Biosketch of Prof. Alo Nag

Professor of Biochemistry

Former Dean, Faculty of Interdisciplinary and Applied Sciences, DU South Campus
Former HOD, Department of Biochemistry
Former HOD, Department of Biophysics
Former Provost, Geetanjali Women PG Hostel, DU South Campus

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Academic Qualifications (from Bachelor's degree onwards):

B.Sc. (Hons) Biochemistry, M.Sc. Biochemistry and Ph.D. Biochemistry from Delhi University (1st Division throughout)

Positions held (in chronological order):

S.No.	Period	Place of Employment	Designation
1.	1999-2001	University of Illinois at Chicago, USA	Post Doctoral Fellow
2.	2002-2004	University of Illinois at Chicago, USA	Senior Scientist
3.	2004- 2007	Northwestern University Chicago, USA	Instructor
4.	August 2007- August 2010	Dept. of Biochemistry, Univ. of Delhi South Campus	Reader
5.	August 2010- August 2014	Dept. of Biochemistry, Univ. of Delhi South Campus	Associate Professor
6.	August 2014-Current	Dept. of Biochemistry, Univ. of Delhi South Campus	Professor

Awards / Fellowships

1. **Appreciation award from Carcinogenesis Foundation, USA** for organizing the **2012** International Carcinogenesis conference in India.
2. **Invited as Research Scientist Fellow** in **University of Illinois at Chicago, USA,** from May to July, **2012.**

3. **Travel Award by American Society for Biochemistry and Molecular Biology** for attending ASBMB/ASPET **2000** Meeting, Boston, USA.
4. **Young Scientist travel award** by Council of Scientific and Industrial Research (**CSIR, India**) to attend the17th International Congress of Biochemistry and Molecular Biology Conference**, 1997**, San Francisco, California.
5. **Young Scientist award** in the 4th International Symposium on Biochemical Roles of Eukaryotic Cell Surface Macromolecules, **1996**, New Delhi, India.
6. **Scholarship awarded by Chanakyapuri Rotary Club** (Delhi, India) for outstanding academic performance during MS in Biochemistry (**1991-1993**).

Research Experience and Field of Specialization:

a) **Molecular Oncology**: Working as an independent investigator of a cancer research lab for last 17 years, mostly working on **cervical cancer**, the top most cancer killer among Indian women. The major focus of research has been to understand the molecular mechanisms responsible for Human Papillomavirus mediated transformation of normal cells into cancerous cells and combat cancer through **discovery of novel molecular targets.**

b) **Cell cycle regulation and Cellular Signaling**: Nine years of postdoctoral research experience in Cancer biology related studies. Expertise gained on **mechanistic understanding of cell cycle regulation** and the role of various **tumor suppressor proteins** (p53, ARF and hADA3) and **oncogenes** (CUL4A E3-ligase, Myc) in regulation/modulation of cell cycle and induction of cellular transformation.

c) **Malarial Pathogenesis:** Characterizing the essential PTM enzymes (Ubiquitination and Sumoylation) of *Plasmodium falciparum* and assessing their role in parasite pathogenesis. Obtained a patent on "Novel anti-malarial liposomal formulation", also elucidating mechanism of action of novel anti-malarials using proteomics.

d) **Knock out mouse technology:** Three years of postdoctoral training was devoted to mouse work and manipulation of mouse genome.

e) **Drug targeting:** Ph.D. thesis focused on the design and development of PEG-conjugated stealth liposomes for efficient drug delivery. The research included evaluating their capability for targeted delivery and conducting pharmacokinetic (PK) and pharmacodynamic (PD) analyses in mouse model.

List of Publications

1. Cheema, P.S., Nandi, D, **Nag, A.** (2025) "Camptothecin exerts Anti-Cancer effects through FoxM1 Inhibition" ***Indian Journal of Biochemistry and Biophysics,* 62** (3), 331-341. (***Figures of the article have been published on the front Cover Page of the journal issue).***
2. Bhatt S, Mohapatra AK, Rajesh AS, Meher S, **Nag A**, Panda PK, Nanda RK, Kundu S. (2024). Does Deteriorating Antioxidant Defense and Impaired γ-Glutamyl Cycle Induce Oxidative Stress and Hemolysis in Individuals with Sickle Cell Disease? ***Antioxid Redox Signal.*** 42(4-6):199-211. *doi: 10.1089/ars.2024.0594.*
3. Raza M, Bharti H, Chauhan C, Singal A, Jha D, Ghosh PC, **Nag A.** (2024). Enhanced anti-malarial efficacy of mefloquine delivered via cationic liposome in a murine model of experimental cerebral malaria. ***Eur J Pharm Biopharm***. *doi: 10.1016/j.ejpb.2024.114210,* 197,114210

4. Atri, Y., Bharti, H., Sahani, N., Sarkar, D., and **Nag, A**. (2023). CUL4A silencing attenuates cervical carcinogenesis and improves Cisplatin. ***J. Mol.Cell. Biochem.*** *doi: 10.1007/s11010-023-04776-2.*
5. Pradhan, S.K., Sahani, N., Preeti and **Nag, A.** (2023). Mechanistic insights into the oncogenic partnership of hADA3 and HPVE6-paving ways for improved for improved cervical cancer therapy. ***Indian Journal of Biochemistry and Biophysics (IJBB)***,60 (9), 651-658.
6. Bandyopadhayaya, S., Yadav, P., Sharma, A., Dey, S.K., **Nag, A.,** Maheshwari, R., Ford, B.M. and Mandal, C.C. (2023). Oncogenic role of an uncharacterized coldinduced zinc finger protein 726 in b reast cancer**.** ***Journal of Cellular Biochemistry****.124(6):889-906. doi: 10.1002/jcb.30417.*
7. Jaiswal, N., Nandi, D, Cheema, P.S., **Nag, A.** (2022). The Anaphase Promoting complex/cyclosome co-activator, Cdh1, is a novel target of human Papillomavirus 16 E7 oncoprotein in cervical oncogenesis. ***Carcinogenesis***, 43:988. doi: 10.1093/carcin/bgac057
8. Chand, V.*, Kapoor, A.*, Kundu, S., **Nag A.** (2022) Identification of a peptide that disrupts hADA3-E6 interaction with implications in HPV induced cancer therapy. ***Life Sciences***, 288:120157. doi: 10.1016/j.lfs.2021.120157.
9. Hina Bharti, Singal, A., Saini, M., Cheema, P.S., Raza, M., Kundu, S. and **Nag, A**. (2022). Repurposing the Pathogen Box compounds for identification of potent anti-malarials against blood stages of Plasmodium falciparum with PfUCHL3 inhibitory activity. ***Scientific Reports***, 12(1): 918. doi: 10.1038/s41598-021-04619-4.
10. Nandi, D., Cheema, P.S., Singal, A., Bharti, H. and **Nag, A**. (2021) Artemisinin mediates its tumor-suppressive activity in hepatocellular carcinoma through targeted inhibition of FoxM1, ***Frontiers in Oncology***, section Cancer Molecular Targets and Therapeutics, 11:751271. doi: 10.3389/fonc.2021.751271.
11. Cheema, P.S., Nandi, D. and **Nag, A. (2021).** "Exploring the therapeutic potential of Forkhead box O for outfoxing COVID-19", ***Open Biology*** 11(6):210069. doi: 10.1098/rsob.210069.
12. Chattopadhyay, I., Nandi, D. and **Nag, A. (2020).** The pint-sized powerhouse: Illuminating the mighty role of the gut microbiome in improving the outcome of anti- cancer therapy. ***Seminars in Cancer Biology.*** 70 (2021) 98-111. *doi:10.1016/j.semcancer.2020.07.012* ***A figure of the article has been published on the front cover page of the journal issue.***
13. Chadha, J., Nandi, D., Yama Atri and **Nag, A. (2020).** Significance of Human Microbiome in Breast Cancer: Tale of an invisible and an invincible. ***Seminars in Cancer Biology***. 70:112-127 *doi:10.1016/j.semcancer.2020.07.010*
14. Chand, V., Cheema, P.S., Atri, Y., Nandi, D., Sharma, P., Jaiswal, N., John, R., Aggarwal, S. and **Nag, A**. (**2019**). Identification of novel interaction between Promyelocytic Leukemia protein and human Alteration/Deficiency in Activation 3 coactivator and its role in DNA damage response. ***J. Prot. Proteom.*** 10(3): 207-220.
15. Kaur S, **Nag A**, Gangenahalli G, Sharma K. Front Genet. **(2019).** Peroxisome Proliferator Activated Receptor Gamma Sensitizes Non-small Cell Lung

Carcinoma to Gamma Irradiation Induced Apoptosis. ***Front. Genet.*** 10:554. doi: 10.3389/fgene.2019.00554.

16. Bharti H, Singal A, Raza M, Ghosh PC, **Nag A. (2019). "**Ionophores as Potent Anti-malarials: A Miracle in the Making". ***Curr Top Med Chem***. 18(23):2029-2041.
17. Kaur S, Nag A, Singh AK, Sharma K. (**2018**). "PPARγ-targeting Potential for Radioprotection". ***Curr Drug Targets.*** 2018;19(15):1818-1830.
18. Raza, M., Bharti, H., Singal, A., **Nag, A**., & Ghosh, P. C. (**2018**). "Long circulatory liposomal maduramicin inhibits the growth of *Plasmodium falciparum* blood stages in culture and completely cures murine model of experimental malaria", ***Nanoscale****, 2018,* ***10****, 13773 – 13791.*
19. Nandi, D., Cheema, P, S., Jaiswal, N., & **Nag, A. (2018).** FoxM1: Repurposing an oncogene as a biomarker. ***Seminars in Cancer Biology*** 52: 74-84
20. Dhir, B., Nandi, D., Wafa, A., **Nag, A.**, & Sultana, S. Toxicity assessment of plants raised in sludge amended soil. **(2017)** ***Int J Biol Med Res****.* 8(4): 6150-6152
21. John, R., Atri, Y., Chand, V., Jaiswal, N., Raj, K., & **Nag, A. (2017).** Cell Cycle-Dependent Regulation of Cytoglobin by Skp2. ***FEBS Letters***. doi: 10.1002/1873-3468.12864.
22. Chowdhury, K., Sharma, A., Kumar,S., Gunjan, G.K., **Nag, A.**, & Mandal CC. **(2017)**. Colocynth Extracts Prevent Epithelial to Mesenchymal Transition and Stemness of Breast Cancer Cells. ***Frontiers in Pharmacology****, 8*,593. doi: 10.3389/fphar.2017.00593.
23. Chand V, Nandi D, Mangla AG, Sharma P, **Nag A**. **(2016). "**Tale of a multifaceted co-activator, hADA3: from embryogenesis to cancer and beyond". ***Open Biology*****,** 6(9): pii: 160153. doi: 10.1098/rsob.160153.
24. Uppal S, Singh AK, Arya R, Tewari D, Jaiswal N, Kapoor A, Bera AK, **Nag A**, Kundu S. **(2016).** "Phe28$_{B10}$ Induces Channel-Forming Cytotoxic Amyloid Fibrillation in Human Neuroglobin, the Brain-Specific Hemoglobin". ***Biochemistry.*** 55(49):6832-6847.
25. Singhal, P., Sharma, U, Hussain, S, **Nag, A**. and Bharadwaj, M. **(2016).** Identification of genetic variants in TNF receptor 2 which are associated with the development of cervical carcinoma. ***Biomarkers*** 21 (7): 665-72.
26. Jaiswal, N., John, R., Chand, V., and ***Nag, A***. **(2015).** "Oncogenic Human Papillomavirus 16E7 modulates SUMOylation of FoxM1b". ***Int. J Biochem Cell Biol.*** 2015 58:28-36. 58,28.
27. John, R., Chand, V., Chakraborty, S., Jaiswal, N. and ***Nag, A***. **(2014).** "DNA damage induced activation of Cygb stabilizes p53 and mediates G1 arrest". ***DNA Repair***. 24: 107.
28. Chand, V., John, R., Jaiswal, N., Johar, S. and ***Nag, A***. **(2014) "**High Risk HPV16E6 Stimulates hADA3 Degradation by Enhancing its SUMOylation". ***Carcinogenesis***. 35(8), 1830.
29. Chakraborty, S., John, R. and ***Nag A***. (**2014**) "Cytoglobin in tumor hypoxia: Novel insights into cancer suppression". ***Tumor Biology***, 35(7), 6207**.**
30. Jaiswal, N., Chakraborty, S. and ***Nag A.*** (**2014**) "Biology of FOXM1and its Emerging Role in Cancer Therapy". ***J. Proteins and Proteomics***, 5(1): 249.
31. Sharma, P. and ***Nag, A***. (**2014)** "CUL4A Ubiquitin Ligase: A Promising Drug Target for Cancer and Other Human Diseases". ***Open Biology***, 4: 130217.
32. Raza, M., Chakraborty, S., Choudhury, M., Ghosh, P.C. and ***Nag A***. (**2014)**. "Cellular iron homeostasis and therapeutic implications of iron chelators in cancer". ***Curr. Pharm. Biotech.*** 15(12), 1125.

33. Mohibi, S., Gurumurthy, C.B., ***Nag, A***., Mirza, S., Mian, Y., Quinn, M., Naramura, M., Band, H. and Band, V. (**2012)**, "Alteration/deficiency in activation 3 is essential for mouse embryonic development and cell cycle progression". ***J Biol. Chem***. 287(35): 29442-56.

34. John, R., Chand, V., Jaiswal, N. and ***Nag, A*. (2011)** "Genotoxic Stress Induced Posttranslational Modification of Transcriptional Adaptor Protein Ada3". ***J. Proteins and Proteomics***, 2(2): 71-79.

35. Kurowska, A.G., ***Nag, A***., Dimri, M., Gao, Q., Dimri, G., Band, H. and Band, V. **2007**. "Ada3 requirement for HAT recruitment to ER and estrogen-dependent breast cancer cell proliferation". ***Cancer Res.*** 67(24):11789-97.

36. ***Nag, A***., Kurowska, A.G., Dimri, M., Sassack., Gurumurthy, C.B., Gao, Q., Dimri, G., Band, H. and Band, V. **2007**. "An Essential Role of Human Ada3 in p53 Acetylation". ***J. Biol. Chem***. 282(12): 8812- 20.

37. Bondar, T., Kalinina, A., Khair, L., Kopanja, D., ***Nag, A.***, Bagchi, S. and Raychaudhuri P. **2006**. ***Mol. Cell Biol***. 26(7):2531-9. "Cul4A and DDB1 associate with Skp2 to target p27Kip1 for proteolysis involving the COP9 signalosome".

38. Rajabi, H.N., Baluchamy, S., Kolli, S., ***Nag, A.***, Srinivas, R., Raychaudhuri, P. and Thimmapaya, B. **2005***. **J Biol Chem***. 280(1): 361-74. "Effects of depletion of CREB-binding protein on c-Myc regulation and cell cycle G1-S transition".

39. Meng, G., Zhao, Y., ***Nag, A.,*** Zeng, M., Dimri, G., Gao, Q., Wazer, D.E., Kumar, R., Band, H., Band, V. **2004.** ***J Biol Chem***. "Human ADA3 binds to estrogen receptor (ER) and functions as a coactivator".

40. ***Nag, A.***, Bagchi,S., and Raychaudhuri P. **2004**. Cancer Res. 64 (22): 8152-5. "Cul4A physically associates with MDM2 and participates in the proteolysis of p53".

41. Datta A, **Nag A,** Pan W, Hay N, Gartel AL, Colamonici O, Mori Y, Raychaudhuri P. ***2004*. *J Biol Chem*.** 279(35): 36698-707. "Myc-ARF (alternate reading frame) interaction inhibits the functions of Myc".

42. Datta A, ***Nag A***, Raychaudhuri P. **2002**. "Differential regulation of E2F1, DP1, and the E2F1/DP1 complex by ARF". ***Mol. Cell Biol***. 22(24): 8398-408.

43. ***Nag, A.***, Datta, A., Yoo, K., Bhattacharyya,D., Chakrabortty, A., Wang, X., Slagle, B.L., Costa, R.H., and Raychaudhuri, P. **2001**. "DDB2 Induces Nuclear Accumulation of the Hepatitis B Virus X Protein Independently of DDB1". ***J. Virol***. 75(21): 10383-10392.

44. ***Nag, A***., Bondar, T., Shiv, S., and Raychaudhuri, P. **2001**. "The XP-E Gene Product DDB2 is a Specific Target of Cullin-4A in Mammalian Cells". ***Mol. Cell. Biol***. 21(20): 6738-6747.

45. Datta, A., Bagchi, S., ***Nag, A***., Shiyanov, P., Yoon, T., and Raychaudhuri, P. **2001**. "DDB Physically and Functionally Interacts with the CBP/p300 Family of Proteins". ***J. Mutation Res***. 486(2): 89-97.

46. Shiyanov, P*.* ***Nag, A***. and Raychaudhuri, P. **1999.** "Cullin 4A associates with the UV-damaged DNA-binding protein DDB" ***J. Biol Chem*.** 274 (50): 35309-12.

47. ***Nag, A***. and Ghosh, P.C. **1999.** "Assessment of Targeting Potential of Galactosylated and Mannosylated PEG-Liposomes to different Cell types of Mouse Liver" ***J. Drug Targeting***. 6(6): 427-38.

48. ***Nag, A***., Mitra, G.,and Ghosh, P.C. **1997**. "A Colorimetric Estimation of Polyethyleneglycol Conjugated Phospholipid in Stealth Liposomes" ***Anal. Biochem***. 250: 35-43.

49. ***Nag, A.,*** Mitra, G.,and Ghosh, P.C. **1996**. "A Colorimetric Assay for Estimation of Polyethyleneglycolated Protein using Ammonium Ferrothiocyanate" ***Anal. Biochem***. 237: 224-231.

Book Chapter:

1. Nandi, D., Singal, A, & **Nag, A. (2019). "**Drug Resistance in Cancer and Role of Nanomedicine-Based Natural Products" in *Bioactive Natural Products for the Management of Cancer: from Bench to Bedside* (pp. 177-218). Springer, Singapore.

Patent:

"Novel anti-malarial liposomal formulation", Prahlad Chandra Ghosh, **Alo Nag**, Mohsin Raza, Aakriti Singal and Hina Bharti (ID 201711016131) – Patent granted in July 2021

Teaching experience: Teaching **Molecular Biology** and **Development Biology** to M.Sc., M. Phil and Ph.D. students **for more than 17 years**

Research Guidance*:* **Nine students completed Ph.D.** (7 PhD students in Cancer Research and 2 on Malarial Research) and awarded their Ph.D. degrees. Currently, **supervising 6 Ph.D. students**.
Trained several DU Masters students for dissertation work and serving as mentor in the Summer Research Fellowship Program jointly sponsored by the three national science Academies, India. Also trained an international exchange visitor student from Germany.

Research Fundings:
From Govt. of India funding agencies: DBT, DST, CSIR, Institute of Eminence-DU

***Scientific Society Membership*:**
Life member of Society of Biological Chemists
Life member of Indian Association of Cancer Research
Life member of Proteomics Society of India

Serving in Editorial Board / as Reviewers:
Editorial Board Member for the Journal "Current Trends in Biotechnological and Chemical Research", India; from 2012 till date.
Editorial Board Member for the Journal of Proteins and Proteomics, A journal of the Proteomics Society, India, Serials Publications; from 2015 till date.
Reviewer of research grant proposals for CSIR, DBT and DST, Govt. of India.
Reviewer of research papers from Molecular Cancer (USA), eCancer (UK), PLoS One, PLASMID (USA), Current Cancer Drug Targets (USA), Genetics Research International (USA), BMC Genomics, Current Drug Targets, Current Medicinal Chemistry, Current Pharmaceutical Biotechnology and Molecular Cancer Biology (USA).
Reviewer of research grant proposals for Swiss Cancer League, Switzerland.