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# ARNOLD & PORTER

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October 24, 2003

Dockets Management Branch  
Food and Drug Administration  
Department of Health and Human Services  
5630 Fishers Lane, Room 1061  
Rockville, MD 20852

Re: Docket No. 2003P-275

Dear Sir or Madam:

We submit, on behalf of our client Allergan, Inc., originals and three copies of the enclosed two declarations to be filed in the docket of this petition, which was filed by our co-counsel Fish & Richardson.

Sincerely,



Donald O. Beers

Enclosures

cc: Terry G. Mahn, Esq.  
Fish & Richardson

## DECLARATION OF DIANE D-S. TANG-LIU, Ph.D.

Diane D-S. Tang-Liu, Ph.D. makes the following declaration:

1. I am Vice President of Pharmacokinetics and Drug Metabolism, Research and Development, at Allergan, Inc. I have worked at Allergan for the past twenty years in various capacities. Additionally, I am a Professor at the School of Pharmacy and Department of Pharmaceutical Sciences at the University of Southern California. A full statement of my education and professional accomplishments is contained in my curriculum vitae, which is attached as Exhibit A to this Declaration.

2. I have been asked to comment on the human tissue concentrations of cyclosporine A (“CsA”) after recommended twice daily dosing of Restasis<sup>®</sup> (cyclosporine ophthalmic emulsion 0.05%) and in particular on the question of whether any such concentrations would reach the level of 0.1 micrograms per milliliter. Restasis<sup>®</sup> is a topical eye drop preparation of CsA used for the treatment of moderate and severe dry eye. It acts as an immunosuppressant, not as an anti-infective or as an antibiotic, and suppresses the immune system targeting the actual cause of dry eye disease. I have had extensive experience with the research, development, and FDA approval of Restasis<sup>®</sup>. I am the authority at Allergan on the pharmacokinetics of Restasis<sup>®</sup>, and have conducted experiments to measure blood concentrations of CsA after applying Restasis<sup>®</sup>.

Furthermore, I have reviewed all of the relevant literature regarding the ocular

pharmacokinetics and ocular tissue levels of CsA after application to the ocular surface.

3. Human blood levels of CsA after twice daily administration of Restasis<sup>®</sup> are nondetectable. Allergan has attempted to detect blood CsA concentrations using a specific and sensitive high pressure liquid chromatography-mass spectrometry assay. Blood concentrations of CsA, in all of the specimens collected, after administration of Restasis<sup>®</sup> 0.05% to the ocular surface twice a day, in humans for up to twelve months, were below the quantitation limit of 0.1 nanograms per milliliter (i.e., 0.0001 micrograms per milliliter). Furthermore, there was no detectable drug accumulation in blood during the twelve months of treatment with Restasis<sup>®</sup>.

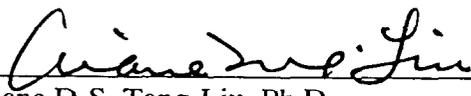
4. Unlike drawing blood from a patient's vein, sampling ocular tissues for the purpose of measuring CsA concentrations after administration to the ocular surface is difficult and in most cases, because ocular biopsy would create inappropriate risks in dry eye treatment, ethically prohibited. As a result, studies measuring CsA concentrations in human ocular tissues after the application of Restasis<sup>®</sup> are not available. Therefore, there is no evidence that the ocular tissue concentrations of CsA after twice-daily Restasis<sup>®</sup> would result in concentrations at or above 0.1 micrograms per milliliter in ocular tissues or any other human tissues of the body.

5. The CsA molecule is relatively large, and when applied to the surface of the eye, very little of the drug penetrates through the ocular surface. Based on my experience with the development of Restasis<sup>®</sup> and my review of all available data on the pharmacokinetics of cyclosporine applied to the ocular surface, I conclude that use of

Restasis<sup>®</sup> as indicated would not lead to levels of CsA at or above 0.1 micrograms per milliliter in any tissue of the body.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on: October 22, 2003

  
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Diane D-S. Tang-Liu, Ph.D.  
Vice President of Pharmacokinetics and  
Drug Metabolism

**EXHIBIT A**  
**CURRICULUM VITAE**  
**June 2003**

**Diane D-S. Tang-Liu, Ph.D.**

**PERSONAL INFORMATION**

Business Address	Allergan, Inc. 2525 Dupont Drive Irvine, CA 92612
Business Telephone	714/246-6767
Business FAX	714/796-3361
Email	tang-liu_diane@allergan.com
Home Address	2615 Blackthorn Street. Newport Beach, CA 92660
Citizenship	United States of America

**REFERENCES** Available on request

**EDUCATION:**

1978 - 1981	Ph.D. in Pharmaceutical Chemistry Thesis, "Theophylline Disposition in Man" University of California, San Francisco, CA
1974 - 1978	B.S. in Pharmacy National Taiwan University Taipei, Taiwan, R.O.C.

**CURRENT POSITION:**

Vice President, Pharmacokinetics and Drug Metabolism, Research & Development, Allergan Inc.

**PRINCIPAL ACCOUNTABILITIES:**

In line management: Responsible for a corporate program of pharmacokinetics and drug metabolism to support drug discovery and development. Ensures that scientific data across disciplines are integrated to support the safety and efficacy and worldwide registration of new chemical entities and acquisition products. Directs and manages the non-clinical and clinical activities of the Department of Pharmacokinetics & Drug Metabolism using in-house and contract

research facilities worldwide. The department operation follows Good Laboratory Practices, International Conference of Harmonization, and other applicable regulations. Represents Allergan as the technical expert in negotiation with regulatory agencies, product acquisition, and market support. Maintains an eminent position in scientific community.

Responsibilities in matrix management include:

- Global team leader for development of oral indications
- Leader of pre-development team, responsible for selection of drug candidates to enter development and the pre-development portfolio

Directs and manages activities across multi-disciplinary departments, regularly updates progress and makes recommendations to Allergan executive officers and Board Directors

### **CURRENT RESEARCH INTERESTS:**

Biodisposition profiles of xenobiotics and metabolites in animals and man with application in prevention and treatment of topical and systemic diseases; kinetic models for investigation of drug disposition and pharmacodynamics; ocular and percutaneous penetration using novel delivery methods; quantitation of drugs and metabolites in biological fluids using state-of-the-art analytical procedures.

### **ACADEMIC AND PROFESSIONAL POSITIONS HELD:**

2001-current	Vice President Pharmacokinetics, Drug Metabolism & PreDevelopment Allergan, Irvine, CA
1996 - 2000	Senior Director Pharmacokinetics & Drug Metabolism Pharmaceutical R&D Allergan, Irvine, CA
1992 - 1996	Director Pharmacokinetics Pharmaceutical R&D Allergan, Inc., Irvine, CA
2003 – current	Professor
1995 - 2003	Associate Professor
1987 - 1994	Assistant Professor School of Pharmacy & Department of Pharmaceutical Sciences University of Southern California Los Angeles, CA
1987 - 1992	Department Manager Pharmacokinetics

Pharmaceutical R&D  
Allergan, Inc., Irvine, CA

1984 - 1987      Section Supervisor  
Pharmacokinetics  
Allergan Eye and Skin Care Group  
Irvine, CA

1983 - 1984      Scientist  
Department of Drug Metabolism and Pharmacokinetics  
Allergan Pharmaceuticals  
Irvine, CA

1983              Retail Pharmacist  
Thrifty Drug Store  
Rotating through Los Angeles and Orange County Stores

1983              Retail Pharmacist  
Arico's Drug Store #4  
Redondo Beach, CA

1982              Hospital Pharmacist  
Huntington Memorial Hospital  
Pasadena, CA

1981 - 1982      NIH Clinical Pharmacology Fellow  
Division of Clinical Pharmacology & Experimental Therapeutics  
Departments of Medicine and Pharmacy  
University of California, San Francisco, CA

#### **PROFESSIONAL LICENSURE**

1983              Licentiate in Pharmacy, California  
1978              Licentiate in Pharmacy, R.O.C.

#### **PROFESSIONAL/HONORARY SOCIETIES**

2001-current      Drug Information Association  
1999-current      Pharmaceutical Research and Manufacturers of America, Drug Safety Section  
1994-current      Association for Ocular Pharmacology and Therapeutics  
1993-current      International Society for the Study of Xenobiotics  
1992-current      The American Society for Mass Spectrometry  
1992-current      Southern California Pharmaceutical Discussion Group  
1987-current      Association for Research in Vision and Ophthalmology  
1987-1994        Pharmaceutical Manufacturers Association, Drug Metabolism Subsection  
1986-current      American Association of Pharmaceutical Scientists

1985-current Society of Chinese Bioscientists in America  
1980-current American Pharmaceutical Association  
1980-1986 Academy of Pharmaceutical Sciences, Basic Pharmaceutics

## COMMITTEE MEMBERSHIPS

2003 **Member**, Nomination Committee, American Association for the Advancement of Science  
2002-current **Chair**, Allergan Pre-Development Committee  
2002-2004 **Board of Directors**, South Coast Chinese Cultural Association  
2001-2006 **Founding President**, South Coast Chinese Cultural Foundation  
2000-current **Chair**, PKDM Project Progress Review Committee, Allergan  
2000-2001 **Chairman**, Board of Directors, South Coast Chinese Cultural Association  
2000-2001 **Board Director and Secretary**, South Coast Chinese Cultural Association  
1999 **Session Chair**, Ocular Drug Delivery and Metabolism, 4<sup>th</sup> Annual Meeting of Association for Ocular Pharmacology and Therapeutics, Irvine, CA  
1997 **Chair**, 2nd International Symposium on Experimental and Clinical Ocular Pharmacology and Pharmaceutics, Munich, Germany  
1996-1997 **Chair**, Allergan PKDM Laboratory Instrumentation Upgrade Committee  
1997-current **Member**, Allergan Therapeutic Area Review Committee  
1995-current **Member**, Allergan Clinical Protocol Review Committee  
1995 **Chair**, Systemic Drug Absorption via Ocular Route, 1<sup>st</sup> International Symposium of Experimental and Ocular Pharmacology and Pharmaceutics, Geneva, Switzerland  
1994-1995 **Chair**, Southern California Pharmaceutical Discussion Group  
1993-1994 **Chair-elect**, Southern California Pharmaceutical Discussion Group  
1993-current **Member**, Allergan Chemical Hygiene Committee  
1992-1993 **Member**, Program and Arrangement Committee Southern California Pharmaceutical Discussion Group  
1990-1997 **Member**, Allergan Project Research Committee  
1987-current **Chair**, Allergan Pharmacokinetics Advisory Team  
1986-1994 **Member**, Allergan Animal Care and Use Committee  
1986-1989 **Member**, Allergan Program Project Management Committee  
1984-1992 **Member**, Allergan Radiation Safety Committee  
1984-1985 **Member**, Allergan Discovery Advisory Group

## TEAM LEADERSHIP – ALLERGAN

2001-current **Team Leader**, Pre-Development for Eye Care, Skin Care, Gastrointestinal and New Technologies  
2001-current **Global Development Team Leader**, Gastrointestinal Diseases  
1997-2001 **Global Development Team Leader**, Oral Tazarotene for Benign Indications  
1993-1997 **Team Leader**, ALRT1550 for Oncology, Allergan/Ligand Retinoid Technology

## JOURNAL REVIEWER

1998-current	Referee, <i>Experimental Eye Research</i>
1997-current	Referee, <i>Journal of Pharmaceutical Sciences</i>
1995-current	Referee, <i>Investigative Ophthalmology and Visual Sciences</i>
1987-current	Referee, <i>Pharmaceutical Research</i>
1985-current	Referee, <i>Biopharmaceutics and Drug Disposition</i>
1980-current	Referee, <i>Journal of Pharmacokinetics and Biopharmaceutics</i>

## ADVISORY BOARDS

2002	<b>Scientific Advisory Board Member</b> , 4th International Symposium on Experimental and Clinical Ocular Pharmacology and Pharmaceutics, Seville, Spain
2000	<b>Scientific Advisory Board Member</b> , 3rd International Symposium on Experimental and Clinical Ocular Pharmacology and Pharmaceutics, Lisbon, Portugal
1997	<b>Scientific Advisory Board Member</b> , 2nd International Symposium on Experimental and Clinical Ocular Pharmacology and Pharmaceutics Munich, Germany
1994	<b>Scientific Advisory Board Member</b> , 1st International Symposium on Experimental and Clinical Ocular Pharmacology and Pharmaceutics Geneva, Switzerland

## HONORS/AWARDS

2003	<b>Recipient</b> , Award for Chinese Cultural Leadership, Asian Business Association of Orange County, CA
2002	<b>Fellow</b> , Association of American Pharmaceutical Scientists
2002	<b>Recipient</b> , Spirit of Volunteerism Award, County of Orange, CA
1997	<b>Recipient</b> , Author of the Year, Applied Sciences, Allergan, Inc.
1995	<b>Recipient</b> , Author of the Year, Applied Sciences, Allergan, Inc.
1994	<b>Key Contributor</b> , AGN 190168 Development, Allergan, Inc.
1985	<b>Recipient</b> , Author of the Year, Allergan Pharmaceuticals
1981	<b>Recipient</b> , NIH Clinical Pharmacology Fellowship
1979	<b>Recipient</b> , University of California Regents Fellowship
1974-1977	<b>Recipient</b> , Dean's List

## PUBLICATIONS IN REFEREED JOURNALS

1. D.D-S. Tang. Synthesis of an optically active carbonyl reagent: d-tartramic hydrazide and synthesis of tartramazone of 2-(6-methoxy-1,2,3,4-tetrahydronaphthylidene-ethyl)-2-methyl-(8)-cyclopentane-1,3-indandione. Thesis submitted in partial fulfillment of Bachelor Degree of Pharmacy, National Taiwan University, Taipei, R.O.C., 1978.
2. K.T. Muir, J.H.G. Jonkman, D-S. Tang, M. Kunitani and S. Riegelman. Simultaneous determination of theophylline and its major metabolites in urine by reversed-phase ion-pair high-performance liquid chromatography. *J. Chromatogr.* 221: 85-95, 1980.
3. J.H.G. Jonkman, D. Tang, R.A. Upton and S. Riegelman. Measurement of excretion characteristics of theophylline and its major metabolites. *Eur. J. Clin. Pharmacol.* 20: 435-441, 1981.
4. T.N. Tozer, D.D-S. Tang-Liu and S. Riegelman. Linear vs. nonlinear kinetics. pp. 3-17. In: *Topics in Pharmaceutical Sciences*. D.D. Breimer and P. Speiser (Eds). Elsevier/North-Holland Biomedical Press, 1981.
5. D.D-S. Tang-Liu and S. Riegelman. Metabolism of theophylline to caffeine in adults. *Res. Comm. Chem. Path. Pharmacol.* 34(3): 371-380, 1981.
6. D.D-S. Tang-Liu, R.L. Williams and S. Riegelman. Nonlinear theophylline elimination. *Clin. Pharmacol. Ther.* 31(3): 358-369, 1982.
7. J.F. Kelly, D.D-S. Tang-Liu, S. Lazo, R.A. Upton and R.L. Williams. The effect of cimetidine on theophylline metabolism in the elderly. *Clin. Pharmacol. Ther.* 31 (2): 238-239, 1982.
8. D.D-S. Tang-Liu and S. Riegelman. An automated HPLC assay for simultaneous quantitation of methylated xanthines and uric acids in urine. *J. Chromatogr. Sci.* 20: 155-159, 1982.
9. D.D-S. Tang-Liu, T.N. Tozer and S. Riegelman. Urine flow-dependence of theophylline renal clearance in man. *J. Pharmacok. Biopharm.* 10(4): 351-364, 1982.
10. J.H.G. Jonkman, K.T. Muir, D-S. Tang and S. Riegelman. Selective quantitative determination of methylxanthines and methyluric acids in urine. pp. 169-174. In: *Theophylline and Other Methylxanthines*. N. Rietbrock, B.G. Woodcock and A.H. Staib (Eds). Friedr. Vieweg und Sohn, 1982.
11. D.D-S. Tang-Liu, T.N. Tozer, and S. Riegelman. Dependence of renal clearance on urine flow: a mathematical model and its application. *J. Pharm. Sci.* 72(2): 154-158, 1983.
12. D.D-S. Tang-Liu, R.L. Williams and S. Riegelman. Disposition of caffeine and its metabolites in man. *J. Pharmacol. Exp. Ther.* 224(1): 180-185, 1983.
13. W. Spitzer, F. Sörgel, I. Krakau, D. Tang, L.Z. Benet, E.Lang. Herzinsuffizienz und Diuretika. *Münch. Med. Wschr.* 125 (41):913-914, 1983.

14. D.D-S. Tang-Liu, R.L. Williams. A composite view of theophylline elimination in man. In: Pharmacokinetics: A Modern View. L.Z. Benet and G. Levy (Eds), pp. 488-491, 1984.
15. D.D-S. Tang-Liu, J.H.G. Jonkman, K.T. Muir, M. Kunitani. A selective HPLC assay for simultaneous quantitation of fourteen methylxanthines and methyluric acids in urine. In: Pharmacokinetics: A Modern View. L.Z. Benet and G. Levy (Eds). pp. 484-487, 1984.
16. D-S. Tang-Liu , S.S. Liu and R.J. Weinkam. Ocular and systemic bioavailability of ophthalmic flurbiprofen. J. Pharmacok. Biopharm. 12(6): 611-626, 1984.
17. D.D-S. Tang-Liu. Reaching steady-state plasma concentration. Letter to the Editor, Amer. Pharmacy, NS 24 (7): 5, 1984.
18. J. Blanchard, S.J.A. Sawers, J.H.G. Jonkman and D.D-S. Tang-Liu. Comparison of the urinary metabolite profile of caffeine in young and elderly males. Br. J. Clin. Pharmacol. 19: 225-232, 1985.
19. D.D-S. Tang-Liu, S. Liu, J. Richman and R.J. Weinkam. HPLC quantitation of levobunolol and its metabolite, dihydrolevobunolol, in biological fluids. J. Liq. Chromatogr. 9(10): 2237-2252, 1986.
20. D.D-S. Tang-Liu and S. Liu. Relationship between ocular and systemic disposition of flurbiprofen: the effect of altered protein dynamics at steady state. J. Pharmacok. Biopharm. 15(4): 387-397, 1987.
21. G.D. Novack, D.D-S. Tang-Liu, E.P. Kelley, S.S. Liu, C.D. Shen and E. Duzman. Plasma levobunolol levels following topical administration with reference to systemic side effects. Ophthalmologica 194: 194-200, 1987.
22. D.D-S. Tang-Liu, S. Liu, J. Neff and R. Sandri. Disposition of levobunolol after an ophthalmic dose to rabbits. J. Pharm. Sci. 76(10): 780-783, 1987.
23. D.D-S. Tang-Liu and P.J. Burke. The effect of azone on ocular levobunolol absorption: calculating the area under the curve and its standard error using tissue sampling compartments. Pharmaceutical Research 5(4): 238-241, 1988.
24. D.D-S. Tang-Liu, J. Neff, H. Zolezio and R. Sandri. Percutaneous and systemic disposition of hexamethylene lauramide and its penetration enhancement effect on hydrocortisone in a rat sandwich skin-flap model. Pharmaceutical Research 5(8): 477-481, 1988.
25. D.D-S. Tang-Liu, M. Shackleton and J.B. Richman. Ocular metabolism of levobunolol. J. Ocular Pharmacol. 4(3): 269-278, 1988.
26. D.D-S. Tang-Liu and R. Sandri. Ocular biodistribution of clonidine after topical application with ophthalmic rods or solution. J. Ocular Pharmacol. 5(2): 133-140, 1989.

27. J.B. Richman and D.D-S. Tang-Liu. A corneal perfusion device for estimating ocular bioavailability *in vitro*. *J. Pharm. Sci.* 79(2): 153-157, 1990.
28. S.S. Liu, R. Sandri, and D.D-S. Tang-Liu. Systemic pharmacokinetics of acetylenic retinoids in rats. *Drug Metab. Dispo.* 18(6): 1071-1077, 1990.
29. J. Richman, H. Zolezio and D.D-S. Tang-Liu. Comparison of ofloxacin, gentamicin and tobramycin concentrations in tears and *in vitro* MICs for 90% of test organisms. *Antimicrobial Agents and Chemotherapy* 34(8): 1602-1604, 1990.
30. D-S. Chien, J.J. Homsy, C. Gluchowski and D.D-S. Tang-Liu. Corneal and conjunctival/scleral penetration of *p*-aminoclonidine, AGN 190342, and clonidine in rabbit eyes. *Current Eye Research* 9(11): 1051-1059, 1990.
31. D.C. Gritz, P.J. McDonnell, T.Y. Lee, D.D-S. Tang-Liu, B.B. Hubbard and A. Gwon. Topical ofloxacin in the treatment of *Pseudomonas* keratitis in a rabbit model. *Cornea* 11(2): 143-147, 1992.
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36. D.D-S. Tang-Liu, J. B. Richman and S.S. Liu. Lenticular uptake and distribution of xenobiotics and amino acids. *J. Ocular Pharmacol.* 8(3): 267-277, 1992.
37. D.D-S. Tang-Liu, J. Richman, P. Lin and S. Selim. Disposition of SK&F L-190144 in rats and monkeys after oral intravenous or ocular administration. *Biopharm. and Drug Dispo.* 14: 313-324, 1993.
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39. P-H. Hsyu, B. Bowen and D. Tang-Liu. Pharmacokinetics of a novel retinoid AGN 190168 and its metabolite AGN 190299 after intravenous administration of AGN 190168 to rats. *Biopharm. and Drug Dispo.* 15: 347-357, 1994.

40. D.D-S. Tang-Liu and J.B. Richman. The effect of pilocarpine on ocular levobunolol absorption from ophthalmic solutions. *J. Ocular Pharmacol.* 10(4): 605-615, 1994.
41. D.D-S. Tang-Liu, D.L. Schwob, J. I. Usansky, and Y.J. Gordon. Comparative tear concentrations over time of ofloxacin and tobramycin in human eyes. *Clin. Pharmacol. and Ther.* 55(3): 284-292, 1994.
42. D. Tang-Liu, J. Lambert, S. Blancaflor, and A. Gwon. Availability of 0.3% ofloxacin ointment and solution in human conjunctiva and aqueous humor. *J. Ocular Pharmacol.* 11 (1): 57-64, 1995.
43. A.A. Acheampong, A. Breau, M. Shackleton, W. Luo, S. Lam, and D. D-S. Tang-Liu. Comparison of concentration-time profiles of levobunolol and timolol in anterior and posterior ocular tissues of albino rabbits. *J. Ocular Pharmacol.*, 11(4): 489-502, 1995.
44. A.A. Acheampong, M. Shackleton and D. D-S. Tang-Liu. Comparative ocular pharmacokinetics of brimonidine after a single dose application to the eyes of albino and pigmented rabbits. *Drug Metab. and Dispo.* 23 (7): 708-712, 1995.
45. A.A. Acheampong and D.D-S. Tang-Liu. Measurement of brimonidine concentrations in human plasma by a highly sensitive gas chromatography/mass spectrometric assay. *J. of Pharma. and Biomed. Analysis*, 13: 995-1002, 1995.
46. D.D-S. Tang-Liu, A.A. Acheampong, D-S. Chien, and J.I. Usansky. Pharmacokinetic and pharmacodynamic correlations of ophthalmic drugs. In: *Ocular therapeutics and drug delivery: a multi-disciplinary approach*. I.K. Reddy (Eds). Technomic Publishing Company, pp. 133-148, 1996.
47. C. Madhu, P. Rix, M. Shackleton, T. Nguyen and D.D-S. Tang-Liu. Effect of benzalkonium chloride/EDTA on the ocular bioavailability of ketorolac tromethamine following ocular instillation to normal and de-epithelialized corneas of rabbits. *J. Pharm. Sci.*, 85(4): 415-418, 1996.
48. O. Angelov, A. Wiese, D. D-S. Tang-Liu, A. Acheampong, I. M. Ismail, and B. S. Brar. Preclinical safety profile of brimonidine. *Eur. J. Ophthalmology*, 6(1): 21-25, 1996.
49. A.A. Acheampong, D-S. Chien, S. Lam, S. Vekich, A. Breau, J. Usansky, D. Harcourt, S. Munk, H. Nguyen, M. Garst and D. Tang-Liu. Characterization of brimonidine metabolism with rat, rabbit, dog, monkey and humane liver fractions and rabbit liver aldehyde oxidase. *Xenobiotica*, 26(10): 1035-1055, 1996.
50. D. Small, M. Dais, M. Wong, D. Tang-Liu. Influence of pH and buffer concentration on the ocular bioavailability of ophthalmic AGN 191103 formulations in albino rabbits. *Int. J. Pharmaceutics*, 149: 195-201, 1997.

51. D. Small, M. Dais, H. Zolezio, T. Nguyen, J. Bushong, M. Wong, D. Tang-Liu. Increasing pH of ophthalmic AGN 191103 formulation increases ocular but not systemic bioavailability in albino rabbits. *Int. J. Pharmaceutics*, 149: 203-212, 1997 .
52. K.R. Aoki, M.Ismail, D. Tang-Liu, B. Brar, and L.A. Wheeler. Botulinum toxin type A: from toxin to therapeutic agent. *Eur. J. Neurology*, 4(Supplement 2): S1-S3, 1997.
53. C. Madhu, S. Duff, V. Baumgarten, P. Rix, D. Small, D. Tang-Liu. Metabolic deesterification of tazarotene in human blood and rat and human liver microsomes. *J. of Pharm. Sci.* 86(8): 972-974, 1997.
54. I.M. Ismail, B.Baker, R. Matsumoto, T. Saaty, H. Sun, D. Tang-Liu, and B. Brar. Sub-chronic and chronic toxicity of tazarotene gel following topical application in Hanford miniswine. *Int J Toxicol.* 16:571-584, 1997.
55. D-S. Chien, D. D-S. Tang-Liu, and D.F. Woodward. Ocular penetration and bioconversion of prostaglandin F<sub>2α</sub> prodrugs in rabbit cornea and conjunctiva. *J. of Pharm. Sci.* 86(10): 1180-1186, 1997.
56. C. Madhu, P. Rix, D. Small, Y-D Yuan, and D.D-S. Tang-Liu. The use of precision-cut rat lung slices for studying PGF<sub>2α</sub> metabolism. *Environmental Toxicology & Pharmacology*, 3:251-256, 1997.
57. C. Madhu, P. Rix, T. Nguyen, D-S . Chien, D. F. Woodward, and D. D-S. Tang-Liu. Penetration of natural prostaglandins & their ester prodrugs and analogs across human ocular tissues *in vitro*. *Journal of Ocular Pharmacology and Therapeutics* 14(5):389-399. 1998.
58. A. Acheampong, M. Shackleton, S. Lam, P. Rudewicz, and D. Tang-Liu. Cyclosporine distribution into the conjunctiva, cornea, lacrimal gland, and systemic blood following topical dosing of cyclosporine to rabbit, dog, and human eyes. In: *Lacrimal Gland, Tear Film, and Dry Eye Syndromes 2: Basic Science and Clinical Relevance*. D.A. Sullivan, D.A. Dartt, and M.A. Meneray, Eds. New York: Plenum Press, pp. 1001-1004, 1998.
59. A.A. Acheampong, M. Shackleton, D. D-S. Tang-Liu, S. Ding, M.Stern, and R. Decker. Distribution of cyclosporin A in ocular tissues after topical administration to albino rabbits and beagle dogs. *Curr Eye Res.* 18(2):91-103. 1999.
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61. J.I. Usansky, A. Desai, and D. Tang-Liu. PK Functions for Microsoft Excel®. <http://www.boomer.org/pkin/soft.html>. 1999.
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## ABSTRACTS AND PRESENTATIONS

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82. "Pharmacokinetic/pharmacodynamic relationship between brain and plasma concentrations and sedation for selected  $\alpha_1$  adrenoceptor agonists in sprague-dawley rats." J. Bushong, T. Nguyen, D. Small and D.D-S. Tang-Liu. Presented at the ISSX Annual Meeting, San Diego, CA, October 1996.
83. "Cyclosporine distribution into the conjunctiva, cornea, lacrimal gland and systemic blood following topical dosing of cyclosporine to rabbit, dog and human eyes." A. Acheampong, S. Lam, P. Rudewicz, M. Shackleton and D.D-S. Tang-Liu. Presented at the Second International Conference on Lacrimal Gland, Tear Film and Dry Eye Syndromes, Bermuda, November 1996.

84. "Distribution and Elimination Of <sup>125</sup>I-Immunoglobulin Following Intravitreal Dosing to Pigmented Rabbits." D.Tang-Liu. S. Sirossian, J. Usansky. Invest Ophthalmol Vis Sci 38(4), March 15; 1997
85. "Absorption and Autoradiography of <sup>3</sup>H-Polyhexamethylene Biguanide (3H-PHMB) after a Single Topical Dose to Pigmented Rabbits Eyes." S. Sirossian, J. Usansky; M. Shackleton, H. Zolezio, D. Tang-Liu. Invest Ophthalmol Vis Sci. 38(4), March 15,1997
86. "BOTOX®: From Toxin to Therapeutic Agent." R. Aoki, M. Ismail, D. Tang-Liu. Presented at the 3rd European BOTOX® Toxin Symposia, London, February 5, 1997.
87. "The Effect of Multiple Dosing Regimen on the Absorption, Disposition and Melanin Binding of <sup>3</sup>H-Polyhexamethylene Biguanide (<sup>3</sup>H-PHMB)." J. Usansky, S. Sirossian, T. Nguyen, M. Shackleton, H. Zolezio, D. Tang-Liu. Presented at ARVO, May 1997
88. "BOTOX®: From Toxin to Therapeutic Agent." R. Aoki, M. Ismail, D. Tang-Liu. Presented at the XVI<sup>th</sup> World Congress of Neurology, Buenos Aries, September 14-19, 1997.
89. "Safety Assessment of Cyclosporine Ophthalmic emulsion and Relevance to Human Use." O. Angelov, A. Wiese, J. Andersen, A. Acheampong, D. Tang-Liu, B. Reis, and B. Brar. Presented at the Second International Symposium of Ocular and Experimental Pharmacology and Pharmaceutics, Munich, Germany, September 1997.
90. "Neutral Replacement of the Carboxylic Acid Group of Prostaglandin F<sub>2α</sub> Provides a Novel Series of Ocular Hypotensive Lipids with Pharmacological Activity Distinct from Prostanoids." R.Chen, D.W. Gil, K.M. Kedzie, H.A. Krauss, C. Madhu, P. Rix, D.D-S Tang-Liu. Presented at the Association for Research in Vision and Ophthalmology (ARVO) Annual Meeting, Fort Lauderdale, Florida, May, 1997.
91. "Pharmacokinetics of Tazarotene After Topical Application to Normal and Psoriatic Subjects". D.D-S. Tang-Liu, R. Matsumoto, and J. Usansky. Presented at The Impact of Pharmacokinetics in Modern Drug Development, San Francisco, California, May 15-17, 1997.
92. "Penetration of Natural Prostaglandins and Their Ester Prodrugs and Analogs Across Human Ocular Tissues *In Vitro*." Presented at Association for Ocular Pharmacology and Therapeutics (AOPT) Annual Meeting, Bethesda, Maryland, October 21-26, 1997.
93. "Comparison of Tear Sampling Techniques: Ofloxacin Concentrations in Rabbit Tears After Sampling with Tear Strips, Capillary Tubes, or Surgical Sponges." D. Small, H. Zolezio, J. Hevy, and D. Tang-Liu. Presented at the Annual AAPS meeting, Boston, MA, November 2-4, 1997.
94. "Determination of tazarotene and its metabolite tazarotenic acid, in human plasma by GC/MS and GC/MS/MS." R.M Matsumoto, D.G. Fellows, J. Usansky, R.W. Kulawy, G. Rahn, D.

Tang-Liu. Pharm Res. 14(11 Suppl):S259-60, 1997

95. "Baseline 9-cis-retinoic acid concentrations detected in human plasma by LC/MS/MS." D. Small, E. Lin, D. Tang-Liu, R. Shi, M.E. McPhee, E. Pippa. Presented at .AAPS Annual Meeting & Exposition, Boston, MA, November 1997, Pharm Res. 14(11 SUPPL):S694, 1997
96. "Safety Research of Cyclosporine Ophthalmic Emulsion " O. Angelov, B. Reis, A. Acheampong, D. Tang-Liu, A. Wiese, J. Andersen, and B. Brar. Accepted for Presentation at European Association for Vision and Eye Research (EVER), Palma de Mallorca, Spain, October, 1998
97. "Safety of cyclosporine ophthalmic emulsion (Restasis)." Angelov O; Reis B; Acheampong A; Wiese A; Tang-Liu D; Brar B. Ophthalmic Res 30(Suppl 1):37 Poster, 1998
98. "The Ocular Pharmacokinetics of Cyclosporine in Albino Rabbits and Beagle Dogs." D. Small, A. Acheampong, M. Shackleton, S. Lam, V. Baumgarten, S. Sirossian, and D. Tang-Liu. Presented to the Annual Meeting of Association for Ocular Pharmacology and Therapeutics, Irvine, CA, January 1999.
99. "Tissue specific distribution of cytochrome P450 isoenzymes in the monkey eye." C. Madhu, V. Dinh, D. Babusis, P. Rix, A.B. Kharlamb, and D. Tang-Liu. Presented to the annual meeting of Association for Research in Vision and Ophthalmology, FL, May 1999.
100. "Expression of cytochrome P450 isoenzymes in dog and human eye." C. Madhu, V. Dinh, D. Babusis, P. Rix, and D. Tang-Liu, Presented at the annual meeting of ISSX, TN, October 1999.
101. "Intravenous pharmacokinetics of AGN 194310 in the obese and lean Zucker rats." K.H. John Ling, T. Nguyen, Y. Jiang, and D. Tang-Liu. Presented at the annual meeting of ISSX, TN, October 1999.
102. "Pharmacokinetics of single and multiple doses of oral tazarotene administered to healthy subjects." R.M. Matsumoto, D.A. Lew-Kaya, J. Sefton, L. Borbridge, A. Acheampong, M. Abdelhameed, and D. Tang-Liu. Presented to the AAPS Annual Meeting & Exposition, New Orleans, LA, November 1999.
103. "Comparison of sensitive and high throughput sensitive and high throughput APCI LC-MS/MS assays for separate determination of tazarotenic acid and adapalene concentrations in rabbit plasma." A. Acheampong, L. Borbridge, R. Matsumoto, and D. Tang-Liu. Presented to the AAPS Annual Meeting & Exposition, New Orleans, LA, November 1999.
104. "Pharmacokinetics of tazarotene in female patients with facial acne following facial application of 0.1% tazarotene gel for 28 days." Z. Yu, R.M. Matsumoto, J. Sefton, D.A. Lew-Kaya, S. Kopper, P. Walker, and D. Tang-Liu. Presented at the annual meeting of American Academy of Dermatology, San Francisco, CA, March 2000.

105. "Pharmacological profile of ocular hypotensive lipids." D.F. Woodward, R.M. Burk, J. Chen, A.H-P. Krauss, and D. D-S. Tang-Liu. presented at the ISOPP, 2000.
106. "Replacement of the carboxylic acid group of prostaglandin F<sub>2α</sub> with certain non-ionizable substituents results in pharmacologically unique ocular hypotensive agents." J. Chen, D.F. Woodward, A.H-P. Krauss, C.E. Protzman, D.W. Gil, K.M. Kedzie, A. Kharlamb, J. Ling, D.D-S. Tang-Liu, R.M. Burk, K. Marshall, and J. Senior. presented at the Prostaglandins Congress, 2000.
107. "Metabolite profiling and identification of memantine by a LC-MS/MS system equipped with online extraction HTLC, radiomatic detector β-RAM, and mass spectrometer API-365." D. Dong, J. Ying, J. Ling, A. Acheampong, and D. Tang-Liu. presented at the Annual Meeting of AAMS, May, 2000.
108. "Prostaglandin F<sub>2α</sub> 1-ethanolamide: A unique local hormone biosynthesized from anandamide." D.F Woodward, H. Usansky, C. Machu, S.W. Andrews, R.M. Burk, J. Chen, A.H.P. Krauss, M.E. Garst, L.A. Wheeler, D. D-S. Tang-Liu, D.W. Gil and W. Yang. presented to ICER, 2000.
109. "Blood concentrations of cyclosporin A during twice-daily treatment of 0.05% and 0.1% cyclosporin ophthalmic emulsions for one year in patients with moderate to severe keratoconjunctivitis sicca." D. Small, A. Acheampong, B. Reis, W. Stewart, G. Berdy, R. Epstein, R. Foerster, L Forstot, and D. Tang-Liu, presented to ARVO, 2000.
110. "A sensitive and selective LC-MS/MS method for determination of endogenous prostaglandin F<sub>2α</sub> in human blood." A. Acheampong, N. Qin, M. Ghebrial, D. Dong, and D. Tang-Liu. Presented at the Annual Meeting of American Association of Pharmaceutical Scientist, November 2000.
111. "Nonclinical development of an ophthalmic pharmaceutical: Alphagan®." A. Wiese, B. Short, D. Tang-Liu, A. Acheampong, and B. Brar. Presented to the annual meeting of International Society of Toxicology, 2000.
112. "Influence of emulsion formulation parameters on the ocular bioavailability of cyclosporine A in albino rabbits." R. Lyons, D. Small, A. Suri, C. Agbayani, V. Baumgarten, D. Tang-Liu, J. Chang, and O. Olejnik. Presented to the annual meeting of Association of American Pharmaceutical Scientists, IN, 2000.
113. "A Single-Center, Open-Label, Pharmacokinetic-Pharmacodynamic Study of the Drug-Drug Interaction of Oral Tazarotene and Ortho-Novum® 1/35 Oral Contraceptive in Healthy Female Volunteers." Zhiling Yu, Richard M. Matsumoto, John Sefton, Patricia S. Walker, Deborah A. Lew-Kaya, Frankie D. Baker, and Diane D. Tang-Liu. Presented to the annual meeting of Association of American Pharmaceutical Scientists, IN, 2000.

114. "Pharmacokinetics of tazarotenic acid after single and repeat applications of tazarotene cream 0.1% to either the face or an exaggerated body surface area in female patients with acne vulgaris." Z. Yu, T.C. Marbury, S.C. Kopper, P.S. Walker, J. Sefton, and D. D-S. Tang-Liu. Presented to the annual meeting of American Academy of Dermatology, Washington D.C., March 2001.
115. "Prostamide F<sub>2α</sub> (Prostaglandin 1-ethanolamide): Pharmacological characterization of a novel, naturally occurring substance." D.F. Woodward, A.H-P. Krauss, J. Chen, A. Acheampong, W. Yang, R.M. Burk, S.W. Andrews, M.E. Garst, D.D-S. Tang-Liu, and L.A. Wheeler. Presented at annual ASPET meeting, 2001.
116. "The Ocular Pharmacology and Bioavailability of AGN 192024 (Lumigan™), A Novel Ocular Hypotensive Agent." A.H-P. Krauss, J. Chen, S.W. Andrews, D. Tang-Liu, S. Nilsson, and D.F. Woodward. Presented to ARVO, May 2001.
117. "Effects of Co-Eluting and Separated Internal Standard on Quantitative APCI and ESI LC-MS/MS Analysis of Multiple Short-Chain Amino Acids in Rat Plasma." L. Borbridge, A. Acheampong, S. Ubhayakar, D. Babusis, and D. Tang-Liu. Presented to ASMS, May 2001.
118. "Quantitation of Endogenous Anandamide, Prostamides, Arachidonic Acid, and Prostaglandins in Human Ocular Tissues by High Performance Liquid Chromatography with Tandem Mass Spectrometry." J. Ni, W. Yang, J. Ling, D. Tang-Liu, R. Burk, and D. Woodward. Presented to the Annual Meeting of the International Cannabinoid Research Society, June 2001, Madrid, Spain.
119. "Pharmacokinetics, Metabolism and Excretion of AGN 195183, A Synthetic Retinoid, in Rats and Dogs." R.M. Matsumoto, J. Ling, D. Welty, and D. Tang-Liu. Presented to the Annual Meeting of AAPS, Denver, CO, November, 2001.
120. "Pharmacokinetics of Tazarotene Cream 0.1% After a Single Dose and After 6, 13, 20, and 27 Repeat Topical Applications Once Daily Either to the Face Only or to An Exaggerated Body Surface Area (15%) in Patients with Photodamaged Skin." Z-L Yu, D.A. Lew-Kaya, J. Sefton, P. Walker, D. D-S. Tang-Liu. Presented to the Annual Meeting of American Academy of Dermatology, March 2002.
121. "A Phase I and Pharmacokinetic Clinical Trial of the Orally Administered Retinoic Acid Receptor-α Agonist, AGN 195183." C. Taylor, P. Walker, D.D-S. Tang-Liu, N. Goerman, K. Schmidt, A Simpson, Z. Yu, T. Joshi, Y. Yuan, R. Chandraratna, D. Von Hoff. To be presented at the Molecular Targets Meeting, 2002.
122. "AGN 192024 (Lumigan™): A prostamide analog that lowers primate intraocular pressure by virtue of its inherent pharmacological activity." DF. Woodward, C. Madhu, RM Burk, SW Andrews, J Chen, AH-P Krauss, B Brar, ME Garst, D Tang-Liu, and LA Wheeler. To be presented at the ARVO annual meeting, May 2002.

123. "Systemic pharmacokinetics of bimatoprost 0.03% solution following twice daily ocular dosing in elderly and young subjects." D. Tang-Liu, M. Cherukury, A. Acheampong, J. Cheetham, A. VanDenburgh, and D. Yu. To be presented at the ARVO annual meeting, May 2002.
124. "AGN 192024 (Lumigan®): A synthetic prostamide analog that lowers primate intraocular pressure by virtue of its inherent pharmacological activity." DF. Woodward, C. Madhu, RM Burk, SW Andrews, J Chen, AH-P Krauss, B Brar, ME Garst, D Tang-Liu, and LA Wheeler. To be presented at the IUPHAR meeting, May 2002.
125. "Characterization of urinary and plasma metabolites of memantine after single intravenous administration of <sup>14</sup>C-memantine to rabbits." J. Ni, J. Rowe, A. Acheampong, J. Ling, and D. Tang-Liu. To be presented at the annual ASMS meeting, May 2002.
126. "AGN 192024 (Lumigan®): A synthetic prostamide analog that lowers primate intraocular pressure by virtue of its inherent pharmacological activity." DF. Woodward, C. Madhu, RM Burk, SW Andrews, J Chen, AH-P Krauss, B Brar, ME Garst, D Tang-Liu, and LA Wheeler. To be presented at the International Eicosanoids Conference, Turkey, August 2002.
127. "Systemic Pharmacokinetics of Bimatoprost 0.03% Solution Following Once Daily Ocular Dosing In Normal, Healthy Subjects." D.D. Tang-Liu, M.Chelukury, A.Acheampong, J.Cheetham, A.VanDenburgh, D.Yu. To be presented to ARVO, May 2002.
128. "Long-term Systemic Exposure of Lumigan In Patients With Glaucoma Or Ocular Hypertension." J.K. Cheetham, D.Tang-Liu, Z.Yu, A.VanDenburgh, A.Acheampong, D.Yu. To be presented to ARVO, May 2002.
129. "Relative Ocular Bioavailability of Brimonidine-Purite™, Brimonidine-PF, and Alphagan® in Albino Rabbits." M. Duggirala, D. Welty, D. Small, V. Baumgarten, A. Acheampong, and D. Tang-Liu. To be presented to ARVO, May 2002.
130. "Pharmacokinetic And Safety Profile of Epinastine After Ocular Administration In Patients With Allergic Conjunctivitis." Partha Ghosh, Dale Yu, and Diane Tang-Liu. To be presented to ICER, August 2002.
131. "Metabolism of AGN 195795 in Human and Animal Liver Microsomes, S9 Fractions, and Ocular Tissues." A. Weber, J. Ni, A. Acheampong, D. Gomez, K. Chow, and D. Tang-Liu. To be presented to ISSX Annual Meeting, October 2002.
132. "Lack of a Clinically Significant Pharmacokinetic and Pharmacodynamic Interaction between Oral Tazarotene and the Active Components of Ortho-Novum® 1/35 in Healthy Female Volunteers." W. J. Pan, D. Yu, L. M. Borbridge, A. Suri, S. L. Friborg, and D. D. Tang-Liu. To be presented to AAPS Annual Meeting, Toronto, Canada, November, 2002.

133. "Therapeutic Drug Monitoring for a Multicenter, 12-Month Study of the Safety and Efficacy of 0.2% Brimonidine/0.5% Timolol BID Compared with 0.2% Brimonidine TID or 0.5% Timolol BID in Patients with Glaucoma or Ocular Hypertension." W. J. Pan, E. Lee, D. Yu, C. L. Larsen, J. K. Cheecham, A. A. Acheampong, and D. D. Tang-Liu. To be presented to AAPS Annual Meeting, Toronto, Canada, November, 2002.
134. "Evaluation of Blood-Brain Barrier Distribution of Drugs Measured by In Vivo Microdialysis in Conscious Rats." J.Q. Dong, D.M. Babusis, J. Shen, J. Rowe, S.T. Cross, H. Tang, D.W. Gil, D. Tang-Liu, and D.F. Welty. To be presented at Microdialysis Symposium, MN, June 2002.
135. "Oral Tazarotene for the Treatment of Severe Nodulocystic Acne: A 12-Week Double-Blind Randomized, Placebo-Controlled, Dose-Response Study Followed by a 12-Week Dose-Escalation." N.J. Lowe, G.D. Weinstein, J.A. Carruthers, A.R. Shalita, D. Tang-Liu, and P.S. Walker. To be presented at the Academy of American Dermatology summer meeting, July 2002.
136. "Oral Tazarotene for the Treatment of Moderate to Severe Plaque Psoriasis." N.J. Lowe, M.A. Menter, G.D. Weinstein, G.G. Gibson, D. Tang-Liu, and P.S. Walker. To be presented at the Academy of American Dermatology summer meeting, July 2002.
137. "Pharmacokinetics and Dose Proportionality of Tazarotene Following Oral Administration in Healthy Volunteers." E. Lee, L. Borbridge, P. Walker, A. Suri, D. D-S. Tang-Liu, and D.K. Yu. To be presented to the annual meeting of American College of Clinical Pharmacy, Albuquerque, New Mexico, October 2002.
138. "Plasma Pooling Method for Determining Ultra-Low Exposure in Rabbits Following Topical Administration of Tazarotene." J. Ni, J. Rowe, H. Tang, A. Acheampong, and D. Tang-Liu. To be presented to AAPS Annual Meeting, Toronto, Canada, November, 2002.
139. "Pharmacokinetics and Dose Proportionality of Tazarotene Following Oral Administration in Healthy Subjects." E. Lee, L.M. Borbridge, P.S. Walker, A. Suri, D.D. Tang-Liu, and D.K. Yu Dale. To be presented to American College of Clinical Pharmacy Annual Meeting, Albuquerque, New Mexico, October, 2002.
140. "Pharmacokinetics and Safety Profile of Epinastine After Ocular Administration in Patients with Allergic Conjunctivities." D. Yu, P. Ghosh, and D. Tang-Liu. To be presented to American Academy of Allergy, Asthma, and Immunology.
141. "Dose-Response Study with Oral Tazarotene in Patients with Severe Nodulocystic Acne." N.J. Lowe, P.S. Walker, D.A. Lew-Kaya, D. Tang-Liu, J.R. Gibson and the Tazarotene Oral Acne Clinical Study Group, To be presented to American Academy of Dermatology, San Francisco, CA, March 2003.

142. "A Sensitive and Selective LC-MS/MS Method for the Determination of Anadamide, Arachidonic Acid, Prostaglandins D<sub>2</sub>, E<sub>2</sub>, F<sub>2α</sub> and Prostaglandin-1-Ethanolamide D<sub>2</sub>, E<sub>2</sub>, F<sub>2α</sub> in Biological Matrices." J. Ni, A. Acheampong, L. Borbridge, J. Rowe, D. Woodward, and D. Tang-Liu. To be presented to American Society for Mass Spectrometry, May 2003.
143. "Tazarotene Does Not Affect the Pharmacokinetics and Efficacy of Ortho Tri-Cyclen®." Zhiling Yu, Dale Yu, Patricia S. Walker, Diane D-S. Tang-Liu. To be presented to American Association of Pharm Scientists Annual Meeting, October 2003.

### INVITED LECTURES

1. "A composite view on theophylline disposition in man." D.D-S. Tang-Liu, R.L. Williams and S. Riegelman. Presented at the Sidney Riegelman Memorial Symposium, "Pharmacokinetics, A Modern View". San Francisco, CA, April 1982.
2. "Simultaneous quantitation of methylxanthines and methyluric acids in urine." D.D-S. Tang-Liu, J.H.G. Jonkman, K.T. Muir, M. Kunitani and S. Riegelman. Presented at the Sidney Riegelman Memorial Symposium, "Pharmacokinetics, A Modern View." San Francisco, CA, April 1982.
3. "Ophthalmic administration of flurbiprofen." D.D-S. Tang-Liu. Presented at the Ocular Drug Therapy Update, Irvine, CA, October 1984.
4. "Ocular disposition of levobunolol in rabbits." D.D-S. Tang-Liu. Presented at the Ocular Drug Therapy Update, Irvine, CA, September 1986.
5. "Percutaneous absorption of hexamethylene lauramide after topical doses to rats." D.D-S. Tang-Liu. Presented to the Department of Pharmaceutics, University of Southern California, Los Angeles, CA, November 1987.
6. "The use of penetration enhancers in the eyes and skin." D.D-S. Tang-Liu. Presented to the Department of Pharmacy, National Taiwan University, Taipei, Taiwan, December 1988.
7. "Current challenges facing the pharmaceutical industries." D.D-S. Tang-Liu. Invited lecture to the Pharmaceutical Manufacturers' Association, Taiwan, R.O.C., August 1991.
8. "Pharmacokinetics and discovery and development of new molecular entities." D. D-S. Tang-Liu. Invited lecture to the Pharmaceutical Manufacturers' Association, Taiwan, R.O.C., August 1991.
9. "Ocular Drug Delivery." D. D-S. Tang-Liu, UCI Ophthalmology Basic Science Course. Presented at the Department of Ophthalmology, University of California, Irvine, October, 1995.

10. "Systemic absorption after drug administration to eyes of animals and man." D. D-S. Tang-Liu. Presented at the First International Symposium of Ocular and Experimental Pharmacology and Pharmaceutics, Geneva, Switzerland, October 1995.
11. "Challenges in drug delivery to posterior segment of the eye." D. D-S. Tang-Liu and M. Cherukury. Presented at the Second International Symposium of Ocular and Experimental Pharmacology and Pharmaceutics, Munich, Germany, September 1997.
12. "Pharmacokinetic Considerations in Ophthalmic Drug Delivery." D. D-S. Tang-Liu, M. Cherukury, D. Small, and A. Acheampong. Presented at the annual meeting of Association for Ocular Pharmacology and Therapeutics, Irvine, California, January 1999.
13. "An Overview of Clinical and Non-Clinical Safety for the Ophthalmic Use of Cyclosporin for the Treatment of Dry Eye." D.D-S. Tang-Liu, Presented at the FDA Advisory Panel meeting, October, 1999.
14. "Clinical Pharmacokinetics and Safety Assessment in Drug Development." D. D-S. Tang-Liu. Presented at the Annual Meeting of the Society of Biomaterials and Controlled Release of Taiwan and the Annual Republic of China-Japan Symposium on Biomaterials and Controlled Release, Taipei, Taiwan, February 2000.
15. "Career Opportunities in Pharmaceutical Industry." D.D-S. Tang-Liu. Presented to the Graduate Alliance for the School of Pharmacy and Department of Pharmaceutical Sciences, University of Southern California, Los Angeles, CA, March 2000.
16. "Drug-Drug and Food-Drug Interactions: From Grapefruit Juice to Cellular Transporters." D.D-S. Tang-Liu. Presented to the 21<sup>st</sup> Annual Convention, National Taiwan University Medical College Alumni Association of North America, Anaheim, CA, August 2001.
17. "Global Drug Registration, NDAs and MAAs." D.D-S. Tang-Liu. Presented to International Society for the Study of Xenobiotics meeting, Munich, Germany, October 2001.
18. "Faces of Freedom: A Celebration of Unity." D.D-S. Tang-Liu. Presented to the National Conference for Community and Justice, Irvine, CA, October 2001.
19. "Lessons Learned from the Grapefruit Juice on Metabolism-Based Drug, Herb, and Food Interactions." D. D-S. Tang-Liu. Presented to the Southern California Pharmaceutical Discussion Group, Irvine, CA. January 2002.
20. "New Technologies Are Brewing at Allergan." D. D-S. Tang-Liu. Presented to the Global Regulatory Affairs Conference, Irvine, and CA. February 2002.

21. "The Implementation of Good Laboratory Practices in Non-Clinical and Clinical Pharmacokinetics." D. D-S. Tang-Liu. Presented to the Product Review Department, the Organization for Pharmaceutical Safety and Research (Japan), Irvine, CA, March 2002.
22. "Twenty-five Years of Unity and Diversification: Looking Forward to the Next Decades." D. D-S. Tang-Liu, Presented to the City of Irvine Leaders' Meeting, April 2002.
23. "Global Drug Development: Challenges in Safety Assessment and Clinical Pharmacokinetics." D. D-S. Tang-Liu. Presented to the workshop *Global Biotechnology/Pharmaceutical Research and Development - Current Challenges and Opportunities*. National Health Research Institutes, Taipei, Taiwan, September 2002.
24. "PK/PD and Population Analyses: Their Relevance to Drug Approval." D.D-S. Tang-Liu. Presented to the Center for Drug Evaluation, Taiwan, September 2002.
25. "New Technologies Are Brewing at Allergan." D. D-S. Tang-Liu. Presented to the Global Regulatory Affairs Conference, Irvine, CA. February 2003.
26. "New Technologies Are Brewing at Allergan." D. D-S. Tang-Liu. Presented to the Global Neurology Conference, Irvine, CA. April 2003.

## MANAGEMENT TRAINING

Management Styles, Allergan, Inc., March 1985  
Job Analyst Training Program, Allergan, Inc., April 1985  
Executive Communications Program, Communispond™, Inc., December 1985  
Speaking on Paper, Communispond™, Inc., April 1986  
Managerial Skills, Allergan, Inc., May 1987  
Positive Negotiation Skills, Allergan, Inc., September 1987  
Managing in Technical Organizations, Industrial Relations Center, California Institute of Technology, December 1987  
Leader Effectiveness Training Workshop, Effectiveness Training Inc., February 1988  
Management Styles II, Allergan Pharmaceuticals, May 1990  
Finance and Accounting for the Non-Financial Managers, the Wharton School of Business, University of Pennsylvania, May 1991  
Managing for Financial Success/Shareholder Value Enhancement, Penn Post and Associates, June 1991  
Management Development Program in Health Care, University of Southern California, October 1991  
Management Styles, Creating a High Performance Team, Allergan, Inc., January 1992  
R&D Management Styles, Creating a High Performance Team, Allergan, Inc., December 1992  
Quality in Practice, Allergan, Inc., September 1993  
Finance for Non-Financial Managers, Allergan, May 1996  
Portfolio Management Training, Allergan, July 1996  
Good Manufacturing Practices Training, Allergan, July 1996

Global Team Leader, Oral Tazarotene for Benign Indications, Allergan Inc., 1997-2001  
360 Degree Management Review, Allergan, Inc., May 1997  
Advisory Committee Skills Lab, Stages I-III, May-July, 1999  
Coaching Yourself to the Top, Interven Partners, May-July 2000  
Project Management Practices, Center for Medicines Research, December 2000  
Allergan Leadership Program, University of California, Irvine, Graduate School of Management,  
November 2001  
Sustaining High Impact Leadership, University of California, Irvine, Graduate School of  
Management, March 2003

## TEACHING RECORD

### School of Pharmacy and Department of Pharmaceutical Sciences University of Southern California

Year	Course	Course Description/Lecture Topics	Hours
1987	Pharmacy 405L	Pharmacokinetics and Biopharmaceutics/Drug metabolite kinetics and Nonlinear pharmacokinetics	8
1988	Pharmaceutical Sciences 662	Advanced Pharmacokinetics/Nonlinear pharmacokinetics	4
	Pharmacy 405L	Pharmacokinetics and Biopharmaceutics/Drug metabolite kinetics and Nonlinear pharmacokinetics	8
1989	Pharmacy 405L	Pharmacokinetics and Biopharmaceutics/Drug metabolite kinetics and Nonlinear pharmacokinetics	8
	Pharmacy 403L	Pharmaceutics III/Drug metabolite kinetics and Nonlinear pharmacokinetics	6
1990	Pharmaceutical Sciences 662	Advanced Pharmacokinetics/Nonlinear pharmacokinetics	4
	Pharmacy 403L	Pharmaceutics III/Drug metabolite kinetics and Nonlinear pharmacokinetics	6
1991	Pharmaceutical Sciences 661L	Advanced Pharmaceutical Analysis/Liquid Chromatography	3
	Pharmacy 403L	Pharmaceutics III/Drug metabolite kinetics and Nonlinear pharmacokinetics	6
1992	Pharmaceutical Sciences 662	Advanced Pharmacokinetics/Nonlinear pharmacokinetics	4
	Pharmacy 403L	Pharmaceutics III/Drug metabolite kinetics and Nonlinear pharmacokinetics	6

Year	Course	Course Description/Lecture Topics	Hours
1993	Pharmacy 403L	Pharmaceutics III/Drug metabolite kinetics and Nonlinear pharmacokinetics	6
1994	Pharmaceutical Sciences 662	Advanced Pharmacokinetics/Pharmacokinetics studies in drug development	3
	Pharmacy 403L	Pharmaceutics III/Drug metabolite kinetics and Nonlinear pharmacokinetics	6
1995	Pharmacy 403L	Pharmaceutics III/Drug metabolite kinetics and Nonlinear pharmacokinetics	6
1996	Pharmaceutical Sciences 662	Advanced Pharmacokinetics/Pharmacokinetics studies in drug development	3
1996	Pharmacy 403L	Pharmaceutics III/Drug metabolite kinetics and Nonlinear pharmacokinetics	8
1997	Pharmacy 405L	Pharmacokinetics and Biopharmaceutics/Drug Metabolite Kinetics and Nonlinear Pharmacokinetics	8
1998	Pharmaceutical Sciences 662	Advanced Pharmacokinetics/Metabolism of Drugs	3
1998	Pharmacy 405L	Pharmacokinetics and Biopharmaceutics/Drug Metabolite Kinetics and Nonlinear Pharmacokinetics	8
1999	Pharmaceutical Sciences 662	Advanced Pharmacokinetics/Metabolism of Drugs and Toxicokinetics	3
1999	Pharmacy 405L	Pharmacokinetics and Biopharmaceutics/Drug Metabolite Kinetics and Nonlinear Pharmacokinetics	8
2000	Pharmaceutical Sciences 662	Advanced Pharmacokinetics/Metabolism of Drugs and Toxicokinetics	3
2000	Pharmacy 403L Pharmaceutics III	Pharmacokinetics and Biopharmaceutics/Drug Metabolite Kinetics and Nonlinear Pharmacokinetics	8
2001	Pharmaceutical Sciences 662	Advanced Pharmacokinetics/Metabolism of Drugs and Toxicokinetics	3
2001	Pharmacy 403L Pharmaceutics III	Pharmacokinetics and Biopharmaceutics/Drug Metabolite Kinetics and Nonlinear Pharmacokinetics	8
2002	Pharmaceutical Sciences 662	Advanced Pharmacokinetics/Safety Assessment in Global Drug Development	3
2002	Pharmacy 403L Pharmaceutics III	Pharmacokinetics and Biopharmaceutics/Therapeutics, Model Independent Kinetics, & Metabolite Kinetics	8

### IND Submissions

- 1985 - 1996    Manoalide (SKF 190093), SKF 190383, SKF 104353, SKF 190144Y,  
SKF 86002, Myvacet, SKF 101301, AGN 190988, AGN 191045,  
AGN 191053/AGN 190456, AGN 191743, AGN 191103,  
AGN 194310, AGN 195795
- 1996-1997    Oral ALRT 1057 for Psoriasis  
Oral ALRT 1550 for Oncology  
Topical Brimo-X for Glaucoma  
Oral Memantine for Neuroprotection
- 1998          Topical AGN 194310 for Eczema  
Oral Tazarotene for Acne and Psoriasis
- 1999          Ketorolac Ofloxacin Ophthalmic Solution  
Topical Tazarotene Cream for Acne  
Oral Tazarotene for Oncology  
Brimonidine Timolol Ophthalmic Solution for Glaucoma
- 2000          Oral AGN 195183 for Oncology  
Ophthalmic AGN 195795 for Glaucoma  
Ophthalmic Epinastine for Allergy
- 2001          Ketorolac Ophthalmic Solution Reformulation  
Hypotensive Lipids/Brimonidine Ophthalmic Solution for Glaucoma

### NDA Approvals

- 1984-1985    Betagan™ Ophthalmic Solution for Glaucoma
- 1986          Ocufen™ Ophthalmic Solution for Inflammation
- 1989          Pred G™ Ophthalmic Ointment for Infection
- 1993          Ofloxacin™ Ophthalmic Solution for Infection
- 1995          Azelex™ Topical Cream for Acne
- 1997          Acular™ for Allergy  
Alphagan™ Ophthalmic Solution for Glaucoma
- 1997          Brimonidine™ Ophthalmic Solution for ALT  
Topical Tazorac™ Gel for Psoriasis
- 1999          Alocril™ Ophthalmic Solution 2% for Allergic Conjunctivitis
- 2000          Topical Tazorac™ Cream for Psoriasis
- 2001          Alphagan P™ Ophthalmic Solution for Glaucoma  
Lumigan™ Ophthalmic Solution for Glaucoma  
Topical Tazorac™ Cream for Acne
- 2002          Botox Cosmetics™ for Glabellar Lines  
Avage™ Cream for Photodamaged Skin  
Restasis™ for Dry Eye
- 2003          Zymar™ for treatment of bacterial conjunctivitis  
Acular LS™ for reduction of pain after corneal refractive surgery

## DECLARATION OF H. DWIGHT CAVANAGH, M.D., Ph.D.

H. Dwight Cavanagh, M.D., Ph.D. makes the following declaration:

1. I am currently the Dr. W. Maxwell Thomas Chair, Professor and Vice-Chairperson of Ophthalmology, as well as Medical Director and Associate Dean for Clinical Services, Zale Lipshy University Hospital/The University of Texas Southwestern Medical Center at Dallas. I previously served on the full-time academic medical faculty of Johns Hopkins University, Harvard University, Emory University (F. Phinizy Calhoun, Sr., Professor and Chair of Ophthalmology, 1978-1987), and Georgetown University. I have also served as a past president of the Contact Lens Association of Ophthalmologists (CLAO) and the Castroviejo Corneal Society (CCS), executive director of the Association for Research in Vision and Ophthalmology (ARVO), and as a member (chair) of the Visual Sciences A and Neurosciences and Biobehavioral Sciences Study Sections of the National Institutes of Health. I served a six-year term as Editor-in Chief of the journal *Cornea* (1989-1995), and currently serve as Editor-in Chief of the *Eye & Contact Lens Journal* (formally the *CLAO Journal*). I have a longstanding interest in both corneal and contact-lens related research. A full statement of my education and professional accomplishments is contained in my curriculum vitae, which is attached as Exhibit A to this declaration.

2. I have been asked to comment both on the clinical use of Restasis eye drops (cyclosporine ophthalmic emulsion 0.05%) and whether Restasis is used for

treating eye infections. I specialize in diseases of the cornea and the external surface of the eye, including dry eye disease. In my specialty practice, which includes many dry eye patients, I have treated greater than 100 dry eye patients with Restasis. I was a clinical investigator for the Restasis phase III clinical trials, which studied Restasis as dry eye therapy.

3. Restasis is an eye drop preparation of cyclosporine A given twice daily for the treatment of moderate and severe dry eye disease. Generally, patients begin dry eye therapy with artificial tear eye drops applied to the eyes as needed to supplement their deficient tear production. Patients who are not adequately managed with artificial tear preparations are frequently candidates for Restasis therapy. The daily dose of Restasis is one drop twice daily to the affected eye, and a course of Restasis therapy typically lasts several months.

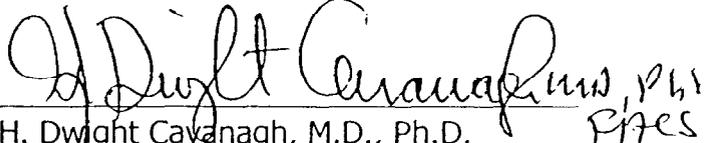
4. Although the exact mechanism of action of Restasis in dry eye disease is unknown, its therapeutic effect is thought to occur from the suppression of T-lymphocytes, not from any anti-infective properties. In fact, the T-lymphocyte suppressive effect of Restasis actually makes a patient's eye more susceptible to infection, and, as stated in the Restasis labeling, the use of Restasis is contraindicated in patients with active ocular infections.

5. As noted above, I have served and currently am serving as Editor-in Chief of a peer review scientific journal. My professional time is divided between patient care and active scientific research. As an active scientist, I am thoroughly abreast of the scientific ophthalmic literature. There are no data showing the clinical utility of

cyclosporine as an anti-infective. Any references in the literature to antifungal uses associated with Restasis, on examination, refer not to antifungal activity of the drug but rather to it being less likely than corticosteroids to encourage fungal growth after corneal transplant for certain corneal fungal infections. I have treated many fungal corneal ulcers, and would not consider Restasis as a therapy for this condition or any other ocular infection.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on: Oct 23 2003  
1

  
H. Dwight Cavanagh, M.D., Ph.D. *FDES*  
Professor and Vice Chairman of the  
Department of Ophthalmology at the  
University of Texas Southwestern Medical  
Center.

## CURRICULUM VITAE

## H. DWIGHT CAVANAGH, M.D., Ph.D.

## PERSONAL INFORMATION:

Birthdate: July 22, 1940  
Atlanta, Georgia, U.S. Citizen  
Father: William Edwards Cavanagh (1905-1991)  
Mother: Marie Logue Cavanagh (1905-1971)

Marital Status: Married, December 27, 1964  
Wife: Lynn Ayres Gantt (1940- )

Children: One Child  
Daughter: Catherine Duval Cavanagh (1965- )

Current Home Address: 27 Lakeside Park  
Dallas, Texas 75225  
Tel (214) 361-0667  
Fax (214) 361-7466

Current Professional Address: Univ. of Texas Southwestern Medical Center at Dallas  
5323 Harry Hines Boulevard  
Dallas, Texas 75390-9057  
Tel (214) 648-8074  
Fax: (214) 648-9061  
e-mail: Dwight.Cavanagh@UTSouthwestern.edu

Social Security Number: 420-54-2464

## EDUCATION:

1954 - 1958 St. Leo Abbey Preparatory School  
Pasco County, Florida

1958 - 1960 Massachusetts Institute of Technology  
Cambridge, Massachusetts

1960 - 1962 Johns Hopkins University School of Medicine  
Baltimore, Maryland  
Received B.A. (1962)

1963 - 1964 Johns Hopkins Medical School  
Department of Physiological Chemistry  
USPH Post-Sophomore Fellow in Research  
Preceptor: Albert Lehninger, Ph.D.

Education (cont.):

- 1962 - 1965  
Johns Hopkins University School of Medicine  
Baltimore, Maryland  
Received M.D. (1965)
- 1965 - 1966  
Johns Hopkins Hospital  
Harriet Lane Service  
Internship in Pediatrics
- 1966 - 1969  
Harvard University Department of Biology  
(Thesis Preceptor: George Wald, Ph.D., Nobel  
Laureate, Medicine & Physiology (1967), Cambridge,  
Massachusetts  
Received Ph.D. in Biology (1972)
- 1969 - 1973  
The Wilmer Eye Institute,  
The Johns Hopkins Hospital  
Residency and Fellowship in Ophthalmology  
Preceptor: A.E. Maumenee, MD
- 1973 - 1975  
Massachusetts Eye and Ear Infirmary  
Harvard Medical School  
Clinical Fellow on the Cornea Service  
Eye Research Institute of Retina Foundation  
Harvard Medical School  
Research Fellow, Laboratory for Corneal Research  
Preceptor: Claes H. Dohlman, M.D.

**ACADEMIC AND ADMINISTRATIVE APPOINTMENTS:**

- 1966 - 1969  
Harvard University Department of Biology  
USPH Post-Doctoral Research Fellow  
Teaching Fellow, Harvard University Graduate School  
of Arts & Sciences (Natural Science 5, Biology)
- 1969 - 1973  
The Wilmer Eye Institute, Johns Hopkins University,  
Instructor in Ophthalmology
- 1975 - 1976  
Assistant Professor of Ophthalmology, Harvard Medical  
School; Director, Residency Training in Ophthalmology  
and Assistant Surgeon in Ophthalmology,  
Massachusetts Eye & Ear Infirmary

**MAJOR PROFESSIONAL SERVICE APPOINTMENTS:**

1975, 1980, 1985, 1990	Consultant to National Eye Institute; Special Study Sections; Corneal Research Task Force Unit; National Plan for Vision Research
1975 - Present	Consultant Reviewer for: <i>American Journal of Ophthalmology</i> <i>Annals of Ophthalmology</i> <i>Archives of Ophthalmology</i> <i>Biochemical Pharmacology</i> <i>British Journal of Ophthalmology</i> <i>Contact Lens Journal of Ophthalmologists</i> (Editor 2002 - ) <i>Current Eye Research</i> <i>Experimental Eye Research</i> <i>Investigative Ophthalmology and Visual Science</i> <i>The Journal Cornea</i> (Editor: 1989-95) <i>Journal of Microscopy</i> <i>The Journal of Scanning Microscopy</i> <i>The New England Journal of Medicine</i> <i>Ophthalmic Research</i> <i>Optometry and Visual Science</i> <i>Proceedings of the National Academy of Science (USA)</i> <i>Prostaglandins</i> <i>Survey of Ophthalmology</i>
1976 - 1989	Member, Board of Directors, Contact Lens Association of Ophthalmologists (US)
1977 - 1978	Consultant: Drugs Committee U.S. Food & Drug Administration
1977 - 1981	Member, Committee for Medical Student Admissions, Emory University School of Medicine
1977 - 1981	<b>Member, Section I Faculty (Fundamentals &amp; Principles of Ophthalmology)</b> <b>American Academy of Ophthalmology</b> <b>Basic and Clinical Science Course</b>
1979 - 1981	<b>Chairman, Section I</b>

Major Professional Service Appointments (cont):

1978 - 1979	Co-Chairman, Medical Care & Utilization Review Committee, Emory University Hospital
1979	Consultant to Scientific Advisory Board: Research to Prevent Blindness, Inc
1978 - 1982	Member, Board of Directors, Castroviejo Society of Corneal Surgeons
1979 - 1986	Founder Member Designate, Peach Bowl, Atlanta, Georgia
<b>1980 - 1984</b>	<b>Member, Visual Sciences-A Study Section The National Eye Institute, Washington, DC</b>
<b>1982 - 1984</b>	<b>Chairman, Visual Sciences-A Study Section</b>
1982 - 1987	Member, Scientific Advisory Panel, The National Society to Prevent Blindness, NY
1984 - Present	Consultant, Ad Hoc Reserve Panel Grants Reviewer, The National Eye Institute/Div. Res. Grants (SBIR, VISA 1, Special SS, etc.)
<b>1980-1984</b>	<b>Associate Secretary, Committee for Research and Regulatory Agencies, The American Academy of Ophthalmology, Washington, DC</b>
1980 - 1986	Member, Committee for Research and Regulatory Agencies, The American Academy of Ophthalmology
1981 - 1982	Chairman, Committee for Postgraduate Education, Associate of University Professor of Ophthalmology
1981 - 1983	Senior Consulting Editor, <i>Ophthalmology Times</i> (New York)
<b>1982 - 1987</b>	<b>Executive Secretary/Treasurer, (position now designated Executive Vice President) Association for Research in Vision and Ophthalmology</b>

Major Professional Service Appointments (cont):

During tenure as CEO of ARVO: (1) membership increased from approximately 1500 to 3000; (2) designed and established the current ARVO central office on the NIH campus with FASEB; (3) hired the first permanent administrator (Mrs. Kathleen McCasland); (4) established the current ARVO Constitution and By-Laws, since modified to permit trustee governance and with required statutes to establish compliance for C3501 tax exempt organization chartered in New York; (5) increased net worth of ARVO from less than \$50,000 (1982) to nearly a half million dollars with institution of a permanent Finance Committee; (5) established and recommended the 2<sup>nd</sup> Mildred Wisenfeld Award with honor recognition to Carl Kupfer, MD, for important services rendered to the visual science community as Director of NEI; (7) established the first liaison with Fight-for-Sight with ARVO as guardian and peer-reviewer for research fund distribution (since ongoing).

1983 - 1986	<b>The Civilian National Consultant to the Surgeon General, United States Air Force</b>
1982 - 1984	Program Chairman, The Castroviejo Society of Corneal Surgeons
1982 - 1987	<b>Member, Board of Counselors, The American Academy of Ophthalmology</b>
1983 - Present	Research External Grants Commission Consultant, Medical Research Council of Australia
1984	Organizer, The Hilton Head Workshop to initiate the Collaborative Corneal Transplantation Study (CCTS)
1985 - 1987	Member, Scientific Advisory Board, The Knights Templar Foundation
1985 - 1988	Member, Advisory Development Board, The Department of Ophthalmology, University of South Florida, Tampa, Florida
1985 - 1988	Member, Editorial Board, <i>J. Ophthalmic Surgery</i>
1986 - 1987	<b>President Elect, Contact Lens Association of Ophthalmologists of the United States</b>
1986	Organizer, The Hilton Head Workshop for Contact Lens Infections: sponsored by Contact Lens Manufacturers Association of America
1987 - 1988	<b>President, Contact Lens Association of Ophthalmologists of the United States</b>
1988 - 1989	<b>Immediate Past-President and Director</b>

Major Professional Service Appointments (Cont):

1987	Chairman, Ad Hoc Outside Review Panel, The Department of Ophthalmology, The University of Pittsburgh, Pittsburgh, PA
1984 - 1986	Member, Board of Trustees Atlanta Area Services for the Blind
1985 - 1987	<b>Vice President and President Elect, Castroviejo Society of Corneal Surgeons</b>
1987 - 1989	<b>President, Castroviejo Society of Corneal Surgeons</b>
1989 - 1991	<b>Immediate Past-President and Director, Castroviejo Society of Corneal Surgeons</b>
1986 - 1987	Member, Board of Directors, Georgia Physicians Health Network Medical Association of Georgia
1986 - 1987	<b>Member, Organizing Committee and Education Coordinator, Third 10th Annual International Corneal Conference, Washington, DC (1987)</b>
	<b>Editor: Proceedings, World Congress on the Cornea (III), Raven Press (1988)</b>
1985 - 1986	Chairman, Research Committee, Association of University Professors of Ophthalmology
1987 - 1989	Member Editorial Board, <i>The Journal Cornea</i>
1987 - 2002	Member, Editorial Board, <i>Contact Lens Assoc. of Ophthalmologists (CLAO) Journal</i>
1989 - 1991	Civilian Consultant (Cornea), National Naval Medical Center, Bethesda, MD
1989 - 1995	<b>Editor-in-Chief, <i>The Journal Cornea</i>, Raven Press, NY</b>
1989 - 1993	<b>Member, Neurosciences I Study Section, National Institutes of Health</b>
1990	Member, Orphan Drug Review Panel, FDA

Major Professional Service Appointments (cont.):

1990 - 1995	Member, Editorial Board, <i>Journal of Scanning Microscopy</i>
<b>1991</b>	<b>Chairman, International Organizing Committee, 3rd International Conference on Confocal Microscopy, Atlantic City, NJ (Apr 10-12 1991). Sponsored by the Royal Microscopy Society and Scanning Microscopy, USA</b>
1991 - 1997	Member, Deans V.A. Medical Center Advisory Committee, U.T. Southwestern Medical Center
1991 - 1992	Member, Utilization Review Committee, Zale Lipshy University Hospital U.T. Southwestern Medical Center
1992	Member, International Organizing Committee, 4th International Conference on Confocal Microscopy, Amsterdam, The Netherlands
1992 - 2002	<b>Founding Associate Editor, <i>The Journal BioImaging</i></b>
1992 - Current	Medical Director, University of Texas Southwestern Eye Bank and Transplant Services
1992 - 1996	Member, Research Committee Eye Bank Association of Americas
1992 - 1996	Member, Scientific Program Committee Eye Bank Association of America
1994 - 2004	Member, Medical Advisory Board Eye Bank Association of America
1994 - 1996	Chair, Medical Advisory Committee for Policy and Position Research Eye Bank Association of America
1993 - 1994	Member, Curriculum Evaluation and Integration Panel, U.T. Southwestern Medical Center
1993 - 1994	<b>Member, Medical School Admissions Committee U.T. Southwestern Medical Center</b>

Major Professional Service Appointments (cont.):

1994 - 1997	Member, Continuing Medical Education Advisory Committee, U.T. Southwestern Medical Center
1994 - 2001	Member (alternate), Institutional Review Board, U.T. Southwestern Medical Center
1994 - Current	Member, Transplant Services Center Medical Advisory Board, U.T. Southwestern Medical Center
1994 - Current	Member, Texas Medical Foundation
1995 and 1996	Member, Medical Executive Committee, Zale Lipshy University Hospital
1995 - Current	Reviewer - The Wellcome Trust - National Research Clinical Grants (London)
1995 - Current	Reviewer - The National Science Foundation, Washington, DC
1995 - 1997	Vice-President/President-Elect, South Central Region, Eye Bank Association of America; Member, Board of Directors, Eye Bank Association of America
1997 - 1998	President, South Central Region, Eye Bank Association of America; Member, Board of Directors, Eye Bank Association of America,
1996 - 1998	Chairman, The Paton Society Committee, Eye Bank Association of America
1998 - 2000	Chairman, Research Committee, Eye Bank Association of America
1997	Scientific Reviewer, Swiss National Science Foundation
1997 - 1998	<b>Member, Peer Review Panel on Photorefractive Keratectomy (PRK) Research, convened by the American Institute of Biological Science for the U.S. Government (Pentagon), Department of Defense</b>
1999 - current	Clinical Planning Committee, The University of Texas Southwestern Medical Center at Dallas
2002 - 2008	<b>Editor-in-Chief, The CLAO Journal</b>

**MILITARY SERVICE:**

Appointed 1 Lt., U.S Army Medical Corps Reserves, 1965; promoted to Captain, 1967; promoted to Major 1974; Reserve Good Conduct Medal, 1974; Inactive Reserve Pool and Honorable Discharge, 1975

**PROFESSIONAL MEMBERSHIPS:**

FROM:

- 1965 Member, Johns Hopkins Medical & Surgical Society
- 1967 Member, Association for Research in Vision and Ophthalmology**
- 1974 Member, Society of Heed Fellows  
Member, American Medical Association  
Member, American Association of Ophthalmologists (1974-80, merged with AAO)  
Member, New England Ophthalmological Society  
Member, Massachusetts Medical Society
- 1975 Fellow, American Academy of Ophthalmology and Otolaryngology**
- 1975 Member, Massachusetts Ophthalmological Society (to 1976)
- 1976 Fellow, International Eye Foundation, Society of Eye Eye Surgeons  
Member, Society for Contemporary Ophthalmology (to 1984)  
Member, Society for Ocular Microbiology and Immunology  
Member, Southeastern District, Eye Bank Association of America, Medical Association of Georgia (to 1987)  
Atlanta Medical Society (to 1987)  
Georgia Ophthalmological Society (to 1987)
- 1977 Fellow, Castroviejo Society of Corneal Surgeons  
Member, Eye Bank Association of America  
Member, Contact Lens Association of Ophthalmologists
- 1978 Member, Pan American Association of Ophthalmologists  
**Fellow, American College of Surgeons**

Professional Memberships (cont.):

- 1979 Member, Board of Directors,  
Keratorefractive Society (1979-81)  
Member, Association University  
Professors of Ophthalmology (1978-86)  
Member, Atlanta Ophthalmologic Society (to 1987)
- 1979 Member, Scientific Advisory Panel for the  
Society to Prevent Blindness (to 1988)
- 1980 Member, Scientific Advisory Panel for  
Friends of Eye Research (to 1986)
- Member, Scientific Advisory Panel for the  
Maryland Eye Bank (to 1985)
- 1982 Fellow, International College of Surgeons
- 1983 Fellow, New York Academy of Science  
Associate Fellow, Royal Society of Medicine  
(London) to 1993
- 1986 **Elected Fellow, Royal Microscopy Society (London)**
- 1988 Fellow, International Society for Contact  
Lens Research  
Member, Washington, DC Ophthalmological Society
- 1990 Fellow, F. Townley Paton, MD Society, Eye  
Bank Association of America
- 1992 **Full Member, The Society for Neuroscience**  
**Full Member, The American Physiological**  
**Society (FASEB)**  
Dallas Academy of Ophthalmology  
Dallas Medical Society  
Texas Ophthalmological Society  
Texas Medical Association  
Fellow, Electron Microscopical Society of America
- 1993 **Elected Fellow, Royal Society of Medicine (London)**
- 1995 Elected Fellow, Texas Society of Ophthalmology and  
Otolaryngology

Professional Memberships (cont.):

- |      |   |
|------|---|
| 1997 | Elected Fellow, Society for Experimental Biology and Medicine (USA) |
| 2001 | Elected Honorary (Lifetime) Fellow, American Academy of Optometry   |

**HOSPITAL APPOINTMENTS:**

- |  |   |
|--|---|
| 1975 - 1976  | Massachusetts Eye & Ear Infirmary Boston, Boston, Massachusetts (Assistant Surgeon)   |
| 1978 - 1986  | Emory University Hospital, Atlanta, GA<br>Henrietta Egleston Hospital for Children, Atlanta, GA<br>Grady Memorial Hospital, Atlanta, GA<br>Crawford W. Long Memorial Hospital, Atlanta, GA<br>Veterans Administration Medical Center, Atlanta, GA |
| <i>Note: As Chairman of Ophthalmology (1978-87), I served as overall head of these affiliated hospital programs for training and services.</i> |   |
| 1978 - 1987  | Metropolitan Eye & Ear Hospital, Atlanta, GA  |
| 1978 - 1985  | Chief of Service, Emory University Hospital, Atlanta, GA  |
| 1978 - 1980  | Chief of Service, Henrietta Egleston Hospital for Children, Atlanta, GA   |
| 1978 - 1982  | Chief of Service, Grady Memorial Hospital, Atlanta, GA  |
| 1988 - 1991  | Georgetown University Hospital, Washington, DC  |
| 1991 - Present   | Zale Lipshy University Hospital<br>Veterans Administration Medical Center, Dallas, TX<br>St. Paul Medical Center<br>Children's Hospital<br>Parkland Memorial Hospital<br>John Peter Smith Hospital (Fort Worth)                                   |

**BOARD CERTIFICATION:**

- |      |  |
|------|--|
| 1974 | Certified: American Board of Ophthalmology (life-time certification) |
|------|--|

**LICENSURE:**

1963	Florida - Basic Science Certificate
Jul 27, 1965	Maryland - #D02614 (active)
May 18, 1967	Massachusetts - #19931 (inactive status after leaving MA in 1976)
Jun 14, 1976	Georgia - #17678 (active)
Jan 27, 1987	District of Columbia - #4337 (active)
Sep 30, 1991	Texas - Distinguished Professor's Permit
Nov 14, 1992	Texas - J2857 (active).

Note: No medical license in any state has ever been limited or terminated.

**HONORS AND AWARDS:**

<b>1962</b>	<b>Phi Beta Kappa, Johns Hopkins Medical School</b>
1962, 1964	Joseph E. Collins Scholar in Medicine, Johns Hopkins Medical School
1963 - 1964	USPH Post-Sophomore Fellowship, Johns Hopkins Medical School
<b>1965</b>	<b>Henry Strong Denison Research Prize (\$1,000), Johns Hopkins Medical School</b>
1966 - 1969	USPH Post-Doctoral Research Fellowship, Harvard Medical School
1973 - 1976	Thomas D. and Hugh Byers Heed Foundation Fellow in Ophthalmology, Massachusetts Eye & Ear Infirmary
1973 - Present	American Medical Association Physician Recognition Award
1974 - 1975	USPH Special Research Fellowship in Cornea, Massachusetts Eye & Ear Infirmary
<b>1979 - 1986</b>	<b>Listing, <i>Best Doctors in the U.S.</i>, John Pekkamen, Wideview Press (1979)</b>
<b>1980 - Present</b>	<b><i>Who's Who in America</i></b>

Honors and Awards (cont.):

1981	<b>The Heed Award</b>
1982	Honor Award, American Academy of Ophthalmology
1983	<i>Who's Who</i> (Germany)
1983	<b>The 18th Jean Lacerte Lecture, Universite' Laval and Canadian College of Surgeons (Quebec)</b>
1983	<b>Fourth Maxwell K. Boschner Lecture Toronto University (Toronto)</b>
1983	<b>Honor Award, Chilean Academy of Ophthalmology</b>
1983	<i>Dictionary of International Biography</i> (Volume 18) (Listing)
1984	Second Joseph E. Koplowitz Memorial Lecture in Ophthalmology, Georgetown University
1982 - 1986	Associate Examiner, The American Board of Ophthalmology
1984	<b>Invited, Congressional Testimony in Support of the Citizens' Budget for the National Eye Institute for FY 1985, presented separately to the United States Senate and The House of Representatives' Appropriations Subcommittees for Health/Labor and Human Services. Sponsored by Research to Prevent Blindness, Inc., (New York), The American Academy of Ophthalmology, and the Association for Research in Vision and Ophthalmology</b>
1987	Award of Appreciation, The Knights Templar Eye Foundation, USA
1987	14th Waldert Lecture, University of Rochester, Rochester, NY
1987	<b>Honor Recognition Award, Association for Research and Vision in Ophthalmology (ARVO)</b>
1988	Honor Recognition Award, Contact Lens, Association of Ophthalmologists (USA)

Honors and Awards (cont.):

- 1989 **27th Conrad Berens Lecturer, Contact Lens, Association of Ophthalmologists (USA)**
- 1989 - Present American Men and Women of Science
- 1989 Honor and Recognition Award, Castroviejo Corneal Society
- 1991 **The 5th Morton B. Sarver Lectures, The College of Optometry, University of California at Berkeley**
- 1995 **W. Maxwell Thomas Distinguished Chair Professor, University of Texas Southwestern Medical Center at Dallas**
- 1995 **Senior Investigator Award (\$55,000), Research to Prevent Blindness, Inc., New York**
- 1996 9th Francisco J. Bajandas Lecture, University of Texas Health Science Center, San Antonio, TX (March 1,2, 1996).
- 1996 CLAO Honor Award, Contact Lens Association of Ophthalmologists
- 1996 **Special Honor Recognition Award as Editor of *Cornea*, Castroviejo Corneal Society, 4th World Congress of the Cornea, Orlando, Florida, April 19, 1996**
- 1997 **The Whitney Sampson Lecture, American Academy of Ophthalmology and Contact Lens Association of Ophthalmologists, Combined Annual Meeting. Oct 27, 1997, San Francisco, CA**
- 1997 **The George Nissel Lecture, The British Contact Lens Association, The Royal Medical Society, London, England and Glasgow, Scotland, November 18, 1997**
- 1998 The 21st McDonald Lecture, June 13th 1998, Loyola University School of Medicine, Maywood, Illinois
- 1998 - current **Listing, *Best Doctors in the U.S.*, Woodward White.**

Honors and Awards (con't):

- 1998 **Distinguished Honor Award for Outstanding Research in Contact Lenses, Vision, University of Texas College of Optometry at Houston**
- 1999 **Senior Honor Award, American Academy of Ophthalmology**
- 1999 **The F. Townley Paton Honor Award and Lecture 2000, Eye Bank Association of America, awarded to one ophthalmologist in the United States each year for outstanding contributions to Corneal Transplantation and Eye Banking**
- 2001 Invited Member, The Order of St. John (US, UK)
- 2001 **Elected as 7th Honorary Fellow (1923 - 2002) American Academy of Optometry**
- 2002 America's Top Ophthalmologists, Consumer Research Council of America, Washington, D.C.

**RESEARCH GRANTS:**

- 1969 - 1970 Fight-for-Sight, Inc.: (\$6,000)  
Biochemistry of Photoreceptor Membranes  
H.D. Cavanagh, M.D.
- 1970 - 1973 USPH Research Grant, #EY-00552:  
(\$34,123) - National Institute Study on Biochemistry of Rod and Cone Visual Pigment Proteins  
H.D. Cavanagh, M.D., Ph.D.
- 1975 - 1980 USPH Training Grant, #EY-07018:  
(\$196,712) - National Institute on Physiology and Biochemistry of Corneal Disease - H.D. Cavanagh, M.D., Ph.D. and C.H. Dohlman, M.D., C.O.P.I.
- 1976 - 1986;  
1988 - 1991 USPH Research Grant, #EY-01920:  
(\$197,242) - National Eye Institute Study on Biochemical Control of Growth and Proliferation in Corneal Epithelium - H.D. Cavanagh, M.D., Ph.D. and Ann Colley, Ph.D.

Research Grants (cont.):

- 1977 - 1978 Parke Davis Company: (\$12,000) - Evaluation of 5% Ophthalmic Suspension and 3% Ointment of Adenine: Arabinoside in the Treatment of Herpes Simplex Keratitis - H.D. Cavanagh, M.D., Ph.D. and Andre J. Nahmias, M.D.
- 1978 Fisons Corporation - (\$6,500) - Double-Blind Evaluation of Cromolyn Sodium 4% Ophthalmic Suspension in Ragweed Allergic Conjunctivitis: Pre-Season Use - H.D. Cavanagh, M.D., Ph.D.
- 1976 - 1983 Corneal Sciences, Inc.: (funded through individual charges to patients fitted with the lenses) - Therapeutic and Extended Wear CSI Soft Contact Lens - H.D. Cavanagh, M.D., Ph.D., Principal Investigator
- 1984 - 1985 Matching Construction/Renovation Grant (\$400,000) NEI (PI) to build the Yerkes Primate Eye Laboratory and Vivarium
- 1984 - 1986 Principal Investigator, NIH Training Grant, T32-#EY-07092: (\$811,804) - Multidisciplinary Training in Vision and Research (Emory University)
- 1986 Co-Principal Investigator, NIH Core Grant, Department of Ophthalmology, P30-#EY-06360: (\$726,878) (Emory University)
- 1987 - 1991 EYO-4361-04 - The Ocular Surface and Contact Lens. M.A. Lemp (PI), \$30,000 as Co-Investigator, Georgetown University Medical Center
- Aug 31, 1987 - Jul 31, 1992 EYO-7348, Co-Principal Investigator - Modulation of Corneal Curvature During Wound Healing (with James V. Jester, Ph.D.) (\$946,979), Georgetown University Medical Center
- 1987 - 1988 Co-Investigator, NIH, Eye Research Instrumentation Grant (\$91,776), Center for Sight, Georgetown University Medical Center
- 1988 - 1992 National Medical Monitor (Principal Investigator) U.S. National Clinical Trial for Extended Wear SF-P Polymer RGP Contact Lens. Menicon Corp., Nagoya, Japan (\$70,000 direct cost)

Research Grants (cont.):

Jan 1, 1990 - Dec 31, 1990	Principal Investigator, Clinical Trial, Treatment of Giant Papillary Conjunctivitis with Docromil (Fisons Corp.) (\$15,000 direct cost), Georgetown Univ. Medical Center
Sep 1, 1989 - Aug 31, 1992	Principal Investigator, Regulation of Corneal Epithelial RNA Polymerase Activity (\$357,201 direct cost) (EYO-4604)
Nov 1, 1989 - Oct 31, 1992	Principal Investigator, <u>In Vivo</u> Regulation of Corneal Endothelial Cell Function (\$614,526 direct cost) (EYO-8277)
Jan 1, 1990 - Dec 31, 1992 <b>One of the five members of the National Advisory Board to Sandoz who planned and executed this study (1990-92)</b>	Principal Investigator, High Risk Corneal Transplantation Study with Topical Cyclosporine A. (Sandoz Pharmaceuticals, Inc.) (\$150,000 direct cost), Georgetown University Medical Center
Aug 31, 1993 - Jul 31, 1996	Co-Investigator, Modulation of Corneal Curvature During Wound Healing, with James V. Jester, Ph.D., (P.I.) (\$452,188 direct cost)
Aug 31, 1994 - Jul 31, 1995	Principal Investigator, Role of O <sub>2</sub> Project to Improve Contact Lens Safety (Pearle Vision) (\$24,432 direct cost)
Oct 1, 1994 - Sept 30, 1997 <ul style="list-style-type: none"><li>• Renewed 1997 - 99</li><li>• Renewed 2000 - 03</li><li>• Resubmitted 2002 - 05</li></ul>	Principal Investigator, Role of O <sub>2</sub> in Contact Lens-Induced Bacterial Binding (\$334,978. direct cost) (EY10738-1)
Jan 1, 1995 - Dec 31, 1996 <ul style="list-style-type: none"><li>• Renewed April 1, 1997 - April 1, 1998 - current</li></ul>	Principal Investigator, Role of Oxygen in Contact-Lens Induced Binding of <i>Pseudomonas aeruginosa</i> to Corneal Epithelium (Bausch & Lomb, Inc.) (\$320,000 direct cost); renewal (\$197,659) direct cost
August 1, 1997 - current	Testing of Proprietary Company Polymers for Bacterial Binding and Effects of Lens Wear. Ciba Vision Corp (\$410,466)
Jan 1, 1995 - June 30, 1997 <ul style="list-style-type: none"><li>• Renewed May 6, 1997 - May 5, 2000</li></ul>	Co-investigator, Pathobiology of Ocular Irritancy: a new <i>in vivo</i> approach, with Dr. James V. Jester, Ph.D. (P.I.), Proctor and Gamble Corp., (\$408,000 total costs); renewal (\$337,437).

Research Grants (cont.):

Jan 1, 1997 - Current	Principal Investigator, Efficacy and Safety of Bromhexine in Patients with Keratoconjunctivitis Sicca, Pharmaceutical Discovery Corporation, (\$22,400 cost).
August 31, 1995 - July 31, 1996 <ul style="list-style-type: none"><li>• Renewed July 1997-98</li><li>• Renewed July 1999-2000 (alternate year renewal)</li><li>• Renewed 2002</li></ul>	Principal Investigator, Project to Improve Contact Lens Safety, Pearle Vision Foundation, (\$25,958 total cost); renewal (\$26,283).
December 1, 1996 - Nov. 30, 2001 <ul style="list-style-type: none"><li>• Renewed 2001/06</li></ul>	Co-Investigator, Regulation of Corneal Myofibroblast Transformation (NEI - EY07238) (Dr. James Jester, Principal Investigator) (\$750,000)
Sept 1, 1996 - July 31, 1999	Co-Investigator, Growth Regulation During Healing of Corneal Endothelium (NEI EY11235, \$463,528 direct costs) (Dr. Matt Petroll, Principal Investigator)
May 7, 1997 - current	Principal Investigator, A Multicenter Double-Masked Study of Safety/Efficacy of Cyclosporine A 0.05% in Patients with Keratoconjunctivitis Sicca. Allergan Inc., (\$15,000).
March 1, 1998 - Feb 28, 2000 (renewed 2000 - 2002)	Co-Investigator, International Program for Animal Alternatives, Johns Hopkins University, \$60,000 "Identification of Biochemical Markers of Surface Induced Ocular Irritation in an ex vivo Eye Model"
Jan. 2000 - Dec. 2002	The Chilton Foundation, Dallas, TX (\$75,000), Award for Research Excellence
Jan 1, 2000 - Dec. 31, 2003	Principal Investigator, Regulatory Role of Contact Lens Oxygen in Epithelial Homostasis. (NEI - \$545,396 direct costs)
Sept 1, 2000 - Aug 31, 2004	Co-Investigator, "Keratocyte Crystallins and Corneal Transparency." (NEI 13215-01, Dr. James Jester, PI) (\$600,000 direct costs)

**POST-DOCTORAL TRAINEES (1978 - Current)**

**Academic Research and Clinical Corneal Fellows**

Gabriel van Rij, M.D.	Professor and Chair Dept. Ophthalmology	Rotterdam University The Netherlands
Michael Insler, M.D.	Professor of Ophthalmology (Academic Full-Time)	Louisiana State University New Orleans, LA
R. Doyle Stulting, M.D., Ph.D.	Professor of Ophthalmology (Academic Full-Time)	Emory University Med. Ctr. Atlanta, GA
Bruce Bodner, M.D.	Clinical Professor of Ophthalmology	Med. Col. Hampden Roads Norfolk, Virginia
Mahipal Sachdev, M.D.	Assoc. Professor Director, Cornea Service (Academic Full-Time)	Prasad Eye Institute Delhi, India
Miriam Krishnan, M.D.	Director (retired) Delhi, India	Lady Hardynge Eye Hospital
Gary N. Holland, M.D.	David May II Professor of Ophthalmology (Academic Full-Time)	Jules Stein Eye Institute Los Angeles, CA
Jayne Weiss, M.D.	Professor of Ophthalmology (Academic Full-Time)	Kresge Eye Institute Detroit, MI
Michael Brown, M.D.	Assoc. Professor (Academic Full-Time)	University of Arkansas Little Rock, AR
David Andrews, M.D.	Clinical Assoc. Professor	Dalhousie University Halifax, Canada
Randy J. Epstein, M.D.	Clinical Professor	Rush Medical College Chicago, IL
Geoffrey J. Crawford, M.D.	Associate Professor (Academic Full-Time)	Lions Eye Institute, Perth Med. Sch., Perth, Australia
Charles Bouchard, M.D.	Professor of Ophthalmology (Academic Full-Time)	Loyola University Chicago, IL
Woodford Van Meter, M.D.	Associate Professor of Ophthalmology	University of Kentucky Lexington, KY
John A. Seedor, M.D.	Clin. Assoc. Professor of Ophthalmology	New York Eye and Ear New York, NY
Alan M. Kozarsky, M.D.	Clin. Asst. Professor of Ophthalmology	Emory University Atlanta, GA

Post-Doctoral Trainees (Academic) cont.

Karen D. Summers, M.D.	Clin. Asst. Professor of Ophthalmology	Emory University Atlanta, GA
Edward R. Rashid, M.D.	Clin. Asst. Professor of Ophthalmology	Univ. Texas Health Sci. Ctr. San Antonio, TX
Eric T. Vinokur, M.D.	Clin. Asst. Professor of Ophthalmology	Albert Einstein Col. of Med. New York, NY
Linda L. Burk, M.D.	Clin. Asst. Professor of Ophthalmology	UT Southwestern Med. Ctr. Dallas, TX
Neil G. Dreizen, M.D.	Clin. Instructor of Ophthalmology	Wills Eye Hospital Philadelphia, PA
Clifford A. Hendricks, M.D.	Clin. Assoc. Professor in Ophthalmology	Tulane University New Orleans, LA
Sylvia Hargrave, M.D.	Asst. Professor of Ophthalmology	UT Southwestern Med. Ctr. Dallas, TX
William Trattler, M.D.	Clin. Asst. Professor of Ophthalmology	Univ. of Miami School of Med. Miami, FL
Thomas Redens, M.D.	Asst. Professor of Ophthalmology (Academic Full-Time)	Louisiana State Univ. Sch. Med. Shreveport, LA
Christopher Ta, M.D.	Asst. Professor of Ophthalmology (Academic Full-Time)	Stanford University Stanford, CA
Vinod Mootha, M.D.	Asst. Professor of Ophthalmology (Academic Full-Time)	Univ. of New Mexico Albuquerque, NM
David Patel, M.D.	Asst. Professor of Ophthalmology (Academic Full-Time)	UT Medical Branch Galveston, TX

**Clinical Trainees (Corneal Fellows)**

Ozlem Abbasoglu, M.D.	Ankara, Turkey
Neil Bealka, M.D.	Temple, TX
Marguerite Bilbro, M.D.	Rockville, MD
Susan Blair, M.D.	Little Rock, AR
Albert Leveille Brooks, M.D.	Sacramento, CA

Clinical Trainees (Corneal Fellows) cont.

Benjamin Chacko, M.D.	U.S. Air Force, Wilford Hall Hospital, San Antonio, TX
Willie Chen, M.D.	Atlanta, GA
S. William Clark, III, M.D.	Waycross, GA
Harold W. Climenhaga, M.D.	Edmonton, Canada
Michael Cornell, M.D.	Aurora, CO
Ajay Dave, M.D.	New Delhi, India
Marilyn Eakins, M.D.	Manitoba, Canada
Adam Friend, M.D.	New York, New York
Dinora Garza, M.D.	Guadalajara, Mexico
Paul J. Glass, M.D.	Atlanta, GA
Richard Hector, M.D.	Bradenton, FL
Ziad Husseini, M.D.	Tripoli, Lebanon
Neil Kalin, M.D.	Wilmington, DE
Michael Lamensdorf, M.D.	Sarasota, FL
John McInnes, M.D.	Chicago, IL
Jaime Ruiz-Montenegro, M.D.	Morelia, Mexico
Phillip Newman, M.D.	Atlanta, GA
C.T. Pillai, M.D.	London, England
Jeffrey Reisman, M.D.	Morristown, NJ
Tom S. Tooma, M.D.	Colton, CA
Ruth Mattern, M.D., Ph.D.	Tuba City, AZ
Mitchell Vogel, M.D.	Virginia Beach, VA
Eric Johnston, M.D.	Chicago, IL
Fusun Gokmen, M.D.	Turkey
James Park, M.D., Ph.D.	Bethesda, MD
Sameh El Agha, M.D.	Dallas, TX
Binoy Jani, M.D.	Washington, DC
Joanne Shen, M.D.	Chicago, IL
Lars Hertzog, M.D.	Long Beach, CA
Rob Mason, M.D.	Springfield, IL
Michael Seward, M.D.	St. Joseph, MI
Michael Shaughnessy, M.D.	South Euclid, OH
Jose Vargas, M.D.	Dallas, TX
Erik Skoog, M.D.	Cleveland, OH
David Liang, M.D.	Washington, D.C.
Maria Rojas, M.D.	Austin, TX
David Mendelblatt, M.D.	St. Petersburg, FL

**Predoctoral Trainee**

Hideji Ichijima (1991-93)	PhD Candidate, Kyoto University (Biochemistry)(2000) Thesis work performed in United States
Patrick Ladage (2000-02)	PhD Awarded by College of Optometry, University of Houston, Texas. Thesis research done at UT Southwestern.
Danielle Robertson, O.D.	Current PhD Candidate at College of Optometry, University of Houston, Texas
Torben Möller-Pederson (1999-2001)	PhD Awarded at Aarhus University, Denmark Thesis research at UT Southwestern

**Research Fellows**

Masaki Imayasu, M.S. (1993-94)	Menicon Inc., Nagoya, Japan
Kazuoka Yamamoto (1998-2001)	Nagoya, Japan, PhD candidate, Osaka Univ. (2003)
Takashi Yamamoto (2001-2003)	Nagoya, Japan
Alex Yu, Ph.D. (1999-2000)	

**Postdoctoral Clinical Research Fellows**

Jin Ho Chang, M.D.	Seoul, Korea
Young Lec, M.D.	Seoul, Korea

**CURRENT TRAINEES**

- **Post-doctoral (basic Science)**
- Patrick Ladage, B.Opt, Ph.D,
- **Current Post-doctoral (Clinical Fellows)**
- Deniz Oral, M.D.
- Julie Madani-Becker, M.D.
- Shady Awwad, M.D.
- Russell Van Norman, M.D.
- Nancy Alvarez, M.D.
- Yen Dang, M.D.

**RESIDENCY TRAINING IN OPHTHALMOLOGY (1975 - CURRENT)**

- As director of residency training in ophthalmology at Harvard, 24 residents per year were supervised (1975-76)
- From 1976 - 86, 15 residents per year were supervised at Emory University. During this period, the program maintained 5 year accreditation without deficiency notation. Kevin C. Greenidge, M.D. (resident 1978-81) is Professor and Chair in Ophthalmology at New York University.
- From 1988-91, 15 residents were trained at Georgetown University; 1991 - current, 24 residents per year are trained at UT Southwestern Medical Center.

**PROFESSIONAL ACTIVITIES:**

**1978 - 1986 - As Chairman of the Committee to Institute the Emory Eye Center (CITE), planned, constructed, occupied and raised the funds to pay for the Emory Eye Center (10 million dollar construction, 2 1/2 million dollar equipment) (dedicated 1985 Prof. Arnall Patz, M.D. (Hopkins) Hon. ScD recipient) with an additional project (\$750,000) for the Yerkes Primate Ocular**

Research Laboratory and Vivarium dedicated by Torsten Wiesel in 1985. During this period the Department of Ophthalmology expanded from three faculty to thirty-seven, from less than twenty employees to more than two hundred and fifty, and with an annual operating budget expansion from less than \$300,000 to 11 million dollars. The annual direct cost NIH research budget expanded from less than \$100,000 to 3.8 million, with thirty-one NIH grants and an additional thirty-four program project grants (3rd ranked of all Eye Institutes in the U.S. by research funding [1984, 1985, 1986] and first ranked Department of the Emory University School of Medicine [1983-1986]). During 1978-86, the Department endowment increased from 4 million to 10 million dollars, with a further 11 million dollars of outstanding pledges and estate commitments, most of which has since been received.

#### CONTINUING MEDICAL EDUCATION PRESENTATIONS:

Presentations given before 1980 not recorded.

January 10-13, 1980	Speaker, Mid-Winter National Meeting, Contact Lens Association of Ophthalmologists
March 9-15, 1980	Speaker, International Glaucoma Conference, IV American Society for Contemporary Ophthalmology
March 17-21, 1980	Lecturer, International Meeting on Human Herpes Viruses, Emory University School of Medicine
March 28-30, 1980	Faculty, Orbital Dissection Course, Emory University School of Medicine
April 24-26, 1980	Visiting Professor, 32nd Annual Wills Eye Conference, Wills Ex-Resident Society
April 28-29, 1980 Minneapolis, Minnesota	Visiting Professor, "Current Ophthalmological Techniques," University of Minnesota
May 1-4, 1980 Sea Island, Georgia	Annual Meeting, Georgia Society of Ophthalmology
May 5-9, 1980	Scientific Speaker, Annual Meeting, Association for Research in Vision and Ophthalmology
June 7-8, 1980	Speaker, "Continuous Wear Soft Contact Lens," Stanford University School of Medicine
August 14-17, 1980 Rochester, New York	Speaker, "Correction of Surgical Aphakia," Rochester Eye Institute, Rochester Academy of Medicine

Continuing Medical Education Presentations (cont.)

September 12-13, 1980	Visiting Professor, "Current Topics in Ophthalmology," Medical College of Georgia
September 27-28, 1980	Speaker, "Anterior Segment Disease and Surgery," Jacksonville Ophthalmology Society
October 20-24, 1980	Speaker and Presiding Officer, Ophthalmic Symposium, American College of Surgeons Annual Clinical Congress

Continuing Medical Education Presentations (cont.)

November 21-24, 1980	Speaker and Presiding Officer, Ophthalmology Symposium, Medical Association of Georgia Scientific Assembly
December 1-2, 1980	Speaker, "Pediatric Ophthalmology and Strabismus: Update," Emory University School of Medicine
December 3, 1980 Atlanta, Georgia	Speaker, Annual Residents/Alumni Scientific Meeting, Emory University School of Medicine
February 2-3, 1981 New Orleans, Louisiana	Speaker and Chairman, Continuing Education Committee, American University Professors of Ophthalmology Annual Meeting
February 19-22, 1981 New Orleans, Louisiana	Speaker, "The Anterior Segment," Eye Foundation of America, Annual Meeting
February 28-March 1, 1981 Chattanooga, Tennessee	Speaker, Saturday Seminar, Chattanooga Ophthalmological Society
March 13, 1981 Providence, Rhode Island	Visiting Professor, Topics in External Disease, Rhode Island Hospital, Department of Ophthalmology
March 18-21, 1981 Orlando, Florida	Speaker, National Meeting, American Society of Contemporary Ophthalmology
April 22-24, 1981 Los Angeles, California	Speaker, Jules Stein Post-Graduate Seminar, Jules Stein Eye Institute
April 26, 1981 Atlanta, Georgia	Speaker, National Meeting, International Eye Congress
April 27-28, 1981 Sarasota, Florida	Speaker, National Meeting, Association for Research in Vision and Ophthalmology
April 30-May 3, 1981 Sea Island, Georgia	Speaker and Presiding Officer, The Cloister Meeting, Georgia Society of Ophthalmology
May 15-31, 1981 China, Beijing, Shanghai, Nanking, Soochow	Visiting Professor, China Exchange Feasibility Committee (Invited by Chinese Government)

Continuing Medical Education Presentations (cont.)

September 18-19, 1981 Boston, Massachusetts	Speaker, 12th Corneal Research Conference
October 26, 1981 Atlanta, Georgia	Speaker, Atlanta Ophthalmological Society
October 31-November 6, 1981 Atlanta, Georgia	Speaker, International Meeting, American Academy of Ophthalmology
November 4, 1981 Miami, Florida	Speaker, III Curso Interamericano Meeting, Bascom Palmer Eye Institute
November 21, 1981 Atlanta, Georgia	Speaker, Georgia Society of Ophthalmology, Omni Hotel
January 28-31, 1982 Las Vegas, Nevada	Speaker, Mid-Winter National Meeting, Contact Lens Association of Ophthalmologists
October 25, 29, 1982 Boston, Massachusetts	Chairman, National Meeting of The Castroviejo Society
October 30-November 5, 1982 San Francisco, California	Speaker, International Meeting of The American Academy of Ophthalmology and the 24th World Congress of Ophthalmology
February 16, 1983 New Orleans, Louisiana	Speaker and Honored Guest, Meeting of The New Orleans Academy of Ophthalmology
March 25-27, 1983 Chattanooga, Tennessee	Speaker, Corneal Symposium, University of Tennessee
April 14-16, 1983 Philadelphia, Pennsylvania	Speaker, Alumni Meeting of Scheie Eye Institute, the University of Pennsylvania
May 2-8, 1983 Sarasota, FL	Speaker, Annual Meeting of The Association for Research in Vision and Ophthalmology
May 6-7, 1983 Toronto, Canada	Speaker, 4th Biennial Contact and Intraocular Lens Course, Toronto University
May 9-12, 1984 Florence, Italy	Speaker, 3rd International Congress on Cataract Surgery and Visual Rehabilitation

Continuing Medical Education Presentations (cont.)

December 13-15, 1984 Boston, Massachusetts	Invited Guest Lecturer, New England Ophthalmological Society
February 14-16, 1985 Phoenix, Arizona	Speaker, 11th Annual Frontiers in Ophthalmology
March 16-18, 1985 Ann Arbor, Michigan	Speaker, W.K. Kellogg Eye Center Dedication Symposium, University of Michigan
March 28-29, 1985 San Juan, Puerto Rico	Speaker, Annual Meeting of the Castroviejo Society
May 2-5, 1985 Sea Island, Georgia	Speaker, Annual Meeting of the Georgia Society of Ophthalmology
May 6-10, 1985 Sarasota, Florida	Speaker, Association for Research in Vision and Ophthalmology
June 5-7, 1985 Los Angeles, California	Speaker, Estelle Doheny Eye Foundation, Hospital Dedication Meeting, University of Southern California
June 13-14, 1985 Washington, D.C.	Speaker, National Eye Trauma Symposium National Eye Trauma Network
June 29-July 3, 1985 San Diego, California	Speaker, Pacific Coast Oto-Ophthalmological Society
February 25, 1986 Phoenix, Arizona	Speaker, Association of University Professors of Ophthalmology
March 8-11, 1986 New Orleans, Louisiana	Speaker and Honored Guest, New Orleans Academy of Ophthalmology Annual Symposium
April 28-May 2, 1986 Sarasota, Florida	Speaker, Annual Meeting of The Association for Research in Vision and Ophthalmology
August 18-21, 1986 Tunis-Carthage, Tunisia	Invited Visiting Professor and Lecturer, Tunis-Carthage Eye Institute, Tunisia (Invited by Tunisian Government)
December 12, 1986 New York, New York	Visiting Professor and Lecturer, The New York Eye and Ear Infirmary

Continuing Medical Education Presentations (cont.)

January 15-18, 1987 Las Vegas, Nevada	Program Speaker, Annual Meeting, Contact Lens Association of Ophthalmologists
January 31, 1987 Nassau, The Bahamas	Program Speaker, Fison's Symposium on Advances in Ocular Immunology
April 15, 1987 Washington, D.C.	Lecturer, Department of Ophthalmology, Howard University
April 27-March 1, 1987 Washington, D.C.	Program Speaker and Educational Coordinator, World Congress on the Cornea III
May 4-8, 1987 Sarasota, Florida	Program Speaker, Annual Meeting, Association for Research in Vision and Ophthalmology
May 18, 1987 Pittsburgh, Pennsylvania	Program Speaker, Dedication, Scientific Symposium for the University of Pittsburgh Eye Center
June 12, 1987 Rochester, New York	14th Waldert Lecturer, University of Rochester
June 13, 1987 Washington, D.C.	Lecturer, Alumni Post-Graduate Course in Ophthalmology, Georgetown University School of Medicine
September 10-12, 1987 Boston, Massachusetts	Program Speaker, 14th Biennial Corneal Research Conference, Massachusetts Eye & Ear Infirmary
October 1-3, 1987 Grenoble, France	Invited International Guest Lecturer, Annual Meeting, The European Contact Lens Society of Ophthalmologists
November 12-25, 1987 Japan and Korea	Bausch & Lomb International Visiting Professor and Lecturer, Universities of Tokyo, Osaka, Kyoto, Sapporo (Japan) and National University and Catholic Universities in Seoul, Korea
January 7, 1988 Washington, D.C.	Lecturer, Georgetown University School of Medicine in Course, Faces of Ophthalmology
January 13-16, 1988 Las Vegas, Nevada	Program Speaker, Annual Meeting, Contact Lens Association of Ophthalmologists

Continuing Medical Education Presentations (cont.)

February 1-5, 1988 Kauai, Hawaii	Program Speaker, Mid-Winter Meeting, Castroviejo Society of Corneal Surgeons
February 25, 1988 Washington, D.C.	Lecturer, Department of Ophthalmology Howard University
May 2-6, 1988 Sarasota, Florida	Program Speaker, Annual Meeting, Association of Research and Vision in Ophthalmology
May 20, 1988 Washington, D.C.	Invited Speaker, Symposium on Advances in Ocular Immunology, Georgetown University Medical Center
June 9-10, 1988 Washington, D.C.	Co-Director, Advanced Course in Anterior Segment Microsurgery, Center for Sight, Georgetown University Medical Center
June 11, 1988 Washington, D.C.	Speaker, Annual Alumni Post-Graduate Course, Center for Sight, Georgetown University Medical Center
June 25, 1988 Dallas, Texas	Participant, Workshop for National Acanthamoeba Clinical Treatment Trial (Bausch & Lomb)
August 17, 1988 Copenhagen, Denmark	Invited Speaker, European Council on Cataract, Implant and Corneal Surgery, Annual Meeting
September 3, 1988 Kauai, Hawaii	Invited Speaker, Society for International Contact Lens Research
September 7, 1988 San Francisco, California	Invited Speaker, The International Society for Eye Research
September 22, 1988 West Germany	Invited Paper Presentation, The Hamburg, International Society of Optical Engineers and Physicists (SPIE)
September 27, 1988 Washington, D.C.	Lecturer, Post-Graduate Course in Ocular Trauma, Department of Ophthalmology, Georgetown University Medical Center
October 10, 1988 Las Vegas, Nevada	Program Participant, Annual Meeting, American Academy of Ophthalmology; Castroviejo Society Symposium on Corneal Transplantation

Continuing Medical Education Presentations (cont.)

October 21, 1988 The Greenbrier, West Virginia	Speaker and Co-Director, Post-Graduate Education Course: "Outpatient Ophthalmology"
November 3-4, 1988 Washington, D.C.	Invited Moderator and Participant, Workshop on Accommodating Advances in Ophthalmology in a Cost Containment Environment, Institute for Health Policy Analysis, Georgetown University
January 13, 1989 New Orleans, Louisiana	The 27th Conrad Berens Lecturer, Annual Meeting, Contact Lens Association of Ophthalmology (USA)
March 15-17, 1989 Amsterdam, The Netherlands	Invited Speaker, 1st International Conference on Confocal Microscopy (Academisch Medisch Centrum)
March 25, 1989 Washington, D.C.	Speaker and Organizer, Spring Clinical Symposium, Center for Sight, Georgetown University Medical Center
April 30-May 5, 1989 Sarasota, Florida	Scientific Program Participant, Annual Meeting, Association for Research in Vision and Ophthalmology
May 18, 1989 Washington, D.C.	Invited Speaker, Washington Ophthalmological Society
June 10, 1989 Dallas, Texas	Invited Speaker and Visiting Professor, Department of Ophthalmology, Dallas Ophthalmological Society, University of Texas at Dallas
August 5-6, 1989 Keystone, Colorado	Co-Director, A National Symposium on Contact Lenses: "Challenges, Controversies, and Opportunities." (Sponsored by Health Learning Systems, Inc.)
September 21-22, 1989 Boston, Massachusetts	Invited Speaker and Program Participant, 15th Cornea Research Conference, Massachusetts Eye & Ear Infirmary, Harvard Medical School

Continuing Medical Education Presentations (cont.)

September 23, 1989 St. Louis, Missouri	Invited Speaker, Post-Graduate Course in Contact Lens and Corneal Disease, St. Louis University School of Medicine, Department of Ophthalmology
October 13-14, 1989 Washington, D.C.	Speaker and Course Organizer: "Ophthalmology Update (1989)," Center for Sight, Georgetown University Medical Center
October 28-30, 1989	Speaker and Participant, American Academy of Ophthalmology Annual Meeting and Combined Castroviejo Corneal Society Symposium
November 4-20, 1989 Washington, D.C.	Program Speaker and Organizer, Fall Clinical Symposium, Center for Sight, Georgetown University Medical Center
November 18-20, 1989 Osaka and Tokyo, Japan	Invited Speaker, 2nd International CIBA Symposium, Tokyo and Osaka Universities
December 13, 1989	Invited Lecturer and Visiting Professor, Department of Ophthalmology, St. Vincents Hospital, New York Medical College
January 10-13, 1990 Las Vegas, Nevada	Scientific Program Participant, Annual Scientific Meeting, Contact Lens Association of Ophthalmologists
February 10, 1990 Baltimore, Maryland	Lecturer and Visiting Professor, Sinai Hospital, Department of Ophthalmology
March 24, 1990 Washington, D.C.	Co-Organizer and Program Participant, Spring Clinical Symposium, "Sjögren's Syndrome," Center for Sight, Georgetown University Medical Center
April 17-20, 1990 Crystal City, Virginia	Scientific Program Participant and National Organizing Committee Member, Scanning Microscopy 1990 Annual Symposium
April 29-May 4, 1990 Sarasota, Florida	Scientific Program Participant and Session Moderator (Cornea), Annual Meeting, Association of Research in Vision and Ophthalmologists

Continuing Medical Education Presentations (cont.)

May 26, 1990 Orlando, Florida	Invited Scientific Program Participant (Cornea), Pan American Association of Ophthalmologists
June 1-2, 1990 St. Louis, Missouri	Invited Program Speaker and Course Participant, 3rd Annual Cornea-Contact Lens Course, Department of Ophthalmology, Washington University School of Medicine
June 21-22, 1990 Norfolk, Virginia	Invited Guest Speaker, Virginia Society of Ophthalmology, Annual State Scientific Meeting
June 30, 1990 Seattle, Washington	Invited Program participant, Eye Bank Association of America, Annual National Scientific Meeting
July 2-6, 1990 London, England	Scientific Program Participant, combined meetings of The Royal Microscopy Society and the 2nd International Conference on Confocal Microscopy
July 12-21, 1990 Tokyo, Nagoya, Osaka Japan	Distinguished Visiting Professor and Lecturer, Universities of Tokyo, Nagoya and Osaka, Japan (Sponsored by Bausch & Lomb, Inc.)
July 29-August 4, 1990 Helsinki, Finland	Invited Scientific Program Participant and Co-Organizer, Session on Confocal Microscopy, 10th International Conference, International Society for Eye Research
August 30-September 3, 1990 Monaco, France	Invited Plenary Speaker, International Society for Contact Lens Research
October 11, 1990 Washington, DC	Visiting Lecturer, Howard University
October 20, 1990 Williamsburg, Virginia	Invited Speaker, The Contact Lens Society, National Annual Scientific Meeting
October 28-November 1, 1990 Atlanta, Georgia	Instructional Program Participant, Annual Scientific Meeting, American Academy of Ophthalmology and Castroviejo Corneal Society
January 12, 1991 Berkeley, California	Invited Visiting Professor, the Morton B. Sarver Lectures, University of California at Berkeley

Continuing Medical Education Presentations (cont.)

April 10-12, 1991 Atlantic City, New Jersey	Chairman of the Organizing Committee and Speaker, the 3rd International Congress on Confocal Microscopy and (4th) 3-Dimensional Reconstruction (Scanning Microscopy, RMS)
April 28-May 3, 1991 Sarasota, Florida	Scientific Program Participant, Annual National Scientific Meeting, Association for Research in Vision and Ophthalmology
May 11, 1991 Fairfax, Virginia	Scientific Program Speaker, The Virginia Ophthalmological Society, Annual State Meeting
May 16, 1991 Louisville, Kentucky,	Visiting Professor and Lecturer, The Department of Ophthalmology and the Louisville Ophthalmological Society
November 23-24, 1991 Nagoya, Japan	40th Anniversary International Contact Lens Symposium, Menicon, Inc., Invited keynote speaker and scientific participant
November 9, 1991 Dallas, Texas	Organizer and Scientific Program Participant, CLAO regional Contact Lens update at U.T. Southwestern Medical Center
December 13, 1991 Lubbock, Texas	Visiting Professor and Lecturer, Department of Ophthalmology, U.T. at Lubbock
January 15-18, 1992 Las Vegas, Nevada	Scientific Program participant, Annual Scientific Meeting, Contact Lens Association of Ophthalmologists
February 21, 1992 San Antonio, Texas	Visiting Professor and Lecturer, Brooke Army Medical Center and Department of Ophthalmology, U.T. San Antonio
March 9-11, 1992 Amsterdam, Holland	Member Organizing Committee and Scientific Program Participant, 4th International Congress on Confocal Microscopy

Continuing Medical Education Presentations (cont.)

April 20, 1992 Newark, New Jersey	Visiting Professor and Lecturer, Dept of Ophthalmology, New Jersey College of Medicine
May 2-9, 1992 Sarasota, Florida	Scientific Program Participant, Annual National Meeting, Association for Research in Vision and Ophthalmology
June 20, 1992 Lake Tahoe, Nevada	Scientific Program Participant, Annual National Meeting, Eye Bank Association of America
June 26-27, 1992 San Antonio, Texas	Invited Program Speaker, Symposium on Biomedical Imaging, U.T.
Nov 8-12, 1992 Dallas, Texas	Scientific Program participant, the American Academy of Ophthalmology Annual Meeting
Dec 5, 1992 Chicago, Illinois	Invited Keynote speaker, Regional Contact Lens Course, Contact Lens Association of Ophthalmologists, Rush Medical College
Jan 13-16, 1993 Las Vegas, Nevada	Scientific Program Participant, Annual Scientific Meeting, Contact Lens Association of Ophthalmologists.
March 5, 1993 Iowa City, Iowa	Visiting Professor, Department of Ophthalmology, University of Iowa School of Medicine
April 21, 1993 Dallas, Texas	Invited Program Speaker, Transplant Services, University of Texas Southwestern Medical Center
May 1-7, 1993 Sarasota, Florida	Scientific Program Participant, Annual National Meeting, Association for Research in Vision and Ophthalmology
May 15, 1993 Houston, Texas	Scientific Program Participant Annual Meeting, Texas Ophthalmological Association
June 14, 1993 Dallas, Texas	Scientific Program Participant, Continuing Education for Primary Care Physicians, U.T. Southwestern Medical Center

Continuing Medical Education Presentations (cont.)

June 16-19, 1993 San Diego, California	Scientific Program Participant, Annual National Meeting, Eye Bank Association of America
October 5, 1993 Killeen, Texas	Continuing Medical Education Program Invited Program Speaker, UT Southwestern
October 28-31, 1993 New Orleans, Louisiana	Invited Scientific Program Participant, Southern Medical Association's 87th Annual Scientific Assembly
Nov 10-13, 1993 Chicago, Illinois	Invited Scientific Program Participant, Eye Bank Association of America
Nov 13-18, 1993 Chicago, Illinois	Invited Scientific Program Participant, Annual National Meeting American Academy of Ophthalmology
Jan 12-15, 1994 Las Vegas, Nevada	Invited Scientific Program Participant, Annual National Meeting, Contact Lens Society of Ophthalmologists
Jan 29-30, 1994 Galveston, Texas	Invited Program Speaker International Keratorefractive Surgery, Excimer, and Holmium Symposium and Workshop, U. Texas Medical School
March 17-18, 1994 Shreveport, Louisiana	Invited Keynote Speaker 1994 Resident Alumni Day, Louisiana State University
May 1-7, 1994 Sarasota, Florida	Scientific Program Participant, Annual National Meeting, Association for Research in Vision and Ophthalmology
May 13-14, 1994 Austin, Texas	Invited Program Speaker Texas Medical Association Meeting/ Texas Ophthalmology Association Meeting
Sept 14-17, 1994 Alicante, Spain	Invited Program Speaker European Contact Lens Society of Ophthalmologists
Oct 1-2, 1994 Dallas, Texas	Invited Program Speaker Sjögren's Syndrome Symposium

Continuing Medical Education Presentations (cont.)

Oct 14-17, 1994 Lisbon, Portugal	Invited Program Speaker Bausch & Lomb European Symposium on Contact Lenses
Oct 26-29, 1994 San Francisco, CA	Scientific Program Participant The Eye Bank Association of America (National Meeting)
Oct 30-Nov 3, 1994 San Francisco, CA	Scientific Program Participant Castroviejo Corneal Society (National Meeting)
December 2-3, 1994 Houston, Texas	Invited Scientific Program Speaker The University of Texas College of Optometry at Houston
December 10-14, 1994 San Francisco, CA	Scientific Program Participant The Society for Cell Biology (National Meeting)
Jan 11-14, 1995 Las Vegas, Nevada	Scientific Program Participant The Contact Lens Association of Ophthalmologists (National Meeting)
Feb 15, 1995 Winston-Salem, NC	Visiting Professor and Lecturer, Bowman-Gray School of Medicine of Wake Forest University (Ophthalmology)
May 14-19, 1995 Fort Lauderdale, FL	Scientific Program Participant Association for Research in Vision and Ophthalmology Annual National Research Meeting
June 14-17, 1995 Hilton Head, South Carolina	Scientific Program Participant, Annual National Meeting, Eye Bank Association of America
July 11, 1995 Waco, TX	Scientific Program Participant, Family Practice Lecture
September 10-15, 1995 Jackson Hole, Wyoming	Scientific Program Participant, Biennial Meeting, International Society of Contact Lens Research
September 15-16, 1995 Lake Geneva, WI	Scientific Program Participant, Wisconsin Upper Michigan Society of Ophthalmology Meeting (invited lecturer)

Continuing Medical Education Presentations (cont.)

September 23, 1995 Dallas, TX	Contact Lens Association of America, Course Director, Regional Basic Contact Lens Seminar
October 7-10, 1995 Orlando, FL	Invited Scientific Program Participant, Research to Prevent Blindness Science Writers Symposium
October 26-28, 1995 Atlanta, GA	Scientific Program Participant, Annual National Meeting, Eye Bank Association of America
December 8-9, 1995 Houston, TX	Invited Plenary Program Lecturer, The University of Texas College of Optometry at Houston
December 10-13, 1995 Washington, DC	Scientific Program Participant, The Society for Cell Biology (National Meeting)
February 16, 1996 Dallas, TX	The Texas Osteopathic Lecture, Texas State Osteopathic Meeting
March 1-2, 1996 San Antonio, TX	The 9th Bajandas Lecture, University of Texas Health Science Center at San Antonio
April 15-20, 1996 Orlando, FL	Invited Speaker, IV World Congress on the Cornea
May 10-11, 1996 San Antonio, TX	Invited Speaker, Texas Medical Association, Annual Session
May 14, 1996 Waco, TX	Scientific Program Participant, Family Practice Lecture
June 25-29, 1996 Santa Barbara, CA	Invited Speaker and Program Participant, Annual National Scientific Meeting, Eye Bank Association of America
October 17-19, 1996 Seville, Spain	Scientific Program Participant, Bausch & Lomb Symposium on Contact Lenses
October 24-27, 1996 Chicago, Illinois	Scientific Program Participant, (1) Eye Bank Association of America; (2) Castroviejo Cornea Society, (3) American Academy of Ophthalmology
December 6-12, 1996 San Francisco, CA	Scientific Program Participant, The Society for Cell Biology National Meeting

Continuing Medical Education Presentations (cont.)

February 20-33, 1997 El Paso, TX	Eye Bank Association of Texas Annual Meeting and Corneal Symposium (Invited Speaker)
March 22-31, 1997 Paris, France	5th Symposium Menicon - Europe (Invited Speaker)
May 16-17, 1997 Houston, TX	Texas Medical Association 1997 Annual Session (Invited Speaker)
June 12-15, 1997 Fort Worth, TX	Texas Osteopathic Medical Association 98th Annual Convention & Scientific Seminar (Invited Speaker)
June 17-22, 1997 Palm Beach, FL	Eye Bank Association of America Annual Meeting (Invited Speaker)
September 9, 1997 Dayton, Ohio	Dayton Ophthalmology Society (Invited Speaker)
September 21-24, 1997 Los Angeles, CA	Research to Prevent Blindness Science Writers Seminar (Invited Speaker)
October 22-25, 1997 San Francisco, CA	Eye Bank Association of America Educational Conference (Invited Speaker)
October 27, 1997 San Francisco, CA	The Whitney Sampson Lecture, American Academy of Ophthalmology, combined with Contact Lens Association of Ophthalmologists
October 28, 1997 San Francisco, CA	Castroviejo Corneal Society Annual Scientific Meeting Scientific Presenter
November 5-6, 1997 New Orleans, LA	9th Symposium on the Material Science and Chemistry of Contact Lenses (Invited Speaker)
November 15-20, 1997 London, England	George Nissel Memorial Lecture British Contact Lens Society

Continuing Medical Education Presentations (cont.)

November 15-20, 1997 Edinburgh, Scotland	George Nissel Memorial lecture Scottish Contact Lens Society
December 5-6, 1997 Toronto, Canada	Update on Cornea and Anterior Segment Corneal, Refractive and Cataract Surgery "Walter Wright Day" (Invited Speaker)
December 14-15, 1997 San Antonio, TX	American Academy of Optometry Annual Meeting (Invited Plenary Speaker)
January 28-19, 1998 Las Vegas, NV	Contact Lens Association of Ophthalmologists Annual Scientific Meeting (Invited Speaker)
February 11, 1998 Washington, D.C.	Food and Drug Administration, Ophthalmic Devices Panel (Invited Guest Speaker)
February 26-28, 1998 Dallas, TX	Eye Bank Association of Texas Annual Meeting and Corneal Symposium (Invited Speaker)
March 15, 1998 Washington, D.C.	Special Call Meeting, Eye Bank Association Clinical Participant
April 2-3, 1998 Baltimore, MD	Invited Speaker, The Johns Hopkins Center for Alternatives to Animal Testing, Special Workshop on Recovery Models
April 5-6, 1998 Rochester, NY	Invited Speaker, Bausch & Lomb Corporation Seminar
April 9-10, 1998 St. Louis, MO	A Celebration of Eye Research, Washington University School of Medicine Symposium (Invited Plenary Speaker)
April 16, 1998 Dallas, TX	Turning Tragedy into Triumph, The 14th Annual Will a Miracle Conference (Invited Speaker) Baylor Hospital, Dallas, Texas
May 8, 1998 Dallas, TX	1998 Texas Optometric Association Annual Meeting (Invited Plenary Lecturer)
May 10-15, 1998 Ft. Lauderdale, FL	Scientific Program Participant, National Annual Meeting, Association for Research in Vision and Ophthalmology

Continuing Medical Education Presentations (cont.)

June 12-13, 1998 Maywood, IL	The 21st Annual McDonald Lecture, Loyola University School of Medicine, Maywood, Illinois
June 23-25, 1998 Amsterdam, The Netherlands	The XXVIIIth International Congress of Ophthalmology (Invited Plenary Speaker)
September 27, 1998 Dallas, TX	Scientific Program Participant Continuing Education for Optometrists
October 12, 1998 Houston, TX	University of Texas College of Optometry, (Invited Speaker)
October 15-16, 1998 Fullerton, CA	Southern California College of Optometry Alumni Reunion (Invited Speaker)
October 17, 1998 Dallas, TX	Scientific Program Participant Continuing Education for Primary Care Physicians
November 5-7, 1998 New Orleans, LA	Eye Bank Association of America, Castroviejo Society and American Academy of Ophthalmology Annual Meeting Invited Scientific Program Participant and Course Instructor.
November 11, 1998 Dallas, TX	Invited Speaker, Southwest Medical Foundation, Clinical Perspectives
November 25-30, 1998 Singapore	3rd Singapore National Eye Centre International Meeting and 11th International Meeting on Cataract, Implant Microsurgery and Refractive Surgery, Invited Speaker
November 25-30, 1998 Singapore	Cornea, Contact Lenses and Contemporary Vision Care; The 15th Annual Symposium (Invited Plenary Speaker)
December 4-6, 1998 Houston, TX	University of Houston College of Optometry Invited Speaker (Honor Award for Distinguished Research in Contact Lenses)
December 12, 1998 Dallas, TX	Special Symposium on Sjogrens Syndrome co-sponsored by Baylor College of Dentistry and the National Sjogrens Foundation (Co-organizer and Speaker)

Continuing Medical Education Presentations (cont.)

December 15, 1998 Atlanta, GA	Biomedical Engineering Symposium, Atlanta, Poster Presentation
April 8-16, 1999 Heidelberg, Germany	International Leica Confocal User Meeting and International Congress on Confocal Microscopy
April 18-21, 1999 Barcelona, Spain	Future in Sight, Invited Guest Speaker CIBA Vision Symposium
May 8-14, 1998 Ft. Lauderdale, FL	Scientific Program Participant, National Annual Meeting, Association for Research in Vision and Ophthalmology
June 23-26, 1999 Newport Beach, CA	Eye Bank Association of America, Annual Meeting
September 23, 1999 Dallas, TX	Partners in Retina Foundation of the Southwest (Invited Guest Speaker)
September 26, 1999 Dallas, TX	Presenter, Ophthalmology Pearls for Optometrists, The UT Southwestern Medical Center
September 28, 1999 Miami, FL	Presenter, Research to Prevent Blindness Science Writers' Symposium
October 9, 1999 Dallas, TX	Co-Presenter, VISX Certification Course, Zale Lipshy University Hospital
October 20-23, 1999 Orlando, FL	Scientific Program Participant, Eye Bank Association of America Annual Meeting
October 20-23, 1999 Orlando, FL	Scientific Program Participant, American Academy of Ophthalmology (Refractive Surgery) Annual Meeting
October 20-23, 1999 Orlando, FL	Scientific Program Participant, The Castroviejo Corneal Society Annual Meeting
November 7, 1999 Dallas, TX	Co-Presenter, Chiron LASIK course, Zale Lipshy University Hospital
December 4, 1999 Dallas, TX	Program Participant, Eye Pearls for Primary Care Physicians

Continuing Medical Education Presentations (cont.)

December 11, 1999 Dallas, TX	Program Director, CLAO Regional Contact Lens Course
January 24-26, 2000 Las Vegas, Nevada	Scientific Program Participant, CLAO National Meeting
April 30-May 3, 2000 Ft. Lauderdale, FL	Scientific Program Participant, National Annual Meeting, Association for Research in Vision and Ophthalmology
June 21-25, 2000 Washington, DC	Eye Bank Association of America, Annual Meeting
October 22-27, 2000 Santa Fe, New Mexico	Invited Special Symposium Program Speaker, International Society for Eye Research
October 28, 2000 Dallas, Texas	The R. Townley Paton Award Lecture in conjunction with the Annual National Joint Scientific Meeting of the Eye Bank Association of America and the Castroviejo Corneal Society
October 31, 2000 Dallas, Texas	Invited Scientific Program Participant, The American Academy of Ophthalmology Joint Meeting with the Castroviejo Corneal Society
Nov. 15-18, 2000 Maui, Hawaii	Invited Keynote Speaker and Founding Member, The Ocular Surface and Tear Film Society, International Scientific Meeting
December 9, 2000 Orlando, Florida	Invited Plenary Scientific Program Speaker, The American Academy of Optometry Annual Meeting, Joint Session with the Contact Lens Section (AAO)
April 29 - May 4, 2001 Ft. Lauderdale, FL	Scientific Program Participant, The Associate for Research in Vision and Ophthalmology
June 1-3, 2001 Brighton, England (UK)	Invited Keynote Speaker, The British Contact Lens Society
July 19-20, 2001 New Orleans, Louisiana	Invited speaker, 12 <sup>th</sup> Symposium on the Material Science and Chemistry of Contact Lenses
August 11, 2001 Dallas, TX	Program Participant, 4 <sup>th</sup> Annual Ophthalmology Review for the Primary Care Physician

Continuing Medical Education Presentations (cont.)

September 9-14, 2001 Sun Valley, Idaho	Invited speaker, International Society for Contact Lens Research
October 14, 2001 Dallas, TX	Program Participant, Anterior Segment Review for Optometrists
November 9-11, 2001 New Orleans, LA	Scientific Program Participant, Eye Bank Association of American
November 14-20, 2001 Nagoya, Japan	Invited speaker, Menicon 50 <sup>th</sup> Anniversary International Symposium/Tokyo Association of Ophthalmologist
December 1, 2001 Dallas, TX	Co-Presenter, Excellence in LASIK course, Zale Lipshy University Hospital
December 2, 2001 Houston, TX	Invited speaker, Cornea, Contact Lens & Contemporary Vision Care: the 18 <sup>th</sup> Annual Symposium
December 8-10, 2001 Philadelphia, PA	Invited Guest of Honor, American Academy of Optometry
January 6-8, 2002 Atlanta, Georgia	Invited speaker, CibaVision Night & Day Clinical Symposium
January 29, 2002 Anaheim, CA	Scientific Program Participant, Contact Lens Association of Ophthalmologist Annual Scientific meeting
March 2, 2002 Dallas, TX	Co-Presenter, Excellence in LASIK course, Zale Lipshy University Hospital
April 19-20, 2002 Dallas, TX	Invited speaker, Texas Ophthalmological Association Annual meeting
May 4-10, 2002 Ft. Lauderdale, FL	Scientific Program Participant, The Associate for Research in Vision and Ophthalmology
May 30-June 1, 2002 Philadelphia, Pennsylvania	Invited Scientific Program Participant (speaker), Joint meeting of the Contact Lens Association of Ophthalmologists/American Society of Cataract and Refractive Surgery
June 9-13, 2002 Salzburg, Austria	Invited Plenary Speaker, 3 <sup>rd</sup> International Conference on Ocular Infections

Continuing Medical Education Presentations (cont.)

June 17-18, 2002 Quebec City, Canada	Invited Plenary Speaker, Night & Day Continuous Wear Summit - Ciba
August 8-9, 2002 Toronto, Canada	Invited Plenary Speaker, 1 <sup>st</sup> International Global Orthokeratology Symposium
August 15-18, 2002 San Diego, California	Scientific Program participant, Continuous Wear Contact Lenses for the New Millennium; A World Summit Symposium
September 22-24, 2002 Washington, D.C.	Invited Participant, Research to Prevent Blindness Science Writers' Symposium
September 28, 2002 Dallas, Texas	Program participant, 5 <sup>th</sup> Annual Ophthalmology Review for the Primary Care Physician
December 14-15, 2002 San Diego, California	Invited speaker, American Academy of Optometry annual scientific meeting
January 22-25, 2003 Orlando, Florida	Invited Plenary Speaker and Symposium Chair, Contact Lens & Eyecare Symposium, Contact Institute of the United States
February 8, 2003 Dallas, Texas	Program Participant, Ophthalmology, Dermatology, and Otolaryngology Joint Symposium
March 1, 2003 Houston, Texas	Invited Plenary Speaker, 50 <sup>th</sup> Anniversary Symposium, College of Optometry, University of Houston, Texas
March 11-13, 2003 Cincinnati, Ohio	Invited Speaker, 8 <sup>th</sup> Annual Ophthalmology Conference & Research Symposium, University of Cincinnati
March 27-29, 2003	Invited Speaker, 6 <sup>th</sup> Symposium Menicon Europe
May 4-9, 2003 Ft. Lauderdale, FL	Scientific Program Participant, The Associate for Research in Vision and Ophthalmology

Continuing Medical Education Presentations (cont.)

June 4-8, 2003  
Brighton, United Kingdom

Invited Speaker, British Contact Lens Association  
Clinical Conference

June 19-21, 2003  
Washington, DC

Invited Speaker, Eye Bank Association of American  
Annual Meeting

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