

Dr. Rajesh Kumar Gupta



1. Designation and full correspondence address:

Associate Professor

Dr. D. Y. Patil Biotechnology & Bioinformatics Institute, Dr. D. Y. Patil Vidyapeeth (Deemed University) Survey No. 87-88, Bangalore-Mumbai Express Highway, Tathawade, Pune -411033

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Telephone: [+91-20-67919444](tel:+91-20-67919444)

3. Academic Qualification

Ph.D. (Life Sciences) Devi Ahilya University, Indore (MP) India 2005

Title of thesis "Isolation, Purification and Characterization of Sheep Galectin"

Supervisor: Dr. Krishnan Hajela, Reader, School of Life Sciences, Devi Ahilya University, Indore (MP)

M.Sc. (Life Sciences) Devi Ahilya University, Indore (MP) India 1999

B.Sc. DDU Gorakhpur University, Gorakhpur (UP), India 1997

Work Experience

Associate Professor (Biotechnology) - Oct. 2016 (onwards)

Dr. D. Y. Patil Biotechnology & Bioinformatics Institute (Dr. D. Y. Patil Vidyapeeth), Pune (Maharashtra)

Assistant Professor (Biotechnology) - Aug 2014 – Sept. 2016

Dr. D. Y. Patil Biotechnology & Bioinformatics Institute (Dr. D. Y. Patil Vidyapeeth), Pune (Maharashtra)

Post-Doctoral scholar – Aug13-Mar14

Department of Microbiology, Immunology and Molecular Genetics, University of Kentucky College of Medicine, Lexington, KY, USA, Supervisor: Prof. Anthony Sinai, Topic - Toxoplasma Glycobiology

Post-Doctoral Fellow (Research Fellow) –Apr12- Apr13

Institute for Glycomics, Griffith University, Gold Coast Campus, QLD, 4222, Australia, Supervisor – Associate Prof. Helen Blanchard, Research Leader, Topic: Glycan Array, Crystallization and X-ray structure determination of galectins.

Post-Doctoral Fellow- Apr08- Mar12

National Institute of Immunology, New Delhi, Supervisor- Prof. Avadhesh Surolia & Dr. Amulya K. Panda. Topic: Purification of Plant lectins and Interaction of antigen loaded polylactide particles with immune cells and their correlation with immune response.

Post-Doctoral Fellow- The French Embassy, India Post-doctoral Fellowship-Sep 07-Feb08

Supervisor- Dr. Nicole Thielens, Group Leader, Immune Response to Pathogens and altered-self Group & Innate immune proteins at the host-pathogen interface team, IBS, Grenoble, France. Topic: Structural and enzymatic characterization of the serine protease domain of human mannan-binding lectin associated serine protease-3 (MASP-3).

Doctoral Fellow-School of Life Sciences, Devi Ahilya University, Indore (MP)- Mar 2000-Aug 07

Supervisor- Dr. Krishnan Hajela, Professor, School of Life Sciences, DAVV, Indore (MP)

Junior Research Scientist - Bio-Med (Pvt.) Ltd., Ghaziabad, (UP)-Jun 99- Feb 2000

Employer- Dr. S.P. Garg (Managing Director) Topic - Development of capsular polysaccharide vaccine against *Haemophilus influenzae* type b and typhoid diagnostic kit.

Fellowship Awarded/ Aailed

1. The French Embassy Post-doctoral Fellowship, the French Embassy, New Delhi (2007-08)
Supervisor-

Dr. Nicole Thielens, Laboratoire d'Enzymologie Moleculaire, IBS, Grenoble, France

2. Council of Scientific and Industrial Research, Research Associateship, New Delhi (2007)
Supervisor - Dr. Krishnan Hajela, Devi Ahilya University, Indore (MP) for three years on the topic "Studies on involvement of lectin pathway of complement activation in coagulation based defense mechanism".

3. Project Fellow- University Grant Commission, New Delhi, 2006-07 (Project) Supervisor- Dr. Krishnan Hajela, Devi Ahilya University, Indore, INDIA for eight months on the topic "The effect of mannose binding lectin gene and promoter polymorphism on susceptibility to leprosy in Indian population".

4. Senior Research Fellowship, Indian Council of Medical Research (ICMR-SRF) (2003-06), New Delhi, INDIA (Project Supervisor- Dr. Krishnan Hajela, Devi Ahilya University, Indore (MP) for three years on the topic "Studies on activation of neutrophils by galectin-1".

5. Junior Research Fellow (Project), DRDO, India (2003) (Project Supervisor- Dr. Krishnan Hajela, Devi Ahilya University, Indore (MP) for Six months “Studies on pathways of activation of neutrophils by serum ficolins”

List of Publications

1. Kiran Bharat Lokhande, Girish R. Apte, Ashish Shrivastava, Ashutosh Singh, Jayanta K. Pal, K. Venkateswara Swamy and **Rajesh Kumar Gupta** (2020) Sensing the interactions between carbohydrate-binding agents and N-linked Glycans of SARS-CoV-2 spike glycoprotein using molecular docking and simulation studies.: **J Biomol Struct Dyn** 1-19. doi: 10.1080/07391102.2020.1851303 (IF 3.31) (*Corresponding author).

2. **Rajesh Kumar Gupta***, Girish R. Apte, Kiran B. Lokhande, Jayanta K. Pal (2020) Carbohydrate Binding Agents: Potential of Repurposing for COVID-19 Therapy. **Curr Protein Pept Sci.** 21(11): 1085-1096. doi: 10.2174/1389203721666200918153717. (*Corresponding author) (IF 2.52)

3. Bhavika Gupta, Daizy Sadaria, Vaishnavi U. Warriar, Anuradha Kirtonia, Ravi Kant, Amit Awasthi, Prakash Baligar, Jayanta K. Pal, Eiji Yuba, Gautam Sethi, Manoj Garg & **Rajesh Kumar Gupta*** (2020) Plant lectins and their usage in preparing targeted nanovaccines for cancer immunotherapy. **Semin Cancer Biol.** 2020 Feb 14; S1044-579X(20)30038-9. doi: 10.1016/j.semcan.2020.02.005. Online ahead of print. (*Corresponding author) (IF 11.09)

4. Vaishnavi U Warriar, Amina I Makandar, Manoj Garg, Gautam Sethi, Ravi Kant, Jayanta K Pal, Eiji Yuba, **Rajesh Kumar Gupta*** (2019) Engineering Anti-Cancer Nanovaccine Based on Antigen Cross-Presentation. **Bioscience Reports** 39 BSR20193220; doi:10.1042/BSR20193220 (*Corresponding author) (IF 2.942)

5. **Rajesh Kumar Gupta**, Kshitij Gupta, Sumati Hajela, and Krishnan Hajela (2015) Carbohydrate-induced modulation of cell membrane IX: Binding with galectin-1 disrupts bacterial membrane. **Life Sciences International Research Journal** Vol. 2 issue 1: 355-362.

6. Christine Gaboriaud, **Rajesh Kumar Gupta**, Lydie Martin, Monique Lacroix, Laurence Serre, Florence Teillet, Gerard J. Arlaud, Veronique Rossi, Nicole M. Thielens (2013) The serine protease domain of MASP-3: Enzymatic Properties and crystal structure in complex with ecotin. **PLoS ONE** 8(7): e67962. doi:10.1371/journal.pone.0067962 (IF 2.766)

7. **Gupta RK**, Goswami DG, Singh RR, Surolia A, and Panda AK (2012) Soybean agglutinin coated PLA particles entrapping candidate vaccines induces enhanced primary and sustained secondary

antibody response from single point immunization. **Eur J Pharm Sci.** 45(3):282-95.

8. Bajaj M, Hinge A, Limaye LS, **Gupta RK**, Surolia A and Kale VP (2011) Mannose-binding dietary lectins induce adipogenic differentiation of the marrow-derived mesenchymal cells via an active insulin-like signaling mechanism. **Glycobiology** 21 (4):521–529. (IF 3.664)

9. Kshitij Gupta, **Rajesh K Gupta** and Krishnan Hajela (2008) Disease association of mannose binding lectin and potential of replacement therapy. **Ind.J.Med. Res.(Review)**127(5):431-40 (IF 2.061)

10. **Rajesh K Gupta**, Abhay H Pandey, Krishna C Gulla, H.J. Gabius and Krishnan Hajela (2006) Carbohydrate induced modulation of cell membrane VIII. Agglutination with Galectin-1 increases osmofragility and membrane fluidity of trypsinized erythrocytes. **FEBS Letters** 580 (6):1691-5. (IF 2.999)

11. KC Gulla, K Gupta, **R K Gupta**, V Vyas and K Hajela (2006) Development of a fluorescence assay for the detection of L-ficolin-MASP in serum or purified samples. **Journal of Biochemical and Biophysical Methods** 66:59-71 (IF 3.722, now published as journal of Proteomics)

12. Abhay H Pande, **Rajesh K Gupta**, Sumati and Krishnan Hajela (2003) Oxidation of goat hepatic galectin-1 induces changes in secondary structure. **Protein Peptide Lett.** 10(3): 265-275. (IF 1.039)

13. **Rajesh K Gupta**, Abhay H Pande, Sumati, and Krishnan Hajela (2003) EPR Studies of Fcγ Receptor in lymphocyte membrane. **Ind. J. Biochem. Biophys.**40 (1): 59-61. (IF 0.385)

Conference Proceedings (Publication):

1. Rohit D. Gupta, Krish Parekh, Vaishnavi U. Warriar, Kiran Bharat Lokhande, K. Venkateswara Swamy, Rajkumar S. Sood and **Rajesh Kumar Gupta*** (2020) Purification and characterization of pectins from *Abelmoschus esculentus* (okra pods) and *Citrus limetta* (citrus peels) and in silico binding study of pectin and pectic polysaccharides with Galectin-1. Journal of Dental Research & Review (Accepted for publication, DPU Interdisciplinary Conference) * **Corresponding author**

Presentation at Conferences

1. Oral Presentation at **2nd Conference in Interdisciplinary Research on Health Sciences, Organized by Dr. D. Y. Patil Vidyapeeth, Pune, 27th-29 Oct. 2020**, Title: Potentials of Pectic Polysaccharides in the inhibition of Galectins for Cancer Therapy. Girish R. Apte, Khushboo Pandey, Kiran Bharat Lokhande, Shiva Bharadwaj, K. Venkateswara Swamy, Shuchi Nagar, Arvind Goja, Jayanta K. Pal and **Rajesh Kumar Gupta**

2. Poster Presentation at **Immunocon-2019, DAE convention Centre, Mumbai**, Title: Glycans from plant glycoprotein lectins to prepare targeted nanovaccines for Cancer immunotherapy. Bhavika Gupta, Daizy Sadaria, Vaishnavi U. Warriar, Amina I. Makandar, Manoj Garg & **Rajesh Kumar Gupta**. Poster No. P-56
3. Poster Presentation at **Immunocon-2019, DAE convention Centre, Mumbai**, Title : Harnessing the Potential of Lectin Microarray in Cancer Diagnosis. Bhavika Gupta, Daizy Sadaria, Vaishnavi U. Warriar, Girish Apte, Ariba Nadim, Simran Ahuja, Manoj Garg, **Rajesh Kumar Gupta**. Poster No. P-135
4. Poster Presentation at **IUIS-IIS-FIMSA Course on “Basic and Advanced Translational Immunology”** Medical college of the Rajasthan University of Health Sciences (RUHS), Jaipur, 12th-16th Oct. 2019 Harnessing the potential of antigen cross-presentation in Immunotherapy, Vaishnavi Warriar, **Rajesh Kumar Gupta**
5. Oral Presentation at 1st **Conference in Interdisciplinary Research on Health Sciences, Organized by Dr. D. Y. Patil Vidyapeeth, Pune**, 27th Aug. 2019, Title: Purification and Characterization of Pectins from *Abelmoschus esculentus* (Okra Pods) and *Citrus limetta* (Citrus Peels) and in silico Binding Study of Pectin and Pectic Polysaccharides with Galectin-1. Rohit D. Gupta, Krish Parekh, Vaishnavi U. Warriar, Kiran Bharat Lokhande, K.Venkateswara Swamy Rajkumar S. Sood ,**Rajesh Kumar Gupta**
6. Poster Presentation at **National Symposium on Recent Advances in Modern Biology and Biotechnology (RAMBB -2019)**, Dr. D.Y. Patil Biotechnology & Bioinformatics Institute, Pune. 14th-16th March 2019, Glycan mediated targeting of c-type lectin receptors on antigen presenting cells. Vaishnavi Warriar, Amina I. Makandar, Darshan Pagote, **Rajesh Kumar Gupta**
7. Poster Presentation at **Immunocon-2018** at THSTI, Faridabad under theme “Cancer Immunology and Immunotherapy” Title: Targeting of C-type lectin receptors on dendritic cells using purified glycopeptides from glycosylated plant lectins. A Makandar, V Warriar, A Sharma, TT Patil, SN Pandey & **Rajesh Kumar Gupta**, Poster No. P-6, Page No. 45-46.
8. Oral presentation at **24th International Lectin Conference, 2011 (24th Interlec 2011)** organized by the Victorian Infectious Diseases Service, Royal Melbourne Hospital, Victoria, Australia, from 27th - 29th July, 2011 on the topic “Interaction of Soybean agglutinin coated and antigen loaded PLA particles with dendritic cells and its correlation with immune response”
9. **National conference of Shanti Swarup Bhatnagar Award Winners**: on the topic “Carbohydrate induced modulation of cell membrane: Impact of binding of exogenous lectin on model membrane systems” organized by Devi Ahilya University, Indore, INDIA from 8-10 March, **2007. Rajesh Kumar Gupta**, Abhay H. Pande and Krishnan Hajela
10. **22nd Madhya Pradesh Council of Science and Technology Young Scientist Congress** (Discipline - Bio-Science) on the topic "Prediction and proof of membrane spanning propensity of mammalian liver galectin-1" organized by the MP Council of Science & Technology, BHOPAL (MP)

from 28th Feb.-1st March **2007** at Samrat Ashok Technological Institute, VIDISHA (MP) **Rajesh Kumar Gupta**

11. 8th FIMSA/ IIS advanced Immunology Course Focus on Clinical Immunology, March 1-5, **2006** New Delhi. Abstract No. P 41 Estimation of L-Ficolin level in Indian population. Krishana C. Gulla, **Rajesh Kumar Gupta**, Kshitij Gupta and Krishnan Hajela

Abstract presented by co-workers:

1. 24th International complement Workshop (ICW) held at Crete, Greece, Oral Presentation by Christine Gaboriaud, **Rajesh Gupta**, Lydie Martin, Monique Lacroix, Gerard J. Arlaud, Veronique Rossi, Nicole M. Thielens (**2012**) Enzymatic Properties of the MASP-3 serine protease domain and crystal structure of its complex with ecotin. Abstract No.109 published in *Immunobiology* 217 (2012) 1129-1222

2. British Society of Immunology Annual Congress, 2007: Demonstration of thrombin like activity in MBL-MASP and Ficolin- MASP complexes in different species. K. Gupta, K.C. Gulla, **R.K. Gupta** and K. Hajela. *Immunology* 120: 55 (Abstract)

3. European Molecular Biology Online (EMBO) workshop on Developmental and Disease models, IIT Kanpur, INDIA 2006: Species dependent differences in MBL/Ficolin associated serine proteases: implications in innate immunity. Kshitij Gupta, **Rajesh K. Gupta**, Krishana C. Gulla, and Krishnan Hajela

4. British Society of Immunology Annual Congress, 2005: Development of fluorescence assay for the detection of L-ficolin in serum. K.C. Gulla, **Rajesh Kumar Gupta**, K Gupta and Krishnan Hajela. *Immunology*, 116, suppl. Abstract 116

5. Therapeutic Applications of Mannose Binding Lectin, Biochemical Society Focused Meeting, 20th March, 2003 Edinburgh UK. Abstract no 4, Calcium induces conformational changes in MBL associated serine protease-1. **Rajesh Kumar Gupta** and Krishnan Hajela

Financial Support Received:

1. Sanctioned from the Dr. D. Y. Patil Vidyapeeth, Pune

Title of the Project "Development of novel particle mediated vaccine delivery system"

Sanction Letter No. - DPU letter No. DPU /106(18)/2015, Sanctioned Amount Rs. 2,00,000/-

2. Sanctioned from the Dr. D. Y. Patil Vidyapeeth, Pune

Title of the Project "Harnessing the potential of antigen presentation in immunotherapy"

Sanction Letter No.-DPU letter No. DPU /17/2016 dated 06/01/2016, Sanctioned Amount Rs. 23,92,000/-

3. Sanctioned from the Science and Engineering Research Board of the Department of Science and Technology (SERB-DST), Govt. of India (Early Career Research Award)

Title of the Project "Harnessing the potential of neo-glycoconjugates in antigen cross-presentation for effective CD8⁺T cell response in cancer".

Sanction Letter No. ECR/2016/001187 dated 23/08/2016, Sanctioned Amount Rs. 40, 02,027/-

4. Sanctioned from the India-Japan (DST-Japan Society for the Promotion of Science) Cooperative Science Programme (IJCSP)-2019 (International Co-operation Division of the DST), Title of the project "Preparation of Next Generation Nanovaccine using Multifunctional Glycans for Cancer Immunotherapy", with Associate Professor Dr. Eiji Yuba, Osaka Prefecture University, Japan.

Awards

1. 22nd Madhya Pradesh Council of Science and Technology Young Scientist Award (Discipline-Bio-Science) on the topic "Prediction and proof of membrane spanning propensity of mammalian liver galectin-1" organized by the MP Council of Science & Technology, Bhopal (MP) from 28th Feb.-1st March 2007 at Samrat Ashok Technological Institute, VIDISHA (MP)
2. Federation of Immunological Societies of Asia-Oceania (FIMSA) travel award for attending 8th FIMSA/IIS advanced immunology course Focus on Clinical Immunology, March 1-5, 2006 at All India Institute of Medical Sciences, New Delhi
3. Department of Science and Technology, International Travel support for attending the 24th International Lectin Conference, 2011 (24th Interlec 2011)
4. Token Grant Rs. 5000/- & 10,000/- sanctioned from the Indian Immunology Society for the World Immunology Day Celebration on 29th April 2016, 29th April 2017 & 2019 at Dr. D. Y. Dr. D. Y. Patil Biotechnology & Bioinformatics Institute, Pune

Teaching Responsibilities

1. Teaching subjects: Analytical techniques (Theory + Practicals), Immunology (Theory + Practicals), Medical Biochemistry (Theory), Vaccine Technology (Theory) to B. Tech. Biotechnology, B. Tech (Medical) Biotechnology, M.Tech (Int.) Biotechnology & M. Sc. Biotechnology.

Student Guidance for B.Tech & B. Tech (Medical) Biotechnology Dissertation Project – 16

(Area of work: Plant Lectin purification, Glycan & Glycopeptide purification, Galectin, Pectin Purification)

Institute Level Extracurricular Activity: Academic and Administrative Responsibility:

1. Organized National Science Day 2018 & 2019 at Dr. D. Y. Patil Biotechnology & Biotechnology & Bioinformatics Institute, Pune
2. Worked as session coordinator in Recent Advances in Modern Biology & Biotechnology 2019 & 2017 and Industry-Academia Conclave 2018 organized at Dr. D. Y. Dr. D. Y. Patil Biotechnology & Bioinformatics Institute, Pune.
3. Working as Saturday Seminar Series Coordinator for organizing Saturday seminars at Institute for students by inviting distinguished academicians and Scientist from India and abroad.

4. ISO-Dy. Management Representative for Dr. D. Y. Dr. D. Y. Patil Biotechnology & Bioinformatics Institute, Pune and conducted internal audit for the Academic and Administrative Department as per ISO 9001:2008 & 9001:2015 standards.
5. Worked as University representative for conducting the All India Entrance Examination of Dr. D. Y. Patil Vidyapeeth, Pune 2017 & 2018
6. Worked as Chairman of Parents-Teacher Committee responsibilities and member for other institutional committee.
7. Attended IQAC workshop on NAAC by Prof. S.P. Thyagrajan.

Workshop attended:

1. IUIS/IIS/FIMSA sponsored Basic and Advanced Translational Immunology Course held at Rajasthan University of Health Sciences, Jaipur, India, Oct 12-16, 2019.
2. Workshop on Faculty Development conducted by Dr. D. Y. Patil Vidyapeeth's University Centre for Professional Educational & Faculty Development (UCPE&FD) at Padmashree Dr. D. Y. Patil Medical College, Hospital & Research Centre, Dr. D.Y.Patil Vidyapeeth, Pune from 30-31/10/2014.
3. Theoretical and practical course "Experimental approaches to studying host- pathogen interaction" from 30th October to 10th Nov 2006 conducted by International Centre for Genetic Engineering and Biotechnology (ICGEB), New Delhi
4. 8th FIMSA/ IIS advanced Immunology Course Focus on Clinical Immunology, March 1-5, 2006, New Delhi,
5. Short term course and work shop on Molecular and Genetic Diagnostic Techniques and clinical implications conducted by Reliance Life Sciences at Dhirubhai Ambani Life Sciences centre at Navi Mumbai, from Jan.16-20, 2006.
6. Workshop on computer basics and application in bioinformatics from 20th-22nd October, 2005 conducted by Biotechnology Sub-Centre, Department of Biotechnology, Devi Ahilya University, Indore (MP)sponsored by Department of Biotechnology, New Delhi
7. Short term training carried out at Division of Biological Products, Indian Veterinary Research Institute, Izatnagar, (UP), INDIA to learn various techniques of production of Veterinary Immunobiologicals from 01.06.1998 to 10.07.1998.