

# **Biosketch**

**Prof. Pradeep Seth, MD FAMS FNASc. FIVS**

1. **Name:** Dr. Pradeep Seth

2. **Date of Birth:** April 26, 1943

3. **Profession:** Consultant: Microbiology, Virology, Molecular Biology, Vaccinology.

**Present Affiliations:**

- i) Honorary President, Seth Research Foundation, Gurgaon, Haryana
- ii) Certified Assessor of the National Accreditation Board for Testing and Calibration Laboratories for Microbiology and Molecular-biology Laboratories

**Former Professor of Virology and Head,** Department of Microbiology, All India Institute of Medical Sciences, Ansari Nagar, New Delhi - 110 029; and

**Former Officer-in-Charge,** National HIV/AIDS Reference Centre, All India Institute of Medical Sciences, Ansari Nagar, New Delhi - 110 029.

**Superannuated on April 30, 2005.**

**4. Corresponding Address:**

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## 5. Teaching Experience:

### i) From 1975 - 2005

- Medical Students (M.B.,B.S.) at All India Institute of Medical Sciences, New Delhi
- Nursing students at All India Institute of Medical Sciences, New Delhi
- **M.D. (Microbiology) students** from 1975 to 2005 at All India Institute of Medical Sciences, New Delhi, **Guided thesis of 15 students as Chief guide/co-guide**
- **Graduate students (Ph.D.)** at All India Institute of Medical Sciences, New Delhi. **Guided thesis of 30 students as Chief guide and more than 10 students as co-guide.**

### ii) From 2006 -2008

- Medical Students (M.B.B.S.) at Shri Ram Murti Institute of Medical Sciences, Barielly, UP, India (From 2005-2006)
- Medical Students (M.B.B.S.) at Muzaffarnagar Medical College, Muzaffarnagar, UP, India (From 2007-2008; 210-2012)

### iii) **Chairman of the Committee for the Development of Course Content for DNB in Pathology and Microbiology (National Board of Examination-1999-2000)**

### iv) **Member of the Medical Council of India Committee for development of course content for MD Microbiology. (2002)**

## 6. Expertise & Research Experience:

### i) Vaccinology:

- Construction of HIV-1 -vaccine candidate(s) by cloning codon optimized envelope gp120 gene, gag-protease gene and modified tat and nef genes of HIV-1 subtypes C (Indian strain) in eukaryotic expression vector pNK- 14 and modified vaccinia Ankara (MVA) and induction of both arms of HIV-1 specific immune response (humoral and cell-mediated) in mice and monkeys by intra-dermal immunization with these vaccine constructs. These vaccine constructs are slated for human trials.
- Co-immunization of animals with HIV-1 vaccines and immunomodulators induces a sustained broad based, robust immune response, which may be useful as a therapeutic vaccine in clearing the virus from the body of HIV infected individuals.

## ii) Virology:

### a) Molecular Virology

- Demonstration of genetic heterogeneity of HIV-1 strains circulating in different parts of India. Reported that more than 95% isolates circulating in India are subtype -C. This information is necessary to design and construct HIV-1 DNA vaccines for use in India and also for understanding the immunogenicity of this virus in HIV infected individuals.
- Development of genotypic and phenotypic assays based on patented technology for determining the resistance of HIV-1 isolates to antiretroviral drugs without isolating the virus. The assay can also be used to screen the efficacy of antiretroviral activity of the compounds during developmental phase.
- Investigation of the genetic variability and detection of evolutionary changes and movement of dengue virus type 2 strains (molecular epidemiology), which were responsible for 1996 epidemic of Dengue hemorrhagic fever.

### b) Investigative Virology

- Demonstrated the presence of both types of Herpes Simplex Viruses (HSV 1 and HSV 2) for the first time in India.
- Isolated both types of HSV in India and demonstrated that HSV-2 may be subdivided into two subtypes based on their oncogenic properties.
- Demonstrated causal relationship of HPV types 16, 18, 31 and 35 with cervical cancer in Indian women.
- Demonstrated the presence of Rubella virus infection in India and found that it accounted for a sizeable number of congenital malformations in newborns.

### c) Diagnostic Virology

- Development of ELISA based test system based on Indian HIV -1 subtype C strains indigenously for detection HIV-1 and 2 antibodies in infected individuals. This test system has following advantages: a) it is based on the antigenic profile of indigenous HIV-1 strains; b) it is far cheaper than the imported ELISA HIV-1 and 2 kits,
- Development of a Real time PCR based assay to qualitative and quantitative determination of virus load particularly in HIV-1 subtypes C infected individuals in India. This test has 100% specificity and sensitivity to detect less than 25 IU of HIV-1 per milliliter of plasma. This assay may be used to screen the donated blood in the blood banks during window period when all HIV-1 antibody assays are negative.
- Development of a Real time PCR based assay to qualitative and quantitative determination of Hepatitis C virus load in blood. This test has 100% specificity and sensitivity to detect 43 IU of HCV per milliliter of plasma.

- Development of HCV genotyping assay based on liquid hybridization technique (hybridization in aqueous solution) with a sensitivity of 70 virus particles per milliliter of plasma and a specificity of 100%.
- Development of PCR test to detect and typing dengue virus within first three days of infection.

### **iii) Research and Development (R & D) Laboratory:**

- Expertise in designing of state-of-art Containment (Biosafety) R & D laboratory for various infectious agents of containment level P-1, P-2 and P-3;
- Expertise in developing protocols for handling different infectious agents (Biosafety practices).
- Designed and developed state-of-art P-3 containment facility for handling HIV and other viruses in the Department of Microbiology, All India Institute of Medical Sciences, New Delhi in 1989.
- Designed and developed P-3 containment facility for handling HIV in the Department of Medicine, University of California-San Diego in 1990.
- Designed and developed state-of-art P-3 containment facility for handling various infectious agents for diagnosis by Real-time PCR assay at Medical Diagnostic Centre) Dr. Dang's Laboratory, New Delhi in 2006. This lab has been accredited by the National Accreditation Board for Testing and Calibration Laboratories (NABL), Government of India.

### **iv) Tuberculosis**

- Development of rapid molecular diagnostic assays based on Polymerase chain reaction
- Development of resistance genotyping of Mycobacterium tuberculosis
- Molecular Epidemiology of tuberculosis in India
- Co-infection of HIV and Tuberculosis

### **v) Certified Assessor of the National Accreditation Board for Testing and Calibration Laboratories for Microbiology laboratories and Molecular-biology Laboratories**

## **7. Consultancy:**

- Consultant: Cosmos Advanced Diagnostics LLP, New Delhi
- Gerson Lehrman Group Healthcare Council, Austin, Texas, USA.
- Consultant: Research and Academics, Dr. Lal Pathlabs Pvt. Ltd. New Delhi; Dec 2006 to July 2009. (Designed and developed state-of-art R & D Molecular Biology Laboratory).
- Advisor, Dr. Dang's Medical Diagnostic Centre, New Delhi, Oct 2005 to August 2006. (Designed and developed state-of-art molecular -diagnostic laboratory which was accredited by NABL).

- v) Advisor, Bharat Biotech International, Hyderabad, July 2005 to May 2006. (Participated in Rotavirus vaccine development and JE vaccine trial in India).
- vi) World Health Organization temporary Adviser in inter-country workshop on Quality Assurance in Laboratory Practices in SEAR countries, Bangkok, 1996.
- vii) World Health Organization Short term consultant to Bhutan in 1996. (Helped Bhutan Government in the development of quality assurance programme in microbiology diagnostic services in Bhutan).
- viii) World Health Organization consultant on reference preparations for evaluating Hepatitis B, Hepatitis C and HIV diagnostic kits, UK, 1996.
- ix) World Health Organization Consultant on the coordination of quality assessment programmes for HIV testing, WHO, Geneva, 1995.
- x) World Health Organization Short term consultant to Bhutan in 1994. (Helped Bhutan Government in the development of microbiology diagnostic services in Bhutan).

#### 8. Visiting Professor / Scholar:

- i) Laboratory for AIDS Vaccine Research and Development, Department of Surgery, Duke University Medical Center, Durham, North Carolina, USA. July 16, 2007 to August 4, 2007.
- ii) Department of Microbiology, Immunology and Molecular Genetics, David Geffen School of Medicine, University of California Los Angeles, California, USA June 1, 2004 to July 15 2004.
- iii) Department of Microbiology and Immunology, David Geffen School of Medicine, University of California, Los Angeles, California, USA. May 1998 to July 1998.
- iv) Department of Microbiology, Jawaharlal Lal Institute of Post-graduate Medical Education and Research, Pondicherry. 1994.
- v) Department of Medicine, University of California, San Diego, La Jolla, California, USA. May 1993 to June 1993.
- vi) Department of Medicine, University of California, San Diego, La Jolla, California, USA. August 1990 to June 1991.
- vii) Department of Medicine, the Scripps Research Institute, La Jolla, California, USA. May 1990 to July 1990.

#### 9. Awards

- i) **Dr. Shanti Swaroop Bhatnagar Award** of the Council of Scientific and Industrial Research for original contribution in the field of Medical Sciences for the year 1986.
- ii) **Lok Sewa Award** of the Chamber of Indian Trade and Industry for contribution in Medical Sciences for the year 1997.
- iii) **Glaxo Oration Award** of the National Academy of Medical Sciences for contribution in the Medical Sciences for the year 1999.
- iv) **IAMM-Endowment Award** of the Indian Association of Medical Microbiologists for contribution in the field of Microbiology for the year 2002.

- v) **Om Prakash Bhasin Foundation Award** for contribution in the field of HIV virology and development of HIV vaccine for the year 2005.
- vi) **Dr. J.B. Srivastava Oration Award** of the Indian Council of Medical Research for research in the field of virology for the year 1985.
- vii) **Raja Ravi Sher Singh of Kalsia Memorial Award** of the Indian Council of Medical Research for Cancer Research on "Herpes Simplex virus and cancer cervix" for the year 1978.
- viii) **Dr. S. C. Aggarwal Oration Award** of the Indian Association of Medical Microbiologists for contribution in the field of Microbiology for the year 1995.
- ix) **Presidential Oration Gold Medal** of the Indian Association of Medical Microbiologists in the year 1996.
- x) **Professor Bikram das Memorial Oration** of Indian Association of Medical Microbiologists (Odissa Chapter) for the year 2009.
- xi) **Hari Om Ashram Prerit Dr. S. Rangachari Research Endowment Executive Committee Award** of the Association of Surgeons of India on "Immunological aspects of breast cancer" for the year 1984.
- xii) **Dr. S. Mitra Birth Centenary Appreciation Award** of the Chittaranjan National Cancer Institute, Calcutta for contribution in Medical Sciences in the year 1996.
- xiii) **Chief of the Army Staff Award** for the best published paper for the year 2004.
- xiv) **Chief of the Army Staff Award** for the best published paper for the year 2006.
- xv) **Appreciation Award of Sri Lanka College of Microbiologists** for the year 2004.

## 10. Fellowship to the learned Professional Bodies:

- i) Fellow, National Academy of Medical Sciences, India (FAMS)
- ii) Fellow, National Academy of Sciences (FNASc).
- iii) Fellow Indian Society of Virology (FIVS).
- iv) Fellow, Society of Biological Scientists of India (FSBSI)
- v) Honorary Life Member of the American Association of Tropical Medicine and Hygiene.

## 11. Patents

### i) National Patents

1. Indian Patent No. 217619 (18-03-04) - Title: "A plasmid construct for testing the resistance of HIV-1 subtype C virus isolates to antiretroviral drugs in vitro".
2. Indian Patent No. 251464 (15-03-05)- Title: "Assay for detection and quantification of HIV-1 in body fluids by real time PCR and a method for developing the same".
3. Indian patent No. 218302 (07-06-04)- Title: "Co-immunization with HIV-1 Vaccinogens and Immunomodulators."
4. Indian Patent No. 63/DEL/2004 (08-09-04)- Title: "HIV-1 Indian subtype C vaccine constructs for use in humans."

## ii) International Patents

1. International Publication No. WO 2005/068634 A1 (date of publication 28-07-2005) by World Intellectual Property Organization with respect to International Application No. PCT/IN04/000284 (10-09-04)- Title: "HIV-1 Indian subtype C vaccine constructs for use in humans."
2. South African Patent No. 2006/5498 (26-09-2007)- Title: "HIV-1 Indian subtype C vaccine constructs for use in humans."
3. Zimbabwe Patent No. 21/2006 (10-09-2004)- Title: "HIV-1 Indian subtype C vaccine constructs for use in humans."
4. Botswana Patent No. BW/A/06/00007 (29-06-2006)- Title: "HIV-1 Indian subtype C vaccine constructs for use in humans."

## 12. Miscellaneous information

### Academic qualifications :

#### i) *Formal Education:*

<b>Graduation</b>	<b>Duration</b>	<b>College/University</b>
M.B., B.S.	August, 1960 to December 1964	All India Institute of Medical Sciences, New Delhi-110029
<b>Post-graduation</b>	<b>Duration</b>	<b>College/University</b>
M.D. (Microbiology)	July, 1968 to May, 1970	All India Institute of Medical Sciences, New Delhi-110029

#### b) **Post-doctoral Experience:**

i) **Duration:** May 1970 to Sept 1972.

**Place:** Department of Microbiology, All India Institute of Medical Sciences, New Delhi

**Position:** Tutor

#### **Experience:**

- Clinical & Diagnostic Virology,
- Investigation of Dengue virus outbreak in Delhi in 1970.
- Role of Herpes Simplex Virus type 2 in Cancer of Uterine Cervix.



ii) **Duration:** Oct 1972 to December 1973.  
**Place:** Department of Virology and Epidemiology, Baylor College of Medicine, Houston, Texas, USA. (**Prof. J L Melnick**)  
**Position:** Research Associate  
**Experience:**  
- Role of Herpes Simplex Virus type 2 in the etiopathogenesis of Cancer of Uterine Cervix.

iii) **Duration:** Jan 1974 to Sept. 1975.  
**Place:** Host Resistance Programme, Department of Pathology, McMaster University Medical Centre, Hamilton, Ontario, Canada (**Prof. WE Rawls**)  
**Position:** Post Doctoral Fellow  
**Experience:**  
- Role of Herpes Simplex Virus type 2 in the etiopathogenesis of Cancer of Uterine Cervix.

**c) Scholarships:**

- i) Directorate General of Health Services, India, scholarship during post-graduate studies at AIIMS from 1968 to 1970.
- ii) WHO fellowship to attend the course on "Postgraduate studies on Immunovirology of Cancer" held at UICC, Lyon, France from Oct 1 to 14, 1974.

**d) Fellowship:**

- i) Fellowship of the Fogarty International Centre of the National Institutes of Health, USA in the Special programme on AIDS from May 1<sup>st</sup> 1990 to June 30, 1991 and from May 15, 1993 to June 30, 1993.

**e) Advance Training:**

- i) **Bioinformatics:** Computational analysis HIV -1 sequence data and development of Phylogenetic tree and Dendrogram to study evolution of the virus" at Centers for Disease Control and Prevention, Atlanta, USA (Dr. Marcia Kalish, Molecular Biology Section, Retrovirus Disease Branch) May 1998.
- ii) **ISO15189:2003** as a Quality Management Standard for Clinical and Medical Laboratories at National Accreditation Board for Testing and Calibration Laboratories(NABL), Government of India.

**f) Honours:**

*Membership to Scientific Committees (Present):*

- i) Member, Scientific Advisory Group of the Division of Epidemiology and Communicable Diseases, Indian Council of Medical Research, New Delhi.
- ii) Chairman, Selection Committee for Indo-German Science Centre for Infectious Diseases Fellowship programme, International Health Division, ICMR.
- iii) Co-chairman, Project Review Committee on HIV/AIDS, ICMR
- iv) Member, Expert group on Encephalitis Like Syndromes of ECD Division, ICMR, New Delhi
- v) Member, Committee on Transfer of Biological Materials for Research/Commercial purposes, International Health Division, ICMR.
- vi) Member, Expert group for the award of training/fellowships to faculty members of various medical colleges/institutes of India, Department of Health Research, Ministry of Health and Family Welfare, Govt. of India.
- vii) Member, Expert group on JE vaccines, ECD Division, ICMR
- viii) Member Expert Group to review candidate vaccines for typhoid, Japanese encephalitis and Chikungunya available with Bharat Biotech International Ltd., India
- ix) Leader of the ICMR team to review the set-up and working of PCR-laboratories in four medical colleges in Bangalore.
- x) Member, Expert Group to review HIV Vaccines studies
- xi) Member, IND Subcommittee for HIV Vaccine development to identify essential requirements/check-list for regulatory submission of protocols for clinical trials.
- xii) Member, Biotechnology Human Resource Development Board, Government of India, Ministry of Science & Technology, Department of Biotechnology.
- xiii) Member, Expert Committee for the selection of Pool Scientists in Medical Sciences of the Council of Scientific & Industrial Research, HRD Group, Government of India.
- xiv) Member, Medical Sciences Research Committee of the Council of Scientific & Industrial Research, Government of India.

*Membership to Scientific Committees (Past):*

- i) Member of Expert Advisory Group of Indo-US Vaccine Action Program of Govt. of India & US Govt. 2001-2002.
- ii) Member of Research Advisory Council of the Council of Scientific and Industrial Research, Ministry of Science and Technology, Govt. of India 1999-2002.
- iii) Member of Scientific Advisory Committee of National Institute of Cholera and Enteric Diseases, Calcutta. 1989-1991 and 1999-2002.
- iv) Member of Scientific Advisory Committee of National AIDS Research Institute, ICMR, 1999-2002.

- v) Member of Scientific Advisory Committee of National Institute of Virology, Indian Council of Medical Research, Pune. 1995-1997 and 1999-2002.
- vi) Member of Research Advisory Committee of National AIDS Control Organization, Ministry of Health, Govt. of India, 2002-2005.
- vii) Member of Programme Advisory Council of the Department of Science and Technology, Ministry of Science and Technology, Govt. of India. 1986-1991.
- viii) Member of Advisory Committee of Centre for Biochemicals, CSIR, New Delhi 1988-1990.
- ix) Member of Project Evaluation committee of Department of Biotechnology, Ministry of Science and Technology, Govt. of India. 1988-1990.
- x) Member of Task force for Environmental Biotechnology, Department of Biotechnology, Ministry of Science and Technology, Govt. of India. 1990.
- xi) Member of Expert Committee of Council of Scientific and Industrial Research, Government of India for selection of emeritus scientists, 1998-2001
- xii) Member of Task force on AIDS, Indian Council of Medical Research, New Delhi. 1987.
- xiii) Member of Advisory Committee on Viruses and Cervical Cancer, Indian Council of Medical Research, New Delhi. 1984 - 1987, 1989-1990.
- xiv) Member, ICMR Advisory Committee for Cancer Research. 1982.
- xv) Member-secretary of National Committee of IUMS (INSA).
- xvi) Member of several scientific advisory committees of NACO, DBT and ICMR.
- xvii) Member of Expert Group on HIV Estimates, Ministry of Health and Family Welfare, Government of India, 1996.
- xviii) Member, Task Force on Vaccines and Medical Biotechnology, Department of Biotechnology, Ministry of Science and Technology, Govt. of India.
- xix) Member, Biotechnology Development Board, Government of India, Ministry of Science & Technology, Department of Biotechnology.

#### **g) Invited Lectures**

- i) Department of Immunology & Infectious Diseases (Previously Pathobiology), School of Public Health, Johns Hopkins University, Baltimore, MD, USA, 1980 and 1984.
- ii) Department of Pathology, Host Resistance Programme McMaster University Medical Centre, Hamilton, Ontario, Canada. 1984.
- iii) Department of Microbiology & Immunology, School of Veterinary Medicine, University of Illinois, Urbana-Champaign, USA. 1984.
- iv) Department of Infectious Diseases, MD Anderson Institute of Tumor Biology, Houston, Texas, USA. 1988.
- v) Department of Medicine, University of California, San Diego, La Jolla, California, USA. 1993.
- vi) Department of Infectious Diseases, School of Medicine, Stanford University, Palo Alto, California, USA. 1993.
- vii) Department of Pharmacology, Brown University, Providence, Rhodes Island, USA. 1991.

- viii) Department of Microbiology, Emory University, School of Medicine, Atlanta, Georgia, USA. 1998.
- ix) Primate Research Center, University of California, Davis, California, USA. 2001, 2002, 2003, 2004.
- x) Department of Molecular Virology, Fred Hutchinson Cancer Center, Seattle, Washington, USA. 1988.
- xi) Department of Microbiology and Immunology, School of Medicine, University of California Los Angeles, USA. 1994, 1998, 2004.
- xii) Department of Medical Microbiology and Immunology, School of Medicine, University of California Davis, USA 2005.
- xiii) Vaccine Research Centre, Emory University, School of Medicine, Atlanta, Georgia, USA 2005.

**h) Positions held earlier (Period, Designation, Institution/Organization).**

Position	Place	Duration
General duty medical officer	Indian Army	1965-1968
Tutor (Microbiol)	AIIMS, New Delhi	1989-1972
Research associate	Department of Virology and Epidemiology Baylor College of Medicine, Houston, TX, USA	1972-1973
Post-doctoral fellow	Department of Pathology, McMaster Univ Medical Centre, Hamilton, Ontario, Canada	1974-1975
Assistant Professor (Microbiol)	AIIMS, New Delhi	1975-1983
Associate Professor (Microbiol)	AIIMS, New Delhi	1983-1986
Additional Professor (Microbiol)	AIIMS, New Delhi	1986-1992
Professor (Virology)	AIIMS, New Delhi	1992-1995
Professor (Virology) and Head of Department of Microbiology	AIIMS, New Delhi	1995-2005
Consultant	i) Dang's Medical Diagnostic Centre, New Delhi ii) Head R & D, Dr. Lal Pathlabs, New Delhi iii) Cosmos Advanced Diagnostics, New Delhi.	2005-2006 2006-2009 2010-2012
Professor and Head of	Muzaffarnagar Medical College, Muzaffarnagar, UP	2007-2008

Department of Microbiology

Professor (Microbiol)

Muzaffarnagar Medical College, Muzaffarnagar, UP

2010-201

### 13. Publications

1. **Seth P.** The situation of HIV/M.tuberculosis Co-infection in India. *Open Infect Dis J.* 5, 2011, 52-60.
2. Alvarez MA et al. Research priorities for HIV/M. tuberculosis Co-infection. *Open Infect Dis J. 5 (S 1-M2)*, 2011, 14-20.
3. **Seth, P.** Evolution of HIV-1 in India. *Indian J. Virol.* 21,2010, 1.
4. **Seth, P.** Evolution of HIV-1 in India. In Sharma VP (ed) "Nature at Work: Ongoing Saga of Evolution. Springer India and National Academy of Sciences, India, 2009.
5. Khan I F, Vajpayee M, Prasad VVSP, **Seth P.** Genetic Diversity of HIV-1 Subtype C *env* gene sequences in India. *AIDS Res Hum Retrovirus* 23, 2007, 934-940.
6. Singh UB, Bhanu NV, Suresh VN, Arora J, Rana T, **Seth P.** Utility of polymerase chain reaction in diagnosis of tuberculosis from samples of bone marrow aspirate. *Am J Trop Med Hyg.* 75, 2006, 960-963
7. **Seth, P.** HIV-1 Subtype C Vaccine: waiting in wings for human trials. *Int. J. Biotechnology*, 9, 2007, 360-380.
8. Qureshi H, **Seth P** and Das BK. Induction of potent cross clade immune response following immunisation with HIV-1 Indian subtype C mutated and codon optimised *tat* DNA/MVA vaccine in mice. *Antiretroviral therapy. 11 (Suppl. 2)*, 2006, 123-124.
9. **Seth P**, Kohli R. and Das BK. Development of HIV-1 *nef* DNA vaccine construct from Indian subtype C and its immunogenicity testing in Balb/C mice. *Antiretroviral therapy. 11 (Suppl. 2)*, 2006, 122.
10. Suresh N, Singh UB, Arora J, Pande JN, **Seth P**, Samantaray JC. Rapid Detection of Rifampicin-resistant *Mycobacterium tuberculosis* by in-house, Reverse Line Blot Assay. 2006, accepted for publication. *Diagn Microbiol. Infect. Dis*, 56, 2006, 133-140.

11. Suresh N, Singh UB, Arora J, Pant H, **Seth P**, Sola C, Rastogi N, Samantaray JC, Pande JN. *rpoB* Gene Sequencing and Spoligotyping of Multidrug-Resistant *Mycobacterium tuberculosis* Isolates from India. *Infect Genet Evol.* 6, 2006, 474-483.
12. Gupta E, Vajpayee M, Xess I, **Seth P**. Oral candidiasis in HIV-infected patients and its relation to CD4 + counts: an adjunct clinical marker of HIV disease progression. *Trop Doct.* 36, 2006, 127.
13. Kumar S, Aggarwal P, Vajpayee M, Pandey RM, **Seth P**. Development of a candidate DNA/MVA HIV-1 Subtype C vaccine for India. *Vaccine.* 24, 2006, 2585-2593.
14. Kaushik S, Vajpayee M, Sreenivas V, **Seth P**. Correlation of T lymphocyte subpopulation with immunological markers in HIV-1 infected Indian patients. *Clin Immunol.* 119 (3), 2006, 330-338.
15. Gupta RM, **Seth P**, Prasad VVSP, Sahni AK, Jena J. Detection of Human Immunodeficiency Virus Type 1 (HIV-1) A/AE circulating recombinant form (CRF) in India: Possible implications. *Med J Armed Forces India*, 62, 2006, 316-320.
16. Bhanu NV, Singh UB, Chakraborty M, Suresh N, Arora J, Rana T, Takkar D, **Seth P**. Improved diagnostic value of PCR in the diagnosis of female genital tuberculosis leading to infertility. *J Med Microbiol.* 54, 2005, 927-931.
17. Kaushik S, Vajpayee M, Wig N, Seth P. Characterization of HIV-1 gag-specific T cell responses in chronically infected Indian population. *Clin Exp Immunol.* 142, 2005, 388-397.
18. Vajpayee M, Kaushik S, Sreenivas V, Wig N, **Seth P**. CDC staging based on absolute CD4 counts and CD4 percentag in an HIV-1 infected Indian population: treatment implications. *Clin Exp Immunol* 141, 2005, 485-490.
19. Aggarwal P, Kumar S, Vajpayee M and **Seth P**. Adjuvant Action of murine *IL-2/Ig* plasmid following intramuscular immunization with Indian HIV-1 subtype C recombinant *env.gp 120* construct. *Viral Immunol.* 18, 2005, 650-656.
20. Gupta RM, Prasad VVSP, Rai A and **Seth P**. Analysis of HIV-1 subtype C full-length gag gene sequences from India: Novel observations and plausible implications. *AIDS Res Hum Retroviruses* 21, 2005, 1068-1072.
21. Aggarwal P, Pandey RM and **Seth P**. Augmentation of HIV-1 Subtype C Vaccine Constructs induced Immune Response in Mice by CpG Motif 1826-ODN. *Viral Immunol.* 18, 2005, 213-223.
22. Kumar S and **Seth P**. Immunogenicity of Recombinant Modified Vaccinia Ankara Viruses (rMVA) Expressing HIV-1 Indian Subtype C *gag-protease* and *env-gp120* genes in Mice. *Viral Immunol.* 17, 2004, 574-579.
23. Renuka K, Kapil A, Kabra SK, Wig N, Das BK, Prasad VV, Chaudhry R, **Seth P**. Reduced susceptibility to ciprofloxacin and gyra gene mutation in North Indian strains of *Salmonella enterica* serotype *Typhi* and serotype *Paratyphi A*. *Microb Drug Resis.* 10, 2004, 146-153.
24. Chugh P, **Seth P**. Induction of broad based immune response against HIV-1 subtype c gag DNA vaccine in mice. *Viral Immunology.* 17, 2004 423-435.

25. Amatya R, Vajpayee M, Kaushik S, Kanswal S, Pandey RM, **Seth P**. Lymphocyte immunophenotype reference ranges in healthy Indian adults: implications for management of HIV/AIDS in India. *Clinical Immunology*. 112, 2004, 290-295.
26. Vajpayee M, Kanswal S, Wig N, **Seth P**. Evaluation of CD4 counts and percentages in the HIV infected Indian population. *Southeast Asian J Trop Med Public Health*. 35, 2004, 144-146.
27. Chugh P, **Seth P**. Development of HIV-1 Subtype C *Gag* Based DNA Vaccine Construct. *Gene Ther Mol Bio*. 8, 2004, 327-334.
28. Aggarwal P, Ray R, Seth P. Phosphorothioated CpG Oligonucleotide induced Hemopoietic Changes in Mice. *Gene Ther Mol Bio*. 8, 2004, 319-326.
29. Kumar S, **Seth P**. Efficient Expression of Gag Protein by Recombinant Modified Vaccinia Ankara Virus (MVA) with HIV-1 Indian Subtype C *gagprotease* Gene Segments. *Gene Ther Mol Bio*. 8, 2004, 201-208.
30. Singh UB, Suresh N, Bhanu NV, Arora J, Pant H, Sinha S, Aggarwal RC, Singh S, Pande JN, Sola C, Rastogi N, **Seth P**. Predominant Tuberculosis Spoligotypes, Delhi, India. *Emerg Infect Dis*. 10, 2004, 1138-1142.
31. Vijaya Bhanu N, Banavalikar JN, Kapoor SK, **Seth P**. Suspected small-scale interpersonal transmission of *Mycobacterium tuberculosis* in wards of an urban hospital in Delhi, India. *Amer J Trop Med Hyg*. 70, 2004, 527-531.
32. Vajpayee M, Kanswal S, **Seth P**, Wig N, Pandey RM. Tuberculosis Infection in HIV infected Indian patients. *AIDS Patient Care STDs*. 18, 2004, 209-213.
33. Vijaya Bhanu N, van Embden JD, van Soolingen D, **Seth P**. Two *Mycobacterium fortuitum* strains isolated from pulmonary tuberculosis patients in Delhi harbour IS6110 homologue. *Diagnostic Microbiol Infect Dis*. 48, 2004, 107-110.
34. Sharma SK, Aggarwal G, **Seth P**, Saha PK. Increasing HIV seropositivity among adult tuberculosis patients in Delhi. *Indian J Med Res*. 117, 2003, 239-42.
35. Vajpayee M, Kanswal S, **Seth P**, Wig N. Spectrum of opportunistic infections and profile of CD4(+) counts among AIDS patients in North India. *Infection*. 31, 2003, 336-40.
36. Ray S, Broor SL, Vaishnav Y, Sarkar C, Girish R, Dar L, **Seth P**, Broor S. Transforming Growth Factor Beta in Hepatitis C Virus infections: in vivo and in vitro findings. *J. Gastroenterol Hepatol* 18, 2003, 393-403.
37. Arora A, **Seth P**. Antigenicity and immunogenicity of HIV envelope gene expressed in baculovirus expression system. *Gen Therapy Mol Biol* 7, 2003, 1-6.
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#### **LIST OF PUBLICATIONS: Books Authored**

1. Murine Monoclonal antibodies. A Laboratory Manual; editors- P. Seth &Shobha Broor, 1987.
2. Murine Monoclonal antibodies. A Laboratory Manual; editors- P. Seth &Shobha Broor, 1990.

#### **LIST OF PUBLICATIONS: Chapters in books:**

1. Medical Microbiology: in Text book of Biotechnology, (3<sup>rd</sup> Edition) HK Das (editor) 2007, Wiley India.
2. Medical Microbiology: in Text book of Biotechnology, (4<sup>th</sup> Edition) HK Das (editor) (in press), Wiley India.
3. Immunity and Immunization: in " Essential Pediatrics" (7<sup>th</sup> Edition) OP Ghai, VK Paul and A Bagga., CBS Publishers and Distributors, India.