

# Pradeep Tyagi

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## ❖ EDUCATION

Degree	Year	Institution	Field
Ph. D.	8/2000-4/2005	University of Pittsburgh School of Pharmacy, Pittsburgh, PA	<b>Intravesical Drug Delivery</b>
M. Sc.	8/1997- 5/1999	All India Institute of Medical Sciences New Delhi, India	<b>Pharmacology</b>
B.Pharm	11/1992-9/1996	Ch. Charan Singh University, Meerut, India	<b>Pharmacy</b>

## ❖ RESEARCH EXPERIENCE

08/2005 – Present	<b>Post Doctoral Research Fellow</b> , Dept. of Urology, School of Medicine Under Dr. Michael Chancellor
06/2000 – 07/2005	<b>Teaching Fellow</b> , Center for Pharmacogenetics, University of Pittsburgh School of Pharmacy, Lab headed by Dr. Leaf Huang
Summer 2001	<b>Visiting Scholar</b> at National University of Singapore in Dr Kesavan Esuvaranathan lab for studying mouse bladder gene transfection
07/1999–06/2000	<b>Senior Research fellow</b> , Dept of pharmacology National Institute of Pharmaceutical Education and Research, Mohali, India
04/1998 - 9/1998	<b>Research Assistant</b> , Ocular Pharmacology Laboratory, headed by Dr. S.K. Gupta, Department of Pharmacology, All India Institute of Medical Sciences, New Delhi, India
11/1996- 8/1997	<b>Trainee chemist</b> , Quality Control Department, Albert David Ltd.B12/13,Meerut Road Industrial Area Ghaziabaad-201203,India
Summer 1995	Student <b>Trainee</b> at Indian drugs and Pharmaceuticals Plant at Rishikesh, India

- ❖ **Independent Research for Post-Doc Work.** My work involves evaluating and preparing formulations of liposomes and new cannabinoid drugs in cystitis treatment. I am also designing a new rat model of premature ejaculation to evaluate potential dietary supplement and serotonin reuptake inhibitors.
- ❖ **Independent Research for Doctor of Philosophy (Ph.D.) Thesis-** For my dissertation work, I worked in the area of developing advanced drug delivery systems in the treatment of interstitial cystitis. I developed and did preclinical evaluation of liposomal formulation for capsaicin, demonstrated sustained intravesical drug delivery using misoprostol and

downregulation of NGF in rat bladder following intravesical instillation of peptide nucleic acid conjugated with Tat peptide.

- ❖ **Independent Research as Senior Research Fellow-** Standardized the model for morphine induced catalepsy in rats and studied the effect of calcium channel blocker in the model developed.
- ❖ **Independent Research for Masters of Science (M.Sc.) Thesis-** As a part of the Masters thesis, I modified and evaluated liposomal formulations of etoposide, an antineoplastic drug. Pharmaceutical test carried out included Stability, optimization etc; pharmacokinetics assay was carried out using HPLC to estimate the parameters in mice. Pharmacodynamics was evaluated against xenografted tumors in nude mice (colony managed by myself) as well as 20 methyl cholanthrene induced fibrosarcoma. Acute and long term toxicity tests were carried out to estimate MTD and myelosuppression.
- ❖ **Passed a certificate course** for developing entrepreneurship offered by Office of Enterprise Development, University of Pittsburgh.

### ❖ **Teaching Experience**

1. In summer of 2005, I guided final year medical student on his research project in urology department. I also supervised a pre-med student in her research project on intravesical instillation of cannabinoids in bladder
2. Teaching Fellow every alternate semester from the year 2000 to 2003 in School of pharmacy, University of Pittsburgh. Team taught the course PHARM 5219, Drug Development III co-instructor, 8 Contact hrs per week during spring term of 2003, which included pre-lab instruction, supervision of students and evaluation of their performance in the lab. Composed and administered exams for the same course.
3. Responsible for administering and evaluating exams for Biochemistry course 5117 and Gastroenterology/ Nutrition course 5317 for the year 2001 and 2002.
4. Participated in the Post-Graduate teaching program in dept. of pharmacology, AIIMS which included presenting weekly seminars and participating in journal and therapeutic clubs.

### ❖ **Honor & Awards**

- ◆ Co-recipient of best poster award in 2006 CURE-IC meeting sponsored by NIH
- ◆ First prize winner in Graduate student research excellence award for 2002 in School of Pharmacy, University of Pittsburgh
- ◆ Recipient of Graduate student travel award for XIV World congress of Pharmacology 2002 for research paper on Liposomal Delivery of Vanilloids for intravesical treatment of hyperactive bladder
- ◆ Stood first in the M.Sc entrance exam 1997 and M.Sc. Final exam (Pharmacology) 1999 of AIIMS

- ◆ Stood among the top three students with distinctions in Physiology, Biochemistry, Pharmaceutical chemistry and Pharmacognosy in Bachelor of Pharmacy
- ◆ Graduate Aptitude Test of Engineering (GATE) 1997, Percentile score-92.91 in Pharmaceutical sciences

### ❖ Membership

- ◆ Student Member of American Association of Pharmaceutical Scientists
- ◆ Student member of American Society of Pharmacology and Therapeutics
- ◆ Member, Code of Conduct Committee, School of Pharmacy, University of Pittsburgh
- ◆ Graduate student representative for the committee to select speakers for distinguished lecture series in school of pharmacy.
- ◆ Treasurer, Graduate student organization, School of Pharmacy
- ◆ Life member of Indian Pharmacology Society
- ◆ Registered pharmacist in Delhi Pharmacy council

### ❖ Patents Filed

Listed as an Inventor on two patents filed by University of Pittsburgh.

- 1: Intravesical Treatment using Lipids
- 2: Sublingual Formulation of St.John's Wort for Pelvic disorders

## ❖ PUBLICATIONS

### PEER REVIEWED ARTICLES

1. **Tyagi P**, Banerjee RK, Basu S, Yoshimura N, Chancellor MB ,Huang L (2006). Intravesical Antisense Therapy For Cystitis Using TAT-Peptide Nucleic Acid Conjugates *Mol. Pharm.* (in press.)
2. Tyagi S, **Tyagi P**, Lee SV, Yoshimura N, Chancellor MB, Miguel FD. (2006). Quantitative and Qualitative Expression of Muscarinic Receptors in Human Urothelium and Detrusor. *J. Urology.* (in press.)
3. **Tyagi P**, Fraser MO, Li Z, Yoshimura N, Huang L, De Groat WC, Chancellor MB (2004). Urodynamic and Immunohistochemical Evaluation of Intravesical Capsaicin delivery using liposomes and Thermosensitive Hydrogel *J. Urology.* **171**(1):483-9
4. **Tyagi P**, Li Z, Chancellor M, De Groat WC, Yoshimura N, Huang L (2004) Sustained intravesical drug delivery using thermosensitive hydrogel. *Pharm Res.* **21**(5):832-7
5. Banerjee RK, **Tyagi P**, Li S, Huang L. Anisamide-targeted stealth liposomes: (2004) A potent carrier for Targeting Doxorubicin to Human Prostate Cancer cells. *Int. J. Cancer.* **112**(4):693-700
6. Fraser MO, Chuang YC, **Tyagi P**, Yokoyama T, Yoshimura N, Huang L, De Groat WC, Chancellor MB (2003) Intravesical liposome administration: a novel treatment for bladder irritation in the rat *Urology* **61**(3): 656-63.
7. Chuang YC, Chancellor MB, Seki S, Yoshimura N, **Tyagi P**, Huang L, Lavelle JP, De Groat WC, Fraser MO (2003) Intravesical protamine sulfate and potassium chlorides as a model for bladder hyperactivity. *Urology* **61**(3): 664-70.

8. Li Z., Ning W., Wang J. Choi A., Lee P.Y., **Tyagi P.** and Huang L. (2003) Controlled gene delivery system based on thermosensitive biodegradable hydrogel. *Pharm Res.* **20** (6):884-8.
9. **P. Tyagi**, S. Sengupta, Tvelpandian, YK Gupta, V. Kochupillai, SK Gupta (1999) Evaluation of efficacy of liposomal formulations of etoposide against choriocarcinoma xenograft in balb/c nu/nu mice. *Pharm Pharmacol Commun.*, **5**: 595-598.
10. S. K Gupta, R.K. Bhardwaj **P. Tyagi**, S. Sengupta and T. Velpandian. (1999) Anti-inflammatory activity and pharmacokinetic profile of a parenteral formulation of Nimesulide *Pharm Res.* **39**(2): 137-41
11. Sengupta. S, **Tyagi P**, Kochupillai V, Gupta SK (2001) Encapsulation in cationic liposomes enhances the efficacy and reduces the toxicity of etoposide a topoisomerase II inhibitor. *Pharmacology* ,**62**:163-71
12. Sengupta S, **Tyagi P**, Velpandian T, Gupta YK, Gupta SK (2000). Pharmacokinetics, Pharmaceutics and toxicity of a liposomal formulation of etoposide. *Pharmacol Res.* **42**(5):459-464

#### REVIEW ARTICLES

1. **Tyagi P**, Wu PC, Yoshimura N, Chancellor MB, Huang L. (2006) Recent advances in Intravesical Drug/ Gene Delivery. *Mol. Pharm.* (in press.)
2. **Tyagi P**, Tyagi S, Kaufmann J, Huang L, de Miguel F. (2006) Local Drug Delivery to Bladder Using Technology Innovations. *Urol Clin North Am.* (in press)
3. Puja sapra, **Pradeep Tyagi**, Theresa M. Allen. Ligand Targeted Liposomes for cancer Treatment. *Curr Drug Deliv.* 2005;2(4):369-81
4. Feng Liu, **Pradeep Tyagi**, Leaf Huang. Naked DNA Injection for Liver Gene Transfer *Adv Genet.* 2005;54:43-64.
5. **Pradeep Tyagi**. Insulin delivery systems – Present trends and future direction. *Indian Journal of Pharmacology* 2002;34:379-389

#### ABSTRACTS

1. Vincent Hsieh, Ratna Ganabathi, Naoki Yoshimura, Jonathan Kaufman, Michael Chancellor, **Pradeep Tyagi**. Instillation Of Liposomes Is Superior To DMSO Or Pentosan Polysulfate In Reducing Bladder Hyperactivity. *J. Urology* 2006.
2. Ratna Ganabathi, **Pradeep Tyagi**, Fernando de Miguel, Shachi Tyagi, Naoki Yoshimura, Michael Chancellor. Effect of IP-751, Ajulemic Acid, against Acetic Acid Induced Bladder Pain Responses in Rats 24h After Intravesical Administration *J. Urology* 2006.
3. Ratna Ganabathi, **Pradeep Tyagi**, Jonathan Kaufman, Fernando de Miguel, Naoki Yoshimura, Michael Chancellor. Effect of St. John's Wort Formulation DP015 Against Acetic Acid Induced Bladder Pain Responses in Rats. *J. Urology* 2006.
4. Shiro Hiragata, Teruyuki Ogawa, **Pradeep Tyagi**, Fernando de Miguel, Michael B Chancellor, William C de Groat, Naoki Yoshimura. Effects of IP751, Ajulemic Acid, on Bladder Overactivity Induced by Bladder Irritation in the Rat. *J. Urology* 2006.
5. Ogawa T, de Miguel F, Chancellor M, **Tyagi P**, Yoshimura N. Effects of ip751, ajulemic acid, on bladder overactivity Induced by bladder irritation in the rat. Abstract no. 25 *Neurourol Urodyn.* 2005; Vol 24 page 444.

6. **Pradeep Tyagi**, Rajkumar Banerjee, Soumitra Basu, Naoki Yoshimura, Michael Chancellor, Leaf Huang. Intravesical Antisense Therapy For Cystitis Using TAT-Peptide Nucleic Acid Conjugates. *J. Urology* 2005 Vol. 173.
7. **Pradeep Tyagi** Nelson Bennet, Jang Kim, Naoki Yoshimura, Leaf Huang, Michael Chancellor. Proof Of Concept For Using Gene Gun For Gene Transfer To The Rat Penis. *J. Urology* 2003 abstract no.1194 AUA supplement
8. **Pradeep Tyagi** Shing-Hwa Lu, Leaf Huang, William C. de Graoat, Michael B. Chancellor, Matthew O Fraser. Liposomal Delivery of Vanilloids for intravesical treatment of hyperactive bladder. Published in *Pharmacologist*, 2002 News Journal of ASPET abstract n. 26.6 (Lower urinary tract pharmacology)
9. M. Xavier, K.Torimito, **P.Tyagi**, C.P Smith, S.Kongsamut, W.C. de Groat, M.O. Fraser, Effects of HP184 on lower urinary tract (LUT) function following acute spinal cord injury (SCI) in the rat. Program no.800.5 Society for neuroscience 2002 Orlando.
10. P. Bansal, R.K. Bhardwaj, **P.Tyagi**, S.K. Gupta. Comparative Antinociception and anti-inflammatory profile of Nimesulide vs Nimesulide and Piperine combination, Published in the proceedings of XXXI Annual Conference of Indian Pharmacological Society at CDRI Lucknow; Page no. 140
11. RK. Bhardwaj, Tvelpandian, **P.Tyagi**, S.K.Gupta. Permeability studies on Liposomal Diclofenac gel Vs Conventional gel through human Cadaver skin and invivo kinetic evaluation in mice, Published in the proceedings of XXXI Annual Conference of Indian Pharmacological Society at CDRI Lucknow; Page no. 140
12. P. Tyagi, P. Mathur, T. Velpandian, S. Sengupta, S.K. Gupta "Preventive effect of chayvanprash in hydrocortisone induced cataract in developing chick embryo". Published in *Ind. J. Pharmacol* April 1998; Vol.30(2),124

### **CHAPTERS IN BOOKS**

1. Chapter on Drug delivery and Intravesical instillation in the book Overactive Bladder: Evaluation and Management. Edited by Kreder and Dmochowski
2. Wrote two chapters in a book on Screening of drugs by Dr. S.K. Gupta. Professor Emeritus, Department of Pharmacology, AIIMS, India. Chapter 1: Screening of Antiplatelet drugs and another chapter on screening of Antiinflammatory drugs.

### **SCIENTIFIC MEETING PRESENTATION**

1. Presented a poster at annual AUA meeting in Atlanta 2006 on Instillation of liposomes is superior to DMSO or pentosan polysulfate in reducing bladder hyperactivity.
2. Invited as a speaker for a workshop on intravesical drug delivery at International Continence Society at Montreal August 30<sup>th</sup> 2005.
3. Presented a poster at annual AUA meeting in San Antonio 2005 on intravesical antisense therapeutics
4. Presented a poster in AAPS annual meeting 2004 in Baltimore on Downregulation of NGF in rat bladder with antisense peptide nucleic acid

5. Presented a poster at annual AUA meeting in San Francisco 2004 on selection of antisense sequence to downregulate rat NGF
6. Presented a poster at annual AUA meeting in Chicago 2003 on proof of concept for using gene gun for gene transfer to the rat penis.
7. Presented a poster at XIV world congress of pharmacology in San Francisco(2002) on Liposomal Delivery of Vanilloids for intravesical treatment of hyperactive bladder
8. Presented a poster on “Activity of liposome formulations of a anticancer drug in human tumor xenografts” at the 18<sup>th</sup> Annual convention of the Indian Association for Cancer Research held in New Delhi on 02/19/99

❖ **Community Health Projects**

- ◆ Participated as a health care volunteer in WHO sponsored Nation wide Pulse Polio program of India in January 1996 and January 1997

❖ **Extracurricular activities**

- ◆ Volunteered in the GEAR UP program of school of pharmacy to attract the domestic applicants in the graduate program of the university

**References:** Available on Request