




**University Faculty Details Page on DU Web-site**

Title	Prof.	First Name	ALO	Last Name	NAG	Photograph	
Designation	<b>Professor</b>						
Department	<b>Biochemistry</b>						
Address (Campus)	Department of Biochemistry Univ. of Delhi South Campus New Biotech Building - 2 <sup>nd</sup> Floor Benito Juarez Road, Dhaula Kuan New Delhi- 110021						
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<b>Education</b>							
<b>Subject</b>	<b>Institution</b>			<b>Year</b>	<b>Details</b>		
Ph.D.	University of Delhi South Campus			1999	Biochemistry		
M.Sc.	University of Delhi South Campus			1993	Biochemistry		
B.Sc.	University of Delhi			1991	Biochemistry (Hons)		
<b>Career Profile</b>							
<b>Organisation / Institution</b>		<b>Designation</b>	<b>Duration</b>	<b>Role</b>			
Univ. of Illinois at Chicago, U.S.A. Department of Biochemistry and Molecular Genetics		Postdoc Fellow	1999- 2001	Identification of interacting partners of damaged DNA binding proteins (DDB1 and DDB2).			
Univ. of Illinois at Chicago, U.S.A. Department of Biochemistry and Molecular Genetics		Senior Scientist	2002-2004	Study of the role of Cul4A (Ubiquitin Ligase) in oncogenesis and cell cycle regulation.			
Northwestern Univ., U.S.A. Robert Lurie Cancer Center		Instructor	2004-2007	Worked as a team leader on HPVE6 interactor protein hADA3 in acetylation of p53, study of its <i>in-vivo</i> functions by generating knock-out mouse models.			
Department of Biochemistry, University of Delhi		Reader	2007-2010	Teaching and Research			

Department of Biochemistry, University of Delhi	Associate Professor	2010-2014	
Department of Biochemistry, University of Delhi	Professor	2014- Present	Teaching and Research
<b>Administrative Assignments :</b>			
<p>Member, Board of Research Studies, Faculty of Interdisciplinary and Applied Sciences  Member, Faculty of Interdisciplinary and Applied Sciences  Teacher-in-charge for Imaging systems, CIF, UDSC  Executive Council Nominee on the Managing Committee of Geetanjali PG Girl's hostel, UDSC  VC nominee to Doctoral Research Committee, Department of Zoology, DU.</p>			
<b>Research Interests / Specialization</b>			
<p>Cell cycle regulation, Molecular mechanisms of cellular transformation, Novel tumor suppression pathways, Development of targeted anti-cancer strategies, Post-translational mechanisms in human and malarial parasite.</p>			
<b>Research Activities:</b>			
<p><b>CANCER:</b> The major focus of our research has been to enhance basic understanding of the molecular mechanisms of tumor development and combat cancer through <b>discovery of novel molecular targets</b>. Ongoing research projects are mostly designed to investigate the key molecular events responsible for transformation of normal cells into cancerous cells. The lab is actively involved in investigating unknown oncogenic functions of Human Papillomavirus. This as an effort towards identification of novel molecular targets against HPV related malignancies including Cervical cancer, a major killer among Indian women.</p> <p>The lab is interested in several cancer therapy targets including FoxM1 and E3 ligase, Cul4a. FoxM1, a master regulator of cell cycle implicated in oncogenesis and metastasis. Our recent findings revealed interesting roles of posttranslational mechanisms in modulation of FoxM1 expression and function in cancer cells. Study of tumor suppression mechanisms is yet another research focus of our lab. We are trying to address the enigmatic functions of Cytoglobin (CYGB). Our findings not only confirmed CYGB's anti-proliferative role but also provided novel evidences for its involvement in cell cycle regulations.</p> <p><b>MALARIA:</b> Exploring the significance of post-translational machinery in <i>Plasmodium falciparum</i>.</p>			
<b>Teaching Experience (Subjects/Courses Taught)</b>			
<p>Teaching <b>Molecular Biology</b> and <b>Developmental Biology</b> course to M.Sc. and Ph.D.students since 2007. Also, supervising M.Sc. practicals (Semester II) related to Cell Culture and Gene Expression in Mammalian Cells; guiding one year long dissertation for M.Sc. (Sem III and IV). Taught <b>Molecular Biology</b> and <b>Developmental Biology</b> course to M.Phil. (Biotechnology) students from 2007-2016.</p>			

### Research Guidance

Supervision of Doctoral Thesis

Ph.D. Degree Awarded : Four  
Under Progress : Seven

### Honors/ Awards/ Distinctions

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. Postdoctoral 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 the 17<sup>th</sup> International Congress of Biochemistry and Molecular Biology Conference, **1997**, San Francisco, California.
5. Young Scientist award in the 4<sup>th</sup> International Symposium on Biochemical Roles of Eukaryotic Cell Surface Macromolecules, **1996**, New Delhi, India.
6. Qualified National Eligibility Test in 1993 which is conducted by Council of Scientific and Industrial Research (CSIR, Government of India) and awarded the University Grants Commission Fellowship for carrying out research from **1993-1998**.
7. Scholarship awarded by Chanakyapuri Rotary Club (Delhi, India) for outstanding academic performance during Masters in Biochemistry (**1991-1993**).

### Conference Organization :

1. Served as **Local Organizing Secretary** of the International conference "Carcinogenesis 2012" entitled "Frontiers in Carcinogenesis and Preventive Oncology: Molecular Mechanisms to Therapeutics". The conference was held at the Ram Manohar Lohia Hospital, New Delhi from 19<sup>th</sup> to 21<sup>st</sup> November 2012.
2. "Frontiers in Biological Sciences" March 16, 2012, S.P. Jain Auditorium, University of Delhi South Campus, New Delhi.
3. "Emerging Trends in Globin Research: Need to Imbibe New Approaches and Technologies" February 6, 2010, Biotech Centre Auditorium, University of Delhi South Campus, New Delhi.

## Peer Reviewed Publications

1. Raza, M., Bharti, H., Singal, A., **Nag, A\*** and Ghosh, P.C\*. (\*corresponding authors) **(2018)**. Long circulatory liposomal maduramicin inhibits the growth of Plasmodium falciparum blood stages in culture and cures murine models of experimental malaria. **Nanoscale**. doi: 10.1039/c8nr02442a.
2. Kaur S., **Nag A.**, Singh AK. and Sharma K. **(2018)**. PPAR $\gamma$ -targeting potential for radioprotection. **Curr Drug Targets**. doi: 10.2174/1389450119666180131105158
3. John R., Atri Y., Chand V., Jaiswal N., Raj K. and **Nag A.** **(2017)**. Cell cycle-dependent regulation of cytoglobin by Skp2. **FEBS Letters**. 591(21):3507-3522.
4. Nandi D., Cheema P.S., Jaiswal N. and **Nag A.** **(2017)**. FoxM1: Repurposing an oncogene as a biomarker. **Seminars in Cancer Biology**. doi:10.1016/j.semcancer.2017.08.009.
5. Chowdhury K., Sharma A., Kumar S., Gunjan GK., **Nag A.** and Mandal CC. **(2017)**. Colocynth Extracts Prevent Epithelial to Mesenchymal Transition and Stemness of Breast Cancer Cells. **Front. Pharmacol.** 8:593. doi: 10.3389/fphar.2017.00593. eCollection 2017.
6. Chand V, Nandi D, Mangla AG, Sharma P and **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.
7. Uppal S, Singh AK, Arya R, Tewari D, Jaiswal N, Kapoor A, Bera AK, **Nag A** and Kundu S. **(2016)**. "Phe28<sub>B10</sub> Induces Channel-Forming Cytotoxic Amyloid Fibrillation in Human Neuroglobin, the Brain-Specific Hemoglobin". **Biochemistry**. 55(49):6832-6847.
8. 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** May 4:1-8 (Epub ahead of print)
9. Kumar S., **Nag, A.** and Mandal C.C. **(2015)** "A Comprehensive Review on miR-200c, A Promising Cancer Biomarker with Therapeutic Potential." **Cancer Drug Targets** 16(12), 1381-403.
10. Jaiswal, N., John, R., Chand, V., and **Nag, A.** **(2015)**. "Oncogenic Human papillomavirus16E7 modulates SUMOylation of FoxM1b" **The International Journal of Biochemistry & Cell Biology**. Nov11;58C:28-36. doi:10.1016/j.biocel.2014.11.002
11. Singhal, P., Kumar, A., Hussain, S, **Nag, A.** and Bharadwaj, M. **(2015)**. "NFKB1/NFKB1a polymorphisms are associated with the progression of cervical carcinoma in HPV-infected postmenopausal women from rural area". **Tumor Biology**, 36(8), 6265-76.
12. 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):1125-40.
13. 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**. Dec;24:107-12. doi: 10.1016/j.dnarep.2014.09.003.
14. 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):1830-9. doi: 10.1093/carcin/bgu104.
15. Chakraborty, S., John, R. and **Nag A.** **(2014)** "Cytoglobin in tumor hypoxia: Novel insights into cancer suppression". **Tumor Biology**, 35(7), 6207-19. doi: 10.1007/s13277-014-1992-z.
16. Jaiswal, N., Chakraborty, S. and **Nag A.** **(2014)** "Biology of FOXM1 and its Emerging Role in Cancer Therapy". **J. Proteins and Proteomics**, 5(1): 249.

17. Sharma, P. and **Nag, A.** (2014) "CUL4A Ubiquitin Ligase: A Promising Drug Target for Cancer and Other Human Diseases". *Open Biology*, 4: 130217. doi: 10.1098/rsob.130217.
18. Mohibi, S., Gurumurthy, C.B., **Nag, A.**, Mirza, S., Mian, Y., Quinn, M., Katafiaz, B., Eudy, J., Pandey S., Guda, C., Naramura, M., Band, H. and Band, V. (2012) "Mammalian alteration/deficiency in activation 3 (Ada3) is essential for embryonic development and cell cycle progression". *J Biol Chem*, 287(35) : 29442-56.
19. 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.
20. 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". *Can. Res.* 67(24):11789-97. Erratum in : *Cancer Res.* 2008 , 68(5):1609.
21. **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.
22. Bondar, T., Kalinina, A., Khair, L., Kopanja, D., **Nag, A.**, Bagchi, S. and Raychaudhuri P. (2006). "Cul4A and DDB1 associate with Skp2 to target p27Kip1 for proteolysis involving the COP9 signalosome". *Mol Cell Biol.* 26(7):2531-9.
23. Rajabi, H, Baluchamy, S., Kolli, S, **Nag, A.**, Srinivas, R., Raychaudhuri, P., Thimmapaya, B. (2005). "Effects of depletion of CREB-binding protein on c-Myc regulation and cell cycle G1-S Transition". *J. Biol. Chem.* 280(1):361-74.
24. Meng, G., Zhao, Y., **Nag, A.**, Zeng, M., Dimri, G., Gao, Q., Wazer, D.E., Kumar, R., Band, H., Band, V. (2004). "Human ADA3 binds to estrogen receptor (ER) and functions as a coactivator". *J. Biol. Chem.* 279(52), 54230-54240.
25. **Nag, A.**, Bagchi,S., and Raychaudhuri P. (2004). "Cul4A physically associates with MDM2 and participates in the proteolysis. *Cancer Res.* 64 (22): 815.
26. Datta A, **Nag A**, Pan W, Hay N, Gartel AL, Colamonici O, Mori Y, Raychaudhuri P. (2004). "Myc-ARF (alternate reading frame) interaction inhibits the functions of Myc". *J. Biol. Chem.* 279(35) : 36698-707.
27. **Nag, A.**, Datta, A., Yoo, K., Bhattacharyya,D., Chakraborty, 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.
28. **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.
29. 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.
30. **Nag, A.**, Mitra, G.,and Ghosh, P.C. 1997. "A Colorimetric Estimation of Polyethyleneglycol Conjugated Phospholipid In Stealth Liposomes" *Anal. Biochem.* 250: 35-43.
31. **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.

## Patent

Filed Indian patent on "**Novel anti-malarial liposomal formulation**".

## Conference Presentations (Last three years)

### Invited Lectures :

*"Hacking the viral tricks to treat Cervical cancer"*, 7<sup>th</sup> International Conference on Translational Cancer Research on "Cancer Prevention and Treatment: From Ancient Medicine to Modern Medicine", from February 8-11, Chennai, India.

*"Understanding the complexities of HPV oncogenesis to devise new treatment strategies"* 11<sup>th</sup> symposium on 'Frontiers in Biomedical Research'. Theme: *Challenges In Human Health: Prevention, Diagnosis and Cure*, 19-21 February, 2018, ACRB, Delhi University.

*"Cell cycle dependent regulation of tumour suppressor Cytoglobin by Skp2"* 11<sup>th</sup> symposium on 'Cancer Prevention and Treatment', 9-10 February, 2018, JNU, New Delhi.

*"Novel ways of perturbing oncogenic interactions for cancer therapy"*, International Conference on "Cell Death in Cancer and Toxicology", 20-22 February, 2018, CSIR-IITR, Lucknow, India.

*"Revealing the Oncogenic Tricks of HPV – Way to New Therapies"* – Workshop on Molecular Techniques in Cancer Research, April 20, 2017, National Institute of Cancer Prevention and Research, Noida.

Guest of Honor speaker in the BIOSPARK Symposium of Department of Biochemistry, Deshbandhu College, on March 27, 2017.

*"Cell Cycle and Cancer"*, Refresher Course in Life Sciences and Biotechnology organized by JNU on October 18, 2016.

*"Human Papillomavirus, an Oncogenic SUMO Wrestler"*, International Conference - 43<sup>rd</sup> ISOBM Annual Congress, September 1 to 6, 2016, Chicago, U.S.A.

*"Insights into Novel Oncogenic Mechanisms of Human Papillomavirus"*, International Symposium CANCER IN ASIA: BRIDGING THE GAPS, organized by ICAR-ACOS, 8-10 April, 2016, Ashoka Hotel, New Delhi.

Invited speaker in the International Symposium on "Role of Herbals in Cancer Prevention and Treatment", 9-10 February, 2016, JNU, New Delhi.

*"Discovery of Novel Drug candidates for anti-Cancer Therapy"*, International Symposium on "Innovations in Product Design at Indian Institute of Information Technology, Design and Manufacturing, 11-13 May, 2015, Indian Institute of Information Technology, Jabalpur.

### Poster presentations/Awards from Lab

*"Role of Skp2-Cytoglobin Axis in Cell Cycle Control"* by Yama Atri, Rince John and Alo Nag,. 86<sup>th</sup> Annual Conference of Society of Biological Chemists on 'Emerging Discoveries in Health and Agricultural Sciences', 16-19 Nov, JNU, New Delhi. **(Won Third Best Poster Award)**

*"The Protective Role of Immunomodulatory Cytokines against Lethal Dose of Radiation in vitro and in vivo"*. Simran Kaur, Anshoo Gautam, Alo Nag and Kulbhushan Sharma. 86<sup>th</sup> Annual Conference of Society of Biological Chemists on 'Emerging Discoveries in Health and Agricultural Sciences', 16-19 Nov, 2017. JNU, New Delhi. **(Won Best Poster Award)**

*"Biochemical and Biophysical Portraying of Plasmodium Cardinal Deubiquitinase: Pfuch13"* by Hina Bharti, Aakriti Singal, Mohsin Raza, Prahlad C. Ghosh and Alo Nag. 86<sup>th</sup> Annual Conference of Society of Biological Chemists on "Emerging Discoveries in Health and

Agricultural Sciences" 16-19 Nov,2017, JNU, New Delhi.

*"Discovery of Novel Inhibitors Against FoxM1 as Promising Anti-cancer Therapeutics"* by Pradeep Singh Cheema, Deeptashree Nandi, Neha Jaiswal, Sanjay Dey, Suman Kundu and Alo Nag. 86th Annual Conference of Society of Biological Chemists on "Emerging Discoveries in Health and Agricultural Sciences" 16-19 Nov, 2017, JNU, New Delhi.

*"Novel Functions of Cytoglobin in Cell Cycle control and Tumour Suppression"*, by Rince John, Vaibhav Chand, and Alo Nag, International Symposium on SYSTEMS ONCOLOGY, Integrated Approaches to Understand and Cure Cancer, 10-12 March, 2017, Cochin (organized Carcinogenesis Foundation, USA).

Ms. Yama Atri **won Best Essay Award** on Cancer Genomics: An Approach to Personalized Therapy, 2016, Indian Association for Cancer Research, New Delhi.

*"Maneuvering Cellular Cul4A and FoxM1 in Virus coerced Carcinogenesis"*, by Yama Atri, Deeptashree Nandi, Pradeep Singh Cheema and Alo Nag, International Symposium on HIV and Hepatitis, September 01, 2016, New Delhi, (organized by Faculty of Life Sciences & Biotechnology, South Asian University).

*"Viral oncoprotein HPV16E7 perturbs SUMOylation of FoxM1 to induce oncogenesis"* by Jaiswal, N., Cheema, S.P., John, R., Chand, V., and Nag, A. International Symposium on "Current Advances in Radiobiology, Stem cells and Cancer Research, Feb 19-21, 2015, JNU, New Delhi. Proceedings published in **Nature India**.

#### **Association with Professional Societies Memberships**

Life member, Society of Biological Chemists (India)

Life member, Indian Association of Cancer Research (India)

Life member of Proteomics society of India

Associate member, American Association of Cancer Research (USA)

#### **Serving in Editorial Board:**

**Editorial Board Member** for the Journal "Current Trends in Biotechnological and Chemical Research", India.

**Editorial Board Member** for the Journal of Proteins and Proteomics, A journal of the Proteomics Society, India, Serials Publications.

#### **Serving as Reviewer:**

**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, Tumor Biology and Molecular Cancer Biology (USA).

#### **Funding**

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