M. OWAIS, Ph D

Professor

Interdisciplinary Biotechnology Unit

Aligarh Muslim University, Aligarh-202002

A glance at some of the coveted achievements of the applicant:

- **Clinical trials on the in-house developed formulation against COVID-19**
- **National Bioscience Award-2007** by DBT, Govt. of India
- **TATA Innovation Award-2013** by DBT, Govt. of India
- **Rashtriya Gaurav Award-2013**
- **VIFRA Distinguished Research Scientist Award-2015**
- **Indus Research Excellence Award-2015**
- **Young Scientist Award (MYSA) in Life Sciences-2002**
- **Best University Teacher Award-2009**
- **Outstanding University Researcher Award-2008**
- **Fogarty International Fellowship, NIH, Maryland, USA**
- **Published work displayed on cover page of *FEMS Immunol.Med Microbiology* for all the issues of *Year* 2006**(copy attached)
- **Published work highlighted on** cover page of *Molecular Medicine* in May-June issue of Year **2007**(copy attached)
- **Technology Transfer to Cadilla Pharmaceuticals Ltd. under PRDSF program of DST, Govt. of India**
- **Technology Transfer to Gennova Pharmaceuticals Ltd.**
- **Merit scholarship for** First class first **in B. Pharm.**
- **GATE 1987,** Percentile **98.89**; **GATE 1988,** percentile **93.36**
- **UGC-CSIR Research Fellowship (**NET 1988**&**NET 1989**)**

- The article entitled as "**Phospholipid diversity: correlation with membrane–membrane fusion events*. BiochimBiophys. Acta(Biomembrane)* (2005) 1669: 170-181**" was categorized among top 25 by Science Direct.

- Another article entitled as "**Ethanol production from crude whey by *Kluyveromycesmarxianus. Biochemical Engineering Journal (2006) 27: 295-297***" was categorized among top 25 by Science Direct.

- Best poster Award on work entitled "Escheriosome entrapped soluble blood stage antigens impart protective immunity against a multidrug-resistant isolate of *Plasmodium yoelii nigeriensis* in BALB/c mice" at **Indo-Australian Conference on Biotechnology in infectious diseases at Kasturba Medical College, MAHE, Manipal**

- Best poster Award on work entitled as "**Fusogenic potential of sperm membrane lipids: Nature's wisdom to accomplish targeted gene delivery** at International symposium on the Predictive, Preventive and Mechanistic Mutagenesis & XXXIII EMSI annual Meeting, AMU, Aligarh during Jan 1-3, 2008.

Three articles co-authored by applicant have been ranked with "**THREE STARS**" by '**BIOWIZARD**' The Biomedical Research Portal.

1. Sharma et. al. (2006) Escheriosome entrapped soluble blood stage antigens impart protective immunity against a multi-drug resistant isolate of *Plasmodium yoeliinigeriensis* in BALB/c mice, ***Vaccine*** 24(7): 948-956.

2. Bajpai et. al. (2005) Concomitant delivery of tetracycline and DEC against experimental filariasis. ***J Drug Targetting*** 13(6): 375-381.

3. Mittal et. al. (2005) Expression, purification and characterization of *Leishmania donovani* trypanothione reductase in *E. coli*. ***ProteinExpression and Purification*** 40: 279-286.

11. Are you member/Fellow of the Indian national Science Academy/ Indian Academy of Sciences/National Academy of Sciences/others? If Yes give detail: NIL

Member of Editorial Boards of various international journals

1. Frontiers in Microbiology (special issue on *E. coli* based therapeutics)
2. Frontiers in Nanotechnology
3. Frontiers in Ageing
4. Molecules (MDPI) special issue
5. Nanotechnology Nanomaterials
6. The open Vaccine Journal (Bentham Press)
7. BioMed Research International (Hindawi Publishing Group)
8. Journal of Clinical Medicine Research (Academic Press)
9. Journal of Chinese Clinical Medicine
10. Biomedical Research
11. World Journal of Critical infectious diseases (BPG Press)
12. World Journal of Experimental medicine (BPG Press)
13. Member of the International Advisory Board of the 12th International Liposome Research DAYS & 3rd conference on "Lipid, Liposomes & Membrane biophysics held at Vancouver, Canada (Aug 4-8, 2010)

PART A

S. No.	INFORMATION						
01.	Name of the Candidate	First			Last		
		Mohammad			**Owais**		
	Designation	**Professor**					
02.	Date of Birth	July 01, 1962					
03.	Address alongwith Telephone/Mobile/E-mail	a. Official address: **Inter. Biotechnology Unit,** **Aligarh Muslim University,** **Aligarh-202002.** **Telephone: 91-571-2720388** **Fax: 91-571-2721776** **Mobile: 07534049778** **e-mail: mdowais2012@gmail.com,** **owais_lakhnawi@yahoo.com**					
05.	Field of Specialization	**Drug Targeting & Vaccine Development**					
06.	Academic Qualification	**Name of Degree**	**Subjects**	**Class/ Division**	**Name of University**	**Year**	**Rank/Prizes**
		B. Pharm	Pharmacognosy Pharmaceutics Pharmacology Human-Physiology Medicinal-chemistry	**First**	**Delhi University**	1987	Ist position DYEA Merit Scholarship Merit Scholar Ship for securing Ist position
		M. Pharm	Pharmaceutics	**First**	**Delhi University**	1990	GATE fellowship

		Ph. D	Biotechnology		**IMTECH**, Chandigarh	1996	CSIR-NET fellowship
07.	(A) Tilte of Ph D thesis	**Liposome as carrier of drug and antigen** Name of the supervisor: Dr. C. M. Gupta; Former Director, CSIR-IMTECH,& CSIR-Central Drug Research Institute					
	(B) Detail of Ph D thesis publications	**1.** **Owais, *et.al*.** (1993). Tuftsin-bearing liposomes as drug vehicles in the treatment of experimental aspergillosis. **FEBS Lett**. 326: 56-58.**[Impact Factor: 3.86]** **2.** **Owais, *et.al*.** (1995). Chloroquine encapsulated in malaria-infected erythrocyte specific antibody bearing liposomes effectively controls Chloroquine resistant Plasmodium berghei infections in mice. **Antimicrobial agent & Chemotherapy** 39: 180-184. **[Impact Factor: 4.80]** **3.** Agrewala, J.N., **Owais, M**., Gupta, C.M. and Mishra, G.C. (1996). Antigen …… preferential expansion of Th-2 cells. **Cytokine Molecular Therapy** 2: 59-65. **[Impact Factor: 1.70]** **4.** **Owais, *et.al*.** (2001) Delivery of the antigen entrapped in the yeast lipid vesicles leads to the generation of $CD4^+$ Th2 and $CD8^+$ CTL cell response. **Scand. J. Immunol**. 54: 125-132. **[Impact Factor: 2.10]** **5.** **Owais, M**., Gupta, C.M. (2000) Yeast vesicles as carriers for introducing macromolecules into cytoplasmic compartment of adherent cells. **Eur. J. Biochem.** 267: 3946-3956. **[Impact Factor: 3.84]**					
	(C) If Ph D thesis not published, whether uploaded on shodhganga	Not applicable					
08.	Position held in chronological order	1998- **At present**		**Faculty position at IB Unit, AMU, Aligarh**			
		1994-1998		**Fogarty fellow at NCI, National Institute of Health, USA**			
		1992-1994		**Senior Research Fellow CSIR, Govt. of India**			
		1990-1992		**Junior Research Fellow CSIR, Govt. of India**			

PART-B

Awards & Honors

Name of the Award	Name of the Organization	Purpose of the Award	Nature of the Award/Frequency
National Bio-Science Award-2007	DBT, New Delhi Govt of India	To promote Scientific Research	National/ Annual
TATA Innovation Award-2013	DBT, New Delhi Govt of India	To promote Scientific Research	National/ Annual
YM Scientist Award-2002	MAAS (INDIA)	To promote Scientific Research	National/ Annual
Distinguished Research Scientist Award-2015	VIFRA FOUNDATION (INDIA)	To promote Scientific Research	Inter-National/ Annual
Research Excellence Award-2015	The Indus Foundation, NJ (USA)	To promote Scientific Research	Inter-National/ Annual
Best Teacher Award-2009	AMU, Aligarh	For outstanding Scientific/Teaching Contributions	National/ University Level Annual
Rashtriya Gaurav Award	IIF, Society, New Delhi (INDIA)	To promote Scientific Research	National/ Annual
Merit Award	Delhi University, New Delhi	For securing Ist position in B. Pharm.	University Level Annual
Merit Award	DYEA, New Delhi	For outstanding perfor-mance in B. Pharm	National/ Annual

CLINICAL TRIAL ON FLUNORM, AN IN-HOUSE NOVEL FORMULATION, DEVELOPED BY NOMINEE'S RESEARCH GROUP, AT JN MEDICAL COLLEGE ALIGARH

F.No.-Z-28015/48/2020-HPC (EMR)-AYUSH
Government of India
Ministry of AYUSH

2nd Floor, Office Block No.-3,
NBCC Office Complex,
Kidwai Nagar, New Delhi 23
Dated: 25th June, 2020

To

Dr. Mohammad Owais, Professor, PhD (Biotechnology)
Department of TB and Chest Diseases,
JNMC, AMU, Aligarh-2
Email ID:

Sub. Project proposal submitted under EMR scheme of Ministry of AYUSH reg.

Sir/Madam,

The undersigned is directed to convey that your proposal titled *"A Herbal composition named FluNorm™ for treating viral infections"* was taken up in the 2nd Special Meeting of the Project Approval Committee (PAC) for SARS CoV-2 Infection and COVID-19 held on 15th & 16th June, 2020 under EMR scheme. A copy of the minutes of the said PAC has already been sent to you vide mail dated 23.06.2020

2. The decision of the above PAC is reproduced as under: -

"Approved the project proposal to be completed in six months' time from the day of admitting first case subject to appropriate revision of the budget with details of Contingency amount, submission of the IEC Clearance certificate and fulfilment of the conditions for proprietary formulation within 7 days."

3. You are, therefore, requested to submit the above mentioned information/documents to EMR Section at the earliest.

Yours faithfully,

(K.B. Sinha)
Under Secretary to the Government of India
Emrayushcovid19@gmail.com
Emr_ayush@yahoo.com

Institutional Ethics Committee (Regd.)
Jawaharlal Nehru Medical College & Hospital, Faculty of Medicine
Aligarh Muslim University, Aligarh U.P. India - 202 002

Prof. Mohammad Shamsee
Member Secretary

Prof. (Retd.) M.R. Ajmal
Chairman

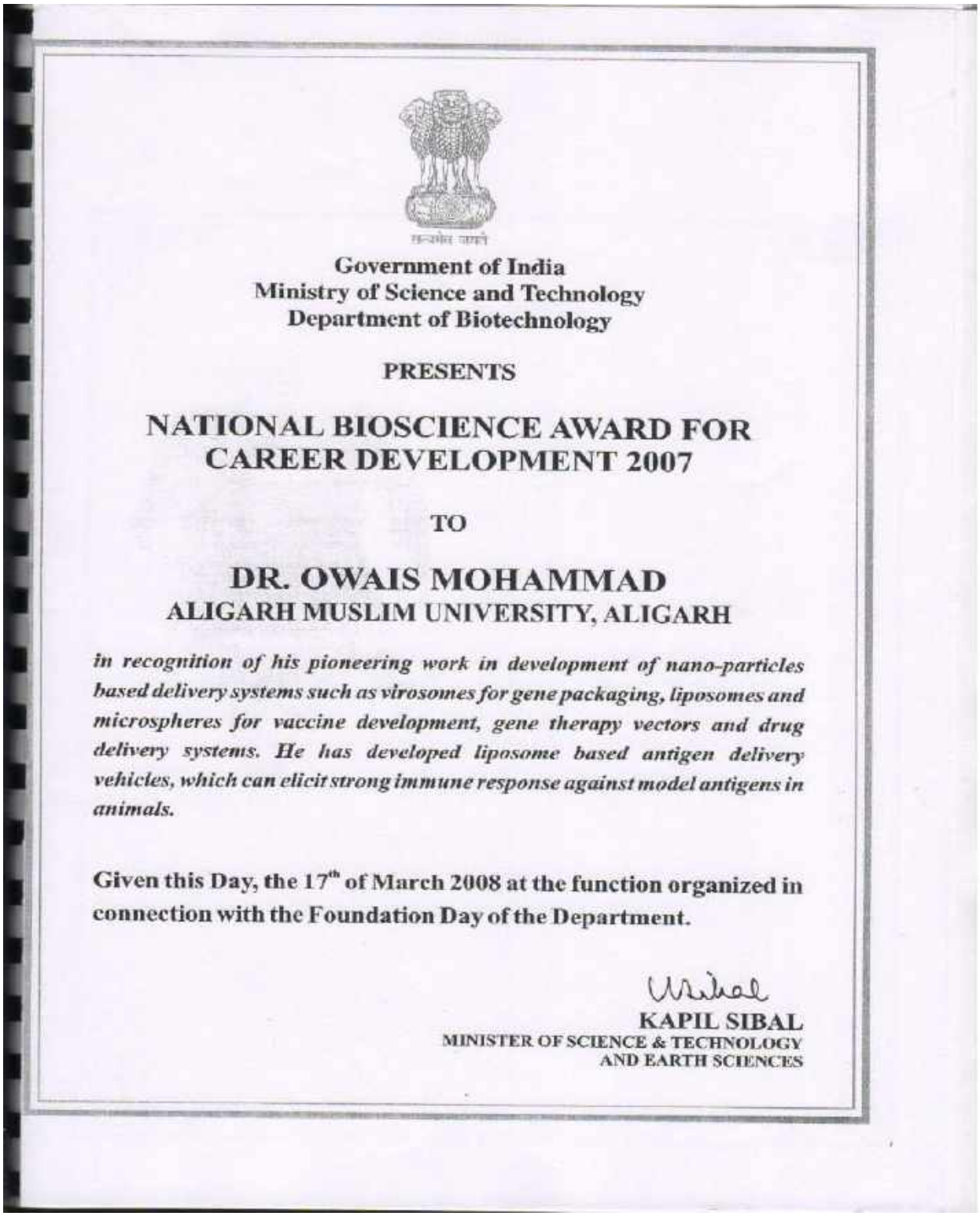
CERTIFICATE

A HERBAL COMPOSITION NAMED FLUNORM™ FOR TREATING VIRAL INFECTIONS

Members of Institutional Ethics Committee examined & approved the Project proposal submitted by Dr. Mohammad Owais, Professor & Principle Investigator, Interdisciplinary Biotechnology Unit, AMU, and Co-Principal Investigators, Prof. Zuber Ahmad, Department of TB and Chest Diseases, JN. Medical College, Faculty of Medicine AMU.

(Prof. Mohammad Shamsee)
Member Secretary, IEC

(Prof. M.R. Ajmal)
Chairperson



Government of India
Ministry of Science and Technology
Department of Biotechnology

PRESENTS

NATIONAL BIOSCIENCE AWARD FOR CAREER DEVELOPMENT 2007

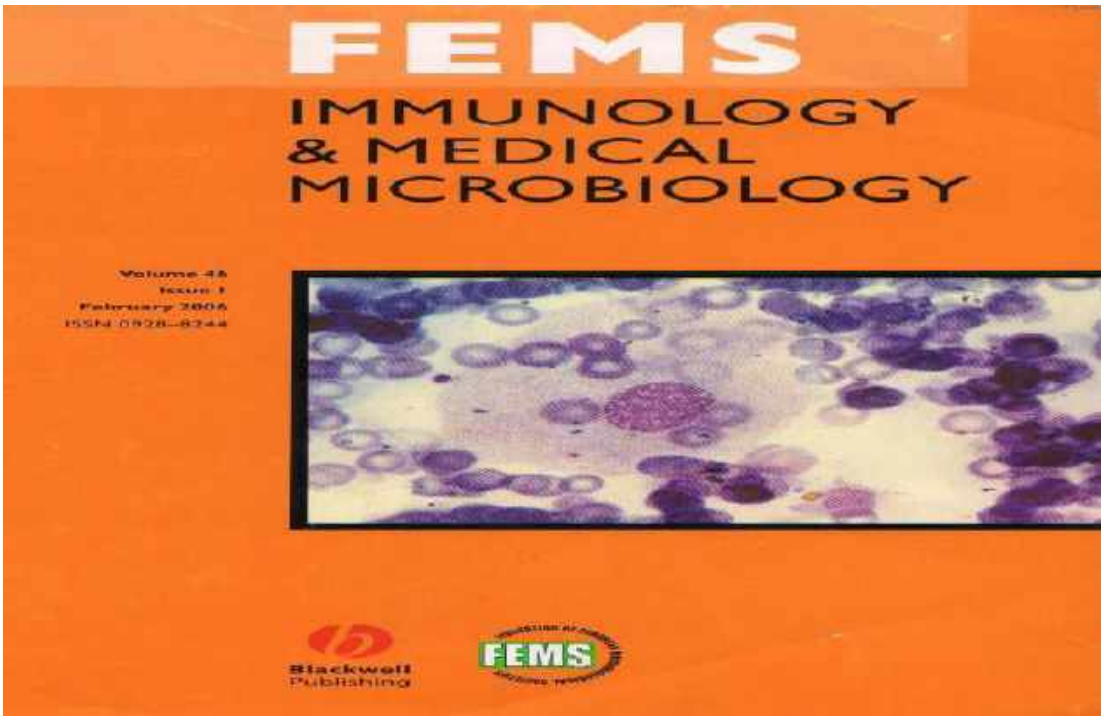
TO

DR. OWAIS MOHAMMAD
ALIGARH MUSLIM UNIVERSITY, ALIGARH

in recognition of his pioneering work in development of nano-particles based delivery systems such as virosomes for gene packaging, liposomes and microspheres for vaccine development, gene therapy vectors and drug delivery systems. He has developed liposome based antigen delivery vehicles, which can elicit strong immune response against model antigens in animals.

Given this Day, the 17th of March 2008 at the function organized in connection with the Foundation Day of the Department.

KAPIL SIBAL
MINISTER OF SCIENCE & TECHNOLOGY
AND EARTH SCIENCES



Cover page showing illustration from nominee's published work

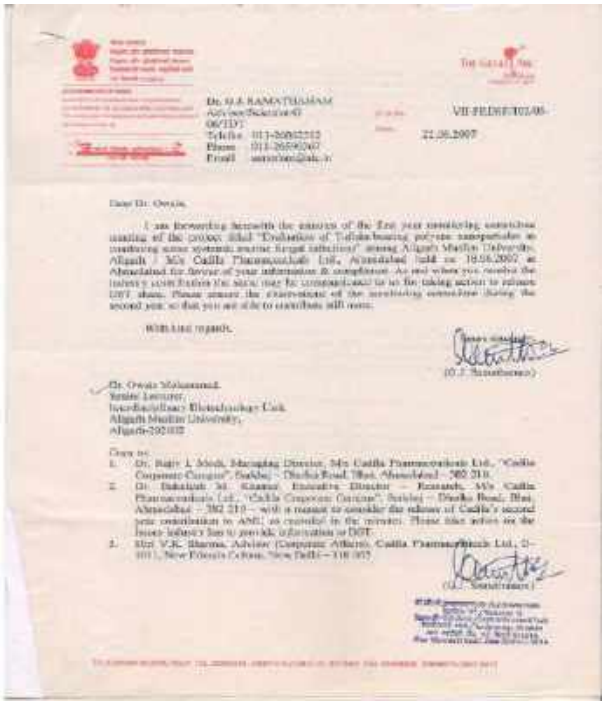
Cover page highlighting nominee's work


RASHTRIYA GAURAV AWARD
CERTIFICATE OF EXCELLENCE
Dr. M Owais
For Meritorious Services, Outstanding Performance And Remarkable Role
By
Dr. Bhisma Narain Singh
Gurpreet Singh
India International Friendship Society


THE INDUS FOUNDATION
Indo-Global Education Summit 2015
AWARD FOR RESEARCH EXCELLENCE
Dr. M. Owais


Young Muslim Scientist Award
Dr. Mohammad Owais
for his outstanding contribution in the field of Life Sciences.

INDUSTRY COLLABORATION



FIRST ANNOUNCEMENT

12th INTERNATIONAL LIPOSOME RESEARCH DAYS
joint meeting with the 3rd conference on
LIPIDS, LIPOSOMES & MEMBRANE BIOPHYSICS

UBC Campus, Vancouver, Canada
August 4-8, 2010

International Advisory Board

Canada	*Italy*
M. Bally	M. Ponzoni
C. Allen	*Germany*
R. Epand	R. Zelisig
R. McElhaney	*Spain*
Japan	F. Goni
K. Maruyama	*Czech Republic*
N. Oku	J.Turanek
H. Hanashima	*Russia*
T. Ishida	L. Yakeshenko
USA	*Taiwan*
C. Alving	J. An Wang
F. Szoka	*China*
L. Huang	Y. Xu
V. Torchilin	*Israel*
D. Needham	A. Gabizon
D. Deamer	C. Barenholz
P. Fulgner	*India*
The Netherlands	P. Devarajan
G. Storm	P. C. Ghosh
B. de Kruijff	M. Owais
D. Hoekstra	*Brazil*
United Kingdom	H. Bueno da Costa
Y. Perrie	*Australia*
H. Bayley	G. Russell-Jones
France	M. Patane
L. Leserman	*South Africa*
Portugal	H. Swai
R. Gaspar	

Conference topics will include:

Nanotoxicology

Ligand-targeted and combination therapeutics

Intracellular delivery

New technology developments

Roles of lipids in membranes

Self-organization of lipids

Lipid trafficking

Membrane nanotechnology

PLUS workshops on
- commercialization of nanomedicines
- delivery of gene therapeutics (DNA, siRNA)
- recent clinical developments

PLUS the International Alec Bangham Award, poster awards, and sponsor exhibits

All researchers with interests in liposomes, nanomedicines, lipids and biomembranes are invited to join us on the beautiful University of British Columbia campus for an exciting interdisciplinary conference.

Organizers: Theresa M Allen (terry.allen@ualberta.ca; Pieter R Cullis (pieterc@interchange.ubc.ca)

एड्स: अमुवि के प्रोफेसर बनाएंगे दवा

अमुवि द्वारा एड्स की दवा बनाने हेतु त्रिपक्षीय समझौता

राजपथ

एड्स पर नियंत्रण के लिए त्रिपक्षीय समझौता

आज

a) Research papers published in full: (Average impact factor~3.78)

Total Research articles: 200

Total Review articles: 20, Chapters in books: 16

a. Some of the original research papers published in full:

1. Jamal F, Ahmed G, Farazuddin M, Altaf I, Farheen S, Zia Q, Azhar A, Ahmad H, Khan AA, Somavarapu S, Agrawal A., **Owais M**. (2023) Potential of siRNA-Bearing Subtilosomes in the Treatment of Diethylnitrosamine-Induced Hepatocellular Carcinoma. **Molecules**: 28(5):2191 (Impact Factor: 4.60)
2. Jamal F, Altaf I, Ahmed G, Asad S, Ahmad H, Zia Q, Azhar A, Farheen S, Shafi T, Karim S, Zubair S, **Owais M** (2023) Amphotericin B Nano-Assemblies Circumvent Intrinsic Toxicity and Ensure Superior Protection in Experimental Visceral Leishmaniasis with Feeble Toxic Manifestation. **Vaccines**: 11(1):100 (Impact Factor 5.6)
3. Faraz Ahmad, Mohd. Saad Umar, Nazoora Khan, Fauzia Jamal, Pushpa Gupta, Swaleha Zubair, Umesh Datta Gupta and **Mohammad Owais** (2021) Immunotherapy With 5, 15-DPP Mediates Macrophage M1 Polarization and Modulates Subsequent *Mycobacterium tuberculosis* Infectivity in rBCG30 Immunized Mice. **Frontiers in Immunology**, section Vaccines and Molecular Therapeutics Manuscript ID: 12:706727. https://doi.org/10.3389/fimmu.2021.706727, [IF 8.70]
4. Fauzia Jamal, Manish Kumar Singh, Jagadish Hansa, Pushp Anjali, Ghufran Ahmad, Saad UM, Manas R Dikhit, Anzar Abdul Mujeeb, Sanjiva Bimal, Pradeep Das, Shubhankar K Singh, Swaleha Zubair, **Owais, M** (2020) A Leishmania specific promiscuous membrane protein Tubulin Folding Cofactor D divulges Th1/Th2 polarization in the host via ERK-1/2 and p38 MAPK signaling cascade**. Frontiers in Immunology**, (section Vaccines and Molecular Therapeutics) Manuscript ID: 506961. [IF 8.7]

5. **Owais M**, Faisal SM, Ahmad N, Rauf MA, Umar MS, Mujeeb AA, Pachauri P, Ahmed A, Kashif M, Ajmal M, Zubair S. (2019) Bio-mediated synthesis of 5-FU based nanoparticles employing orange fruit juice: a novel drug delivery system to treat skin fibrosarcoma in model animals. **Scientific Reports (NPG)** 9(1):12288. doi: 10.1038/s41598-019-48180-7. [IF 4.40]

6. AA Mujeeb, NA Khan, F Jamal, KFB Alam, H Saeed, S Kazmi, **Owais, M**. (2020). *Olax scandens* mediated biogenic synthesis of Ag-Cu nanocomposites: potential against inhibition of drug-resistant microbes**.** **Frontiers in Chemistry** 8 [IF 5.54]

7. Kazmi S, Mujeeb AA, **Owais M**. (2018) Cyclic undecapeptide Cyclosporin A mediated inhibition of amyloid synthesis: Implications in alleviation of amyloid induced neurotoxicity. **Scientific Reports (NPG)** 23; 8(1):17283 (Impact Factor: 4.99).
8. Badrealam F. Khan, Hamidullah, Sonam Dwivedi, RiturajKonwar, Swaleha Zubair, **Owais, M** (2019) Potential of bacterial culture media in biofabrication of metal nanoparticles and the therapeutic potential of the as-synthesized nanoparticles in conjunction with artemisinin against MDA-MB-231 breast cancer cells. **Journal of Cellular Physiology:** 234(5): 6951-6964. (IF 3.92]
9. Mubin N, Pahari S, **Owais M**, Zubair S. (2018) Mycobacterium tuberculosis host cell interaction: Role of latency associated protein Acr-1 in differential modulation of macrophages. **PLoS One**: 2018 Nov 5;13(11): e0206459. **[IF 2.80]**
10. Mubin N, Umar, MS, Zubair, S., **Owais, M** (2018) Selective targeting of 4SO4-N-Acetyl-Galactosamine functionalized M. tb protein loaded chitosan nanoparticle to macrophages: correlation with activation of Immune System. **Frontiers in Microbiology:**9, 2469 **[IF 4.10]**

11. Ahmar RM, Swaleha Z, Hira A, Subodh P, Ajmal KM, **Owais M** (2018) Synergistic effect of Diallylsulphide with Zinc oxide Nanorods: A novel anthe d effective approach for treatment of acute dermatitis in model animals. **Frontiers in Microbiology:** 9:586. doi: 10.3389/fmicb.2018.00586 **[IF 4.1]**
12. Tufail S, Sherwani MA, Shoaib S, Azmi S, **Owais M**, Islam N.(2018) Ovalbumin self-assembles into amyloid nanosheets that elicit immune responses and facilitate sustained drug release. **J Biol Chem**: 293(29):11310-11324. doi: 10.1074/jbc.RA118.002550. [pub ahead of print] **[IF 4.1]**
13. Kaushik S, Iqbal N, Singh N, Sikarwar JS, Singh PK, Sharma P, Kaur P, Sharma S, **Owais M**, Singh TP (2018) Search of multiple hot spots on the surface of peptidyl-tRNA hydrolase: structural, binding and antibacterial studies. **Biochem J**. 475(3): 547-560. doi: 10.1042/BCJ20170666. **[IF 4.4]**
14. Ahmad F, Zubair, S, Gupta P, Gupta UD, Patel R, **Owais M**. (2017) Evaluation of Aggregated Ag85B Antigen for Its Biophysical Properties, Immunogenicity, and Vaccination Potential in a Murine Model of Tuberculosis Infection. **Front in Immunology** 8:1608. doi: 10.3389/fimmu.2017.01608. **[IF 6.70]**
15. Fatima N, Faisal SM, Zubair S, Siddiqui SS, Moin S, **Owais M**. (2017) Emerging role of Interleukins IL-23/IL-17 axis and biochemical markers in the pathogenesis of Type 2 Diabetes: Association with age and gender in human subjects. **Int J Biol Macromol**. 105 (Pt 1): 1279-1288. doi: 10.1016/j.ijbiomac.2017.07.155. **[IF 3.7]**
16. Qamar Zia, Mohd. Ahmar Rauf, Wasi Ahmad, **Owais M.** Biomimetically engineered Amphotericin B nano-aggregates circumvent toxicity constraints against mammalian cells. **Scientific reports** 7 (1), 11873. **[IF 4.3]**
17. Tan, D., Zia, Q., Zubair, S., Stapleton, P., Singh, R., Owais, M., Somavarapu, S. (2017) B Novel biodegradable poly (gamma-glutamic acid)-amphotericin B complexes show promise as improved amphotericin B formulations. Nanomedicine: Nanotechnology, Biology, and Medicine (Elsevier) pii: S1549-9634(17)30021-7. doi: 10.1016/j.nano.2017.02.003. **(Impact Factor: 6.70)**

18. Ahmar, RM, **Owais, M.,** Ravikant, R., Faraz, A., Nazoora, K., Swaleha Z. (2017) Biomimetically synthesized ZnO nanoparticles attain potent antibacterial activity against less susceptible *S. aureus* skin infection in experimental animals. *RSC Adv.*, 7: 36361-36373. **[IF 3.2]**
19. Zubair S, Azhar A, Khan N, Ahmad E, Ajmal M, Owais M. (2017) Nanoparticle-Based Mycosis Vaccine. Methods Mol Biol. 1625:169-211. doi: 10.1007/978-1-4939-7104-6_13. **(Impact Factor: 3.80)**
20. Owais M, Kaur J, Singh G, Faisal SM, Azhar A, Rauf MA, Gupta UD, Gupta P, Pal R, Zubair S. (2016) TLR Agonist Augments Prophylactic Potential of Acid Inducible Antigen Rv3203 against Mycobacterium tuberculosis H37Rv in Experimental Animals. PLoS One. 29;11(3):e0152240. **(Impact Factor: 3.45)**
21. Fatima N, Faisal SM, Zubair S, Ajmal M, Siddiqui SS, Moin S, Owais M. (2016) Role of Pro-Inflammatory Cytokines and Biochemical Markers in the Pathogenesis of Type 1 Diabetes: Correlation with Age and Glycemic Condition in Diabetic Human Subjects. PLoS One. 2016 Aug 30;11(8):e0161548. doi: 10.1371/journal.pone.0161548 (Impact Factor: 3.45).
22. Asif, MS, Tufail, S., Khan, AA, Owais, M. (2016) Dendrosome mediated topical gene silencing by PLK-1 specific siRNA: implication in treatment of skin cancer in mouse model. **RSC Advances** 6 (8), 6843-6857 **(Impact Factor: 3.84)**
23. Ahmad E, Zia Q, Fatima MT, Owais M., (2015) Vaccine potential of plasma bead-based dual antigen delivery system against experimental murine candidiasis. Int J Biol Macromol. 81:100-111. (Impact Factor: 9.08)
24. Ahmad E, Fatima MT, Hoque M, Owais M, Saleemuddin M. (2015) Fibrin matrices: The versatile therapeutic delivery systems. Int J Biol Macromol. 81:121-136. (Impact Factor: 9.08)

25. Sherwani MA, Tufail S, Khan AA, Owais M. (2015) Gold Nanoparticle-Photosensitizer Conjugate Based Photodynamic Inactivation of Biofilm Producing Cells: Potential for Treatment of C. albicans Infection in BALB/c Mice. PLoS One. 2015 Jul 6;10 (7): e0131684. doi: 10.1371/journal.pone.0131684. (Impact Factor: 3.45)
26. Tufail S, Badrealam KF, Sherwani A, Gupta UD, Owais M. (2013) Tissue specific heterogeneity in effector immune cell response. **Frontiers in Immunology** 4:254. doi: 10.3389/fimmu.2013.00254. **(Impact Factor: 8.40)**
27. Sherwani, M. A., Tufail, S., Khan A. A, Owais, M. (2015) Dendrimer-PLGA based multifunctional immuno-nanocomposite mediated synchronous and tumor selective delivery of siRNA and cisplatin: potential in treatment of hepatocellular carcinoma **RSC Advances** 5 (49): 39512-39531**(Impact Factor: 3.88)**
28. Ansari, MA, Qamar, Zia, Khan AA, Azhar, A, Owais, M. (2015), Efficacy of cell wall deficient spheroplasts against experimental murine listeriosis. **Scandinavian Journal of Immunology** 82(1):10-24. **(Impact Factor 2.15)**
29. Qamar, Z., Zubair, S., Khan, A. A., **Owais, M**. (2015) Self assembled amphotericin B loaded poly-glutamic acid nanoparticles: preparation, characterization and in vitro potential against Candida albicans. **International journal of Nano-medicine**. 10:1769-90. (Impact factor 4.21)
30. Saba Tufail, Owais, M., Shadab Kazmi, Renu Balyan, Jasneet Kaur Khalsa, Syed Mohd. Faisal, Mohd. Asif Sherwani, Manzoor Ahmad Gatoo, Mohd. Saad Umar and Zubair S (2015), Amyloid form of Ovalbumin evokes native antigen-specific immune response in the host: prospective immuno-prophylactic potential. The Journal of Biological Chemistry. (Impact Factor: 4.65)
31. Farazuddin, M., Zia, Q., Sharma, B., Joshi, B., Owais, M. (2014) Chemotherapeutic potential of curcumin bearing microcells against hepatocellular carcinoma in model animals. International journal of Nano-medicine. 9:1139-1152. [Impact factor 4.21]

32. Ahmed N, Konduru NK, Ahmad S, Owais M. (2014) Synthesis of flavonoids based novel tetrahydropyran conjugates (Prins products) and their antiproliferative activity against human cancer cell lines. Eur J Med Chem. 75:233-46. [Impact factor 3.60]
33. Owais M, Kazmi S, Tufail S, Zubair S (2014) An alternative chemical redox method for the production of bispecific antibodies: implication in rapid detection of food borne pathogens. PLoS One. 17;9(3):e91255. [Impact factor 3.70]
34. Arun, C., Swaleha Z., Ahmad N., Sajid AA, Ansari, MY, Owais, M. (2014) Escheriosome mediated cytosolic delivery of Plk1 specific siRNA: Potential in treatment of liver cancer in Balb/c mice. **Nanomedicine** (Future Medicine, London) 9(4): 407-420. [Impact factor 5.81]
35. Khan AA, Jabeen M, Khan AA, Owais M. (2013) Anticancer efficacy of a novel propofol-linoleic acid-loaded escheriosomal formulation against murine hepatocellular carcinoma. Nanomedicine (Future Medicine, London). 8(8):1281-1294. [Impact factor 5.81].
36. Maroof, A., Zubair, S., Farazuddin, M., Ejaj, A., Arbab, K., Qamar, Z., Abida, M., Owais, M. (2013), Development, characterization and efficacy of niosomaldiallyldisulphide in treatment of disseminated murine candidiasis. **Nanomedicine** (Elsevier) 9(2): 247-256. (Impact factor 6.70)
37. Kumar N. K., Sunita, D., Sajid, M., Owais, M., Ahmed, N. (2013) Synthesis and Antibacterial/ Antifungal Evaluation of Some Chalcone Based Sulfones and Bisulfones. European Journal of Medicinal Chemistry 59: 23-30. [Impact factor 3.60]
38. Ejaj Ahmad, Munazza T Fatima, M Saleemuddin, M., Owais, M. (2012) Plasma beads loaded with Candida albicans cytosolic proteins impart protection against the fungal infection in BALB/c mice.Vaccine 30(48): 6851-6858. [Impact factor 3.80]
39. Khan AA, Husain A, Jabeen M, Mustafa J, Owais M. (2012). Synthesis and Characterization of Novel n-9 Fatty Acid Conjugates possessing antineoplastic properties. Lipids 47(10):973-86. [Impact factor 2.40]

40. Khan AA, Jabeen M, Chauhan A, Owais M. (2012). Vaccine potential of cytosolic proteins loaded fibrin microspheres of *Cryptococcus neoformans* in BALB/c mice. **J Drug Target**. 20 (5): 453-66. **[Impact factor 2.70]**

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iii) Scientific Reviews:

1. Azhar, Mohammad A Wali, Qudsia Rashid, Wajihul Hasan Khan, Khaled Al-Hosaini, Owais, M., Mohammad Amjad Kamal (2023) Crosstalk between SARS-CoV-2 Infection and Neurological Disorders: A Review **CNS & Neurological Disorders-Drug Targets**: 22(5), 643-658. (Impact Factor: 2.82)
2. Khan FB, Uddin S, Elderdery AY, Goh KW, Ming LC, Ardianto C, Palakot AR, Anwar I, Khan M, **Owais M**, (2022) Illuminating the Molecular Intricacies of Exosomes and ncRNAs in cardiovascular diseases: Prospective Therapeutic and Biomarker Potential. ***Cells***: 11(22):3664. https://doi.org/10.3390/cells11223664 (Impact Factor: 6.6)
3. Farheen Badrealam Khan, Parul Singh, Yahya F Jamous, Syed Azmal Ali, Mohammad Owais, Chih Yang Huang, Venkatesh Chanukuppa, (2022) Multifaceted pharmacological potentials of curcumin, genistein, and tanshinone IIA through proteomic approaches: an in-depth review Cells: 15 (1) 249 (Impact Factor: 6.6)
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5. Alshameri AW, **Owais M** (2022) Antibacterial and cytotoxic potency of the plant-mediated synthesis of metallic nanoparticles Ag NPs and ZnO NPs. Open Nano: 8, 100077 (Impact Factor: 9.50)
6. Asim Azhar, WH Khan, PA Khan, K Al-Hosaini, **M Owais**, A Ahmad (2022) Mucormycosis and COVID-19 pandemic: Clinical and diagnostic approach. **Journal of Infection and Public Health:** 15 (4), 466-479 (Impact Factor: 3.32).
7. S Farheen, S Agrawal, S Zubair, A Agrawal, F Jamal, I Altaf, A Kashif Anwar, SM Umair, **M Owais** (2021) Patho-Physiology of Aging and Immune-Senescence:

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i) **Other publications (poster presentation**):

- Paper entitled as “Liposome in treatment of infectious diseases” was presented in Second Chandigarh Symposium on “New Biology” at IMTECH, Chandigarh during March 22-23, 1993.
- AIDSLINE ICA12/98385118. Meeting Jan 1998. National Cancer Institute, National Institute of Health, Bethesda, MD, USA.Anti-HIV chemokines: domain mapping and HIV-2 lentivirus delivery.
- International Conference on “Current Trends in Drug Discovery Research (CTDDR)” at CDRI, Lucknow during Feb 13-17 2001 and presented poster entitled “Liposome mediated removal of bilirubin in jaundice rats.”
- 9th Asia Pacific Congress in Clinical Biochemistry, 2002 at New Delhi during March 9-14, 2002and presented a poster entitled “Binding of bilirubin with albumin coupled liposomes: Implication in treatment of jaundice.”
- Yeast 2003: An International meeting on yeast biology at IMTECH, Chandigarh during Feb 20-22, 2003 and presented poster entitled “Reconstitution of Candida albicans antigen in fusogenic yeast lipid vesicles: Implication in vaccine development.”

- Yeast 2003: An International meeting on yeast biology at IMTECH, Chandigarh during Feb 20-22, 2003 and presented poster entitled "Glyoxylate cycle enzymes as potential drug targets for treatment of intracellular infections."

iv) Other publications (posters):

- Paper entitled as "Liposome in treatment of infectious diseases" was presented in Second Chandigarh Symposium on "New Biology" at IMTECH, Chandigarh during March 22-23, 1993.
- AIDSLINE ICA12/98385118. Meeting Jan 1998. National Cancer Institute, National Institute of Health, Bethesda, MD, USA. Anti-HIV chemokines: domain mapping and HIV-2 lentivirus delivery.
- International Conference on "Current Trends in Drug Discovery Research (CTDDR)" at CDRI, Lucknow during Feb 13-17 2001 and presented poster entitled "Liposome mediated removal of bilirubin in jaundice rats."
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- Yeast 2003: An International meeting on yeast biology at IMTECH, Chandigarh during Feb 20-22, 2003 and presented poster entitled "Glyoxylate cycle enzymes as potential drug targets for treatment of intracellular infections."
- 2nd World Congress on "Biotechnological developments of herbal medicines" at NBRI Lucknow during Feb 20-22, 2003, and presented poster entitled "Antibacterial efficacy of Withania somnifera against experimental Salmonella typhimurium infection in BALB/c mice."

- 6th International Conference on "Liposome Advances: Progress in drug and vaccine delivery" at School of Pharmacy, University of London, London, UK during Dec 15-19, 2003, and presented a poster entitled "Fusogenic liposomes: potential as future vaccine candidates.
- Indo-Australian Conference on Biotechnology in infectious diseases at Kasturba Medical college, MAHE, Manipal during 1-3 March, 2005, and presented poster entitled "Role of vaccine adjuvant against experimental murine Salmonellosis."
- Indo-Australian Conference on Biotechnology in infectious diseases at Kasturba Medical College, MAHE, Manipal during 1-3 March, 2005, and awarded best poster entitled "Escheriosome entrapped soluble blood stage antigens impart protective immunity against a multidrug resistant isolate of Plasmodium yoelii nigeriensis in BALB/c mice."
- National symposium on Nano particles, IVRI, Izat Nagar during 22-23 Dec, 2007, delivered talk on Development of nano particle based drug and antigen delivery system.
- International symposium on the Predictive, Preventive and Mechanistic Mutagenesis & XXXIII EMSI annual Meeting, AMU, Aligarh during Jan 1-3, 2008 and presented poster entitled as "Fibrin mesh encapsulated tuftsin activates immune functions of host macrophages.
- International symposium on the Predictive, Preventive and Mechanistic Mutagenesis & XXXIII EMSI annual Meeting, AMU, Aligarh during Jan 1-3, 2008 and presented poster entitled "Fusogenic potential of sperm membrane lipids: nature's wisdom to accomplish targeted gene delivery

International visits:

1. Asim Azhar, Ahmar Rauf, Swaleha Zubair, Haris Saeed and Mohammad Owais. "Dietary Components Bearing Nanoparticles: potential in Treatment of Cancer in Model Animals". *International Symposium on Current Advances in Radiology, Stem Cells and cancer Research organized by School of Life Sciences, Finland during 19-21 Feb, 2015.*
2. Asim Azhar, Qamar Zia, Shadab Kazmi, Ejaj Ahmad, M Ansari, K.E Johnson, Swaleha Zubair, M Owais. "Efficacy of Cell-Wall Deficient spheroplasts Against Experimental Murine Listeriosis" organized by The 15th Awaji International Forum on Infection and Immunity in Yumebutai International Conference, Awaji Japan 6-9th Sept, 2016.

Other publications (poster presentation):

- Paper entitled as “Liposome in treatment of infectious diseases” was presented in Second Chandigarh Symposium on “New Biology” at IMTECH, Chandigarh during March 22-23, 1993.
- AIDSLINE ICA12/98385118. Meeting Jan 1998. National Cancer Institute, National Institute of Health, Bethesda, MD, USA.Anti-HIV chemokines: domain mapping and HIV-2 lentivirus delivery.
- International Conference on “Current Trends in Drug Discovery Research (CTDDR)” at CDRI, Lucknow during Feb 13-17 2001 and presented poster entitled “Liposome mediated removal of bilirubin in jaundice rats.”
- 9th Asia Pacific Congress in Clinical Biochemistry, 2002 at New Delhi during March 9-14, 2002and presented a poster entitled “Binding of bilirubin with albumin coupled liposomes: Implication in treatment of jaundice.”
- Yeast 2003: An International meeting on yeast biology at IMTECH, Chandigarh during Feb 20-22, 2003 and presented poster entitled “Reconstitution of Candida albicans antigen in fusogenic yeast lipid vesicles: Implication in vaccine development.”
- Yeast 2003: An International meeting on yeast biology at IMTECH, Chandigarh during Feb 20-22, 2003 and presented poster entitled “Glyoxylate cycle enzymes as potential drug targets for treatment of intracellular infections.”
- 2nd World Congress on “Biotechnological developments of herbal medicines” at NBRI Lucknow during Feb 20-22, 2003, and presented poster entitled “Antibacterial efficacy of Withania somnifera against experimental Salmonella typhimurium infection in BALB/c mice.”
- 6th International Conference on “Liposome Advances: Progress in drug and vaccine delivery” at School of Pharmacy, University of London, London, UK during Dec 15-19, 2003, and presented a poster entitled “Fusogenic liposomes: potential as future vaccine candidates.”
- Indo-Australian Conference on Biotechnology in infectious diseases at Kasturba Medical College, MAHE, Manipal during 1-3 March, 2005, and

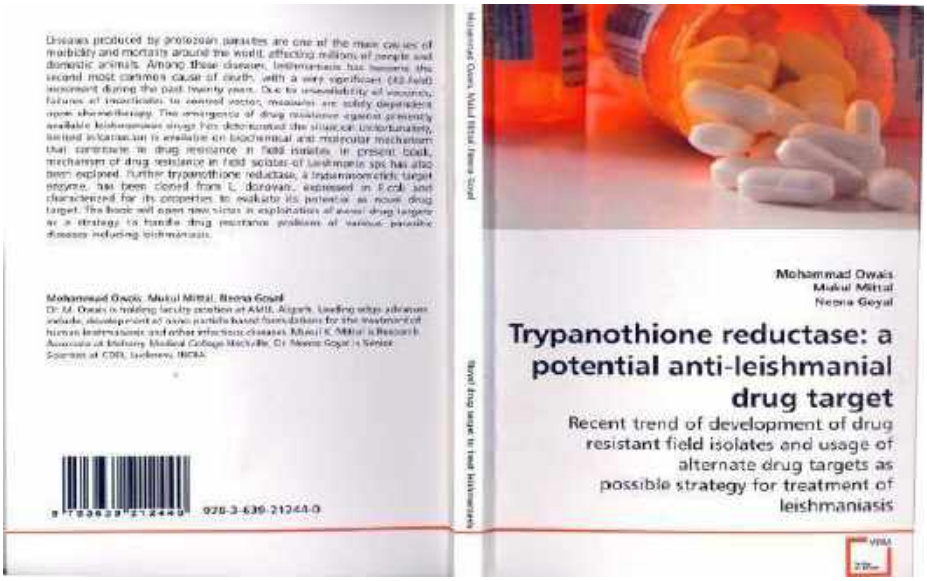
presented poster entitled “Role of vaccine adjuvant against experimental murine Salmonellosis.”

- Indo-Australian Conference on Biotechnology in infectious diseases at Kasturba Medical College, MAHE, Manipal during 1-3 March, 2005, and awarded best poster entitled “Escheriosome entrapped soluble blood stage antigens impart protective immunity against a multidrug resistant isolate of Plasmodium yoeliinigeriensis in BALB/c mice.”
- National symposium on Nano particles, IVRI, Izat Nagar during 22-23 Dec, 2007, delivered talk on Development of nanoparticle based drug and antigen delivery system.
- International symposium on the Predictive, Preventive and Mechanistic Mutagenesis & XXXIII EMSI annual Meeting, AMU, Aligarh during Jan 1-3, 2008 and presented poster entitled as “Fibrin mesh encapsulated tuftsin activates immune functions of host macrophages.
- International symposium on the Predictive, Preventive and Mechanistic Mutagenesis & XXXIII EMSI annual Meeting, AMU, Aligarh during Jan 1-3, 2008 and presented poster entitled “Fusogenic potential of sperm membrane lipids: nature’s wisdom to accomplish targeted gene delivery.”

Total Books Published: 03

1. Modern Phytomedicine: Turning Medicinal Plants into Drugs (2006) Wiley VCH, Verlag Gmbtt& Co. KgaA.
2. Trypanothione reductase: a potential anti-leishmanial drug target (2009) (ISBN-NR 978-3-639-21244-0) VDM Verlag Dr. Müller Aktiengesellschaft& Co. KG
3. Combating Fungal Infections: Problems and Remedy (2010) Springer-Verlag, Heidelberg, Germany.


Edited by Iqbal Ahmad,
Farrukh Aqil and Mohammad Owais
WILEY-VCH
Modern
Phytomedicine
Turning Medicinal Plants into Drugs
Iqbal Ahmad
Mohammad Owais
Mohammed Shahid
Farrukh Aqil
Editors
Combating
Fungal Infections
Problems and Remedy
Springer


Mohammad Owais
Mukul Mittal
Neena Goyal
Trypanothione reductase: a
potential anti-leishmanial
drug target
Recent trend of development of drug
resistant field isolates and usage of
alternate drug targets as
possible strategy for treatment of
leishmaniasis

Total Ph D Dissertations (Awarded): Thirty four

Details of the Ph D Dissertations supervised by the nominee:

1. Liposomes as an immuno-potentiating delivery system: Prophylactic and therapeutic implications against fungal infections (Alam MK, 2004).

2. Biochemical and molecular chararcterization of drug resistance in *Leishmania donavani* (Mittal MK, 2005)

3. Development of liposome based vaccines against infectious diseases (Faisal SM, 2006).
4. Fusogenic liposome based vaccines against some infectious diseases (Mallick, AI, 2009).

5. Concomitant delivery of immunomodulator and chemotherapeutic agents: Perspective in treatment of cancer in model animals (Arif, K, 2009).

6. Spermatosome based vaccines against intracellular pathogens (Atif SM, 2009).

7. Liposome based vaccines: Prophylactic measure against infectious diseases (Sharad K Sharma, 2009).
8. Epidemeological studies on prevalence of oral cancer in North India (Ahmad MG, 2010).

9. Saccharosomes as vehicle for delivery of drugs and antigens (Varun D, 2010).

10. Nano particles: Potential delivery systems against some intracellular infectious diseases (Maroof A, 2010).

11. Development of fibrin mesh based delivery system (Aijaz, A, 2011).

12. Characterization of some immunogenic proteins and their potential as vaccine candidates (Ansari MA, 2011).

13. Studies on molecules associated with polycystic ovary syndrome (Fatima N, 2011).

14. Development of nanoparticle based formulations against treatment of cancer (Azmat Ali, 2011).

15. Evaluation of nano-particle based delivery systems against prophylactic treatment of opportunistic fungal infections in Balb/C mice (Arun Chauhan, 2012)

16. Development of nano-particles based formulations against infectious diseases (Farazuddin M, 2012).

17. Some defense strategies against pathogen living in intracellular compartment of host (Zia Q, 2013)

18. Antioxidant and antiglycation effects of some phytochemicals (Shazia Aman, 2014)

19. Potential of fibrin based vaccines against experimental murine infections (Ejaj Ahmad, 2014)

20. Prophylactic potential of nano-particles in prevention of infectious diseases (Saba T, 2015)

21. Prospective prophylactic strategies against some diseases (KF Badrealam, 2015)

22. Targeted delivery of immune-nano-composite based delivery systems: potential in treatment and prophylaxis of cancer (Asif MS, 2015)

23. Nanoparticle mediated targeted delivery of drug and antigen (Ahmar MR, 2017)

24. Emerging role of Interleukins IL-23/IL-17 axis and biochemical markers in the pathogenesis of Type 2 Diabetes (Naureen F, 2017)

25. Theranostic biosensors: Application in detection of food borne pathogens (Shadab Kazmi, 2017)
26. Role of cytokines in the regulation of host immune responses during infection (Faisal SM 2018)
27. Immune potential of M tb hypoxic stress induced Acr1 protein against intracellular M tb species infection (Nida 2019)
28. Studies on some prophylactic and chemotherapeutic strategies against some fungal infection (Faraz A, 2019).
29. Exosome mediated dendritic cell priming: potential in treatment of brucellosis (Anzar M, 2020)
30. Evidence implicating role of immune components of the host in autoimmunity (Haris Saeed, 2020)
31. Metal nanoparticles based drug delivery system to combat pathogens (Ansam Alshamer 2022)
32. Role of immunotherapy in cancer prophylaxis (Mohammmad S, 2022)
33. Nanoparticles in prophylaxis against intracellular pathogens (Altaf I, 2023)
34. Prophylactic strategies against intracellularpathogens (Farheen S, 2023)

M Phil Dissertations (Awarded): Three

1. Antifertility Vaccines (Nishat F, 2006).
2. Role of immunomodulators in cancer (Arif K, 2004).
3. Development of nanoparticle based formulations against infectious diseases (M. Farazuddin, 2008)

MD Dissertations (Awarded): Nine

1. T. L. C. profile and protein analysis of certain indigenous drugs (Shebaz, A. 2005).
2. Use of nano particles in treatment of Jaundice (Uzma, F. 2006).
3. Correlation between various inflammatory markers with different grades of blood pressure in essential hypertensive patients (Aslam, M. 2007).
4. A study of inflammatory markers and its correlation with severity in patients with chronic heart failure (Ansari, N, 2007).

5. A study of inflammatory markers in diabetic patients (Lubna, H, 2007).

6. Cytokine profile in auto-immune patients (Zuhaib, M. 2008).

1. Absorption of Triamcinolone Acetonide after posterior sub-tenon injection (Mahamood S, 2009)
2. Study of pro-inflammatory cytokines in patients of ischemic and non ischemic dilated cardiomyopathies (Hamid, A. 2011)

3. Potential of Cox-2 in prognosis of pulmonary tuberculosis (Zubair, M. 2011

4. Immune staus of the tuberculosis patient with diabetes (Adil M, 2015)

11. Role of Th17 cells in HIV patients (Ahmad M, 2015)

M. Tech.Dissertation (Awarded): One

1. Ethanol production from crude whey by *Kluyveromycesmarxianus* (Salman, Z. 2004)

Ph D Dissertations (pursuing): eight

1. Exosome mediated dendritic cell priming: potential in the treatment of brucellosis (Nazoora Khan)

2. Studies on some prophylactic and chemotherapeutic strategies against some fungal infections (Samiuddin).

3. Cytokine praxis in control of viral infections (Ashima Gupta)

4. Metal nanoparticle: possible role in treatment of infectious diseases (Ruqayya Khan)

5. Bacteriphage based drug delivery systems for treatment of infectious diseases (Nikhat Firdaus)

Details of Sponsored Research Schemes

a. **Name of the project: Development of Flunorm^{R}…… COVID-19 patients**
Funding agency: Minstry of AYUSH, Govt. of India
Duration: Six months (w.e.f. 08. 07. 2020)
Amount*: Rs. 18.0 lakhs*

b. **Name of the project:** Towards establishing ……. modes of gene delivery
Funding agency: DBT, Govt. of India
Duration: Two years (w.e.f. 10. 01. 2017)
Amount*: Rs. 78.0 lakhs*

c. Name of the project: Microarray for detection of food borne pathogens
Funding agency: ICAR, Govt. of India
Duration: Four years (w.e.f. 1. 10. 2012)
Amount*: Rs. 231 lakhs (02.31 crores)*

d. Name of the project: Development of diagnostic kit… detection of GAS isolates
Funding agency: DST, Govt. of India
Duration: Three years (w.e.f. 1.09. 2015)
Amount*: Rs. 64 lakhs*

e. Name of the project: Exosome mediated delivery of antigen to dendritic cells.
Funding agency: DBT, Govt. of India
Duration: Five years (w.e.f. 1. 04. 2013)
Amount*: Rs. 27.0 lakhs*

f. Name of the project:Immunoprophylaxis approaches….. protozoal parasite
Funding agency: DBT, Govt. of India (BUILDER program)
Duration: Five years (w.e.f. 1. 04. 2012)
Amount*: Rs. 981 lakhs (9.81crores)*

g. Name of the project:Cancer siRNA therapy by ……. ligand Nanoparticles.
Funding agency: ICMR, Govt. of India
Duration: Four years (w.e.f. 1. 10. 2011)
Amount: Rs. 54.0 lakhs

h. Name of the project: Potential of nano particle …. si RNA in cancer.
Funding agency: DBT, Govt. of India
Duration: Four years (2008-2011)
Amount: Rs. 66.0 lakhs

i. Name of the Project: Evaluation of tuftsin ……. fungal infections.
Funding agency: DST (PRDSF Program), Govt. of India

Duration: Two years (2006-2008)

Amount: Rs. 89.0 lakhs

j. Name of the project: si RNA in treatment of viral infections.
Funding agency: DBT, Govt. of India

Duration: Three years (2008-2011)

Amount: Rs. 09.0 lakhs

k. Name of the project: Development of liposome/ ……. malaria infection.

Funding agency: Council of Science & Technology, Govt. of India

Duration: Three years (2001-2004)

Amount: Rs. 3.0 lakhs

l. Name of the project: Effect of bioactive medicinal plant ….. potential prospection.
Funding agency: UGC, Govt. of India

Duration: Three years (2002-2005)

Amount: Rs. 5.73 lakhs

Score: 05 points

13. Name of the project: Reversal of resistance…….. liposomes

Funding agency: UGC, Govt. of India (special assistance)

Duration: One year

Amount: Rs. 1.23 lakhs

14. Name of the project: Evaluation of fibrin mesh …… murine cryptococcosis.

Funding agency: CSIR, Govt. of India

Duration: Three years (2005-2008)

Amount: Rs. 10.0 lakhs

Multi-Institutional Collaborative Projects: **Three**

Patents:

1. Gupta, C.M., **Owais, M**., and Varshney, G.C. A process for the preparation of the drug encapsulated target specific immuno-liposomes for the treatment of drug resistant disease. Patent No. 182550 (Indian Patent).

2. **Owais**, **M**., Verma J. N., Development of liposome based herbal formulations Patent No. 318455 (Indian Patent).

3. **Owais**,**M**.,Swaleha Z, Shadab K. Production of bispecific antibodies for rapid detection of food borne parhogens. Appln. No US 62/133,412 (US Patent).

4. **Owais, M**., Swaleha Z. siRNA LOADED SUBTILOSOME FOR INHIBITING THE GROWTH OF HEPATOCELLULAR CARCINOMA AND METHOD OF PREPARATION THEREOF. Application No: 202111060743
5. **Owais M**, Khamar BK. Nano particle based polyene anti-fungal formulations (technology development).
6. **Owais M, Zubair S, Umair SM, Shazia. A herbal composition for treating viral infections. (International patent No. PBT/2022/070168)**

Details of the Technologies Developed

The nominee has been helping several Indian pharmaceutical industries such as Cadilla Pharmaceutical Ltd (Amphotericin B), Ahmedabad;Life Care, New Delhi (DAS, Perillyl alcohol, Eugenol etc.) and Gennova Biopharmaceuticals Limited, Pune (Doxorubicin) in development of nano-particle based drug formulations. He has used lipid as well as other polymers (e.g. fibrin, non-ionic surfactant, PLGA *etc*) based-nano-particles to overcome the problems that are encountered by the liposome based delivery systems in blood circulation. A number of patents in collaboration with these companies have been filed.

Various nanoparticle based novel formulations developed by nominee's group

1. Immunoliposomes: Chloroquine bearing immunoliposomes decorated with Mab specific for surface of infected erythrocyte (Antimicrob Agents & Chemother 1995)
2. DNA delivery vehicle: The Brucella SOD protein expressing DNA was encapsulated in liposome and used as DNA vaccine for prophylaxis against brucellosis (Microbes & Infection 2009, Plos One 2014)

3. Tuftsin bearing Amphotericin B liposome: Immunomodulator tuftsin bearing Amp B liposomes for treatment of aspergillosis, candidiasis and cryptococcosis (FEMS 2005, JDT 2004).

4. pH sensitive liposomes: pH sensitive liposome for treatment of fibrosarcoma (Molecular Medicine 2007)

5. Tuftsin bearing Amphotericin B niosomes: Tetrapeptide tuftsin was intercalated in the bilayer of AM B containing niosomes. The formulation was used for treatment of fungal infection (Cadila Pharmaceuticals, Ahmedabad).

6. Tuftsin bearing Amphotericin B microspheres: The PLGA microspheres were grafted with tuftsin to activate macrophages. The formulation was used in treatment of fungal infections (Cadila Pharmaceuticals, Ahmedabad).

7. Non PC liposomes: Various liposome using non PC phospholipid were develop to develop novel antigen delivery system (Vaccine 2006).

8. Saccharosome: Lipid isolated from Saccharomyces cerevisiae were used to develop antigen delivery system (Vaccine 2009).

9. Escheriosome: The fusogenic lipids abundant in *Escherichia coli* were used to develop escheriosome based antigen delivery system the formulation was used to develop vaccine against murine malaria in model animal (Vaccine 2003, Nanomedicine 2014.

10. Erythrosome: The lipid isolated from human erythrocytes were used for development of antigen delivery system. Both inside out as well right side out vesicles were also exploited for homing of entrapped antigen to the antigen presenting cells (BBA 2005).

11. Subtilosme: The lipid isolated from Bacillus subtilis was used in development of novel vaccines (BBA 2005).

12. Spermatosome: The potential of sperm to transfer encapsulated genetic material was further exploited to deliver encapsulated antigen to the target cells (Febs Letters 2006, Vaccine 2008).

13. Archaeosome: The lipid isolated from archae-bacteria was used in development of antigen delivery system. The formulation was used in prophylaxis against listeriosis and experimental tuberculosis.

14. Fibrin microbeads: Autologous plasma was used to fabricated plasma beads that were used in prophylaxis and chemotherapy of fungal infections (JDT 2012, Therapeutic Delivery 2011, Vaccine 2013, IJMM; 2015).

15. 5-FU nanoassemblage: Biomimetic synthesis of 5-FU nano-particles (Plos One 2013)

16. Amphotericin B nanoassembly: The antifungal agent was biomimetically transformed to nano-crystals (Ph D thesis Dr. Zia)

17. Poly glutamic acid nano-particles: Gama PGA based solid nano-particles were fabricated to various immunogenic antigens and antifungal agents (IJN 2014).

18. Essential oil bearing liposomes: Various essential oil bearing liposomes were developed to facilitate targeted delivery (JDT 2004).

19. Essential oil bearing microspheres: Perillyl alcohol, allyl sulphide derivatives of garlic were used for development of anticancer formulations (IJN 2013, Molecular Medicine 2007, Nanomedicine 2013)

20. siRNA bearing nano-particles: Fox-P3 and Plk-1 specific siRNA formulations were developed to treat various types of cancer in model animals (Plos One 2014).

21. Fatty acid based anticancer agents and their nano-particle based formulations: Propofol-fatty acid conjugates were encapsulated in nano-particles to treat breast and liver cancer (Nanomedicine 2013, EJMC 2012).

B. Biosensors:

1. Gold immuno-nanoparticles: Antibody conjugated gold nano-particles were fabricated to detect various types of cancer (IJN 2011).

2. Bispecific antibodies: Hybridization based bispecific antibodies were developed to detect food borne pathogens (Plos One 2014)

Significant Research contribution at the international level

Dr. Mohammad Owais is currently serving as a professor of biotechnology at Aligarh Muslim University, Aligarh. Besides active involvement in teaching modern biochemistry/biotechnology courses to M.Sc./Ph.D. students, Dr. Owais has successfully established a small but active research group with focus on nano-particle-based novel delivery systems including dendrimers/virosomes for gene packaging and liposomes, niosomes, microspheres and solid core lipid nano-particles for vaccine delivery, gene delivery, targeted drug delivery *etc*; with a view to increase the efficacy and safety of encapsulated chemo-therapeutic agents/sub-unit vaccines for some important infectious diseases.

The research focus of Dr. Owais's group has been on:

- Nanoparticles based antigen/DNA vaccine against various infectious diseases with special converges on intracellular pathogens.
- Novel nano-carriers for targeted delivery of encapsulated therapeutic agents (siRNA/drug of interest) for improved treatment of cancer and some imperative infectious diseases.
- Nanoparticles with assorted applications in the field of diagnostics, taste/odor masking and treatment of hyper-bilirubinemia in model animals.

International visits:

3. AsimAzhar**,** Ahmar Rauf, Swaleha Zubair, Haris Saeed and Mohammad Owais. **"Dietary Components Bearing Nanoparticles: potential in Treatment of Cancer in Model Animals".***International Symposium on Current Advances in Radiology, Stem Cells and cancer Research organized by School of Life Sciences, Finland during 19-21 Feb, 2015.*
4. AsimAzhar**,** Qamar Zia, Shadab Kazmi, Ejaj Ahmad, M Ansari, K.E Johnson, Swaleha Zubair, M Owais. **"Efficacy of Cell-Wall Deficient spheroplasts Against Experimental Murine Listeriosis"** organized by The 15th Awaji International Forum on Infection and Immunity in Yumebutai International Conference, Awaji Japan 6-9th Sept, 2016.

Invited Lectures:

- Delivered invited lecture in **SFRR-Satellite India-2008 Meeting** held on 11-12th Feb, 2008 at AIIMS, New Delhi on the topic entitled as **"p53 mediated modulation of p21/WAF1 in Benzo pyrene induced Fibrosarcoma by tuftsin bearing Liposomal etoposide in swiss Albino mice".**
- Delivered invited lecture in National symposium on Nano particles, IVRI, Izat Nagar during 22-23 Dec, 2007, delivered talk on Development of **Nano particle based drug and antigen delivery system**.
- **Chaired two scientific sessions** in National symposium on Nano particles, IVRI, Izat Nagar during 22-23 Dec, 2007.
- Delivered invited lecture in National symposium on Infectious diseases at Kashmir Universit June 09, 2014
- Delivered invited lecture in National symposium on Parasite and Health at CDRI, Lucknow, August 01, 2014
- **Chaired scientific session** in National symposium on New facet of Biotechnology: from Genes to Proteins at IBU, Aliagrh during 15-17 Jan, 2014
- **Chaired scientific session** in National symposium on Modern trend in human diaseses at JNMC, Aliagrh during 14-15 Dec, 2013
- Delivered invited lecture in National symposium on Nanoscience at Nanotechnology Center ZHE College, AMU, Aligarh Dec 12, 2012
- Delivered invited lecture in National symposium on Metal toxicity and oxidative stress at JMI, New Delhi on, 23 Sept, 2014
- Delivered an invited lecture on "*Multifunctional nanosystems: growing sanguinity in development of particulate antigen delivery vehicle based vaccines* Golden Jubilee International Conference on Advances in Biophysics organized JMI, New Delhi Feb 07, 2015

- Delivered invited lecture on ‘TLR agonist enhances the immunogenicity and protective efficacy of RD antigen based nanovaccine’ in National ConferenceonNanoscience, Nanotoxicology and Nanoinformatics” at Integral University, Lucknow on, 13 March 2015.
- Delivered an invited lecture on “Multifunctional particulate antigen delivery vehicle based vaccines: potential in prophylaxis against intracellular pathogens’in 5th Annual International Conference onAdvances in Biotechnology organized GSTF & IIT Kanpur on 14-15 March, 2015
- Delivered invited lecture in National symposium on "Immune cell surveillance: Strategies opted by host to keep intruders at bay" at Panjab University Chandigarh on, March 23, 2015
- Delivered invited lecture in National symposium on "Nanoparticle based vaccine delivery system" at IVRI, Izat Nagar on, Nov 20, 2015
- Delivered an invited lecture on “Nano: Vaccine exploiting TLR agonist”in2ndNano-bio Interface in Biotechnology organized organized by JNU, New Delhi on 18-20 March, 2016
- Delivered an invited lecture on “Nanoparticles: emerging technology to facilitate homing of drugs and antigens in Ist Annual International Conference and Knowledge Park organized by Dept of Biotechnology, Sharda University, Noida on Aug 17, 2016.
- Delivered an invited lecture on “Liposome based drug and antigen delivery system in International Conference on Advances in Biotechnology organized by Mangalayatan University on 28-29 August, 2016

Best Poster Awards

- **Indo-Australian Conference on Biotechnology in infectious diseases at Kasturba Medical College, MAHE, Manipal** during 1-3 March, 2005, and awarded best poster for work entitled “Escheriosome entrapped soluble blood stage antigens impart protective immunity against a multidrug resistant isolate of Plasmodium yoeliinigeriensis in BALB/c mice.”
- **International symposium on the Predictive, Preventive and Mechanistic Mutagenesis & XXXIII EMSI annual Meeting,** AMU, Aligarh during Jan 1-3, 2008 and awarded best poster for work entitled “Fusogenic potential of sperm membrane lipids: Nature’s wisdom to accomplish targeted gene delivery.”

To Whom it may concern

This letter is my personal recommendation for Dr. Mohammed Owais. I have seen the profile of Dr. Owais very closely who holds a distinguished record from his Ph.D. days till today specifically in the area of development of liposome-based formulations for the treatment of a range of infectious diseases. His pioneering work in development of nano-particle based delivery systems such as virosomes for gene packaging, liposomes and microspheres for vaccine development, gene therapy vectors and drug delivery systems are being currently exploited by some of the leading pharmaceutical and biotechnology companies to develop some novel drug formulations. Dr Owais work in the area of liposomes technology and nanoparticle has been featured as a cover page by reputed International journals (Molecular Medicine & FEMS-Immunology and Medical Microbiology). He has also developed liposome based antigen delivery vehicles, which can elicit strong immune response against model antigens in animals. Dr. Owais is also currently propagating idea of administering suitable drug formulation along with immunomodulators to combat infectious diseases.

Cadila Pharmaceuticals Ltd., India has sought help of Dr. Mohammed Owais in development of nanoparticle based novel antifungal formulations for treatment of opportunistic fungal infections under the PRDSF program of DST, Govt of India. This product is likely to have great market value and the formulations have been found to impart tremendous increase in efficacy of the drugs. Presently Gennova is evaluating liposome based vaccine delivery options for human phase I clinical trial which have been developed at Dr. Owais lab.

On a personal note, I would like to mention that it has been a pleasure to know a scientist like Dr. Owais, who has developed applied science area so well within academic environment. I wish him all the success in his endeavors and he may add more laurels to his illustrious career.

Yours Sincerely,

Sanjay Singh, Ph.D.
Chief Executive Officer

Gennova Biopharmaceuticals Limited
Plot No.: P-1, I.T. – B.T.Park, Phase – II, M.I.D.C., Hinjwadi, Pune – 411 057 (India) Phone Nos.: + 91 20 39821300 Fax: 91 20 – 39821441
Registered Office : Emcure house, T – 184, M.I.D.C., Bhosari, Pune – 411 026 (India)

Agreement for (re-)use of an illustration

June 10, 2005

Dr. Mohammad Owais
A.M. University - Int. Biotech. Unit
Int. Biotech. Unit,
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I www.fems-microbiology.org

Dear Dr. Mohammad Owais

Co-administration of immunomodulator tuftsin and Liposomised nystatin can combat less susceptible C. albicans infection in temporarily neutropenic mice / FEMSIM 41 (2004) 249-258

Your above-detailed article was recently published in FEMS Immunology and Medical Microbiology.

FEMS Publications Office is presently preparing the new cover for the Journal FEMS Immunology and Medical Microbiology for 2006 and would like to use Figure 1b from your article on the cover. The image accompanied by the legend would be used for all issues of FEMS Immunology and Medical Microbiology in 2006 and appear in miniature on the FEMS website and publisher's website. In addition, our publisher may use the cover for marketing purposes.

We understand that you are the copyright holder for this image. If you allow us to use the image, possibly with alterations to complement the cover design, could you please sign a copy of this agreement letter and send it to my attention, confirming that we may use the illustration as indicated, in both print and electronic versions of the Journal.

Please return the signed original of this letter by mail or fax, retaining a copy for your own files, to:

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Thank you for your assistance.
Yours sincerely,

Dr Alenka Princic
FEMS Editorial Coordinator

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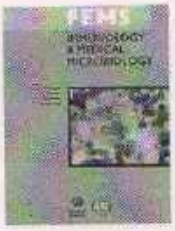
Registered in England



Signed..... Date.....

Aligarh Muslim University, Aligarh

Republic Day Celebrations – 2009

Certificate of Outstanding Merit

This is to certify that Prof./Dr./Mr./Ms. Mohd Owais Lecturer
Department of Inter. Biotech Unit is awarded Outstanding Certificate of Honour for bringing laurels to the University and is felicitated in a Public Meeting held on the auspicious occasion of the 60th Republic Day.

Prof. V.K. Abdul Jaleel
Registrar, AMU Aligarh

Date: 26 January 2009

Biotechnology in the Service of Humanity

Message

Biotechnology is a frontier area of science with a high promise for the welfare of humanity. New generation of biotechnology developed as a result of intensive work in India has opened up research of national relevance. I am confident that fruits of biotechnology would be harnessed for the benefit of millions of our poor people as we move into the next millennium.

(Atal Bihari Vajpayee)
Prime Minister

Message

India is well poised to leapfrog towards a bio-industrial development by conserving and using the precious biodiversity of the country on a sustainable basis with the application of biotechnological tools.

(Dr. Murli Manohar Joshi)
Minister for HRD & Science and Technology

Significant Achievements

- A novel targeted gene delivery system dedicated for liver cells developed and patented in US.
- Identification of a mutation conferring resistance to HIV infection in Indian population.
- Cloning and sequencing of atleast six genes achieved, primarily the seed storage, amino acids, biosynthetics and genes for plant defence, for enhancing the nutritional quality. A US patent granted for the seed storage protein gene.
- Plant tissue culture established as an industrial activity. Around plants of forest and horticulture species field planted in 4000 ha., 40% increase in yield achieved in tissue cultured cardamom plants.
- Biobeneficiation and desulphurisation technologies perfected and transferred to industry, bioremediation field tested for wasteland recovery.
- Transgenic silkworm with sclerotes gene can act as a bioreactor for producing proteins of agricultural and therapeutic importance.
- Biofertilizers and biopesticide formulations demonstrated on large scale in farmers' field, production units set up.
- 1000 genetically superior calves born through Embryo Transfer Technology (ETT), including 100 buffalo calves.
- Specific primers developed for sex determination of embryos, being used as a customerised service for farmers.
- Record production of over 10 tonnes/ha./year in two crops of prawns through semi-intensive aquaculture attained.
- Through intensive carp farming production level of 16 tonnes/ha./ year achieved.
- First indigenous recombinant vaccine strain for oral cholera, VA 1.3 and Rotaviral diarrhoea enter cancer trials.
- Three indigenous test systems perfected for detection of HIV-I and II, and Streptococcal infections, transferred to industry.
- Low cost nutritious food supplement for the school children being produced.
- Liposome encapsulated Amphotericin B, a drug for severe systemic fungal infections and leishmaniasis commercialised.
- Skin culture technology for burn, new wattle, cord blood and bone marrow preservation technologies transferred to hospitals.
- Centres for DNA Fingerprinting, Plant Genome, Brain Research, a Golden Jubilee Women's Biotechnology Park and a Biovillage being established.
- Human resource development in 17 States and UTs produced about 4000 trained students.
- A wide spread bioinformatics network with INTERNET based Biotechnology Service Provider established.
- Large number of biotechnology based programmes to benefit rural population, SC/ST and women successfully conducted.

Department of Biotechnology , Ministry of Science and Technology