CURRICULUM VITAE

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Education and Professional Enrichment

1976	B.S. in Biology (Minor in Chemistry), University of Illinois at Urbana-Champaign
1979	M.S. in Microbiology, University of Illinois at Urbana-Champaign
1981	Ph.D. in Microbiology, University of Illinois at Urbana-Champaign, Thesis Title: "Kinetic Analysis of High Affinity Polyclonal Anti-Fluorescyl IgG Antibodies" (Prof. Edward W. Voss, Jr., thesis advisor)
1981-1984	Postdoctoral study in Immunoglobulin X-ray Crystallography, University of Utah (Prof. Allen B. Edmundson, sponsor)
1984-1985	Postdoctoral study in Protein Adsorption and Biosensors, University of Utah (Prof. Joseph D. Andrade, sponsor)
1996	Sabbatical at the Department of Pharmaceutics, University of Utrecht, in the Netherlands (June - August, 1996). Host: Prof. Daan J. A. Crommelin.
2009	United Stated Department of Agriculture – China Ministry of Agriculture Scientific Exchange Program: Team 4 – Rapid Detection Technologies For Food Safety, Environmental and Agricultural Applications. China (October 10-24, 2009). Host: China Ministry of Agriculture.

Professional Positions (Reverse Chronological Order)

2013-present	Assistant Dean for Academic Affairs, College of Pharmacy, University of Utah.
1992-present	Associate Professor, Department of Pharmaceutics, University of Utah.
2009-present	Adjunct Associate Professor, Department of Bioengineering, University of Utah

1993-2009	Associate Research Professor, Department of Bioengineering, University of Utah
2000-2003	Director, Center for Biopolymers at Interfaces, University of Utah.
1991-2000	Co-Director, Center for Biopolymers at Interfaces, University of Utah.
1988-1992	Assistant Professor, Department of Pharmaceutics, University of Utah.
1987-1990	Adjunct Assistant Professor, Department of Biology, University of Utah.
1985-1993	Assistant Research Professor, Department of Bioengineering, University of Utah.
1979-1981	Teaching Assistant, School of Basic Medical Sciences, University of Illinois at Urbana-Champaign
1977-1979	Teaching Assistant, Department of Microbiology, University of Illinois at Urbana-Champaign

Honors

1978-1981	NIH Predoctoral National Research Service Award, University of Illinois
1979	Phi Kappa Phi
1981-1982	NSF Postdoctoral Fellowship, University of Utah
1982-1984	NIH Individual National Research Service Award, University of Utah
1986-1989	NIH New Investigator Research Award
1996	John R. Park Teaching Fellowship, University of Utah
2008	Nominated as College of Pharmacy Teacher of the Year
2009	Nominated as College of Pharmacy Teacher of the Year by the P3 Class
2010	3rd Year Professional Class Teacher of the Year, College of Pharmacy
2010	College of Pharmacy Teacher of the Year
2011, 2012	Nominated as College of Pharmacy Teacher of the Year by the P4 Class

Research Interests

Translational Research of Clinical Diagnostics Assays and Therapeutic Agents

Immunotherapeutics and Vaccines

Biosensors, Companion Diagnostics, Diagnostics Assays, High-throughput Screening, Personalized Medicine

Molecular Immunology and Structure, Function and Dynamics of Antigen-Antibody Interactions

Professional Organizations

American Association for the Advancement of Science

American Association of Pharmaceutical Scientists

American Chemical Society

Teaching

Didactic

1984-87	Microprocessor Based Bioinstrumentation, Bioengineering 601 (Autumn Quarter, 3 cr, lecture + lab, 6-10 graduate students)
1989-Present	Pharmacokinetics, Pharmaceutics 404, 614, 5315, 7011, or 7315
	1989-1997: PHCEU 404/614, Autumn Quarter, annually, 3 cr, 45-50 professional pharmacy students
	1999- 2003: PHCEU 5315/7315, Autumn Semester, 3 cr, course master, responsible for 50% of the material, 45-50 professional pharmacy students
	2004-2005: PHCEU 7315, Autumn Semester, 3 cr, course master, responsible for 50% of the material, 45-50 Pharm.D. students
	2006, 2008, 2009: PHCEU 7315, Autumn Semester, 2 cr, course master, responsible for 75% of the material, 45-50 Pharm.D. students, 0-8 graduate students
	2007, 2010-present: PHCEU 7315, Autumn Semester, 2 cr, course master, responsible for all of the material, 45-60 Pharm.D. students, 0-8 graduate students
	2011-present: PHCEU 7011, Summer or Autumn Semester, 2 cr, course master, responsible for all the material, 4-11 graduate students
1991, 93, 95, 97	Biophysical Chemistry of Proteins, Pharmaceutics 706/Bioengineering 523 (Spring Quarter, 3 cr, lecture + laboratory, 4-10 graduate students)
1992-94	Structure Analysis Methods, Biological Chemistry 649 (Winter Quarter, 3 cr, lecture + lab, responsible for 40% of the material, 10-12 graduate students)
1999-2002	Pharmaceutics 1, Pharmaceutics 7010 (Spring Semester, 4 cr, responsible for 25% of the material, 4-10 graduate students)
1999	Dosage Forms and Drug Delivery, Pharmaceutics 5215 (Autumn Semester, 2 cr, responsible for 25% of the material, 45-50 pharmacy students)

2000, 02, 04	Physicochemical Approach to Proteins and Nucleic Acids, Pharmaceutics 7410/Bioengineering 7111 (Spring Semester, 2 cr, lecture + laboratory, course master, responsible for 80% of the material, 4-8 graduate students)
2003-2008	Homogeneous and Heterogeneous Equilibria in Pharmaceutical and Biological Systems, Pharmaceutics 7020 (Spring Semester, 4 cr, responsible for six 1.5-hour lectures, 4-12 graduate students)
2004-2011	Fundamentals of Pharmaceutical Science, Pharmacy 7113 (Autumn Semester, 3 cr, responsible for two lectures on ligand binding in 2004-2011, plus three pharmacokinetics lectures in 2011, 6-15 graduate students)
2010-Present	Biotechnology, Pharmaceutics 7040 2010-2011: Spring Semester, 4 cr, course master, responsible for nine 2-hr lectures and 4 practical training experiences, 6-11 graduate students 2011-Present: Spring Semester, 4 cr, course master, responsible for eleven 2-hour lectures and 5 practical training experiences, 6 graduate students
2011-Present	Basics of Pharmaceutical Science, Pharmacy 5113 (Autumn Semester, 3 cr, responsible for three pharmacokinetics lectures, 60 Pharm.D. students)

Seminar

1988-2010	Graduate Seminar, Pharmaceutics 789 or 7890 1988-1991: PHCEU 789, Autumn, Winter, Spring Quarters, seminar coordinator, 1 cr, 35 graduate students 2005: PHCEU 7890, Fall Semester, 1 cr, seminar coordinator, 35 graduate students 2009-2010: PHCEU 7890, Fall and Spring Semesters, 1 cr, seminar coordinator, 35 graduate students
2007-Present	Clinical (Pharm.D.) Seminar, Pharmacotherapy 7100/7200 2007-2009, 2010-2011: Autumn & Spring Semesters, 1-2 cr, section leader, responsible for scheduling talks and chairing seminars, 20-24 Pharm.D. students 2011-Present: Autumn & Spring Semesters, 1-2 cr, course master of all five sections, section leader, responsible for scheduling talks and chairing seminars, 20-24 Pharm.D. students

Teaching Honors

2010	College of Pharmacy Teacher of the Year

Graduate Students Supervised

Masters Degrees

1. David Horsley (Bioengineering, Co-supervised with J. D. Andrade)
   Interfacial behavior of lysozyme
   Research co-supervisor 7/85 to 9/87, M.S. December 1987

2. Aiping Wei (Bioengineering, Co-supervised with J. D. Andrade)
   Interfacial behavior of model proteins
   Research co-supervisor 1/87 to 8/89, M.S. August 1989

3. Justine Turcotte (Bioengineering)
   Photo-induced mediation of antibody affinity
   Research supervisor 9/88 to 12/90, M.S. December 1990

4. Tsing-hua Zheng (Bioengineering)
   Interfacial behavior of model proteins
   Research supervisor 1/91 to 9/93, M.S. September 1993

5. Kevin Petersen (Bioengineering, BS/MS Program)
   Patterning proteins & nucleic acid on planar waveguide biosensors
   Research supervisor from 6/03 to 5/06, M.S. December 2006

6. James Taylor (Business, Co-supervised with Troy D'Ambrosio, Lassonde Center)
   Market research and business development for translational research sponsored by the Rocky Mountain Regional Center of Excellence in Biodefense and Emerging Infectious Disease (RMRCE)
   Research supervisor 8/11 to 5/13, M.B.A. May 2013

Ph.D. Degrees

1. Jinn-Nan Lin (Bioengineering, Co-supervised with J. D. Andrade)
   Immunosensor technology
   Research co-supervisor 7/85 to 4/88, Ph.D. April 1988

2. Kap Lim (Bioengineering)
   Molecular mechanics simulations of protein-polymer interactions
   Research supervisor 7/88 to 12/92, Ph.D. September 1992

3. Christine Gentry (Pharmaceutics — PMA Graduate Fellow)
   Biophysical characterization of immunoliposomes
   Research supervisor 9/88 to 9/94, Ph.D. October 1997

4. I-Nan Chang (Materials Science and Engineering, Co-supervised with J. D. Andrade)
   Immunosensor technology
   Research co-supervisor 1/91 to 2/94, Ph.D. February 1994

5. Aiping Wei (Bioengineering — NIH Trainee)
   Antigen-Antibody interactions
   Research supervisor 9/92 to 6/94, Ph.D. March 1995

6. James Cavenaugh (Pharmaceutics — NIH Trainee, PhRMA Fellow)
   Non-traditional vaccines

Research supervisor 9/93 to 10/02, Ph.D. Spring 2003

7. Samuel Tolley (Bioengineering — NIH Trainee)
   Biosensing
   Research supervisor 12/98 to 04/05, Ph.D. December 2006

8. Zhi-Ming (Jeremy) Guo (Pharmaceutics – Pharmacia-Upjohn Internship)
   High Throughput Screening
   Research supervisor 7/99 to 10/03, Ph.D. May 2007

9. Jian Chen (Pharmaceutics)
   Cell biology and anti-HIV drug uptake in the blood-brain barrier
   (Transferred from Prof. Brad Anderson's lab after Brad moved to University of Kentucky)
   Research supervisor from 8/05 to 5/06, Ph.D. August 2006

10. Jacob Durtschi (Bioengineering — Whitaker and NIH Trainee)
    Biosensing
    Research supervisor 7/93 to 7/99, 8/05 to present, Ph.D. expected 2013

11. Li Sun (Pharmaceutics – Internship and Curricular Practical Training at Amgen, Inc.)
    Photophysical stability of antibody therapeutics
    Research supervisor 8/11 to present, Ph.D. expected December 2013

Postdoctoral Scholars Supervised

1. Jinn-Nan Lin, Ph.D.
   Immunosensor technology
   1988 - 1990

2. Vera Janatova, Ph.D.
   Hydrogels and immobilization of antibodies
   1991 - 1992

3. Wim Jiskoot, Ph.D.
   Biophysical chemistry of antigen-antibody interactions
   1991 -1993

4. Vladimir Omelyanenko, Ph.D.
   Biophysical chemistry of antigen-antibody interactions
   1991 – 1993

5. Jian Chen
   Molecular beacon technology
   2007 – 2008

Visiting Scientists Supervised

1. Prof. Hsu-kun Wang
   Nankai University, Tianjin, China
   Immunochemistry and immobilization of antibodies
   1990 – 2002, Consulting in 2003, 2004, 2005, 2006

2. Henrik Engstrom, Ph.D.
   PLC Diagnostics, Inc.
   In-plane, parallel microarray screening technology
   2008

3. Vladimir Omelyanenko, Ph.D.
   Agri-Analysis, Inc.
   Biophysical chemistry of antigen-antibody interactions
   2011-present

Undergraduate Students Supervised

Available upon request

Research Activities

Research Grants and Fellowships

Available upon request

Publications (chronological order)

1. Johnston, J. B. and J. N. Herron (1979). A Routine Water Monitoring Test for Mutagenic Compounds, *University of Illinois Water Resource Center Research Report* **No. 141**.

2. Watt, R. M., J. N. Herron, and E. W. Voss, Jr. (1980). First Order Dissociation Rates Between High Affinity Rabbit Anti-Fluorescyl IgG Antibody and Homologous Ligand. *Molecular Immunology* **17**, 1237-1243.

3. Kranz, D. M., P. A. Billing, J. N. Herron, and E. W. Voss, Jr. (1980). Modified Hybridoma Methodology: Antigen-Directed Chemically Mediated Cell Fusion. *Immunological Communications* **9**, 639-651.

4. Kranz, D. M., J. N. Herron, D. E. Giannis, and E. W. Voss, Jr. (1981). Kinetics and Mechanism of Deuterium Oxide-induced Fluorescence Enhancement of Fluorescyl Ligand Bound to Specific Heterogeneous and Homogeneous Antibodies. *Journal of Biological Chemistry* **256**, 4433-4438.

5. Herron, J. N., and E. W. Voss, Jr. (1981). Characterization of Fluorescent 2-Dimethylaminonaphthalene-5-Sulfonyl-Immunoglobulin G Conjugates for Application in Fluorescence Polarization Studies. *Journal of Biochemical and Biophysical Methods* **5**, 1-17.

6. Herron, J. N. (1981). Kinetic Analysis of High-Affinity Polyclonal Anti Fluorescyl-IgG Antibodies. *Ph.D. Thesis*, University of Illinois at Champaign-Urbana.

7. Kranz, D. M., J. N. Herron, and E. W. Voss, Jr. (1982). Mechanisms of Ligand Binding by Monoclonal Anti-Fluorescyl Antibodies. *Journal of Biological Chemistry* **257**, 6987-6995.

8. Herron, J. N. and E. W. Voss, Jr. (1983). An Exact Procedure for the Analysis of Heterogeneous Kinetics in Polyclonal Antibody Populations. *Journal of Biochemical and Biophysical Methods* **8**, 189-204.

9. Herron, J. N. and E. W. Voss, Jr. (1983). Analysis of Heterogeneous Dissociation Kinetics in Polyclonal Populations of Rabbit Anti-Fluorescyl-IgG Antibodies. *Molecular Immunology* **29**, 1323-1332.

10. Ely, K. E., J. N. Herron, and A. B. Edmundson (1983). Three-Dimensional Structure of the Orthorhombic Form of the Mcg Bence-Jones Dimer. *Progress in Immunology* **5**, 61-66.

11. Herron, J. N. (1984). Equilibrium and Kinetic Methodology for the Measurement of Binding Properties in Monoclonal and Polyclonal Populations of Antifluorescyl-IgG Antibodies. In: *Fluorescein Hapten: An Immunological Probe* (E.W. Voss, Jr., Ed.). CRC Press, Boca Raton, Florida. pp. 49-76.

12. Herron, J. N. and E. W. Voss, Jr. (1984). Analysis of Heterogeneous Dissociation Kinetics in Polyclonal Populations of Antifluorescyl Antibodies. In: *Fluorescein Hapten: An Immunological Probe* (E.W. Voss, Jr., Ed.). CRC Press, Boca Raton, Florida. pp. 77-96.

13. Heath, T. D., R. T. Fraley, J. Bentz, E. W. Voss, Jr., J. N. Herron, and D. Papahadjopoulos (1984). Antibody-Directed Liposomes: Determination of Affinity Constants for Soluble and Liposome-Bound Antifluorescein. *Biochimica et Biophysica Acta* **770**, 148-158.

14. Edmundson, A. B., K. R. Ely, and J. N. Herron (1984). A Search for Site-Filling Ligands in the Mcg Bence-Jones Dimer: Crystal Binding Studies of Fluorescent Compounds. *Molecular Immunology* **21**, 561-576.

15. Gibson, A. L., J. N. Herron, D. W. Ballard, E. W. Voss, Jr., X. M. He, V. A Patrick and A. B. Edmundson (1985). Crystallographic Characterization of the Fab Fragment of a Monoclonal Anti-ss-DNA Antibody. *Molecular Immunology* **22**, 499-502.

16. Herron, J. N., K. R. Ely, and A. B. Edmundson (1985). Pressure Induced Conformational Changes in a Human Bence-Jones Protein (Mcg). *Biochemistry* **24**, 3453-3459.

17. Edmundson, A. B., K. R. Ely, J. N. Herron, and A. L. Gibson (1985). Probing the Binding Sites in Crystals of Immunoglobulins. From: *Investigation and Exploitation of Antibody Combining Sites* (Reid, E., Cook, G. M. W., and Morre, D. J., eds.), p. 33-50. Plenum Publishing.

18. Edmundson, A. B., K. R. Ely, and J. N. Herron (1986). Three-Dimensional Analyses of the Binding of Chemotactic and Opioid Peptides to the Mcg Light-chain Dimer. From: *Vaccines86: New Approaches to Immunization* (Brown, F., Chanock, R. M., and Lerner, R. A., eds.), p. 57-63. Cold Spring Harbor Laboratory.

19. Herron, J. N., D. M. Kranz, D. M. Jameson and E. W. Voss, Jr. (1986). Thermodynamic Properties of Ligand Binding by Monoclonal Antifluorescyl Antibodies. *Biochemistry* **25**, 4602-4609.

20. Horsley, D., J. Herron, V. Hlady, and J. D. Andrade (1987). A Comparative Study of Human and Hen Lysozyme Adsorption Using Total Internal Reflection Fluorescence Spectroscopy and Molecular Graphics. *ACS Symposium Series No. 343: Proteins at Interfaces:*

Physicochemical and Biochemical Studies (J. L. Brash and T. A. Horbett, eds.), American Chemical Society, pp. 290-305.

21. Edmundson, A. B., K. R. Ely, J. N. Herron, and B. D. Cheson (1987). The Binding of Opioid Peptides to the Mcg Light Chain Dimer: Flexible Keys and Adjustable Locks. *Molecular Immunology* **24**, 915-935.

22. Andrade, J. D., J. Herron, V. Hlady, and D. Horsley, (1987). Simulation of Protein Adsorption -- Denaturation Correlation. *Croatica Chemica Acta* **60**, 495-503.

23. Ives, J. T., W. M. Reichert, J. N. Lin, V. Hlady, D. Reinecke, P. A. Suci, R. A. Van Wagenen, K. Newby, J. Herron, P. Dryden and J. D. Andrade (1987). Total Internal Reflection Fluorescence Surface Sensors. In: *Optical Fiber Sensors* (Chester, A. N., ed.), M. Nijhoff Publ., Dordrecht, pp. 391-397.

24. Andrade, J. D., J. Herron, J.-N. Lin, H. Yen, J. Kopecek and P. Kopecekova (1988). On-line Sensors for Coagulation Proteins: Concept and Progress Report. *Biomaterials* **9**, 76-79.

25. Lin, J.-N., J. Herron, J. D. Andrade and M. Brizgys (1988). Characterization of Immobilized Antibodies on Silica Surfaces. *IEEE Transactions on Biomedical Engineering* **35**, 466-471.

26. Gibson, A. L., J. N. Herron, X.-M. He, V. A. Patrick, M. L. Mason, J.-N. Lin, D. M. Kranz, E. W. Voss, Jr., and A. B. Edmundson (1988). Differences in Crystal Properties and Ligand Affinities of an Antifluorescyl Fab (4-4-20) in Two Solvent Systems. *PROTEINS: Structure, Function, and Genetics* **3**, 155-160.

27. Hansen, J., K. Ely, D. Horsley, J. Herron, V. Hlady, and J. D. Andrade (1988). The Adsorption of Lysozymes: A Model System. *Makromol. Chem., Macromol. Symp.* **17**, 135-154.

28. Ely, K. R., A. B. Edmundson, and J. N. Herron (1988). Production of Hybrids -- Protein Engineering of a Binding Cavity. In: *Advances in Gene Technology Vol. 8: Protein Engineering and Production*, IRL Press Limited, Washington D.C., p. 175.

29. Edmundson, A. B., J. N. Herron, K. R. Ely, X.-M. He, D. L. Harris, and E. W. Voss, Jr. (1989). Synthetic Site-Directed Ligands. *Phil. Trans. Roy. Soc. Lond.* **B 323**, 495-509.

30. Smith, R. G., D. W. Ballard, P. R. Blier, P. E. Pace, A. Bothwell, J. N. Herron, A. B. Edmundson and E. W. Voss, Jr. (1989). Structural Features of a Murine Monoclonal Anti-ssDNA Autoantibody. *J. Indian Inst. Sci.* **69**, 25-46.

31. Herron, J. N., X.-M. He, M. Mason, E. W. Voss, Jr. and A. B. Edmundson (1989). Three-dimensional Structure of a Fluorescein-Fab Crystallized in 2-Methyl-2,4-pentanediol. *PROTEINS: Structure, Function, and Genetics* **5**, 271-280.

32. Edmundson, A. B., K. R. Ely, X.-M. He and J. N. Herron (1989). Cocrystallization of an Immunoglobulin Light Chain Dimer with Bis(Dinitrophenyl)lysine: Tandem Binding of Two Ligands, One with and One without Accompanying Conformational Changes in the Protein. *Mol. Immunol.* **26**, 207-220.

33. Ely, K. R., J. N. Herron, Melani Harker and A. B. Edmundson (1989). Three-dimensional Structure of a Light Chain Dimer Crystallized in Water; Conformational Flexibility of a Molecule in Two Crystal Forms. *J. Mol. Biol.* **210**, 601-615.

34. Bedzyk, W. D., J. N. Herron, A. B. Edmundson and E. W. Voss, Jr. (1990). Active Site Structure and Antigen Binding Properties of Idiotypically Cross-reactive Anti-fluorescein Monoclonal Antibodies. *J. Biol. Chem.* **265**, 133-138.

35. Ely, K. R., J. N. Herron and A. B. Edmundson (1990). Three-dimensional Structure of a Hybrid Light Chain Dimer: Protein Engineering of a Binding Cavity. *Mol. Immunol.* **27**, 101-114.

36. Edmundson, A. B., J. N. Herron, K. R. Ely and D. L. Harris (1990). Complexes of Peptides, Nucleotides and Fluorescein with Immunoglobulin Fragments; Effects of Solvent on Crystal Structures and Ligand Binding. In: *The Use of X-ray Crystallography in the Design of Antiviral Agents* (W. G. Laver and G. M. Air, ed.), Academic Press, pp 95-111.

37. Andrade, J. D., J-N Lin, V. Hlady, J. Herron, D. Christensen and J. Kopecek (1990). Immunosensors: Remaining Problems in the Development of Remote, Continuous, Multi-Channel Devices. In: *Biosensor Technology: Fundamentals and Applications* (Buck, R. B., *et al.*, eds.). Marcel Dekker, New York, pp 219-239.

38. Jiskoot, W., E. C. Beuvery, A. A. M. de Koning, J. N. Herron and D. J. A. Crommelin (1990). Analytical Approaches to the Study of Monoclonal Antibody Stability. *Pharmaceutical Research* **7**, 1234-1241.

39. Wei, A.-P., J. N. Herron and J. D. Andrade (1990). The Role of Structural Parameters in the Surface Tension of Model Proteins. In: *From Clone to Clinic* (D. J. A. Crommelin and H. Schellekens, eds.). Kluwer Academic Publishers, Amsterdam, pp 305-313.

40. Horsley, D., J. Herron, V. Hlady and J. D. Andrade (1991). Fluorescence Quenching of Absorbed Hen and Human Lysozymes. *Langmuir* **7**, 218-222.

41. Lin, J.-N., I.-N. Chang, J. D. Andrade, J. N. Herron and D. A. Christensen (1991). Comparison of Site-Specific Coupling Chemistry for Antibody Immobilization on Different Solid Supports. *J. Chromatography* **542**, 41-54.

42. Jiskoot, W., P. Hoogerhout, E. C. Beuvery, J. N. Herron and D. J. A. Crommelin (1991). Preparation and Application of a Fluorescein-Labeled Peptide for Determining the Affinity Constant of a Monoclonal Antibody-Hapten Complex by Fluorescence Polarization. *Analytical Biochemistry* **196**, 421-426.

43. Jiskoot, W., M. Bloemendal, B. van Haeringen, R. van Grondelle, E. C. Beuvery, J. N. Herron and D. J. A. Crommelin (1991). Non-random Conformation of a Mouse IgG_{2a} Monoclonal Antibody at Low pH. *European Journal of Biochemistry* **201**, 223-232.

44. Herron, J. N., X.-M. He, D. W. Ballard, P. R. Blier, P. E. Pace, A. Bothwell, E. W. Voss, Jr. and A. B. Edmundson (1991). An Autoantibody to Single-stranded DNA: Comparison of the Three-Dimensional Structures of the Unliganded Fab and a Deoxynucleotide-Fab Complex. *PROTEINS: Structure, Function, and Genetics* **11**, 159-175.

45. Grainger, D. W., K. M. Maloney, X. Huang, M. Ahlers, A. Reichert, H. Ringsdorf, C. Salesse, J. N. Herron, V. Hlady and K. Lim (1991). Binding, Interaction, and Organization of Proteins with Lipid Model Membranes. In: *Progress in Membrane Biotechnology* (Gomez-Fernandez, Chapman, Packer, eds.). Birkhäuser Verlag, Basel, Switzerland. pp 64-82.

46. Lea, A. S., A. Pungor, V. Hlady, J. D. Andrade, J. N. Herron and E. W. Voss, Jr. (1992). Manipulation of Proteins on Mica by Atomic Force Microscopy. *Langmuir* **8**, 68-73.

47. Grainger, D.W., M. Ahlers, A. Reichert, H. Ringsdorf, C. Salesse, J.N. Herron and K. Lim (1992). Modeling Membrane Targeting: Interaction and Recognition of Proteins with Model Biomembrane Systems. *Journal of Controlled Release* **19** , 201-218.

48. Lim, K. and J. N. Herron (1992). Molecular Simulation of Protein-PEG Interaction. In: *Poly(Ethylene Glycol) Chemistry: Biotechnical and Biomedical Applications* (J. Milton Harris, ed.). Plenum Press, New York. pp 29-56.

49. Gölander, C.-G., J. Herron, K. Lim, P. Claesson and P. Stenius (1992). Properties of Immobilized PEG-Films and the Interaction with Proteins. In: *Poly(Ethylene Glycol) Chemistry: Biotechnical and Biomedical Applications* (J. Milton Harris, ed.). Plenum Press, New York. pp 221-245.

50. Ahlers, M., D.W. Grainger, J.N. Herron, K. Lim, H. Ringsdorf and C. Salesse (1992). Quenching of Fluorescein-Conjugated Lipids by Antibodies: Quantitative Recognition and Binding of Lipid-Bound Haptens in Biomembrane Models, Formation of Two-Dimensional Protein Domains and Molecular Dynamics Simulations. *Biophysical Journal* **63**, 823-838.

51. Wei, A.-P., J.N. Herron, and D. A. Christensen (1992). Characterization of Fluorescent Dyes for Optical Immunosensors Based on Fluorescence Energy Transfer. In: Biosensor Design and Application (P. R. Mathewson and J. W. Finley, eds.). ACS Symposium Series 511. ACS Press, Washington, D.C. pp 105-120.

52. Herron, J. N., W. Müller, M. Paudler, H. Riegler, H. Ringsdorf and P. A. Suci (1992). Specific recognition-induced self-assembly of a biotin lipid/strepavidin/Fab fragment triple layer at the air/water interface: ellipsometric and fluorescence microscopy investigations. *Langmuir* **8**, 1413-1416.

53. Ebato, H., J. N. Herron, W. Müller, Y. Okahata, H. Ringsdorf and P. Suci (1992). Docking of a Second Functional Protein Layer to a Streptavidin Matrix on a Solid Support: Studies with a Quartz Crystal Microbalance. *Angewandte Chemie* **31** (8), 1087-1090.

54. Grainger, D.W. , M. Ahlers, P. Meller, R. Blankenburg, A. Reichert, H. Ringsdorf, C. Salesse, J.N. Herron, and K. Lim (1992). Controlling Binding and Organization of Proteins with Biomembrane Systems Through Specific Recognition. In: *Biomembrane Structure & Functions: The State of the Art* (B.P. Gaber & K.R.K. Easwaran, eds.). Adenine Press, Schenectady, NY.

55. Chistensen, D. A., S. Dyer, J. S. Kimmel, and J. N Herron (1992). Evanescent coupling in a waveguide fluoroimmunosensor. *Proc. SPIE*, **1648**, 223-6.

56. Guddat, L. W., J. N. Herron and A. B. Edmundson (1993). Three-Dimensional Structure of a Human Immunoglobulin with a Hinge Deletion. *Proc. Natl. Acad. Sci., U.S.A.* **90** (9), 4271-4275.

57. Kim, Y.-H., W. I. Higuchi, J. N. Herron and W. Abraham (1993). Fluorescence Anisotropy Studies on the Interaction of the Short Chain n-Alkanols with Stratum Corneum Lipid Liposomes (SCLL) and Distearoylphosphatidylcholine (DSPC)/Distearoylphosphatidic Acid (DSPA) Liposomes. *Biochimica et Biophysica Acta* **1148**, 139-151.

58. Bergers, J. J., M. H. Vingerhoeds, L. van Bloois, J. N. Herron, L. H. M. Janssen, M. J. E. Fischer and D. J. A. Crommelin (1993). The Role of Protein Charge in Protein-Lipid Interactions. pH-Dependent Changes of the Electrophoretic Mobility of Liposomes through Adsorption of Water-Soluble, Globular Proteins. *Biochemistry* **32**, 4641-4649.

59. Christensen, D. A., S. Dyer, J. N. Herron, and V. Hlady (1993). Comparison of robust coupling techniques for planar waveguide immunosensors. *Proc. SPIE* **1796**, 20-25.

60. Herron, J. N., K. D. Caldwell, D. A. Christensen, S. Dyer, V. Hlady, P. Huang,V. Janatova, H.-K. Wang and A.-P. Wei (1993). Fluorescent Immunosensors using Planar Waveguides. *Proc. SPIE* **1885**, 28-39.

61. Christensen, D. A., S. Dyer, D. Fowers, and J. N. Herron (1993). Analysis of Excitation and Collection Geometries for Planar Waveguide Immunosensors. *Proc. SPIE* **1886**, 2-8.

62. Omelyanenko, V. G., W. Jiskoot and J. N. Herron (1993). The Role of Electrostatic Interactions in the Binding of Fluorescein by Anti-Fluorescein Antibody 4-4-20. *Biochemistry* **32**, 10423-10429.

63. Wei, A.-P. and J. N. Herron (1993). Using Synthetic Peptides as Tracer Antigens in Fluorescence Polarization Immunoassays of High Molecular Weight Antigens. *Analytical Chemistry* **65**, 3372-3377.

64. Herron, J. N., C. A. Gentry, S. S. Davies, A.-P. Wei and J.-N. Lin (1994). Antibodies as Targeting Moieties: Affinity Measurements, Conjugation Chemsitry, and Applications in Immunoliposomes. *J. Controlled Release* 28, 155-166.

65. Wei, A.-P., D. K. Blumenthal and J. N. Herron (1994). A Fluorogenic Peptide Based on Toggling the Intramolecular Dimer-Monomer Equilibrium of Fluorescent Dyes. *Analytical Chemistry* **66**, 1500-1506.

66. Ebato, H., C. A. Gentry, J. N. Herron, W. Müller, Y. Okahata, H. Ringsdorf and P. A. Suci (1994). Investigation of Specific Binding of Anti-fluorescyl Antibody and Fab to Fluorescein Lipids in Langmuir-Blodgett Deposited Films Using Quartz Crystal Microbalance Methodology. *Analytical Chemistry* **66**, 1683-1689.

67. Crommelin, D. J. A., J. N. Herron and G. Storm (1994) (Protein)-targeted delivery with particulate systems, in: Trends and future perspectives in peptide and protein drug delivery (V. H. L. Lee, M. Hashida and Y. Mizushima, eds.) Harwood Academic Publishers, GmbH, pp. 207-239.

68. Torchilin, V. P., V. G. Omelyanenko, M. I. Papisov, A. A. Bogdanov, Jr., V. S. Trubetskoy, J. N. Herron and C. A. Gentry (1994). Poly(ethylene glycol) on the Liposome Surface: on the

Mechanism of Polymer-Coated Liposome Longevity. *Biochimica et Biophysica Acta* **1195**, 11-20.

69. Herron, J. N., A. H. Terry, S. Johnston, X.-M. He, L. W. Guddat, E. W. Voss, Jr. and A. B. Edmundson (1994). High Resolution Structures of the 4-4-20 Fab Fragment in Two Solvent Systems: Effects of Solvent on Structure and Antigen-Binding Affinity. *Biophysical Journal* **67**, 2167-2183.

70. Chang, I.-N., J.-N. Lin, J. D. Andrade and J. N. Herron (1995). Photo-Affinity Labeling of Antibodies for Applications in Homogeneous Immunoassays. *Analytical Chemistry* **34**,959-966.

71. Lim, K. and J. N. Herron (1995). Molecular Dynamics of the Anti-Fluorescein 4-4-20 Antigen-Binding Fragment: I. Computer Simulations. *Biochemistry* **34**, 6962-6974.

72. Lim, K., D. M. Jameson, C. A. Gentry and J. N. Herron (1995). Molecular Dynamics of the Anti-Fluorescein 4-4-20 Antigen-Binding Fragment: II. Time-Resolved Fluorescence Spectroscopy. *Biochemistry* **34**, 6975-84.

73. Chang, I.-N. and J. N. Herron (1995). Orientation of Acid Pretreated Antibodies on Hydrophobic Dichlorodimethylsilane-treated Silica Surfaces. *Langmuir* **11**, 2083-2089.

74. Chang, I.-N., J.-N. Lin, J. D. Andrade and J. N. Herron (1995). Adsorption Mechanism of Acid Pre-Treated Antibodies on Dichlorodimethylsilane-Treated Silica Surfaces. *Journal of Colloid and Interfaces Science* **174**, 10-23.

75. Jiskoot, W., V. Hlady, J. J. Naleway and J. N. Herron (1995). Application of Fluorescence Spectroscopy for Determining the Structure and Function of Proteins. In: *Physical Methods to Characterize Pharmaceutical Proteins* (J. N. Herron, W. Jiskoot and D. J. A. Crommelin, eds.) Plenum Press, New York, pp. 1-63.

76. Leckband, D. E., T. Kuhl, H. K. Wang, J. Herron, W. Müller, and H. Ringsdorf (1995). 4-4-20 Anti-fluorescyl IgG Fab' Recognition of Membrane Bound Hapten: Direct Evidence for the Role of Protein and Interfacial Structure. *Biochemistry* **34**, 11467-11478.

77. Plowman, T. E., W. M. Reichert, C. R. Peters, H. K. Wang, D. A. Christensen and J. N. Herron (1996). Femtomolar Sensitivity using a Channel-etched Thin Film Waveguide Fluoroimmunosensor. *Biosensors & Bioelectronics* **11**, 149-160.

78. Higuchi, W. I., K. Yoneto, A.-H. Ghanem, S. K. Li, D. J. A. Crommelin, J. N. Herron and Y.-H. Kim (1996). Mechanistic Aspects of Transdermal Drug Transport. In: *Advanced Biomaterials in Biomedical Engineering and Drug Delivery Systems* (N. Ogzata, S. W. Kim, J. Feijen, T. Okano, eds.) Springer-Verlag, Tokyo, pp. 111-115.

79. Yoneto, K., S. K. Li, W. I. Higuchi, W. Jiskoot and J. N. Herron (1996). Fluorescence Probe Studies of the Interactions of 1-Alkyl-2-pyrrolidones with Stratum Corneum Lipid Liposomes. *Journal of Pharmaceutical Sciences* **85**, 511-517.

80. Christensen, D. A. and J. N. Herron (1996). Optical Immunoassay Systems Based upon Evanescent Wave Interactions. *Proc. SPIE* **2680**, 58-67.

81. Huang, S.-C., K. D. Caldwell, J.-N. Lin, H.-K. Wang and J. N. Herron (1996). Site-Specific Immobilization of Monoclonal Antibodies using Spacer-Mediated Antibody Attachment. *Langmuir* **12**, 4292-4298.

82. van den Elsen, J. M.H., E. van Pomeren, J. T. Poolman, J. Wilting, J. N. Herron, and D. J.A. Crommelin (1997). On the Interaction between the Bactericidal Monoclonal Antibody and a PorA Epitope of *Neisseria meningitidis* in Outer Membrane Vesicles: a Competitive Fluorescence Polarization Immunoassay. *Analytical Biochemistry* **247**, 382-388.

83. van den Elsen, J. M.H., J. N. Herron, P. Hoogerhout, J. T. Poolman, E. Boel, T. Logtenberg, J. Wilting, D. J.A. Crommelin, J. Kroon and P. Gros (1997). Bactericidal Antibody Recognition of a PorA Epitope of *Neisseria meningitidis*: CrystalStructure of a Fab Fragment in Complex with a Fluorescein-conjugated Peptide. *Proteins* **29**, 113-125.

84. van den Elsen J. M. H., L. M. A. van Unen, L. van Bloois, M. A. Busquets, W. Jiskoot, P. Hoogerhout, J. Wilting, J. N. Herron, D. J. A. Crommelin (1997). Thermodynamic Analysis of the Interaction between a Bactericidal Antibody and a PorA Epitope of *Neisseria meningitidis*. *Biochemistry* **36**, 12583-12591.

85. Franssen, O., R. D. van Ooijen, D. de Boer, R. A. A. Maes, J. N. Herron and W. E. Hennink (1997). Enzymatic Degradation of Methacrylated Dextrans. *Macromolecules* **30**, 7408-7413.

86. van Hal, N. L., G. A. Van Dongen, C. B. Ten Brink, J. N. Herron, G. B. Snow and R. H. Brakenhoff (1997). Sequence Variation in the Monoclonal-Antibody-U36-Defined CD44v6 Epitope. *Cancer Immunol. Immunother.* **45**, 88-92.

87. Herron, J. N., H.-K. Wang, A. H. Terry, J. D. Durtschi, L. Tan, M. E. Astill, R. S. Smith and D. A. Christensen (1998). Rapid Clinical Diagnostics Assays using Injection-Molded Planar Waveguides. *Proceedings SPIE* **Vol. 3259** (Systems and Technologies for Clinical Diagnostics and Drug Delivery), 54-64.

88. Koppenhagen, F. J., A. J. W. G. Visser, J. N. Herron, G. Storm and D. J. A. Crommelin (1998). Interaction of Recombinant Interleukin-2 with Liposomal Bilayers. *Journal of Pharmaceutical Science*. **87**, 707-714.

89. Herron, J. N., H.-K. Wang, V. Janatová, J. D. Durtschi, K. D. Caldwell, D. A. Christensen, I.-N. Chang and S.-C. Huang (1998). Orientation and Activity of Immobilized Antibodies. In: *Biopolymers at Interfaces* (M. Malmsten, ed.), Surfactant Science Series, Vol. 75, Marcel Dekker, New York, pp. 221-280.

90. Rapoport, N. Y., J. N. Herron, W. G. Pitt and L. Pitina (1999). Micellar Delivery of Doxorubicin and Its Paramagnetic Analog, Ruboxyl, to HL-60 Cells: Effect of Micelle Structure and Ultrasound on the Intracellular Drug Uptake. *Journal of Controlled Release* **58**, 153-62.

91. Plowman, T. E., J. D. Durstchi, H. K. Wang, D. A. Christensen, J. N. Herron and W. M. Reichert (1999). Multiple-analyte Fluoroimmunoassay using an Integrated Optical Waveguide Sensor. *Analytical Chemistry* **71**, 4344-52.

92. Vernooij, E. A. A. M., C. A. Gentry, J. N. Herron, D. J. A. Crommelin and J. J. Kettenes-van den Bosch (1999). 1H NMR Quantification of poly(Ethylene Glycol)-Phophatidylethanolamine in Phospholipid Mixtures. *Pharmaceutical Research* **16**, 1658-1661.

93. Herron, J. N., S. zumBrunnen, J.-X. Wang, X-L. Gao, H.-K. Wang,A. H. Terry, D. A. Christensen (2000). Planar Waveguide Biosensors for Nucleic Acid Hybridization Reactions. *Proc. SPIE* **3913**, 177-184.

94. Sipe, D.M., K. P. Schoonmaker, J. N. Herron and M. J. Mostert (2000). Evanescent Planar Waveguide Detection of Biological Warfare Simulants. *Proc. SPIE* **3913**, 215-222.

95. Leckband, D. E., T. L. Kuhl, H. K. Wang, J. Herron, W. Müller, and H. Ringsdorf (2000). Force Probe Measurements of Antibody-Antigen Interactions. *Methods* **20**, 329-340.

96. Liu, X.-H., H.-K. Wang, J. N. Herron, G. D. Prestwich (2000). Photopatterning of Antibodies on Biosensors. *Bioconjugate Chemistry* **11**, 755-761.

97. Wei, A.-P. and J. N. Herron (2002). Bifluorophoric Molecules as Fluorescent Beacons for Antibody-Antigen Binding. *Journal Molecular Recognition* **15**, 311-320. (Special Issue in honor of Prof. Allen B. Edmundson's 70th birthday).

98. Herron, J. N., H.-K. Wang, V. Janatová, J. D. Durtschi, K. D. Caldwell, D. A. Christensen, I.-N. Chang and S.-C. Huang (2003). Orientation and Activity of Immobilized Antibodies. In: *Biopolymers at Interfaces, 2nd Edition* (M. Malmsten, ed.), Surfactant Science Series, Vol. 110, Marcel Dekker, New York, pp. 115-163.

99. Cavenaugh, J. S., H.-K. Wang, C. Hansen, R. S. Smith, and J. N. Herron (2003). How well can a T cell epitope replace its parent carrier protein? A dose response study. *Pharmaceutical Research* **20**, 591-596.

100. Tolley, S. E., H.-K. Wang, R. S. Smith, D. A. Christensen, and J. N. Herron (2003). Single Chain Polymorphism Analysis in Long QT Syndrome using Planar Waveguide Fluorescent Biosensors. *Analytical Biochemistry* **315**, 223-237.

101. Terzyan, S., P. A. Ramsland, E. W. Voss, Jr., J. N. Herron and A. B. Edmundson (2004). Three-Dimensional Structures of Idiotypically Related Fabs with Intermediate and High Affinity for Fluorescein. *Journal of Molecular Biology* **339**, 1141-1151.

102. Cavenaugh, J. S., H.-K. Wang, J. Sha, C. Hansen, K. Papangkorn, R. S. Smith, and J. N. Herron (2004). How Well Can an Idiotope Peptide Mimic Replace Its Parent Idiotype in a Synthetic Peptide Vaccine? *Pharmaceutical Research* **21**, 1480-1488.

103. Liu, Y., J. Bishop, L. Williams, S. Blair and J. Herron (2004). Biosensing Based upon Molecular Confinement in Metallic Nanocavity Arrays. *Nanotechnology* **15,** 1368–1374

104. Jiskoot, W., A. J. W. G. Visser, J. N. Herron, and M. Sutter (2005). Fluorescence Spectroscopy. In: *Methods for Structural Analysis of Protein Pharmaceuticals* (W. Jiskoot & D. Crommelin, eds.). AAPS Press, Arlington, VA, pp. 27-82.

105. Herron, J. N., H.-K. Wang, L. Tan, S. Z. Brown, A. H. Terry, S. E. Tolley, J. D. Durtschi, E. M. Simon, M. E. Astill, R. S. Smith and D. A. Christensen (2005). Planar Waveguide Biosensors for Point-Of-Care Clinical and Molecular Diagnostics. In: Fluorescence Sensors and

Biosensors (R. B. Thompson, Ed.). CRC Press Taylor & Francis Group, Boca Raton, FL. pp. 283-332.

106. Herron, J. N., S. E. Tolley, R. S. Smith, and D. A. Christensen (2006). Rapid Single Nucleotide Polymorphism Detection for Personalized Medicine Applications using Planar Waveguide Fluorescence Sensors. *Proc SPIE* **6080**, pp. 0Z1-0Z10.

107. Guo, J., P. Elzinga, M. Hageman and J. Herron (2008). Rapid Throughput Solubility Screening Method for BCS Class II Drugs in Animal GI Fluids and Simulated Human GI Fluids Using a 96-well Format. *Journal of Pharmaceutical Science* **97**, 1427-1442.

108. Guo, J., P. Elzinga, M. Hageman, and J. Herron (2008). Rapid Throughput Screening of Apparent K_{sp} values for Weakly Basic Drugs Using 96-Well Format. *Journal of Pharmaceutical Science* **97**, 2080-2090.

109. Suhonen, M., S. K. Li, W. I. Higuchi, and J. N. Herron (2008). A Liposome Permeability Model for Stratum Corneum Lipid Bilayers Based on Commercial Lipids. *Journal of Pharmaceutical Sciences* **97**, 4278-4293.

110. Christensen, D. A. and J. N. Herron (2009). Optical System Design for Biosensors Based on CCD Detection. *Methods Mol Biol.* **503**, 239-58.

111. Duer, R., R. Lund, R. Tanaka, D. A. Christensen, J. N. Herron (2010). In-Plane Parallel Scanning: A Microarray Technology for Point-of-Care Testing. *Analytical Chemistry*, **82**, 8856-8865.

112. Hawe, A., T. Rispens, J. N. Herron, W. Jiskoot (2011). Probing bis-ANS binding sites of different affinity on aggregated IgG by steady-state fluorescence, time-resolved fluorescence and isothermal titration calorimetry. *J. Pharm. Sci.*, 100, 1294-1305.

Books Edited

1. Herron, J. N., W. Jiskoot and D. J. A. Crommelin, eds. (1995). *Physical Methods to Characterize Pharmaceutical Proteins* (Pharmaceutical Biotechnology, Vol. 7, R. T. Borchardt, Series Ed.) Plenum Press, New York.

United States Patents

1. Andrade, J. D. and J. N. Herron (1992). Optical Regulation of Ligand-Receptor Binding. U.S. Patent No. 5,135,876.
2. Herron, J. N. and A.-P. Wei (1993). Method of Determining Energy Transfer Efficiency of A Donor-Acceptor Pair of Fluorescent Dyes. U.S. Patent 5,237,515 (issued on 08/17/93).
3. Herron, J. N. and A.-P. Wei (1993). Method of Determining Extinction Coefficient of Fluorescent Dye and Protein Concentration of Dye-Protein Conjugate. U.S. Patent 5,245,551 (issued on 09/14/93).
4. Herron, J. N. (1995). Compounds Having the Antigenicity of hCG. U.S. Patent 5,380,668 (issued on 01/10/95).

5. Herron, J. N., D. A. Christensen, K. D. Caldwell, H.-K. Wang, S.-C. Huang and V. Janatova (1996). Waveguide Immunosensor with Coating Chemistry Providing Enhanced Sensitivity. U.S. Patent 5,512,492 (issued on 04/30/96).
6. Herron, J. N., D. A. Christensen, H.-K. Wang, K. D. Caldwell, V. Janatova and S.-C. Huang (1997). Apparatus and Methods for Multi-Analyte Homogeneous Fluoroimmunoassays. U.S. Patent 5,677,196 (issued on 10/14/97).
7. Reichert, W. M., J. N. Herron, D. A. Christensen and H.-K. Wang (1998). Integrated Optic Waveguide Immunosensor. U.S. Patent 5,814,565 (issued on 09/29/98).
8. Reichert, W. M., J. N. Herron, D. A. Christensen and H.-K. Wang (1998). Composite Waveguide for Solid Phase Binding Assays. U.S. Patent 5,832,165 (issued on 11/03/98).
9. Herron, J. N., D. A. Christensen, K. D. Caldwell, V. Janatova, S.-C. Huang and H.-K. Wang (1998). Waveguide Immunosensor with Coating Chemistry and Providing Enhanced Sensitivity. U.S. Patent 5,846,842 (issued on 12/08/98).
10. Herron, J. N., D. A. Christensen, H.-K. Wang, K. D. Caldwell, V. Janatova and S.-C. Huang (1999). Apparatus and Methods for Multi-Analyte Homogeneous Fluoro-Immunoassays. U.S. Patent 5,919,712 (issued on 7/06/99).
11. Reichert, W. M., J. N. Herron, D. A. Christensen and H.-K. Wang (1999). Integrated Optic Waveguide Immunosensor. U.S. Patent 5,961,924 (issued on 10/05/99).
12. Christensen, D. A., J. N. Herron, E. M. Simon (2000). Waveguide lens. U.S. Patent D426,783 (issued on 6/20/00).
13. Herron, J. N., D. A. Christensen, V. A. Pollak, R. D. McEachern, and E. M. Simon (2000). Lens and Associatable Flow Cell. U.S. Patent 6,108,463 (issued on 8/22/00).
14. Herron, J. N., D. A. Christensen, and J. D. Durtschi (2001). Diagnostic Device and Method. U.S. Patent 6,222,619 (issued on 4/24/01).
15. Herron, J. N., D. A. Christensen, and S. D. Miles (2001). Oscillation Apparatus and Methods for Multi-Analyte Homogeneous Fluoro-Immunoassays. U.S. Patent 6,242,267 (issued on 6/5/01).
16. Herron, J. N. and D. A. Christensen (2001). System for Determining Analyte Concentration. U.S. Patent 6,287,871 B1 (issued on 9/11/01).
17. Herron, J. N., D. A. Christensen, H.-K. Wang, K. Caldwell, V. Janatova, and S.-C. Huang (2001). Apparatus and Methods for Multi-Analyte Homogeneous Fluoro-Immunoassays. U.S. Patent 6,316,274 (issued on 11/13/01).
18. Herron, J. N., D. A. Christensen, K. D. Caldwell, V. Janatova, S.-C. Huang, and H.-K. Wang (2002). Apparatus for Multichannel Fluorescent Immunoassays. U.S. Patent 6,340,598 (issued 1/22/02).
19. Reichert, W. M., J. N. Herron, D. A. Christensen, and H.-K. Wang (2002). Integrated Optic Waveguide Immunosensor. U.S. Patent 6,350,413 (issued 2/26/02)
20. Herron, J. N., D. A. Christensen, V. A. Pollak, R. D. McEachern, and E. M. Simon (2002). Lens and Associatable Flow Cell. U.S. Patent 6,356,676 (issued 3/12/02).
21. Wei, A.-P and J. N. Herron (2002). Immunoassay Procedure Utilizing Fluorogenic Tracer Antigens. U.S. Patent 6,482,655 (issued 11/19/2002).
22. Wei, A.-P and J. N. Herron (2003). Assay Procedure Using Fluorogenic Tracers. U.S. Patent 6,576,419 B1 (issued 6/10/2003).

23. Wei, A.-P and J. N. Herron (2003). Compositions and Kits for Fluorescence Polarization Assay of Large Molecules. U.S. Patent 6,632,613 B1 (issued 10/14/2003).
24. Reichert, W. M., J. N. Herron, D. A. Christensen, H.-K. Wang and J. D. Durtschi (2005). Composite Waveguide for Solid Phase Binding Assays. U.S. Patent 6,911,344 (issued on 6/28/05).
25. Herron, J. N., D. A. Christensen, H.-K. Wang, K. D. Caldwell, V. Janatova, and S.-C. Huang (2005). Apparatus and Methods for MultiAnalyte Homogeneous Fluoroimmunoassays. U.S. Patent 6,979,567 (issued on 12/27/05).
26. Herron, J. N., D. A. Christensen, K. Caldwell, V. Janatova, S.-C. Huang, and H.-K. Wang, (2006). Waveguide immunosensor with coating chemistry and providing enhanced sensitivity. U.S. Patent 7,022,515 (issued on 4/04/06).
27. Wei, A.-P and J. N. Herron (2006). Assay Procedure Using Fluorogenic Tracers. U.S. Patent 7,153,654 (issued 12/26/06).
28. Herron, J. N., D. A. Christensen, V. A. Pollak, R. D. McEachern, and E. M. Simon (2007). Lens and Associatable Flow Cell. U.S. Patent RE39,772 (reissued 8/14/07).
29. Reichert, W. M., J. N. Herron, D. A. Christensen, and H.-K. Wang (2009). Integrated Optic Waveguide Immunosensor. U.S. Patent 7,537,734 (issued 5/26/09).
30. Herron, J. N., S. Tolley, and H.-K. Wang, (2010). Detection of single nucleotide polymorphisms using planar waveguides. U.S. Patent 7,811,754 (issued on 10/12/10).

U.S. Patent Applications

1. Duer, R. and J. Herron. System and Method for Nucleic Acids Sequencing by Phased Synthesis. U.S. Patent Application No. 20090312188 (published 12/17/09)
2. Blair, S. M., F. Mahdavi, Y. Liu, J. N. Herron, and A. Nahata. Biosensors Including Metallic Nanocavities. U.S. Patent Application No. 20100256016 (published 10/7/10)

Foreign Patents

Available upon request

Invention Disclosures

Available upon request

Podium and Poster Presentations at Scientific Meetings

1. Herron, J. N. and E. W. Voss, Jr. (1979). Use of 2,5-Dns as an Immunoglobulin Fluorescence Polarization Probe. *Fed. Proc.* **38**: 1796.

2. Herron, J. N. (1980). Internal Flexibility of Liganded Rabbit Anti-Hapten IgG Antibody. *Fed. Proc.* **39**: 369.

3. Herron, J. N. and E. W. Voss, Jr. (1981). A Novel Method for Analysis of Heterogeneous Hapten-Immunoglobulin Kinetics. *Fed. Proc.* **40**: 5180.

4. Herron, J. N. (1982). Characterization of High Affinity Subpopulations in Rabbit Polyclonal Anti-fluorescyl-IgG Antibodies. *Fed. Proc.* **41**: 143.

5. Herron, J. N., K. R. Ely, and A. B. Edmundson (1983). Pressure Induced Conformational Changes in the Mcg Bence-Jones Protein. *Fed. Proc.* **42**: 1410.

6. Edmundson, A. B., K. R. Ely, and J. N. Herron (1983). Mcg Bence-Jones Dimer as a Model for Generalized Hydrophobic Binding in Immunoglobulins. *5th International Congress of Immunology*, Aug. 20-27, 1983 (Kyoto, Japan).

7. Herron, J. N., K. R. Ely, and A. B. Edmundson (1984). Binding of Site-Filling Ligands to the Mcg Bence-Jones Dimer. *Fed. Proc.* **43**: 67.

8. Gibson, A. L., J. N. Herron, and A. B. Edmundson (1984). Crystallization of the Hapten-Fab complex from a Monoclonal Antifluorescyl-IgG Antibody. *Fed. Proc.* **43**: 1546.

9. Herron, J. N., A. L. Gibson, E. W. Voss, Jr. and A. B. Edmundson (1985). Ligand Binding Properties of Monoclonal Antifluorescyl Antibodies in Solution and Crystals. *Fed. Proc.* **44**, 1328.

10. Andrade, J. D., J.-N. Lin, J. Herron, M. Reichert, J. Kopecek (1986). Fiber Optic Immunodetectors: Sensors or Dosimeters? *Proc. S.P.I.E.* **718**, 280.

11. Herron, J. N., X.-M. He, A. L. Gibson, E. W. Voss, Jr. and A. B. Edmundson (1987). Crystal Structure of a murine Fab Fragment with Specificity for Single-Stranded DNA. *Fed. Proc.* **46**: 1626.

12. Herron, J. N., X.-M. He, E. W. Voss, Jr. and A. B. Edmundson (1988). Structure of the Fab of an Anti-ss-DNA Autoantibody. *Second Symposium of the Protein Society*, Aug. 13-17 (San Diego), Abstract # S201.

13. Andrade, J. D., V. Hlady, J. Herron and J.-N. Lin (1988). Proteins at Interfaces: Principles Relevant to Protein-Based Devices. In: *2nd International Symposium on Bioelectronic and Molecular Electronic Devices*, (Fujiyoshida, Japan) pp. 67-71.

14. Herron, J. N., D. M. Jameson, D. M. Kranz and E. W. Voss, Jr. (1989). Thermodynamic Properties of Anti-Fluorescyl Antibodies. In: *Fluorescent Biomolecules: Methodology and Applications* (Jameson, D. M. and G. D. Reinhart, eds.) Plenum Press, p. 364.

15. Lim, K., R. J. Athay, J. D. Andrade and J. N. Herron (1989). Molecular Modelling of Protein-Polymer Interactions. *J. Mol. Graphics* **7**, 179-180.

16. Wei, A. P., J. N. Herron and J. D. Andrade (1989). Adsorption of Model Proteins at the Air-Water Interface: Role of Stability and Effective Hydrophobicity. ACS 63rd Colloid & Surface Science Symposium, June 18-21 (Seattle).

17. Herron, J. N., X.-M. He, A. B. Edmundson and E. W. Voss, Jr. (1989). Comparison of Nearly Isomorphous Structures of Fabs from Anti-DNA and Anti-Fluorescyl Antibodies. *Annual Meeting of the American Crystallographic Society*, July 23-29 (Seattle), Abstract # PB50.

18. Herron, J. N., X.-M. He, E. W. Voss, Jr. and A. B. Edmundson (1989). Similarities in the Crystal Structures of Fabs from Anti-DNA and Anti-Fluorescein Antibodies. *Third Symposium of the Proteins Society*, July 29 - Aug. 2 (Seattle), Abstract # M58.

19. Herron, J. N., K. Lim, J. D. Andrade and R. J. Athay (1989). Molecular Mechanics Simulations of Polyethylene and Polyethyleneoxide: Chain Dynamics and Interfacial Behavior. *The 1989 International Chemical Congress of Pacific Basin Societies*, December 17-22 (Honolulu).

20. Herron, J. N. (1990). Thermodynamics and Molecular Mechanisms of Ag-Ab Binding and Regulation. *UCLA Symposia on Molecular & Cell Biology: Biochemistry and Molecular Biology of Biosensors and Bioprobes*, February 3-8 (Frisco, Colorado).

21. Edmundson, A. B., J. N. Herron, L. Guddat and E. W. Voss, Jr. (1990). General Aspects of Antibody Structures and Their Relations to Ligand Binding. *UCLA Symposia on Molecular & Cell Biology: Biochemistry and Molecular Biology of Biosensors and Bioprobes*, February 3-8 (Frisco, Colorado).

22. Herron, J. N., A. Hosakul, J. Andrade, D. Horsley, A. Wei, B. Tripp and T. Oolman (1990). Interfacial Behavior of Model Proteins and Protein Drugs. *From Clone to Clinic*, March 19-22 (Amsterdam, the Netherlands).

23. Herron, J. N., J-N Lin, C.A. Gentry, and J. Turcotte (1990). Model Antibody Systems for Studies of Activity and Stability. *From Clone to Clinic*, March 19-22 (Amsterdam, the Netherlands).

24. Herron, J. N., K. Lim, and R. J. Athay (1990). Molecular Mechanics Simulations of Polyethylene and Polyethyleneoxide. *West Coast Theoretical Chemistry Conference*, March 23-25 (Salt Lake City).

25. Herron, J. N., K. Lim, J. D. Andrade and R. J. Athay (1990). Molecular Mechanics Simulations of Model Peptides at Polyethylene and Polyethyleneoxide Interfaces. *American Chemical Society: 199th National Meeting*, April 22-27 (Boston).

26. Andrade, J. D., J.-N. Lin, V. Hlady, J. Herron, D. Christensen and J. Kopecek (1990). Immunosensors: Remaining Problems in the Development of Remote, Continuous, Mult-channel Devices for Coagulation Proteins. *Biomation in the 21st Century*, May 12-14 (Nihon University, Japan).

27. Herron, J. N., K. Lim, and R. J. Athay (1990). Molecular Dynamics Simulations of Biomaterials: Chain Dynamics and Interactions with Peptides. *American Chemical Society: Joint 45th Northwest/10th Rocky Mountain Regional Meeting*, June 13-15 (Salt Lake City).

28. Herron, J. N., X.-M. He, E. W. Voss, Jr. and A. B. Edmundson (1991). Three-Dimensional Structures of Fab Fragments from Anti-DNA and Anti-Fluorescyl Antibodies: an Examination of Hapten-Antibody Interactions. *Keystone Symposia on Molecular & Cell Biology: Monoclonal Antibodies*, March 10-16 (Denver, Colorado).

29. Wei, A.-P., J. N. Herron, J.-N. Lin and D. A. Christensen (1991). Characterization of Fluorescent Dyes for Energy Transfer. *American Chemical Society: 201th National Meeting*, April 14-19 (Atlanta).

30. Lin, J., I. Chang, J. Herron and D. Christensen (1991). Immobilization of Antibodies on Silica Surfaces for Biosensor Applications. *American Chemical Society: 201th National Meeting*, April 14-19 (Atlanta).

31. Wei, A.-P., J. N. Herron, V. Hlady and J. D. Andrade (1991). Adsorption of Model Proteins at the Air-Water and Water-Solid Interfaces. *American Chemical Society: 201th National Meeting*, April 14-19 (Atlanta).

32. Grainger, D. W., M. Ahlers, H. Ringsdorf, K. Lim , J. N. Herron and C. Salesse (1991). Specific Antibody Recognition with Surfaces Induces Fluorescent Lipid Quenching and Antibody Assembly into Two-Dimensional Protein Domains. *American Chemical Society: 201th National Meeting*, April 14-19 (Atlanta).

33. Lim, K. and J. N. Herron (1991). Molecular Simulations of Proteins on Polymeric Surfaces. *Society for Biomaterials: 17th Annual Meeting*, May 1-5 (Scottsdale, Az).

34. Lim, K. and J. N. Herron (1991). Molecular Dynamics of Anti-Fluorescyl Antibody Fab Fragment. *Fifth Symposium of the Protein Society*, June 22-26 (Baltimore).

35. Guddat, L., A. B. Edmundson and J. N. Herron (1991). Structure of a Human Immunoglobulin (Mcg) at 2.8 Å Resolution. *Annual Meeting of the American Crystallographic Association*, July 21-26 (Toledo, Oh).

36. Herron, J. N., X.-M. He, E. W. Voss, Jr. and A. B. Edmundson (1991). Three-Dimensional Structures of Fab Fragments of an Anti-DNA Autoantibody: an Examination of Hapten-Antibody Interactions. *Annual Meeting of the American Crystallographic Association*, July 21-26 (Toledo, Oh).

37. Herron, J. N., V. Hlady, A.-P. Wei, E. Brynda and P. Suci (1991). Using Evanescent Fluorescence to Probe the Interfacial Behavior of Proteins. *International Symposium on Innovative Fluorescence Methodologies in Biochemistry and Medicine*, Sept. 23-26 (Frascati, Italy).

38. Christensen, D., S. Dyer, J. Kimmel and J. Herron (1992). Evanescent Coupling in a Waveguide Fluoroimmunosensor. *SPIE Conference on Biomedical Optics*, Jan. 19-24 (Los Angeles, CA).

39. Christensen, D., S. Dyer, J. Herron and V. Hlady (1992). New Coupling Techniques and Sensitivity Analysis for Planar Waveguide Immunosensors. *Europt(v)ode*, April 12-15 (Graz, Austria).

40. Yoneto, K., Y.-H. Kim, W. I. Higuchi and J. N. Herron (1992). Effects of Short Chain N-Alkanols on Stratum Corneum Lipid Liposomes (SCLL): a Fluorescent Probe Study. *Proceed. Intern. Symp. Rel. Bioact. Mater.* **19**.

41. Herron, J. N., S. Johnston, X.-M. He, E. W. Voss, Jr., L. Guddat and A. B. Edmundson (1992). High Resolution Structures Of The Antigen Binding Fragment Of 4-4-20 Crystallized In Two

Different Solvent Systems. *Annual Meeting of the American Crystallographic Association*, August 9-14 (Pittsburgh, Pa).

42. Herron, J., V. Hlady, A. Wei, W. Jiskoot, and P. Suci (1992). Conformation And Stability Of Adsorbed Proteins. *National Meeting of the American Chemical Society*, August 23-26 (Washington, DC).

43. Christensen, D., S. Dyer, J. Herron and V. Hlady (1992). Comparison of Robust Coupling Techniques for Planar Waveguide Immunosensors. *SPIE Conference on Chemical, Biochemical, and Environmental Fiber Sensors*, Sept. 8-11 (Boston, MA).

44. Herron, J. N., K. Caldwell, D. A. Christensen, S. Dyer, V. Hlady, P. Huang, V. Janatova, H-K Wang and A-P Wei (1992). Fluorescent Immunosensors Using Planar Waveguides. *Annual Fall Meeting of the Biomedical Engineering Society*, October 16-18 (Salt Lake City, UT).

45. Jiskoot, W., J.-N. Lin and J. N. Herron (1992). Thermal Stability of an Anti-Fluorescyl Monoclonal Antibody-Fluorescein Complex. *Annual Meeting of the American Association of Pharmaceutical Scientists*, November 16-19 (San Antonio, TX).

46. Gentry, C. A. and J. N. Herron (1992). Development of a Peg Coated Model Antifluorescyl Immunoliposome. *Annual Meeting of the American Association of Pharmaceutical Scientists*, November 16-19 (San Antonio, TX).

47. Herron, J. N. (1993). Fluorescent immunosensors using planar waveguides. *SPIE Conference on Advances in Fluorescence Sensing Technology*, January 19-20 (Los Angeles).

48. Herron, J. N. (1993). Antibodies as Targeting Moieties: Affinity Measurements, Conjugation Chemsitry, and Applications in Immunoliposomes. *Sixth International Symposium on Recent Advances in Drug Delivery Systems*, February 22-25 (Salt Lake City).

49. Wei, A.-P. and J. N. Herron (1993). A New Fluorogenic Antibody-Antigen System for Homogeneous Immunoassays and Biosensors. *Seventh Symposium of the Protein Society*, July 24-28 (San Diego). (Abstract published in: *Protein Scenice*, Vol. 2, Suppl. 1, July 1993, p. 161).

50. Wei, A.-P. and J. N. Herron (1993). A Fluorogenic Peptide based on Toggling the Intramolecular Dimer¤Monomer Equilibrium of Fluorescent Dyes. *Fourth IBC Annual Conferences on Antibody Engineering*, Dec. 8-10 (San Diego).

51. Wei, A.-P. and J. N. Herron (1993). Antibody-mediated Opto-Molecular Switches using Antifluorescein Antibodies and a Bichromophoric Molecule. *Fourth IBC Annual Conferences on Antibody Engineering*, Dec. 8-10 (San Diego).

52. Christensen, D.A., J.N. Herron, H-K Wang, and A-P Wei (1994). Two-Channel Fluorescent Immunosensor Using a Planar Waveguide Substrate. *Second European Conference on Optical Chemical Sensors and Biosensors*, April 19-21 (Firenze, Italy).

53. Herron, J. N. (1994). Fluorometric Studies on Proteins. *Ninth Annual Meeting and Exposition, American Association of Pharmaceutical Sciences*, November 6-10 (San Diego, CA).

54. Yoneto, K., K. S. Li, W. I. Higuchi, W. Jiskoot and J N. Herron (1994). Time-Resolved Fluorescence Probe Studies of the Interactions of the 1-alkyl-2-pyrrolidones with Stratum Corneum Lipid Liposomes. *Ninth Annual Meeting and Exposition, American Association of Pharmaceutical Sciences*, November 6-10 (San Diego, CA).

55. Herron, J. N., A.-P. Wei, J. V. D. Elsen and D. J. A. Crommelin (1995). Novel Methods for Quantification of Antibody-Antigen Binding. *11th International Symposium on Affinity Chromatography and Biological Recognition*, May 25-31, 1995 (San Antonio, TX).

56. Herron, J. N. (1995). Proteins at Interfaces: Packing, Orientation and Function. *69th Colloid & Surface Science Symposium*, June 11-14, 1995 (Salt Lake City, UT).

57. Leckband, D., C. Yeung, T. Kuhl, H.-K. Wang, J. N. Herron, W. Müller and H. Ringsdorf (1995). Probing the Molecular Forces Governing Protein Recognition of Surface Bound Ligands by Direct Force Measurements. *69th Colloid & Surface Science Symposium*, June 11-14, 1995 (Salt Lake City, UT).

58. Crommelin, D. J. A., J. J. Bergers and J. N. Herron (1995). Studies on the Role of Protein Charge in Protein-Lipid Interactions. *69th Colloid & Surface Science Symposium*, June 11-14, 1995 (Salt Lake City, UT).

59. Herron, J. N. and A.-P. Wei (1995). Novel Fluorescence Methods for Examining Antibody-Antigen Interactions. *Third International Symposium on Innovative Fluorescence Methodologies in Biochemistry and Medicine*, July 30 - Aug. 2, 1995 (Kaanapali, Maui, Hawaii).

60. Christensen, D. and J. Herron (1995). Recent Developments in Optical Biosensors Utilizing Evanescent Wave Interactions. *The 22nd Annual Conference of the Federation of Analytical Chemistry and Spectroscopy Societies*, October 15-20 (Columbus, OH).

61. Plowman, T. E., W. M. Reichert, C. R. Peters, H.-K. Wang, D. Christensen and J. Herron (1995). Femtomolar Sensitivity using Thin Film IOW Immunosensors. *The 22nd Annual Conference of the Federation of Analytical Chemistry and Spectroscopy Societies*, October 15-20 (Columbus, OH).

62. Christensen, D. A. and J. N. Herron (1996). Optical Immunoassay Systems Based upon Evanescent Wave Interactions. *Photonics West Meeting of the Society of Electro-optical Engineers (SPIE)*, January 28-31 (San Jose, CA).

63. Herron, J. N. (1996). Fluorescent immunosensors using planar waveguides. *Oak Ridge Conference of the American Association of Clinical Chemistry*, April 11 (San Jose, CA).

64. Cavenaugh, J. S., K. Palmer and J. N. Herron (1996). Molecular mechanics and molecular dynamics simulations of a set of peptide vaccines. *1996 American Conference on Theoretical Chemistry*, July 21-24 (Park City, UT).

65. Wei, A.-P. and J. N. Herron (1996). Studies of Fluorescent Homogeneous Immunoassay Systems for High Molecular Weight Analytes. *1996 Chinese Young Scientists Symposium on Frontier Research of Polymer Materials*, Aug. 11-16 (Beijing, China).

66. Herron, J.N., J.D. Durtschi, H.-K. Wang, A.H. Terry, D.A. Christensen, R. Smith, M. Astill (1997). Fluorescent sensing using injection-molded planar waveguides. *213th National Meeting of the American Chemical Society*, April 13-17 (San Francisco, CA).

67. Herron, J. N. (1997). Packing, Orientation and Activity of Antibodies Immobilized to Silica Surfaces. Gordon Research Conference on Bio/Analytical Sensors, July 26 - August 1 (Henniker, NH).

68. Suhonen, T.M., S. K. Li, J. N. Herron and W. I. Higuchi (1997). Vesicles prepared from a mixture of commercial lipids approcimating human stratum corneum (SC) lipid composition are an appropriate model for SC lipid Bilayers. *AAPS Annual Meeting*, Nov. 2-7 (Boston, MA).

69. Xu, Y., T.-X. Xiang, J. Herron and B.D. Anderson (1997). Development of a quantitative relationship for lipid bilayer surface density by fluorescence spectroscopy. *AAPS Annual Meeting*, Nov. 2-7 (Boston, MA).

70. Herron, J. N., H.-K. Wang, A. H. Terry, J. D. Durtschi, L. Tan, M. E. Astill, R. S. Smith and D. A. Christensen (1998). Rapid Clinical Diagnostics Assays using Injection-Molded Planar Waveguides. *BiOS '98 International Biomedical Optics symposium*, Jan. 24-28 (San Jose, CA).

71. Herron, J. N., J. D. Durtschi, H.-K. Wang, A. H. Terry, D. A. Christensen, L. Tan and M. E. Astill (1998). Rapid Clinical Diagnostics Assays using Injection-Molded Planar Waveguides. *FACSS Annual Meeting*, October 11-15 (Austin, TX).

72. Xu, Y., T.-X. Xiang, J. Herron and B.D. Anderson (1998). Quantitative Dependence of Molecule Permeability on the Static and Dynamic Properties of Lipid Bilayer Membranes Determined by Fluorescence Spectroscopy. *AAPS Annual Meeting*, Nov. 15-19 (San Francisco, CA).

73. Durtschi, J. D. and J. N. Herron (1999). Kinetic analysis of human chorionic gonadotrophin binding to an evanescent-wave biosensor. *BiOS '99 International Biomedical Optics symposium*, Jan. 24-27 (San Jose, CA).

74. Herron, J. N., J. D. Durtschi, H.-K. Wang, A. H. Terry, D. A. Christensen (1999). Clinical Diagnostics Assays Based on Planar Waveguide Fluorescence Sensors. *4th International Weber Symposium on Innovative Fluorescence Methodologies in Biochemistry and Medicine*, June 23-27 (Kaanapali, Maui, HI).

75. Herron, J. N., S. zumBrunnen, J.-X. Wang, X-L. Gao, H.-K. Wang,A. H. Terry, D. A. Christensen (2000). Planar Waveguide Biosensors for Nucleic Acid Hybridization Reactions. *BiOS 2000 International Biomedical Optics symposium*, Jan. 22-28 (San Jose, CA).

76. Herron, J. N., H.-K. Wang, A. H. Terry, D. A. Christensen, J. D. Durtschi, M. Astill, M. Mostert (2000). Detection of Clinical Analytes in Plasama and Whole Blood using Planar Waveguide Biosensors. *Sixth World Biomaterials Congress*, May 15-20 (Kamuela, Hawaii).

77. Jeremy Guo, Paul A. Elzinga, James N. Herron, Michael J. Hageman (2001). Rapid Throughput Screening of Ksp Values for Weakly Basic Drugs Using 96-well Format. *American Association of Pharmaceutical Scientists 2001 Annual Meeting*, October 21-25 (Denver, CO).

78. Tolley, S. E., R. S. Smith, H.-K. Wang, and J. N. Herron (2002). Planar Waveguide Measurements of Single Nucleotide Polymorphisms. *BiOS 2002 International Biomedical Optics Symposium*, Jan. 22-24 (San Jose, CA).

79. Cavenaugh, J. S., H.-K. Wang, K. Papangkorn, C. Hansen, R. S. Smith, and J. N. Herron (2002). How well can an immunodominant T cell epitope replace its parent carrier protein? An ANOVA and dose response study. *Walter Reed Army Institute of Research 8th National Symposium: Basic Aspects of Vaccines*, May 1-3 (Bethesda, MD).

80. Tolley, S. E., H.-K. Wang, R. S. Smith, D. A. Christensen, and J. N. Herron (2002). Single Chain Polymorphism Analysis in Long-QT Syndrome using Planar Waveguide Fluorescent Biosensors. *Fifth International Weber Symposium on Innovative Fluorescence Methodologies in Biochemistry and Medicine*, June 25-29 (Lihue, Kaua'i, HI).

81. Ai-Ping Wei, James H. Wicks, James N. Herron and Donald K. Blumenthal (2002). Homogeneous Biological Assays Based on Doubly Labeled Peptides and Oligonucleotides. *Fifth International Weber Symposium on Innovative Fluorescence Methodologies in Biochemistry and Medicine*, June 25-29 (Lihue, Kaua'i, HI).

82. Herron, J. N. (2003). Biophotonics Applications in Biotechnology: Evanescent Wave Biosensors. *First Workshop on Biophotonics: Principles, Practice and Applications*, Jan. 13-16 (Honolulu, HI).

83. Herron, J. N. and D. K. Blumenthal (2003). New Screening Technologies. *First Workshop on Biophotonics: Principles, Practice and Applications*, Jan. 13-16 (Honolulu, HI).

84. Guo, J., P. Elzinga, J. Herron, M. Hageman (2003). Rapid Throughput Solubility Screening Method for BCS Class II Drugs in Animal GI Fluids and Simulated Human GI Fluids Using a 96-well Format. *American Association of Pharmaceutical Scientists 2003 Annual Meeting*, October 26-30 (Salt Lake City, UT).

85. Guo, J., P. Elzinga, J. Herron, M. Hageman (2003). The Effects Of Excipients On BCS Class II Drug Solubility In Animal And Simulated Human GI Fluids Mimicking The Fed And Fasted States Using A 96-well Format. *American Association of Pharmaceutical Scientists 2003 Annual Meeting*, October 26-30 (Salt Lake City, UT).

86. Herron, J. N., L. Tan, J. D. Durtschi, S. Tolley, H.-K. Wang, A. H. Terry, M. E. Astill, R. S. Smith and D. A. Christensen (2004). Rapid Clinical and Molecular Diagnostic of Heart Disease using Biosensor Technology. *College of Pharmacy Research Symposium, University of Utah*, April 15 (Salt Lake City, UT).

87. Herron, J. N., S. Tolley, R. S. Smith and D. A. Christensen (2005). Real-Time Detection of Single Base Extension Reactions using Planar Waveguide Fluorescence Sensors. *Sixth International Weber Symposium on Innovative Fluorescence Methodologies in Biochemistry and Medicine*, July 22-28 (Lihue, Kaua'i, HI).

88. Herron, J. N., S. Tolley, R. S. Smith and D. A. Christensen (2006). Rapid single nucleotide polymorphism detection for personalized medicine applications using planar waveguide fluorescence sensors. *BiOS 2006 International Biomedical Optics Symposium*, Jan. 22-24 (San Jose, CA).

89. Christensen, D. A., L. Tan, J. D. Durtschi, S. Tolley, H.-K. Wang, A. H. Terry, M. E. Astill, R. S. Smith, and J. N. Herron (2006). Rapid Clinical and Molecular Diagnostics of Heart Disease Using Biosensor Technology. *Improving Health Care Accessibility Through Point-of-Care Technologies*, Workshop sponsored by the National Institute of Biomedical Imaging and Bioengineering, the National Heart, Lung, and Blood Institute, and the National Science Foundation, April 11-12, 2006 (Arlington, VA).

90. Herron, J. N., J. Jensen, E. Simon, and D. A. Christensen (2006). Portable Rapid Diagnostics Systems for Category B Toxins. *2006 Annual meeting of the Rocky Mountain Regional Center of Excellence (RMRCE) for Biodefense and Emerging Infectious Diseases*. October 2-4, 2006 (Salt Lake City, UT)

91. Christensen, D.A., E.M. Simon, J. Jensen, and J.N. Herron (2007). Portable Rapid Diagnostics Systems for Category B Toxins. *Fourth Annual Meeting of the NIH-NIAID Regional Centers of Excellence*. April 15-17, 2007 (St. Louis, MO).

92. Durtshi, J.D., D.A. Christensen, and J. N. Herron (2007). Diffusion and Binding Kinetics Modeling of Planar Waveguide Biosensors. *Third Annual Mountain West Biomedical Engineering Conference*. September 21-22, 2007 (Park City, UT).

93. Herron, J. N. (2007). Rapid IVD Testing using Planar Waveguide Biosensors. *Emerging Technologies to Enable Quantitative Rapid Tests*. Workshop sponsored by BioDot, Inc., September 24-26, 2007 (Sand Diego, CA).

94. Herron, J. N., J. Jensen, E. Simon, and D. A. Christensen (2007). Portable Rapid Diagnostics Systems for Category B Toxins. *2007 Annual meeting of the Rocky Mountain Regional Center of Excellence (RMRCE) for Biodefense and Emerging Infectious Diseases*. October 3-4, 2007 (Fort Collins, CO)

95. Herron, J. N., E. Simon, D. A. Christensen, C. Myatt and M. Lochhead (2008). Development of a Planar Waveguide Biosensor Platform. *RCE Network Diagnostics Workshop: Biology and Medicine Meet Engineering and Physics*. March 3 & 4, 2008 (Los Angeles, CA)

96. Simon, E. M., D.A. Christensen, and J. N. Herron (2008). Rapid IVD Testing using Planar Waveguide Biosensors. *Emerging Technologies to Enable Quantitative Rapid Tests*. Workshop sponsored by BioDot, Inc., June 23-25, 2008 (St. Paul, MN).

97. Herron, J. N., S. Kern, B. Rivoire, T. Headley, R. Bargatze, and T. Miller (2008). RMRCE Translational Development Subcommittee. *2008 Annual meeting of the Rocky Mountain Regional Center of Excellence (RMRCE) for Biodefense and Emerging Infectious Diseases*. October 6-7, 2008 (Bozeman, MT)

98. Herron, J. N., B. Rivoire, A. Sutton (2009). Critical Services for Scientific Advancement and Product Development. *2009 Annual meeting of the Rocky Mountain Regional Center of Excellence (RMRCE) for Biodefense and Emerging Infectious Diseases*. September 27-29, 2009 (Logan, UT)

99. Herron, J. N., B. Rivoire, and R. Tompkins (2010). The Translational Development Pathway at the RMRCE. *2010 National RCE Meeting*. April 11-13, 2010 (Las Vegas, NV)

100. Herron, J. N. (2010). RMRCE Translational Development Subcommittee (podium presentation). *2010 Annual meeting of the Rocky Mountain Regional Center of Excellence (RMRCE) for Biodefense and Emerging Infectious Diseases*. September 26-28, 2010 (Estes Park, CO)

101. Herron, J. N., B. Rivoire, and R. Tompkins (2010). The Translational Development Pathway at the RMRCE (poster presentation). *2010 Annual meeting of the Rocky Mountain Regional Center of Excellence (RMRCE) for Biodefense and Emerging Infectious Diseases*. September 26-28, 2010 (Estes Park, CO)

102. Engelhardt, K. and Herron, J. N. (2011). A red-emitting molecular beacon for the detection of botulinum neurotoxin A. *43rd Annual Oak Ridge Conference: Emerging Technologies for 21st Century Clinical Diagnostics*. April 14 & 15, 2011 (Baltimore, MD)

103. Herron, J. N. (2011). RMRCE Translational Development Subcommittee (podium presentation). *2011 Annual meeting of the Rocky Mountain Regional Center of Excellence (RMRCE) for Biodefense and Emerging Infectious Diseases*. September 11-13, 2011 (Denver, CO)

104. Herron, J. N., James Taylor, Troy D'Ambrosio (2012). The Translational Development Pathway at the RMRCE. *2012 National RCE Meeting*. March 26-28, 2012 (Omni Amelia Island Plantation, FL)

105. Herron, J. N. (2012). RMRCE Translational Development Subcommittee. *2012 Annual meeting of the Rocky Mountain Regional Center of Excellence (RMRCE) for Biodefense and Emerging Infectious Diseases*. October 7-9, 2012 (Missoula, MT)

Invited Presentations at Universities and Industry

1. Herron, J. N. (1992) Molecular Modeling Tools for Studying Structure, Function and Dynamics of Macromolecules. *USI Winter Workshop on Molecular Modeling, University of Utah*, January 30 (Salt Lake City, Utah).

2. Herron, J. N. (1992). Antigenic Specificity of Antibodies: Structural Evidence for an Induced Fit Mechanism. *Department of Biochemistry, University of Illinois*, March 27 (Urbana, Illinois).

3. Herron, J. N. (1992). Structure and Function of Monoclonal Antibodies. *Boehringer-Mannheim, Inc.*, March 30 (Indianapolis, Indiana).

4. Herron, J. N. (1992). Structure and Function of Monoclonal Antibodies. *Becton-Dickenson Research Center*, April 6 (Research Triangle Park, North Carolina).

5. Herron, J. N. (1992). High Performance Computing in Macromolecular Crystallography and Molecular Simulation. *Utah Supercomputing Institute*, April 14 (Salt Lake City).

6. Herron, J. N. (1993). Structure-Function Correlates in Monoclonal Antibodies. *Biochemistry Interest Group Seminar*, University of Utah, November 10 (Salt Lake City).

7. Herron, J. N. (1994). Fluorescent immunosensors using planar waveguides. *Department of Biomedical Engineering, Duke University*, February 9 (Durham, NC).

8. Herron, J. N. (1994). Antibodies as Targeting Moieties: Structure, Function, and Applications in Immunoliposomes. *Department of Pharmaceutics, University of Georgia*, February 10 (Athens, GA).

9. Herron, J. N. (1994). Structure-Function Relationships in Monoclonal Antibodies. *Department of Pharmaceutics, University of Utrecht*, May 31 (Utrecht, the Netherlands).

10. Herron, J. N. (1995). Structure-Function Relationships in Monoclonal Antibodies. *Department of Veterinary Pathobiology*, Texas A & M University, May 25 (College Station, TX).

11. Herron, J. N. (1995) Molecular Modeling Tools for Studying Structure, Function and Dynamics of Macromolecules. *3M Corporation*, June 27 (St. Paul, MN).

12. Herron, J. N. (1995) Structure-Function Relationships in Monoclonal Antibodies. *3M Corporation*, June 28 (St. Paul, MN).

13. Herron, J. N. (1995) Structure-Function Relationships in Monoclonal Antibodies. *Max Planck Institute*, August 29 (Munich, Germany).

14. Herron, J. N. (1995). Fluorescent immunosensors using planar waveguides. *Biotechnology and Diagnostics Divisions, Pharmacia*, September 4 (Uppsala, Sweden).

15. Herron, J. N., A.-P. Wei, J. V. D. Elsen and D. J. A. Crommelin (1995). Novel Methods for Quantification of Antibody-Antigen Binding. *Department of Pharmaceutics, University of Utrecht*, September 13 (Utrecht, the Netherlands).

16. Herron, J. N. (1996). Epitope Mapping of Antibody Combining Sites using Synthetic Peptide Antigens. *Department of Biochemistry, University of Illinois at Urbana-Champaign*, January 26 (Urbana, IL).

17. Herron, J. N. (1996). RES-Avoiding Immunoliposomes. *Department of Biochemistry, University of Illinois at Urbana-Champaign*, January 29 (Urbana, IL).

18. Herron, J. N. (1996). Fluorescent immunosensors using planar waveguides. *Abbott Laboratories*, March 1 (Abbott Park, IL).

19. Herron, J. N. (1996). Early diagnosis and therapy of acute myocardial infarction. *Department of Pharmaceutics, University of Utrecht*, July 2 (Utrecht, Netherlands).

20. Herron, J. N. (1996). Activity and orientation of immobilized antibodies. *Department of Pharmaceutics, University of Utrecht*, July 9 (Utrecht, Netherlands).

21. Herron, J. N. (1996). Protein folding: a thermodynamic view. *Department of Pharmaceutics, University of Utrecht*, July 12 (Utrecht, Netherlands).

22. Herron, J. N. (1996). RES-avoiding immunoliposomes. *Department of Pharmaceutics, University of Utrecht*, July 15 (Utrecht, Netherlands).

23. Herron, J. N. (1996). Protein-ligand interactions: physicochemistry and thermodynamics. *Department of Pharmaceutics, University of Utrecht*, August 16 (Utrecht, Netherlands).

24. Herron, J. N. (1996). Physical methods for characterizing proteins. *Dutch National Institute of Public Health and Environmental Protection*, August 16 (Bilthoven, Netherlands).

25. Herron, J. N. (1997). Fluorescent-based immunosensors. *Department of Bioengineering, University of Utah*, January 24 (Salt Lake City, UT).

26. Herron, J. N. (1997). Fluorescent immunosensors using planar waveguides. *Dade International*, August 25 (Newark, DE).

27. Herron, J. N. (1997). Conformational Dynamics of Antigen Binding: *E Pluribus Unum*. *Department of Pharmaceutics, University of Utrecht*, September 10 (Utrecht, Netherlands).

28. Herron, J. N. (1998). Applications of Planar Waveguides in Bio-Analytical Sensors. *Department of Chemistry*, Mississippi State University, March 27 (Starksville, MS).

29. Herron, J. N. (1998). Activity, Structure and Dynamics of Antigen-Antibody Interactions, *Abbott Laboratories*, June 11 (Abbott Park, IL).

30. Herron, J. N. (1998). Kinetics of Antigen-Antibody Reactions at the Solid Phase, *University of Utrecht*, Sept. 14 (Utrecht, Netherlands).

31. Herron, J. N. (1998). Activity and Structure of Antigen-Antibody Interactions, *Wageningen Agricultural University*, Sept. 16 (Wageningen, Netherlands).

32. Herron, J. N., J. D. Durtschi, H.-K. Wang, A. H. Terry, D. A. Christensen (1999). Clinical Diagnostics Assays Based on Planar Waveguide Fluorescence Sensors. *Center for Biopolymers at Interfaces Semiannual Meeting*, September 19-21 (Salt Lake City, UT).

33. Herron, J.N., S. zumBrunnen, J.-X. Wang, X-L. Gao, H.-K. Wang, A.H. Terry, D.A. Christensen, R. Smith, M. Astill (2000). Fluorescent sensing using injection-molded planar waveguides. *Pharmacia*, June 29 (Kalamazoo, MI).

34. Herron, J.N., H.-K. Wang, A.H. Terry, D.A. Christensen, J.D. Durtschi, R. Smith, M. Astill and M. Mostert (2001). Rapid Medical Diagnostic Assays using Planar Waveguide Fluorescent Sensors. *Duke University*, March 2 (Durham, NC).

35. Herron, J.N., A.-P. Wei, J. van den Elsen, P. Gros, J. Wilting and D.J.A. Crommelin (2001). "Mix and Read" Fluorescent Immunoassays based on Synthetic Peptide Antigens. *3M Corporation*, March 5 (St. Paul, MN).

36. Herron, J.N., H.-K. Wang, A.H. Terry, D.A. Christensen, J.D. Durtschi, R. Smith, M. Astill and M. Mostert (2001). Rapid Medical Diagnostic Assays using Planar Waveguide Fluorescent Sensors. *Medtronic, Inc.*, March 6 (Minneapolis, MN).

37. Herron, J.N. (2001). Correlated Molecular Dynamics Simulations and Time-resolved Fluorescence Spectroscopy Studies to Probe the Conformational Dynamics of Antigen Binding. *Bioinformatics Lecture Series, University of Utah,* October 24 (Salt Lake City, UT).

38. Herron, J.N. (2003). Applications of Evanescent Wave Biosensors in *In Vitro* and Molecular Diagnostics. *3M Corporation*, June 27 (St. Paul, MN).

39. Herron, J.N. (2003). Applications of Evanescent Wave Biosensors in *In Vitro* and Molecular Diagnostics. *Associated Regional University Pathologists (ARUP)*, November 17 (Salt Lake City, UT).

40. Herron, J.N. (2004). Applications of Evanescent Wave Biosensors in *In Vitro* and Molecular Diagnostics. *Department of Bioengineering Seminar Series, University of Utah*, February 19 (Salt Lake City, UT).

41. Herron, J.N. (2006). Antibody Structure and Principles of Biodetection. 3M Corporation, May 18 (St. Paul, MN).

42. Herron, J.N. (2006). Antibodies, Biodetection, and Mix & Read Assays. 3M Corporation, May 19 (St. Paul, MN).

43. Christensen, D.A. and J. N. Herron (2009). Commercializing a rapid point-of-care diagnostics test. University of Utah, Department of Bioengineering Entrepreneurial Engineering Seminar Series, March 11 (Salt Lake City, UT).

44. Herron, J. N. (2009). Rapid testing using Planar Waveguide Biosensors. Key Lab of Transducer Technology, Institute of Electronics, Chinese Academy of Sciences, Oct. 12 (Beijing, China).

45. Herron, J. N. (2009). Rapid testing using Planar Waveguide Biosensors. Chinese Academy of Agricultural Sciences, Oct. 12 (Beijing, China).

46. Herron, J. N. (2009). Rapid testing using Planar Waveguide Biosensors. China Agricultural University, College of Food Science & Nutritional Engineering, Oct. 13 (Beijing, China).

47. Herron, J. N. (2009). Rapid testing using Planar Waveguide Biosensors. Northwest Agriculture & Forestry University, Oct. 16 (Yangling, China).

48. Herron, J. N. (2009). Rapid testing using Planar Waveguide Biosensors. Guangzhou Center for Disease Control and Prevention, Guandong Province Center for Disease Control and Prevention, Oct. 19 (Guangzhou, China).

49. Herron, J. N. (2009). Rapid testing using Planar Waveguide Biosensors. Guangzhou Agriculture Department, Oct. 19 (Guangzhou, China).

50. Herron, J. N. (2009). Rapid testing using Planar Waveguide Biosensors. Fenghua Diagnostics, Oct. 20 (Guangzhou, China).

51. Herron, J. N. (2009). Rapid testing using Planar Waveguide Biosensors. Daan Gene Company, Oct. 20 (Guangzhou, China).

52. Herron, J. N. (2009). Rapid testing using Planar Waveguide Biosensors. 3M China R&D Center, Oct. 22 (Shanghai, China).

53. Herron, J. N. (2009). Rapid testing using Planar Waveguide Biosensors. Shanghai Applied Protein Technologies Co. Ltd., Oct. 23 (Shanghai, China).

54. Herron, J. N. (2011). From Lab to Clinic: Developing Biosensors for Point-of-Care Diagnostics & Personalized Medicine. University of Utah, Research Administration NAKAMA program, Aug. 5 (Salt Lake City, UT).

55. Herron, J. N. (2012). Optical Biosensors for Point-of-Care Diagnostics and Personalized Medicine. ARUP Laboratories and University of Utah College of Engineering Collaboration Breakfast Meeting, Mar. 7 (Salt Lake City, UT).

Service Activities

Graduate Student Committees

Available upon request

Department of Pharmaceutics

1992-present	Department Retention, Promotion and Tenure Advisory Committee
1994-1999	Fellowships Committee
1996-present	Curriculum Committee (**Chair** 1996-present)
1998-present	Director of Graduate Studies
1999, 2000, 2010-11, 2012-13	Faculty Search Committees (**Chair** 2010-11 search committee)
2001-2002	Strategic Planning Committee
2005	Department Chair Search Committee
2009-present	**Assistant Department Chair**, Academic Affairs

College of Pharmacy

1988-2007	Computer Committee (**Chair** 1992, 1995-1998, 2004-2007)
1991-1993	Pharm.D. Task Force
1992-present	College Retention, Promotion and Tenure Advisory Committee
1996-1998	Curriculum Committee
2000-2002	Research Committee (**Chair**, 2000-2001)
2003-2005	Learning and Teaching Committee
2007-2009, 2010-present	Pharm.D. Seminar Committee (**Chair**, 2011-present)
2013-present	**Assistant Dean**, Academic Affairs

University of Utah

Center for High Performance Computing (CHPC)

1988-2002	Faculty Advisory Board, College of Pharmacy Representative (**Chair** 1992-1995, 2001-2002)

1992	Co-organized (with Prof. Julio Facelli) a two-day workshop entitled "USI Winter Workshop on Molecular Modeling." Co-sponsored by the CHPC, the Center for Biopolymers at Interfaces and the College of Pharmacy, University of Utah (Jan. 30-31, 1992).
1992-1993	Planning Committee, Computational Sciences Building
1992-1993	Search Committee (**Chair**), Director of Center for High Performance Computing
1994-1995, 2000	*Ad Hoc* Committee on High Performance Computing
2000-2013	CHPC computer time allocation committee
2008-2012	CHPC Updraft cluster steering committee

Conflict of Interest Committee (COI)

2002-2007	College of Pharmacy representative (**Chair** 2005-2007)
2007-2009	Chair Emeritus
2009-2012	CoI policy revision team

Graduate Council Review

2001-2002	Internal Reviewer of the Electrical & Computer Engineering Department

University Promotion and Tenure Advisory Committee (UPTAC)

2000-2003	College of Pharmacy representative
2004-2005	College of Pharmacy representative (substitute for Kristen Keefe)

Other University Committees

1995-1999	Eccles Medical Library Advisory Committee, College of Pharmacy representative
1999-2001	University of Utah Information Technology Council (ITC) College of Pharmacy representative
2007-2010	University Technology Commercialization Advisory Committee

Intermural Proposal Reviews

2012	Peer Reviewer, University of Utah, Funding Incentive Seed Grant Program, Reviewed two proposals, Dec 2012

Center for Biopolymers at Interfaces (CBI)

1990	Organized and chaired a one-day short course entitled "Molecular Graphics and Molecular Mechanics Simulations of Proteins, Peptides and Synthetic Polymers." Sponsored by the Center for Biopolymers at Interfaces, the Department of Bioengineering and the Department of Pharmaceutics, University of Utah (April 4, 1990).
1991-2000	**Co-Director** of CBI.

2000-2003 **Director** of CBI.

National Service

NIH Peer Review Panels

1997	Peer Review Panel, NIH Special Study Section for SBIR proposals, Washington, DC, March 17 & 18, 1997
1999	*Ad hoc* reviewer, NIH NHLBI, Teleconference, Nov. 4, 1999
2004	Peer Review Panel, NIH NIAID Cooperative Research for the Development of Vaccines, Adjuvants, Therapeutics, Immunotherapeutics, and Diagnostics for Biodefense and SARS, Gaithersburg, MD, Feb 3-5, 2004
2004	Peer Review Panel, NIH NIAID Biodefense Countermeasure Development: Project Bioshield, Teleconference, Nov. 8, 2004
2006	Peer Review Panel, NIH NIAID Cooperative Research Partnerships for Biodefense, Silver Springs, MD, Jan 29 - Feb 2, 2006
2010	Peer Review Panel, NIH NIAID Therapeutics Partnerships (ZAI1 LR-M), Silver Springs, MD, Jan 26 & 27, 2010
2011	Peer Review Panel, NIH NIAID Partnerships for Biodefense (ZAI1 FDS-M), Teleconference, Sep 14, 2011

NIH NIAID Centers of Excellence Program

2008-present	**Chair**, Translational Development Subcommittee for the NIAID-sponsored Rocky Mountain Center of Excellence in Biodefense and Emerging Infectious Disease (RMRCE)

Extramural Proposal Reviews

2008	Peer Reviewer, North Carolina Biotechnology Center, Multidisciplinary Research Grant Program, Reviewed one proposal, May 2008
2011	Peer Reviewer, Dutch Top Institute Pharma (TI Pharma), Value Creation Call program, Reviewed six proposal, May 2011
2012	Peer Reviewer, University of Maryland, Maryland Industrial Partnerships Program, Reviewed one proposal, Oct 2012

Professional Societies

American Association of Pharmaceutical Scientists (AAPS)

1989-present	Member
2005-present	Lipid-based drug delivery systems focus group
2006-present	Ligand binding assay bioanalytical focus group

Biomedical Optics Society (Member Society of SPIE, the Society for Electro-Optical Engineers)

1999-2008	**Co-chair** for Conference entitled “Advanced Biomedical and Clinical Diagnostics Systems” at the annual Photonics West Meeting

1999	**Chaired** podium session entitled "Diagnostic Uses of Optical Biosensors" at BiOS '99, an international biomedical optics symposium held in San Jose, California (January 25, 1999).
2000	**Chaired** podium session entitled "Instrumentation in *In Vitro* Diagnostics" at BiOS 2000, an international biomedical optics symposium held in San Jose, California (January 26 & 27, 2000).
2001	**Chaired** podium session entitled "Optical Biosensor Systems" at BiOS 2001, an international biomedical optics symposium held in San Jose, California (January 21 & 22, 2001).
2002	**Chaired** podium session entitled "Diagnostic Sensor Technologies" at BiOS 2002, an international biomedical optics symposium held in San Jose, California (January 22 - 24, 2002).
2006	**Chaired** two podium sessions entitled "Biosensors" and "Biosensor Technologies for Point of Care Applications" at BiOS 2006, an international biomedical optics symposium held in San Jose, California (January 22 - 24, 2006).
2008	**Co-chaired** two podium sessions entitled "Noninvasive Technologies" & "Biosensors & Labeling") at BiOS 2008, an international biomedical optics symposium held in San Jose, California (January 20 - 21, 2008).

Federation of Analytical Chemistry and Spectroscopy Societies (FACSS)

1998	**Organized and chaired** a podium session entitled "Optical Biosensors" at the 25th Annual Conference of the Federation of Analytical Chemistry and Spectroscopy Societies (FACSS) held in Austin, Texas (Oct. 13, 1998).

Scholarly Journals

Journal of Pharmaceutical Science

1994-present	**Editorial Board**
1994-2000	**Acting Associate Editor**
2000-2002	**Associate Editor** Responsibilities included assigning reviewers and making editorial decisions on manuscripts for the journal. I handled more than 400 manuscripts during this time.

Manuscript Reviews

1985-present	Reviewed articles for more than 40 scholarly journals in the areas of analytical chemistry, analytical biochemistry, biochemistry, biomedical optics, biophysics, biosensors, biotechnology, chemistry, chemical engineering, colloids & surface science, controlled drug release, immunology, immunochemistry, molecular biology, pharmaceutical science, proteins and peptides, and structure biology. My typical "review load" is 6-12 articles per year. At least half of these are from the *Journal of Pharmaceutical Sciences*.

National and International Academic and Industrial Collaborators

1985-1994	Prof. Allen B. Edmunson, Harrington Cancer Center, Amarillo, Tx
1985-1995	Prof. David M. Jameson, University of Hawaii, Honolulu, HI
1988-present	Prof. Daan J. A. Crommelin, University of Utrecht, Utrecht, The Netherlands
1989-1992	Drs. Jan Vleggar and Francis Via, Akzo Corporate Research, The Netherlands
1990-1994	Dr. Paul Hamilton, Becton-Dickinson, Research Triangle Park, NC
1991-present	Dr. Sergey Tetin, Abbott Laboratories, Abbott Park, IL
1994-2008	Dr. Aiping Wei, 3M, St. Paul, MN
1996-2002	Prof. William M. Reichert, Duke University, Durham, NC
2000-2005	Dr. Mike Hageman, Pfizer (formerly Pharmacia), Kalamazoo, MI
2005-present	Dr. Reuven Duer, PLC Diagnostics, Inc., Thousand Oaks, CA
2006-present	Drs. Mike Lochhead and Chris Myatt, MBio Diagnostics, Inc. (formerly Precision Photonics, Inc.), Boulder, CO
2008-present	Dr. Aiping Wei, Agri-Analysis, West Sacramento, CA

Consulting Activities

1990-1992	TheraTech, Consultant
1993-2002	HCP Diagnostics, LP / Lumenal Technologies, LP, IVD Systems LLC / ThauMDx, LLC
	1993: **Co-founder** with Dr. Doug Christensen and Victor Pollak, Esq.
	1993-1999: **Chaired** Scientific Advisory Board
	1999-2002: Scientific Advisory Board
2000-2004	DuoFluor, **Co-founder**, Scientific Advisory Board
2004-2006	Olympus Biotechnologies, **Co-founder**, Scientific Advisory Board
2004-2006	Abbott Laboratories, Consultant
2006-present	MBio Diagnostics, Consultant
	2009-2011: Research Collaborator
2007	Ortho-Clinical Diagnostics (a Johnson & Johnson company), Consultant, Focus Group Participant
2007-present	PLC Diagnostics, Inc.
	2007: **Co-founder** with Drs. Doug Christensen and Reuven Duer
	2007-present: **Chair** Scientific Advisory Board
	2007-present: Research Collaborator
2008-present	Agri-Analysis, Inc., Consultant
	2011-present: Research Collaborator

Community Service Activities

Friends of the Cumbres and Toltec Scenic Railroad

The Friends of the Cumbres and Toltec Scenic Railroad is a non-profit 501(c)(3) corporation designated as the official museum group for the Cumbres and Toltec Scenic Railroad (C&TSRR), a National Historic Landmark that is owned jointly by the States of Colorado and New Mexico. The Railroad is an important industrial heritage site of National significance that preserves and operates 64 miles of narrow-gauge track in the San Juan mountains between Chama, NM and Antonito, CO as a living museum. The Friends has more than 2200 members worldwide. Its primary activities are curation and restoration of the Landmark's historical collection, fundraising, grant writing, and interpretation of the collection. Restoration is accomplished via a series of work sessions each summer in which volunteers from around the world restore railroad equipment and structures at the site.

Since 1988, I have spent at least a week per year doing restoration work on the railroad. For example, over the past 20 years I have been the team leader of a group of volunteers who restores historic buildings in the old railroad towns of Chama, NM, Cumbres, CO, and Sublette, NM. I have also served on the Board of Directors of the Friends of the C&TSRR since 1993 and held various leadership positions within the Friends including Secretary, Vice President, Vice Chairman of the Board, and Chairman of the Board.