

Dr. Dinesh Kumar

(Associate Professor)

Molecular Diagnostics and Phenome Research (MDPR) Lab

Centre Biomedical Research (CBMR),

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Research Area:

The broad area of my research at CBMR is biomolecular NMR and primarily we are involved in **NMR based clinical metabolomics studies** i.e. to identify the disease specific metabolic signatures and to explore their utility in clinical diagnosis and surveillance. We are also using **NMR based metabolomics approach for evaluating therapeutic efficacy and safety** of potential candidate drugs on **preclinical** models of various cancer types such as hepatocellular carcinoma, breast cancer, colon cancer, lung cancer, etc. In addition to metabolomics studies, we are also involved in developing novel NMR methodologies for rapid structural and functional studies of proteins. These designed NMR methods are further used in combination with other chemical biology tools to understand the mechanistic structural biology of proteins of therapeutic relevance. The structural information is then used in the rational discovery of small molecule inhibitors.

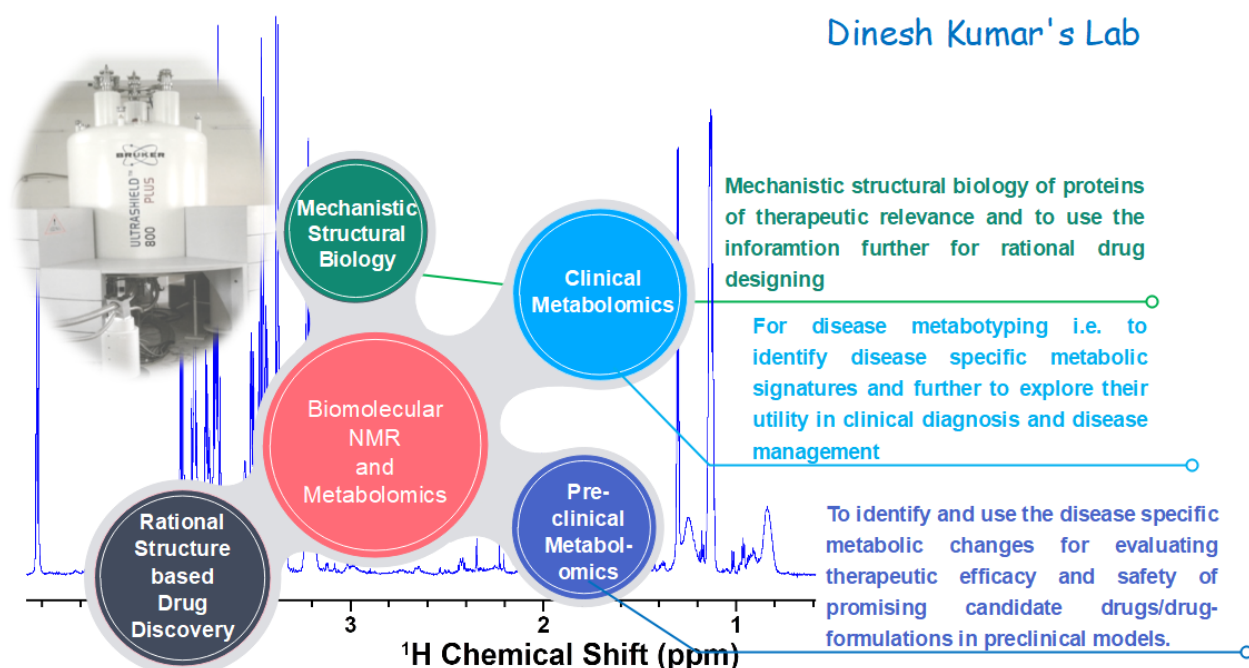


Figure: Biomolecular NMR and metabolomics approach used for biomedical research in kumar's lab.

Metabolomics in Biomedical Research

Metabolomics -a newborn cousin to genomics and proteomics- is an analytical approach to reveal altered metabolism induced by a disease or its therapeutic intervention. It involves quantitative and comparative analysis of concentration profiles of low molecular weight metabolites and their intermediates in affected biological systems (typically urine, blood-plasma/serum, cell lysates, or tissue extracts). With its ability to discover disease related biomarkers and underlying biochemical processes, today, metabolomics is used virtually in all aspects of biomedical research aiming to improve the understanding of the health and disease processes. The whole paradigm is based on the fact that a pathophysiological condition or therapeutic intervention results in a specific and characteristic change in the biochemical composition profiles of bio-fluids and metabolomics aims to identify these changes. The biochemical changes -that correlate to a disease (or disease type/grade/severity)

and/or predict treatment response- then allow the clinical researchers to improve diagnosis and other aspects of disease management such as predicting disease progression, early detection of a medical comorbidity, monitoring response to treatment and patient stratification for treatment. The molecular biomarkers validated on wide-range of human populations form the basis for new clinical diagnostic assays.

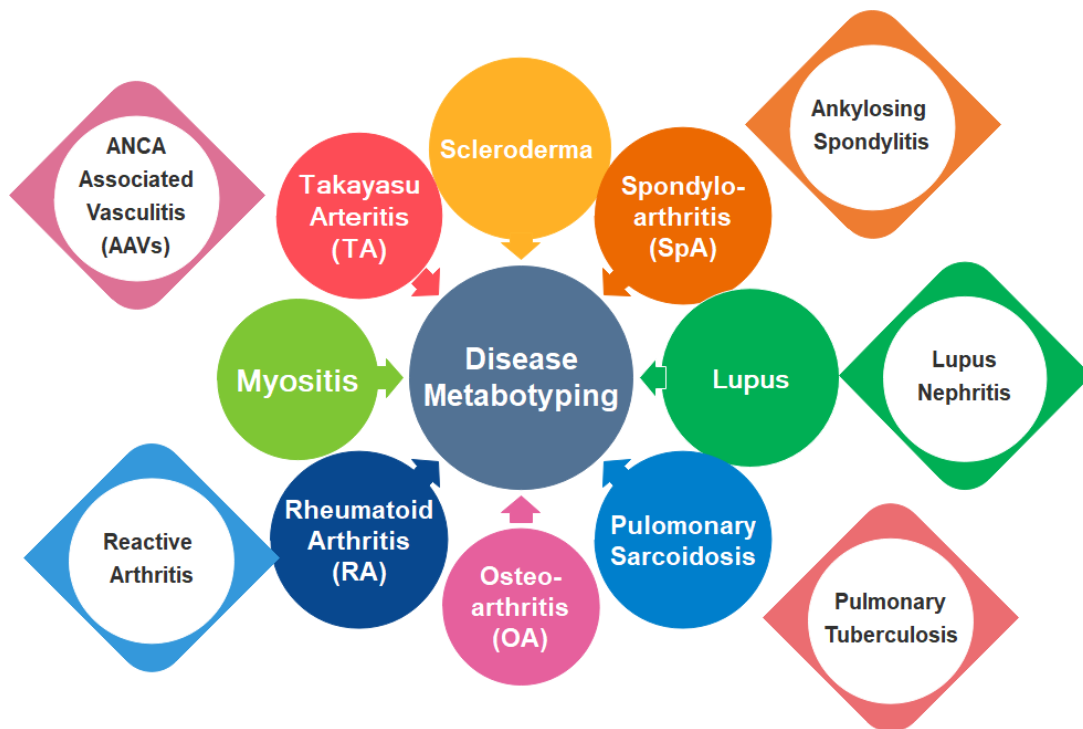


Figure: Various autoimmune inflammatory diseases (AIDs) under investigation in kumar's lab (through the use of NMR based metabolomics approach).

NMR based Metabolomics:

NMR spectroscopy coupled with multivariate statistical analysis is currently the technique of choice for clinical metabolomics. Particularly, the interest in applying NMR-based metabolomics for the disease metabotyping studies is increasing among clinical researchers owing to its non-destructive, non-selective and minimal sample preparation requirement. On top of this, it offers the potential for high-throughput (i.e. >100 samples a day is attainable) and provides highly reproducible results. NMR based metabolomics approach has extensively and exclusively been used in our lab to identify metabolic signatures of various mechanistically complex autoimmune inflammatory diseases such as lupus (also known as systemic lupus erythematosus or SLE), lupus nephritis, Takayasu arteritis (TA), small vessel vasculitis (SVV), pulmonary sarcoidosis, rheumatoid arthritis (RA), reactive arthritis (ReA), osteoarthritis (OA), myositis and various spondyloarthritis (SpA) conditions. AIDs are often diagnosed by the presence of antibodies to normal proteins; however, their levels in the blood keep on varying significantly time to time and even from patient to patient making it difficult to diagnose AIDs when antibodies are not measurable. Further, the proteomic analyses and mRNA gene expression data do not show the complexity of pathophysiological processes that occur in a cell, tissue or organism. Therefore, there is immense clinical interest is to identify biomarkers to improve diagnostic and prognostic screening of AIDs. Metabolic profiling represents a paradigm shift in clinical immunology research, with the goal of capturing the complexity of metabolic networks. Further, the metabolic biomarkers offer clear potential to overcome the limitations of proteomics, genomics and transcriptomics based single feature markers in the diagnosis of complex diseases including AIDs, particularly, the assessment of disease activity in such patients. In addition to AIDs, we were also involved in disease metabotyping studies of other devastating human diseases such as acute-on-chronic liver failure (ACLF), lung-cancer, and pulmonary tuberculosis.

Academic Awards and Recognitions:

Dr. Dinesh Kumar received his PhD from Department of Chemical Sciences (DCS), Tata Institute of Fundamental Research (TIFR), Mumbai. During his PhD, he worked mainly in the area of protein NMR and contributed substantially through designing a series of amide-resolved 2D/3D heteronuclear correlation NMR experiments and novel strategies based on these methods for rapid structural and functional studies of proteins. Consequently, his thesis work received "**2011 Eli Lilly Outstanding Thesis Award**" in the "*Structural Biology Section*" because of potential implications of the designed NMR methodologies for pursuing structural investigations on proteins, especially, those containing disordered fragments and having tendency to degrade/precipitate in matter of days. After PhD, he plunged himself into the area of rational drug designing and reported promising natural compounds as next-generation anti-*Helicobacter pylori* (HP) agents. These small molecules have been demonstrated to exhibit exquisite binding to the HP histone like DNA binding protein (a potential drug-target protein for developing therapeutic strategies against *Helicobacter pylori*). In order to resonate with the core mandate of CBMR, he also plunged himself into NMR based **clinical metabolomics** studies for elucidating distinctive metabolic signatures of various mechanistically complex human diseases (such as acute-myocardial-infarction, acute-on-chronic liver failure, etc.) including a range of autoimmune-inflammatory diseases such as lupus, lupus nephritis, Takayasu arteritis, small-vessel vasculitis, sarcoidosis, scleroderma, rheumatoid-arthritis, reactive-arthritis, spondyloarthritis, and myositis. Additionally, he has been involved in several **pre-clinical metabolomics studies** for the evaluation of therapeutic efficacy and safety of promising candidate drugs. Working in such important areas of biomedical research has credited following awards and recognitions to his academic career:

1	Elected as Associate of Indian Academy of Sciences (IAsC) for three years (2019 to 2022).
2	Elected as a member of Executive committee (EC) of National Magnetic Resonance Society (NMRS), for three years (2019 to 2022).
3	Serving as President of Translational Biomedical Research Society (TBRS) India. (Registered Under Society Registration Act 1860, Reg. No.: LUC/00480/2019-2020) (https://tbrsindia.wordpress.com)
4	Serving as visiting faculty of Biosciences (FoBS), Institute of Biosciences and Technology (IBST), SHRI Ramswaroop Memorial University (SRMU), Barabanki, UP. (January 2021 Onward)
5	Serving as an Editorial Board member of Current Metabolomics and Systems Biology , (Publisher: Bentham Sciences; eISSN: 2213-2368; pISSN: 2213-235X), Frontiers in Molecular Biosciences (as Review Editor of its Section: Molecular Diagnostics and Therapeutics (Publisher: Frontiers Media S.A. Switzerland; ISSN: 2296-889X) and Archives of Clinical and Biomedical Research (Publisher: Fortune Journals; ISSN: 2572-5017)
6	Serving as a Referee/Reviewer for Metabolomics (Springer, Journal No. 11306; 2016 Onward) Current Metabolomics and Systems Biology (Bentham Science, ISSN: 2213-2368; 2015 Onward) RSC Advances (Royal Society of Chemistry, ISSN 2046-2069; 2016 Onward); Scientific Reports (Nature Publisher, ISSN 2045-2322; 2017 Onward) Indian Journal of Pharmacology (Wolters Kluwer; 2017 Onward) Archives of Pharmacal Research (Springer, Journal No. 12272; ISSN: 0253-6269; 2018 Onward)

A. PhD students supervised or currently working in the lab :				
○ Students completed/Submitted PhD:		Three (3)		
○ Students perusing PhD thesis work		Seven (7)		
#	Name of the Student (Guide)	PhD Registration/Enrollment Status	Status	Supervised/Supervising as
1	Dr. Atul Rawat (2012- 2017, CSIR-JRF)	Dept. of Biotechnology, BBAU, Lucknow (Prof. Anand Prakash) (Registration Number: 005/2012)	Awarded in December 2017	Co_Guide
	Thesis Title	Identification and Characterization of Biomarkers using NMR based Metabolomics: Implication to Disease Diagnosis and Treatment Monitoring		
2	Dr. Nancy Jaiswal (2013 to 2019, DST INSPIRE PhD Fellow)	Dr. A.P.J. Abdul Kalam Technical University (APJAKTU), Lucknow (Enrollment Number: 1743; Roll Number: 1540046)	Awarded in 2019	Guide
	Thesis Title	Structural and Mechanistic Investigation of Histone like DNA binding protein (HU) of <i>Helicobacter pylori</i>		
3	Durgesh Dubey (2013 to 2019, ICMR-JRF)	Dept. of Biotechnology, BBAU, Lucknow (Prof. Dinesh Raj Modi) (Registration Number: 1081/07 Roll Number: 826)	Awarded in September 2020	Co_Guide
	Thesis Title	NMR based Metabolomics of Synovial Fluid from patient with Reactive Arthritis (ReA) for Identifying abnormal metabolic status		
4	Umesh Kumar (2015 to 2020, ICMR JRF)	Department of Zoology BBAU, Lucknow (Guide: Dr. Venkatesh Kumar R) (Enrollment Number: 1381/18)	Currently working as SRF	Co_Guide
5	Vandana Singh (PhD Fellow under UGC program 2015-2020)	Department of Zoology BBAU, Lucknow (Guide: Dr. Venkatesh Kumar R) (Enrollment Number: 636/18 Registration Number: RA199C96594)	--	External Co_Guide
6.	Ritu Raj (Joined March 2018, CSIR-JRF)	Department of Biochemistry & Biophysics, University of Kalyani, Kalyani-741235, West Bengal, India (Guide: Prof. Tapati Chakraborti) (Enrollment ID: APP/PH/02/22/302227)	Currently working as SRF	Co_Guide
7.	Mrs. Anamika Chaturvedi (Joined June 2018, CSIR-JRF in Physics)	Dept. of Physics, BHU, VARANSI-221005; Guide: Prof. Ranjan Kumar Singh (Admission ID: BCUFN115940169S/ RET Roll No. 8819100056)	Currently working as SRF	Co_Guide
8.	Nikhil Gupta (Joined Sept 2018, CSIR-JRF)	Dept. of Chemistry, BHU, Varanasi-221005 (Guide: Dr. Ashish Kumar) (Admission ID: BCUFN91160419a /RET Roll No. 8829100052)	Currently working as SRF	Co_Guide
9.	Miss Anuradha Yadav (PhD Fellow, 2019)	Amity Institute of Biotechnology, Amity University, Lucknow-226028 Uttar Pradesh India (Guide: Dr. Manish Dwivedi)	--	External Co_Guide
10.	Miss Pranjali (Project Assistant 2019 Onward)	Dept. of Physics, BHU, VARANSI-221005) (Guide: Prof. Ranjan Kumar Singh) (Registration Number awaited)	--	External Co_Guide
	Thesis Title	Design and synthesis of smart and versatile nanoparticles for diagnostic and therapeutic applications		

B. Post-Doctoral Research Associates	Supervisor Role
Dr. Sandeep Kumar (ICMR RA, from March 2019 Onward) Title of the Project: Liposomal Encapsulation of potent natural anti-microbial agents for their intraperitoneal use: Implications to Improve the peritoneal dialysis technique	Guide
Dr. Anurag Srivastava: (ICMR RA) Supervisor: Prof Vikas Agarwal, SGPGIMS, Lucknow Title of the Project: Preclinical Implication of Dual Drug Curcumin and P144 Loaded Nanoemulsion for Targeted Inhibition of Transforming Growth Factor (TGF beta-1)/Smad Pathway to Ameliorate Peritoneal Fibrosis In Peritoneal Dialysis	Co-Supervisor

C. MD/DM students completed or pursuing their thesis projects in the lab :	Number
MD/DM Students completed their thesis research in the lab	Thirteen (13)
MD/DM Students pursuing their research projects in the lab	Three (3)

D. Served as Thesis Reviewer/Examiner:
<ul style="list-style-type: none"> ○ August 2017: Ms. Swathi Ramasahayam (International Institute of Information Technology (IIIT), Gachibowli, Hyderabad-500032; Supervisor: Dr. Shubhajit Roy Chowdhury ○ February 2020: Mr. Ramireddy Ravikanth Reddy (AcSIR-CLRI; CSIR-Central Leather Research Institute; Chennai-600020 India; Supervisor: BVN Phani Kumar ○ May 2020: Mr. Tahseen Raza (Department of Biotechnology, IIT Roorkee, Roorkee-247667, Uttarakhand INDIA; Supervisor: Dr. Sulakshana Mukherjee) ○ August 2020: Ms. Farheen Fatma (CSIR-CDRI, Lucknow; Supervisor: Dr. Ashish Arora) ○ November 2020: Mr. Saleem Yousf (IISER Pune; Supervisor: Dr. Jeetender Chugh)

Publications in peer reviewed national and international Journals (Accepted and Online in UGC Listed Journals)

(Note: The authors marked using symbols “*” represent the corresponding authors and the authors marked using symbols “‡” represent the equally contributing authors)

Total	108	As Corresponding Author*
During PhD	10	--
During 2011-2014	14	9
2015 Onward	79	25
Book chapters/Review Articles/ perspectives	05	1

Citations of my few publications: Please visit following site for my citation detail.

<https://scholar.google.co.in/citations?hl=en&user=9z8KbqoAAAAJ>

103. Umesh Kumar, Pankti Mehta, Sandeep Kumar, Avinash Jain, Anupam Guleria, Venkatesh Kumar R, Ramnath Misra and **Dinesh Kumar***, “Circulatory Histidine levels as Predictive Indicators of Disease Activity in Takayasu Arteritis”. **Analytical Science Advances (March 2021)** (DOI: 0.1002/ansa.202000181) ([Analytical Science Advances \(ASA\) is now part of the Chemistry Europe journal family \(i.e. European Chemical Societies Publishing with ISSN:2628-5452; Publisher: Wiley-VCH\)](#))
102. Umesh Kumar, Abhai Kumar*, Smita Singh, Payal Arya, Sandeep Kumar Singh, Rameshwar Nath Chaurasia, Anup Singh, and **Dinesh Kumar***, “An elaborative NMR based plasma metabolomics study revealed metabolic derangements in patients with Mild Cognitive Impairment: A study on North Indian Population” **Metabolic Brain Disease (March 2021)** (DOI: 10.1007/s11011-021-00700-z) (IF: 2.726; eISSN:1573-7365; pISSN: 0885-7490; Publisher: Springer Nature, Switzerland AG)
101. Ritu Raj, Nipanshu Agarwal, Sriram Raghavan, Tapati Chakraborti, Krishna Mohan Poluri, Gaurav Pande*, **Dinesh Kumar***, “Epigallocatechin gallate (EGCG) with potent anti-*Helicobacter pylori* activity binds efficiently to its Histone like DNA binding protein” **ACS Omega (2021) 6, 5, 3548–3570.** (DOI: 10.1021/acsomega.0c04763) (IF-2019: 2.87 | Web Edition ISSN: 2470-1343; Publisher: American Chemical Society)
100. V. Karthick*, **Dinesh Kumar**, Katsuhiko Ariga*, Vineeth Kumar C M, V. Ganesh Kumar, K. Vasanth, T. Stalin Dhas, and M. Ravia “Incorporation of 5-nitroisatin for tailored hydroxyapatite nanorods and its effect on cervical cancer cells: A nanoarchitectonics approach”, **Journal of Inorganic and Organometallic Polymers and Materials (February 2021).** (IF-2020:1.67; ISSN: 1574 1443 | 15741451; Publisher:Springer Verlag)
99. Nancy Jaiswal, Nipanshu Agarwal, Krishna Mohan Poluri and **Dinesh Kumar***, “Effect of Urea concentration on instant refolding of Nuclear Export Protein (NEP) from Influenza-A virus H1N1: A solution NMR based investigation” **International Journal of Biological Macromolecules (2020), 165 (Part-B) 2508-2519.** (DOI: 10.1016/j.ijbiomac.2020.10.146) ([Impact Factor: 5.162; ISSN No: 0141-8130; Publisher: Elsevier](#))
98. Tulika Shrivastava, Ritu Raj, Amit Dubey, Dinesh Kumar, Rajnish Chaturvedi, Sandeep Sharma, and Smriti Priya*, “Fast kinetics of environmentally induced α -synuclein aggregation mediated by structural alteration in NAC region and result in structure dependent cytotoxicity” **Scientific Reports (2020), Article No. 75361.** (DOI:10.1038/s41598-020-75361-6) (5 year IF: 4.576; ISSN: 2045 2322 (online); Publisher: Nature Publishing Group, UK)
97. Krishnakant Gangele, Khushboo Gulati, Nidhi Joshi, **Dinesh Kumar** and Krishna Mohan Poluri*, “Molecular insights into the differential structure-dynamics-stability features of interleukin-8 orthologs: Implications to functional specificity” **International Journal of Biological Macromolecules (2020), 164, 3221-3234.** (DOI: 10.1016/j.ijbiomac.2020.08.176.) ([Impact Factor: 5.162; ISSN No: 0141-8130; Publisher: Elsevier](#))
96. Shweta Devi, Kajal Karsauliya, Tulika Srivastava, Ritu Raj, **Dinesh Kumar** and Smriti Priya*, “Pesticide interactions induce alterations in secondary structure of malate dehydrogenase to cause destability and cytotoxicity”. **Chemosphere (2020). 263, 128073.** (DOI: 10.1016/j.chemosphere.2020.128074). (IF: 5.8, ISSN:

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95. Nidhi Joshi, **Dinesh Kumar** and Krishna Mohan Poluri*, "Elucidating the molecular interactions of chemokine CCL2 orthologs with flavonoid baicalin". **ACS Omega (2020), 5 (35), 22637–22651.** (DOI: [10.1021/acsomega.0c03428](#)) (IF-2019: 2.87 | Web Edition ISSN: 2470-1343; Publisher: American Chemical Society)
94. Latika Gupta, Anupam Guleria, Atul Rawat, **Dinesh Kumar*** and Amita Aggarwal*, "NMR based clinical metabolomics revealed distinctive serum metabolic profiles in patients with Spondyloarthritis", **Magnetic Resonance in Chemistry (2020), 1-14.** (DOI: [10.1002/mrc.5083](#)). (IF: 2.035, ISSN: 0749-1581; Publisher: Wiley).
93. Priyanshi Agnihotri, Ritu Raj; **Dinesh Kumar**, and Abhijit Dan* "Short oligo(ethylene glycol) chain incorporated thermoresponsive microgels: from structural analysis to modulation of solution properties" **Soft Matter (2020) 16, 7845-7859.** (DOI: [10.1039/D0SM01187H](#)) (IF: 3.14; eISSN: 1744-6848; Medline Indexed; Publisher: RSC)
92. Anamika Chaturvedi, Pranjali Pranjali, Mukesh Kumar Meher, Ritu Raj, Madhuri Basak, Ranjan Kumar Singh, Krishna Mohan Poluri, **Dinesh Kumar**, and Anupam Guleria*, "In vitro and ex vivo relaxometric properties of ethylene glycol coated gadolinium oxide nanoparticles for potential use as contrast agents in magnetic resonance imaging", **Journal of Applied Physics (2020), 128, 034903.** (DOI: [10.1063/5.0011230](#)). (IF: 2.328; pISSN: 0021-8979 | eISSN: 1089-7550; Publisher: AIP Publishing)
91. Ritu Raj, Nipanshu Agarwal, Sriram Raghavan, Tapati Chakraborti, Krishna Mohan Poluri and **Dinesh Kumar*** "Exquisite binding interaction of 18β-Glycyrrhetic acid with histone like DNA binding protein of Helicobacter pylori: A computational and experimental study", **International Journal of Biological Macromolecules (Oct 2020), 161 (15), 231-246.** (DOI: [10.1016/j.ijbiomac.2020.04.067](#)) (IF: 5.162; ISSN No: 0141-8130; Publisher: Elsevier)
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89. Nidhi Joshi, Nupur Nagar, Khushboo Gulati, Krishnakant Gangele, Amit Mishra, **Dinesh Kumar** and Krishna Mohan Poluri* "Dissecting the Differential Structural and Dynamics features of CCL2 chemokine Orthologs", **International Journal of Biological Macromolecules (2020), 156, 239-251.** (DOI: [10.1016/j.ijbiomac.2020.04.067](#)) (IF: 5.162; ISSN No: 0141-8130; Publisher: Elsevier)
88. Sujata ganguly, Umesh Kumar, Nikhil Gupta, Anupam Guleria, Sanjukta Majumdar, Sanat Phatak, Smriti Chaurasia, Sandeep Kumar, Amita Aggarwal, **Dinesh Kumar**, and Ramnath Misra* "NMR based Targeted profiling of urinary acetate and citrate following Cyclophosphamide therapy in patients with Lupus nephritis" **Lupus (2020) 29(7),1-5.** (DOI: [10.1177/0961203320918011](#)) (Scopus CiteScore: 2.55; Impact Factor: 2.924; ISSN: 0961-2033 (print); 1477-0962 (web); Publisher: SAGE)
87. Pranesh Kumar, Anurag Kumar Gautam, Umesh Kumar, Archana Singh Bhadauria, Ashok Kumar, **Dinesh Kumar**, Tarun Mahata, Biswanath Maity, Hriday Bera and Sudipta Saha*, "Mechanistic Exploration of the activities of PLGA-loaded betulinic acid nanoparticles against hepatocellular carcinoma at cellular and molecular levels", **Archives of Physiology and Biochemistry (2020), 1-13** (DOI: [10.1080/13813455.2020.1733024](#)) (IF: 1.81; ISSN: 1381-3455 (Print) 1744-4160 (Online); Publisher: Taylor and Francis)
86. Anupreet Kaur, Nancy Jaiswal, Ritu Raj, Bhushan Kumar, Sonal Kapur, Dinesh Kumar, Gagandeep Kaur Gahlay*, and Venus Singh Mithu*, "Characterization of Cu²⁺ and Zn²⁺ Binding sites in SUMO1 and its Impact on Protein Stability", **International Journal of Biological Macromolecules (2020), 151, 204-211** (DOI: [10.1016/j.ijbiomac.2020.02.116](#)) (IF: 5.162; ISSN No: 0141-8130; Publisher: Elsevier)
85. Subhadeep Roy, Manjari Singh, Atul Kumar Rawat, **Dinesh Kumar** and Gaurav Kaithwas*, "Mitochondrial apoptosis and curtailment of hypoxia inducible factor-1α/fatty acid synthase: a dual edge sword perspective of gamma linolenic acid in ER+ mammary gland cancer". **Cell Biochemistry & Function (2020)** (DOI: [10.1002/cbf.3513](#)) (IF: 2.142; eISSN: 1090-0844; Publisher: Wiley Online Library; Indexing: Web of Science)
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83. Kashmiri Deka, Anupam Guleria, **Dinesh Kumar**, Jayeeta Biswas, Saurabh Lodha, Som Datta Kaushik, Suman Dasgupta, and Pritam Deb*, "Exclusive T2 MRI contrast enhancement by mesoporous carbon framework encapsulated manganese oxide nanoparticles" **Current Applied Physics (2020)**, **20 (1)**, 89-95. (DOI: 10.1016/j.cap.2019.10.010) (IF: 2.01; ISSN:1567-1739; Publisher: Elsevier)
82. Pranjali, Mukesh Meher, Ritu Raj, Narayan Prasad, Krishna Mohan Poluri*, **Dinesh Kumar***, and Anupam Guleria*, "Physicochemical and Antibacterial Properties of PEGylated Zinc Oxide Nanoparticles Dispersed in Peritoneal Dialysis Fluid", **ACS OMEGA (Open Access)**. **2019**, **4**, **21**, 19255-19264. (DOI: 10.1021/acsomega.9b02615) (Impact Factor 2018: 2.584 | Web Edition ISSN: 2470-1343; Publisher: American Chemical Society)
81. PraneshKumar, Aakriti Agarwal, Ashok K.Singh, Anurag Kumar Gautam, Sreemoyee Chakraborti, Umesh Kumar, **Dinesh Kumar**, Bolay Bhattacharya, Parthasarathi Panda, Biswajit Saha, Tabish Qidwai, Biswanath Maity, Sudipta Saha*, "Antineoplastic properties of zafirlukast against hepatocellular carcinoma via activation of mitochondrial mediated apoptosis." **Regulatory Toxicology and Pharmacology (December 2019)**, Vol **109**, 104489. (DOI:10.1016/j.yrtph.2019.104489) (Impact factor: 2.996; ISSN: 0273-2300; Publisher: Elsevier).
80. Hafis Muhammed, **Dinesh Kumar**, Durgesh Dubey, Sandeep Kumar, Smriti Chaurasia, Anupam Guleria, Sanjukta Majumdar, Rajeev Singh, Vikas Agarwal and Ramnath Misra* "Metabolomics analysis revealed significantly higher synovial Phe/Tyr Ratio in Reactive Arthritis and undifferentiated Spondyloarthropathy" **Rheumatology | Oxford Academic | Concise Report: kez493 |(July 2020)**. **59 (7)**, 1587-1590. (DOI: 10.1093/rheumatology/kez493/5602626) (Impact factor (2018): 5.2; pISSN: 1462-0324; eISSN: 1462-0332).
79. Srigurunathan Kalaivani, Anupam Guleria, **Dinesh Kumar** and Sanjeevi Kannan*, "Bulk yttria as a host for lanthanides in biomedical applications. Influence of concentration gradients on the structural, mechanical, optical and in vitro imaging behavior", **ACS Applied Bio Materials (2019)**, **2**, **10**, 4634-4647. (DOI: 10.1021/acsbm.9b00718) (eISSN: 2576-6422; Publisher: ACS Publications) (DOI: 10.1021/acsbm.9b00718)
78. Anupam Guleria*, Pranjali, Mukesh Kumar, Meher, Anamika Chaturvedi, Sreemoyee Chakraborti, Ritu Raj, Krishna Mohan Poluri, and **Dinesh Kumar**, "Effect of Polyol Chain Length on Proton Relaxivity of Gadolinium Oxide Nanoparticles for Enhanced Magnetic Resonance Imaging Contrast" **The Journal of Physical Chemistry-C (2019)**, **123(29)**, 18061-18070. (DOI: 10.1021/acs.jpcc.9b04089) (Impact factor: 4.309 (2018) pISSN: 1932-7447; eISSN: 1932-7455; Publisher: ACS)
77. Vimal Maurya, Pranesh Kumar, Sreemoyee Chakraborti, Ashok K Singh, Archana Singh Bhadauria, Umesh Kumar, **Dinesh Kumar**, Gosipatala Sunil Babu, Bolay Bhattacharya, Biswanath Maity, and Sudipta Saha*, "Zolmitriptan attenuates hepatocellular carcinoma via activation of caspase mediated apoptosis" **Chemico-Biological Interactions (June 2019)**, **308**, 120-129. (DOI: 10.1016/j.cbi.2019.05.033) (Impact Factor: 3.308; ISSN No. 0009-2797; Publisher: Elsevier)
76. V. Karthick, Sucheta Panda, V. Ganesh Kumar*, **Dinesh Kumar**, Lok Kumar Shrestha, Katsuhiko Ariga, K. Vasanth, Shanmugavel Chinnathambi, T. Stalin Dhas, K.S. Uma Suganya, "Quercetin loaded PLGA microspheres induce apoptosis in breast cancer cells, **Applied Surface Science (2019)** **487**, 211-217. (DOI: 10.1016/j.apsusc.2019.05.047) (Impact Factor: 4.439; ISSN: 0169-4332; Publisher: ELSEVIER)
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74. Kalaivani Srigurunathan, Rugmani Meenambal, Anupam Guleria, Dinesh Kumar, José Ferreira, and S Kannan*, "Unveiling the effects of rare earth substitutions on the structure, mechanical, optical and imaging features of ZrO₂ for biomedical applications" **ACS Biomaterials Science & Engineering (2019)**, **5(4)**, 1725-1743. (DOI:10.1021/acsbiomaterials.8b01570). (Impact Factor 2017/18: 4.432; ISSN: 2373-9878; Publisher: ACS)
73. Meenakshi Sharama, Nancy Jaswal, **Dinesh Kumar**, and Krishna Mohan Poluri*, "Enhanced dynamics of conformationally heterogeneous T7 bacteriophage lysozyme native state attenuates its stability and

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