Masters in Zoology, 1st Div, specialization in genetics, University of Jammu, J&K
- 1984 Bachelors in Science, 1st Div, University of Jammu, J&K
- 1981 First year TDC (12th Std), SP College, Srinagar, Kashmir, J&K
- 1981 PUC (11th Std), SP College, Srinagar, Kashmir, J&K
- 1980 Matriculation, 1st Div, National High School, Srinagar, Kashmir, J&K

PUBLICATIONS

SYNTHETIC BIOLOGY

- 100. Binay Panda, Pawan K Dhar, Building Biofoundry India: challenges and path forward, *Synthetic Biology*, 2021;, ysab015, <https://doi.org/10.1093/synbio/ysab015>
- 99. Singh V, Braddick D, Dhar PK. Exploring the potential of genome editing CRISPR-Cas9 technology. *Gene*. 2017: 599, 1-18.
- 98. Joshi K, Goyal S, Grover S, Jamal S, Singh A, Dhar P, Grover A. Novel group-based QSAR and combinatorial design of CK-1 δ inhibitors as neuroprotective agents. *BMC Bioinformatics*. 2016: 17(Suppl 19):515.
- 97. Pawan K. Dhar, Satya Prakash Dash, Deepak Singh. Synthetic Biology and the responsible futures. *BioVoice* 2016: 2, 28-30 [[click here](#) to download the article]
- 96. Singh V, Dhar PK. *Systems and Synthetic Biology* (Springer, 2015) Top 25% downloaded eBook
- 95. Varughese D, AS. Nair, PK. Dhar. Function Annotation of Novel Peptides Generated from the non-expressing genome of *Drosophila melanogaster*. *Bioinformation* 2017: 13(1):17-20.
- 94. P.R.Shidhi, Prashanth Suravajhala, Aysha Nayeema, Achuthsankar S. Nair, Shailja Singh and Pawan K. Dhar. Making novel proteins from pseudogenes. *Bioinformatics*. 2015: 31(1):33-9.
- 93. Navya Raj, Agnes Helen, N. Manoj, Harish G., Vipin Thomas, Shailja Singh, Seema Sehrawat, Shaguna Seth, Achuthsankar S. Nair, Pawan K. Dhar. In silico study of peptide inhibitors against BACE Sys. *Synth.Biol. J*. 2015 9: 67-72
- 92. Krishnan R, Vinod Kumar, Vivek Ananth, Shailja Singh, Achuthsankar S. Nair, Pawan K. Dhar. Computational identification of novel microRNAs and their targets in the malarial vector. *Anopheles stephensi*. *Sys & Synth.Biol J* 2015: 9: 11-7.
- 91. Singh D and PK Dhar. Exploring the Future of Synthetic Biology in India and its probable pathways from Infancy to Maturity. *Curr Synthetic Sys Biol* 2013, 1: 106
- 90. Singh, V, I. Mani, DK Chaudhary, PK Dhar. Metabolic Engineering of Biosynthetic Pathway for Production of Renewable Biofuels. *Appl Biochem Biotechnol* 2014: 172, 1158-1171
- 89. Joshi M, SV Kundapura, T Poovaiyah, K Ingle, PK Dhar. Discovering Novel Anti-Malarial peptides from the Not-coding Genome - A Working Hypothesis. *Curr Synth Sys Biol* 2013, 1:1
- 88. Dhar PK. Synthetic biology and biomediated synthesis of organic chemicals. In the "Impact of scientific developments on the chemical weapons convention" IUPAC technical report. Smallwood K, Trapp R, Mathews R, Schmidt B, Sydnes LK (2013)

87. Dhar PK. Will recombinant DNA technology become obsolete? Nature India, Dec 2012
86. Dhar PK (2011): Emerging trends in synthetic biology. In the "Trends in Science and Technology Relevant to the Biological & Toxin Weapons Convention". US National Academies of Sciences. ISBN-13:978-0-309-20929-8
85. Dhar PK (2010): Synthetic Biology in India and Japan. In the "Synthetic Biology from Science to Governance" European Science Commission meeting, Brussels. The report described our work "potentially ground breaking"
84. Dhar PK. Hacking the genetic code. Nature India, Aug 2011
83. Dhar PK. Making a genome. Nature India, April 2011
82. Krishnan R et al. Building momentum for systems and synthetic biology in India. Sys Syn Biol. 2010: 4, 237-40
81. Dhar PK et al. Synthesizing non-natural parts from natural genomic template. J. Biol. Engg. 2009: 3, 2

PUBLICATIONS IN SYSTEMS BIOLOGY AND BIOINFORMATICS

80. Sundararajan VS, Malik G, Ijaq J, Kumar A, Das PS, P R S, Nair AS, Dhar PK, Suravajhala P. HYPO: A Database of Human Hypothetical Proteins. Protein Pept Lett. 2018;25(8):799-803.
79. Krishnan R, AS Nair, Pawan K Dhar. Computational study of HUB microRNA in human cardiac diseases. Bioinformatics 2017: 13, 17-20.
78. Kopal Joshi, Sukriti Goyal, Sonam Grover, Salma Jamal, Aditi Singh, Pawan Dhar and Abhinav Grover Novel group-based QSAR and combinatorial design of CK-1 δ inhibitors as neuroprotective agents. BMC Bioinformatics 2016 (accepted)
77. Dhar PK. Converting Life into numbers. IJCB 0007:98-99, 2012
76. Namboodiri S, A Giuliani, PK Dhar (2012): Looking for a sequence based allosteric definition: a statistical journey at different resolution scales. J. Theor. Biol 304:211-8
75. Dhar PK. Virtual Cell: computing human brain. Nature India, April 2012
74. Dhar PK: Virtual cell: computing human skin. Nature India, Mar 2012
73. Dhar PK. Virtual Cell: Making a virtual human liver. Nature India, Feb 2012
72. Dhar PK. Virtual Cell: Making a virtual heart. Nature India, Jan 2012
71. Dhar PK. Virtual cell: Making tiny life forms. Nature India, Dec. 2011
70. Dhar PK. Virtual Cell: How to make one. Nature India, Nov 2011
69. Dhar PK. Virtual Cell. Nature India, Oct. 2011
68. Aswathi BL, AS Nair, A Sivasankaran, PK Dhar (2011): Identification of hub proteins from sequence. Bioinformatics 7,163-8
67. Tun K, Menghini M, Dhar PK, Tanaka H, Giuliani A (2011): Why so few drug targets: a mathematical explanation. Current Computer-Aided Drug Design 7, 206-213
66. Dhar PK (2011): A periodic table for biology. Nature India, May 2011.
65. Dhar PK (2011): Finding new laws in biology. Nature India, Mar 2011

64. Krishnan R, Manjaly-Antony LA, PK Dhar (2010): Building momentum for systems and synthetic biology in India. *Sys. Synth. Biol.* 4, 237-40.
63. Namboodiri S, Verma C, Dhar PK, Giuliani A, Nair AS (2010): Sequence signatures of allosteric proteins towards rational design . *Sys. Synth. Biol* 2010: 4(4):271-80
62. Dhar PK, A.Giuliani. *Laws in Biology: why so few ?* *Sys. Synth. Biol* 2010: 4, 7-13
61. Rao R, K. Tun, Y. Makita, PK Dhar (2009): Amino-acid Residue Association models for large scale protein- protein interaction prediction In Silico *Biol* 2009: 9, 0015
60. Tun K, Raghuraj Rao, L Swamedham, PK Dhar (2009): Rich can get poor – an evolutionary study of hub proteins. *Sys. Synth. Biol.* 2009: 2, 75-82
59. Dhar PK (2007): The next step in biology: A periodic table? *J. of Biosciences*, 2007: 2, 1005-8
58. Dhar PK, R. Weiss (2006): Enabling the new biology of 21st century. *Sys. Synth. Biol* 1(1), 1-2
57. Tun K, PK Dhar, MC Palumbo, A. Giuliani (2006): Metabolic Pathways Variability and Sequence / Networks Comparisons. *BMC Bioinformatics* 7, 24
56. Palumbo MC, A Colosimo, K Tun, PK Dhar, A Giuliani (2006): Networks Everywhere? Some general implications of an emergent metaphor. *Current Bioinformatics* 1, 219-234
55. Mondry A, Z.Wang, P.K.Dhar (2005): Bone and the kidney: A systems biology approach to the molecular mechanisms of renal osteodystrophy . *Curr Mol Med* 5, 489-496
54. Dhar PK (2005): Systems Biology is all noise. *Current Science* 88, 1022-23
53. Zhu H, Yinghui Wu, Sui Huang, Yan Sun, Pawan Dhar (2005): Cellular Automata With Object-Oriented Features For Parallel Molecular Network Modeling. *IEEE Transactions in NanoBioscience* 2005: 4, 141-148
52. Dhar PK, Tan Chee Meng et al (2005): Grid Cellware - The first grid enabled Tool for Modeling And Simulating cellular processes. *Bioinformatics* 21, 1284-7
51. S. Arjun, Pawan Dhar, Masaru Tomita (2005): *E-Cell System : Basic concepts and applications* Kluwer Academic Publishers & Landes Biosciences. USA.
50. Zhu H, Sun Yan, G.Rajagopal, A.Mondry, Pawan Dhar (2004): Facilitating arrhythmia simulation: the method of quantitative cellular automata modeling and parallel running. *BioMedical Engineering Online* 3, 29: 1-15
49. Zhu H, Peter Pang, Yan Sun and Pawan Dhar (2004): Asynchronous Adaptive Time Step In Quantitative Cellular Automata Modeling. *BMC Bioinformatics* 5, 1-7
48. Dhar P (2004): Application of grid technology in systems biology: parameter estimation. *IEEE Proceedings, BioGrid, Japan*
47. Rizwan A, Arun Krishnan, Pawan Dhar (2004): A Parallel Implementation of Gillespie's Direct Method. *Lecture Notes in Computer Science series 3037*, 284-291
46. Dhar PK, Zhu Hao, Santosh Mishra (2004): Computational approach to systems biology: from fraction to integration and beyond. *IEEE Transactions on Nano-Bioscience* 3, 144-152
45. Dhar PK, TC Meng,S Somani, Li Ye, A Sairam, M Chitre, Z Hao, K Sakharkar. *Cellware – a new modeling and simulation tool for Computational Systems Biology.* *Bioinformatics* 2004: 20, 1319-1321 Covered by "The Scientist" magazine, July 05, 2004
44. Meng TC, Sandeep Somani, Pawan Dhar (2004) Modeling and simulation of biological systems with stochasticity. *In Silico Biology* 2004: 4, 0024.

43. Hao Z, Sui Huang, Pawan Dhar (2003): The next step in Systems Biology: Simulating temporo-spatial dynamics of the molecular networks. *BioEssays* 26, 68-72.
42. Hashimoto K, Sae Seno, Pawan Dhar, M.Tomita (2002): Integrative modeling of gene expression and metabolism in a cell. *Artificial Life and Robotics* 6: 99-107.

PUBLICATIONS IN GENETICS AND MOLECULAR BIOLOGY

41. Manvati S, Mangalhar KC, Kalaiarasan P, Chopra R, Agarwal G, Kumar R, Saini SK, Kaushik M, Arora A, Kumari U, Bamezai RNK, Dhar PK. miR-145 supports cancer cell survival and shows association with DDR genes, methylation pattern, and epithelial to mesenchymal transition. *Cancer Cell Int.* 2019; 6, 230
40. Manvati S, KC Mangalhar, J Khan, , GL Pathania, S Kaul, M Kaushik, A Arora, PK. Dhar. Deciphering the role of microRNA – A step by step guide. *Gene Expression Patterns* (accepted) 2017
39. Das P, Dilleekumar R, AS Krishnan, AS Nair, PK Dhar, Oommen OV. Decahydroquinolines from the venom of a formicinae ant, *Oecophylla smaragdina*. *Toxicon* 2014: 92, 50-3.
38. Dhar PK. The dark matter of genome. *Nature India*, Jan 2013
37. Kumari U, PK Dhar, UM Dhanalekshmi, GK Bhat (2013): Fibroadenoma and breast cancer patients' lymphocytes sensitivity to gamma rays- An evaluation by micronuclei assay. *Annals of Biological Research* 4, 148-156.
36. Kumari U, PK Dhar, UM Dhanalekshmi, GK Bhat (2013): Significance of silver stained nucleolar organizer regions in benign breast diseases and breast cancer. *Archives of Applied Science Research* 5, 60-68.
35. Dhar PK. Will recombinant DNA technology become obsolete? *Nature India*, Dec 2012
34. Dhar PK. What's ailing our lungs? *Nature India*, July 2011
33. Dhar PK. Shape me up DNA. *Nature India*, June 2011
32. Dhar PK. Zincing towards genome engineering. *Nature India* Jan 2011
31. Dhar PK. 'Promoting' DNA once again. *Nature India* Dec 2010
30. Dhar PK. The Language of Life. *Nature India* Oct. 2010
29. Sakharkar KR, Pawan K. Dhar and Vincent T.K. Chow (2004): Genome reduction in prokaryotic obligatory intracellular parasites of humans – a comparative analysis. *Int J Syst Evol Microbiol* 54, 1937 – 41.
28. Sonoda E, Zhao GY, Kohzaki M, Dhar PK, Kikuchi K, Redon C, Pilch DR, Bonner WM, et al (2007): Collaborative roles of gamma H2AX and Rad51 paralog Xrcc3 in homologous recombinational repair. *DNA Repair* 6,280-92.
27. Dhar PK (2004): The Cell equator - more than poles apart. *Trends in Biotechnology* 22, 103-4
26. Dhar PK, E.Sonoda, A.Fujimori, Y.M.Yamashita, S Takeda (2001): Experimental evidence in support of chicken DT40 cell line as a unique model for DNA repair studies. *Journal of Environ. Path and Toxicol, USA* 20:273-283.
25. Fukushima T, M.Takata, C.Morrison, R.Araki, A.Fujimori, M.Abe, K.Tatsumi, M.Jasin, P.K.Dhar et al (2001): Genetic analysis of the DNA dependent protein kinase reveals an inhibitory role of Ku in late G2 phase DNA double strand break repair. *JBC* 276 (48), 44413-8.

24. Fujimori A, S.Tachiri, E.Sonoda, L.H.Thompson, Pawan K. Dhar, M.Hiraoka, S.Takeda et al (2001): Rad52 partially substitutes for the Rad51 paralog XRCC3 in maintaining chromosomal integrity in vertebrate cells. *EMBO J* 20, 5513-5520.
23. Dhar Pawan K, A.Kryscio, C.Streffer (2000): Application of FISH technique in normal, transformed and malignant cell lines using alpha pan centromeric DNA probes. *Current Sci* 78, 1247-49.
22. Dhar PK (2000): Mammalian cloning – an evolutionary perspective. *Current Sci.* 78, 102.
21. Dhar PK, Rao TR, Sreekumaran Nair N, Mohan S, Chandra S, Bhat KR, Rao K (2000): Identification of risk factors for specific subsites within the oral and oropharyngeal region—a study of 647 cancer patients. *Ind J Cancer* 37(2-3),114-22.
20. Dhar P K, Y Kumar (2000): GenSoft 2000 - A new software for diagnosing genetic diseases. *Ind J Human Genet* 5(1), 67-68.
19. Dhar PK, T.R.Rao, U.Harischandran, K.R.Bhat (1999): Diagnostic importance of nuclear morphometry in oral cancers. *Ind J. Orofacial Genetics* 2 (2); 15-21.
18. Dhar Pawan K (1999): Oral DNA vaccines – The start of the art. *Ind J Orofacial Genet* 1, 11-4
17. Dhar Pawan K, S.Devi., et al (1996): Significance of Lymphocyte Sister Chromatid Exchanges in Ovarian Cancer patients . *Cancer Genet & Cytogenet* 89(2); 105-108.
16. Dhar PK, MR Kumar, S Nayak, et al (1995): A rapid staining and destaining technique for silver nucleolus organizer regions. *Biotechnic and Histochemistry.* 70(6); 302-30.
15. Bamezai R, Bhattacharya V, Husain SA, Dhar P K (1989): Genetics of non-syndromic cleft lip and palate - A five year study. *DAE proceedings on Human Genetics* 10, 55-60.

BOOKS

14. *Genome Engineering via CRISPR-Cas9 system.*
Academic Press, USA.
Vijai Singh, Pawan K. Dhar (2020)
13. *Systems and Synthetic Biology*
Springer Publishers, USA
Vikram Singh, Pawan Dhar (2015)
12. *E-Cell System : Basic concepts and applications*
Kluwer Academic Publishers & Landes Biosciences. USA.
S. Arjun, Pawan Dhar, Masaru Tomita (2005)
11. *Textbook of Biochemistry*
Jay Pee Brothers Medical Publishers, New Delhi, (1998).
Vasudevan DM, Sreekumari, S, Dhar Pawan, Bhat PG
10. *Human Genetics*
Jay Pee Brothers Medical Publishers, New Delhi, (1997).
Dhar Pawan
9. *Latest Concepts in Medical Genetics*
KMC Press, Manipal, India, (1995)
Dhar Pawan

CHAPTERS

8. Building a novel drug discovery platform from the dark genome
Book chapter in: "Translational Biotechnology: A Journey from Laboratory to Clinics"
Yasha Hasija Eds. Elsevier Publishing (ongoing)
7. Modeling Spatiotemporal Dynamics of Multicellular signaling
Book chapter in: Introduction to Systems Biology Editor: Sandun Choi, Caltech
Humana Press, USA, 2007
Hao Zhu, Pawan Dhar
6. Computer Aided Design of Signaling Networks
Book chapter in: Information processing and living systems. Vladimir Bajic Eds.
World Scientific Press (2005)
Zhu Hao, Pawan Dhar
5. Electronic Cell Environments: Combining Gene, Protein and Metabolic Networks
Book Chapter in: Complex Systems Science in Biomedicine. Deisboeck TS, Yasha
Kresh J, Kepler TB Eds. (2003) Kluwer Academic Publishers, New York.
Pawan Dhar, Masaru Tomita
4. E- Cell: Computer simulation of Electronic Cell
Book chapter in: Encyclopedia of Molecular cell biology and Molecular Medicine.
Robert A Myers Eds. WILEY-VCH Verlag, GmbH & Co (2003)
Pawan Dhar, Kouichi Takahashi, Yoichi Nakayama, Masaru Tomita
3. Medical Genetics Questions
Exam Master Corporation, Delaware, USA. (Electronic publication), (2000)
Dhar Pawan
2. Human Genetics
Book chapter in: Textbook of Pedodontics
Tandon S Eds. Paras Medical Publishers. Hyderabad., India, (2001)
Dhar Pawan
1. Career in Human Genetics
Book chapter in: Specialty selection guide.
Fact Find Eds. MAHE Publications. Manipal, India (2000)
Dhar Pawan

----- CV of Pawan K Dhar ends here -----