

## CURRICULUM VITAE

Lawrence R. Soma

July 1, 2013

Office Address: University of Pennsylvania, School of Veterinary Medicine, New Bolton

Past Position: Marilyn M. Simpson Professor of Veterinary Medicine, Professor of Anesthesia & Clinical Pharmacology Department of Clinical Studies-NBC, School of Veterinary Medicine, University of Pennsylvania

Current Position: Emeritus Professor of Anesthesia and Clinical Pharmacology, Department of Clinical Studies, New Bolton Center, School of Veterinary Medicine, University of Pennsylvania  
Principal Investigator-Pennsylvania Horse & Harness Racing Commissions Research Program

Education: 1950-53 University of Connecticut  
1953-57 V.M.D. University of Pennsylvania

Primary Area of Research: Clinical Pharmacology, Pharmacokinetics/Pharmacodynamics, Anesthesiology, Exercise Physiology

### Postgraduate Training:

1957-58 Intern, Animal Medical Center, New York City, New York  
1958-60 Walter Reed Army Medical Center, US Army Veterinary Corps, Washington DC,  
1960-63 Resident-Fellowship, Department of Anesthesia and Department of Pharmacology, University of Pennsylvania School of Medicine, Philadelphia, Pennsylvania  
1968-73 Career Development Awardee, National Institute of Health  
1974-75 Special Fellowship Awardee, Heart and Lung Institute NIH

### Faculty Appointments:

1963-64 Instructor in Anesthesia, Department of Clinical Studies, School of Veterinary Medicine, University of Pennsylvania  
1964-67 Assistant Professor, Anesthesia Section, Department of Clinical Studies, University of Pennsylvania  
1967-72 Associate Professor, Chief Anesthesia Section, Department of Clinical Studies, University of Pennsylvania  
1971-75 Staff Member, Department of Anesthesia, University of Pennsylvania School of Medicine  
1972 Professor of Anesthesia, Department of Clinical Studies  
1990 Professor of Comparative Anesthesiology (Secondary), Department of Anesthesia, School of Medicine, University of Pennsylvania  
1993-2013 Marilyn M. Simpson Professor of Veterinary Medicine, Professor of Anesthesia & Clinical Pharmacology, Department of Clinical Studies-New

Bolton Center, School of Veterinary Medicine, University of Pennsylvania

July, 1 2013 Emeritus Professor of Anesthesia and Clinical Pharmacology, Department of Clinical Studies, New Bolton Center, School of Veterinary Medicine, University of Pennsylvania

**Administrative Appointments:**

1975-79 Chairman, Department of Clinical Studies, School of Veterinary Medicine, University of Pennsylvania

1975-78 Acting Director, Small Animal Hospital, School of Veterinary Medicine, University of Pennsylvania

Licensure: State of Pennsylvania

**Specialty Certification:**

Founding Member, American College of Veterinary Anesthesiology

**Memberships in Professional and Scientific Societies:**

American Veterinary Medical Association

Pennsylvania Veterinary Medical Association

American Physiological Society

American College of Veterinary Anesthesiology (President 1979-1980)

American Academy of Veterinary Pharmacology and Therapeutics

American Society of Anesthesiologists

Pennsylvania Society of Anesthesiologists

Member of Editorial Board Chromatographia

Academic Committees at the University of Pennsylvania:

Department Committees: Various search committees

**School Committees:**

Committee of Appointments and Promotions (3 times)

Committee on Academic Status of Students (3 times)

1989-1990 - Strategic Planning Committee

1992-1993 - Long Range Planning Committee

1992-1994 - Chairman Peer Review Committee - NBC

1995- 1997- Committee on Appointments and Promotions, Chairman 96-97

2005-2008- Committee on Appointments and Promotions

**University Committees:**

1991-92 - Member - Institutional Animal Care and Use Committee

1992-1996 - Chairman - Institutional Animal Care and Use Committee

1997- Chairman ULAR Administration Review Committee

1999 to 2003-Chairman - Institutional Animal Care and Use Committee

**External Academic or Administrative Service:**

United States Veterinary Corp., Walter Reed Army Institute of Medical Research 1958-1960

Veterinary-Chemist Advisory Committee and Medication

Committee - Association of Racing Commissioners International 1983-1990

Board member Drug, Cosmetic and Devices - State of Pennsylvania 1983-1990

Member New York Academy of Science Committee on Experimental Animal Care 1985-89

Member National Research Council - ILAR Committee on Recognition and Alleviation of Pain and Distress in Laboratory Animals	1989-1992
Hastings Center Committee on Ethical Guidelines for Animal Experimentation	1988-1990
Chairman - Committee on Animal Pain - Morris Animal Foundation	1988-1990
Drug Classification Committee, Association of Racing Commissioners Intnat.	1992-present
Association of Racing Commissioners International - Drug Testing Standards and Practice Committee, Veterinary Pharmacology Subcommittee	1991-present
Testing Integrity Partnership - Quality Assurance Program	1995-2011
Associate member - Association Racing Chemist.	2007-present
RMTC Scientific Advisory Committee	2008-present

Graduate Students, Postdoctoral Fellows, Residents Trained:

Drs. Alan Klide, Lin Klein, R. White, B. Caulderwood, J. Fujimoto, D. Wilson, K. Olson, E. Abrahamsen, S. Perkowski, M. Tomasic, K. Coyne, B. Brainard, P. Burns, T. Tomas, J. O'Brien, Walpack, Mary Robinson

Teaching Responsibilities at the University of Pennsylvania:

Anesthesia Core Course  
 Anesthesia Elective Course  
 Exercise Physiology

**Original Refereed Papers:**

1. Penna M, Soma LR, Aviado MD: Rose of carotid and aortic bodies in mediating the increase of cardiac output during anozemia. *Am J Physiol* 203:133, 1962.
2. Soma LR: Circulatory changes during thoracotomy and positive pressure ventilation. *Am Vet Assoc Proc* 136, 1963.
3. Soma LR, Shield DR: Neuroleptanalgesia produced by fentanyl and droperidol. *J Am Vet Med Assoc* 145:897, 1964.
4. Soma LR, Penna M, Aviado DM: Mechanisms for cardiac stimulation during anoxemia in the modified heart-lung preparations. *Pflugers Archiv* 282:209, 1965.
5. Soma LR, Kenney R: The cardiovascular, respiratory, EEG, and metabolic effects of doxapram in the dog. *Am J Vet Res* 28:191, 1967.
6. Buchanan JW, Patterson DF, Soma LR: Patent ductus arteriosus surgery in dogs weighing 490-3200 grams. *J Am Vet Med Assoc* 151:701, 1967.
7. Soma LR, Klide AM: Technique and equipment for inhalation anesthesia. *J Am Vet Med Assoc* 152:957, 1968.
8. Klide AM, Soma LR: Epidural analgesia. *J Am Vet Med Assoc* 153:165, 1968.
9. Clifford D, Soma LR: Feline experimental anesthesia. *Fed Proc* 28:1479, 1969.
10. Soma LR: Anesthetic system for cats and small dogs. *Penn Vet*, Sept. 1969.
11. Soma LR, Shite RJ, Kane PB: Surgical preparations of a chronic maternal-fetal model in pregnant sheep. *J Surg Res* 11:85, 1971.
12. Calderwood HW, Klide AM, Cohn B, Soma LR: Cardiorespiratory effects of tiletamine (CI 634) in cats. *Am J Vet Res* 32:154, 1971.
13. Klide AM, Cohn B, Calderwood HW, Soma LR: The cardiopulmonary effects of BAY VA 1470 in dogs. *Am J Vet Res* 32:1511, 1971.

14. Soma LR, Neufeld GR, Dodd DC, Marshall BE: Pulmonary function in hemorrhagic shock; the effect of pancreatic ligation and blood filtration. *Ann Surg* 179:395, 1974.
15. Marshall BE, Soma LR, Harp JR, Neufeld GR, Wurzel HA, Dodd DC: Pulmonary function after exchange transfusion of stored blood in dogs. *Ann Surg* 179:46, 1974.
16. Klide AM, Calderwood HW, Soma LR: The cardiopulmonary effects of xylazine in dogs. *Am Vet Res J* 36:931, 1975.
17. Marshall BE, Soma LR, Neufeld GR: Lung water volume at rest and exercise. *J Appl Physiol* 39:7, 1975.
18. Dudley WR, Soma LR, Barnes C, Smith TD, Marshall BE: An apparatus for anesthetizing small laboratory animals. *Lab Anim Sci* 25:481, 1975.
19. Marshall BE, Soma LR, Harp JR, Neufeld GR, Wurzel HA: Microaggregate formation in stored blood. I. Species differences and storage time. *Circ Shock* 2:175, 1975.
20. Marshall BE, Ellison N, Wurzel HA, Neufeld GR, Soma LR: Microaggregate formation in stored blood. II. Influence of anticoagulants and blood components. *Circ Shock* 2:185, 1975.
21. Marshall BE, Wurzel HA, Ellison N, Neufeld GR, Soma LR: Microaggregate formation in stored blood. III. Comparison of bentley, fenwal, pall, and swank micropore filtration. *Circ Shock* 2:249, 1975.
22. Neufeld GR, Williams J, Graves I, Soma LR, Marshall BE: Pulmonary capillary permeability in man and canine models of chemical pulmonary edema. *J Microvasc Res* 10:192, 1975.
23. Raphel CF, Soma LR: Exercise-induced pulmonary hemorrhage in Thoroughbreds following racing and "breeding." *Am J Vet Res* 43:1123-1127, 1982.
24. Raphel CF, Soma LR: Exercise-induced pulmonary hemorrhage in horses after different competitive exercise. *Proceedings First International Conference on Equine Exercise Physiology, Oxford, England, Sept. 22-24, 1982.*
25. Soma LR: Anesthetic and Analgesic Considerations in the Experimental Animal, in *The Role of Animals in Biomedical Research*, New York Academy of Science 406:32-47, 1983.
26. Soma LR, Gallis DE, Rudy TA, Davis WL, Cochran TA, Woodward CB: Phenylbutazone kinetics and metabolite concentrations in the horse following five days of administration. *Am J Vet Res* 44:2104-2109, 1983.
27. Gunson D, Soma LR: Renal papillary necrosis in horses after phenylbutazone and water deprivation. *Veterinary Pathology* 20:603-610, 1983.
28. Soma LR, Korber K, Anderson T, Hopkins J: The effects of furosemide on the plasma, urinary concentration and excretion of fentanyl: A model for the study of the interaction of drugs in the horse. *Am J Vet Res.* 45: 1743-1749, 1984.
29. Sweeney C, Soma LR, Beech J, Reef VB, Simmons Rd: Pharmacokinetics of ticarcillin in the horse after intravenous and intramuscular administration. *Am J Vet Res*, 45:1000-1002, 1984.
30. Sweeney CR, Soma LR, Bucan CA, Ray SG: Exercise-induced pulmonary hemorrhage in exercising Thoroughbreds: Preliminary results with pre-exercise medication. *Cornell Vet.* July, 1984.
31. Soma LR, Oppenlander GF, Laster L, Barr-Alderfer V: Effects of furosemide on racing times of horses with exercise-induced pulmonary hemorrhage. *Am J Vet Res*

- 46:763-768, 1985.
32. Soma LR, Sams R, Duer W, Tobin T, Woodward C, McDonald J: Plasma and serum concentrations of phenylbutazone and oxyphenbutazone in racing Thoroughbreds 24 hours after various dosage regimens. *Am J Vet Res* 46:932-938, 1985.
  33. Raphael-Sweeney CF, Soma LR: Exercise-induced pulmonary hemorrhage in Thoroughbred breezing and racing: Response to furosemide or hesperidin citrus bioflavonoids. *J Am Vet Med Assoc* 185:195-197, 1984.
  34. Orsini J, Soma LR, Rourke J, Park M: Pharmacokinetic analysis of amikacin sulfate in the horse following IV and IM administration. *J Vet Pharmacol Ther* 8:194-201, 1985.
  35. Sweeney RW, Sweeney CR, Soma LR, Woodward CB, Charlton CA: Pharmacokinetics of metronidazole given to horses by intravenous and oral routes. *Am J Vet Res* 47(8):1726-1729, 1986.
  36. Meredith D, Elser AH, Wolf B, Soma LR, Donawick WJ, Lazary S: Equine leukocyte antigens: Relationships with sarcoid tumors and laminitis in two pure breeds. *Immunogenetics* 23:221-225, 1986.
  37. Soma LR: Assessment of pain in experimental animals. *Lab Anim Sci Special Issue*, 71-74, January, 1987.
  38. Soma LR, Beech J, Gerber NH: Effects of Cromolyn in Horses with Chronic Obstructive Pulmonary Disease. *Veterinary Research Communications* 11:339-351, 1987.
  39. Soma LR, Klide A. Steady state anesthesia for experimental animals. *Proc Colloquium on Recognition and Alleviation of Animal Pain and Distress, AVMA* 191:1260-1265, 1987.
  40. Sweeney RW, Beech J, Simmons RD, Soma LR. Pharmacokinetics of ticarcillin and clavulanic acid given in combination to adult horses by intravenous and intramuscular routes. *J Vet Pharmacol Ther* 11:103-108, 1988.
  41. Gunson DE, Sweeney CR, Soma LR. Sudden death attributable to exercise-induced pulmonary hemorrhage in racehorses: Nine cases (1981-1983). *J Am Vet Med Assoc* 193:102-106, 1988.
  42. Wilson DV, Suslak L, Soma LR. Effects of frequency and airway pressure on gas exchange during interrupted high frequency pressure ventilation in ponies. *Am J Vet Res* 49:1263-1269, 1988.
  43. Soma LR, Tierney W, Satoh N: Sevoflurane anesthesia in the monkey: The effects of multiples of MAC. *Hiroshima J Anesthesia* 24:3-13, 1988.
  44. Sweeney CR, Fisher JRS, Hall J, Leary H, Soma LR. Efficacy of water vapor saturated air in the treatment of exercise-induced pulmonary hemorrhage in Thoroughbreds after breezing. *Am J Vet Res* 49:1705-1707, 1988.
  45. Soma LR, Behrend E, Rudy J, Sweeney R. Disposition and excretion of flunixin meglumine in horses. *Am J Vet Res* 49:1894-1898, 1988.
  46. Leary H, Soma LR, Spencer P, Sweeney CR, Ziemer E. The effect of water-vapor saturated air therapy on bronchoalveolar lavage and tracheal mucous transport rate in normal horses. *Am J Vet Res* 50(2):276-279, 1989.
  47. Monos DS, Wolf B, Radka SF, Rifat S, Donawick WJ, Soma LR, Zmuenski CM, Kamoun M. Equine class II MHC antigens: Identification of two sets of epitopes using anti-human monoclonal antibodies. *Tissue Antigens* 34:111-120, 1989.
  48. Sweeney CR, Soma LR, Maxson AD, Thompson JE, Holcombe SJ, Spencer PA. Effects of furosemide on the racing times of Thoroughbred racehorses. *Am J Vet Res*

- 51:772-778, 1990.
49. Johnston JK, Freeman DE, Gillette D, Soma LR. Effects of superoxide dismutase on injury induced by anoxia and reoxygenation in equine small intestine in vitro. *Am J Vet Res* 52:2050-2054, 1991.
  50. Uboh CE, Rudy JA, Soma LR, Fennell MA, May L, Sams R, Railing J, Shellenberger J, Kohler M. Characterization of bromhexine and ambroxol in equine urine: Effects of furosemide on identification and confirmation. *J Pharmaceut Biomed Analysis* 9:33-39, 1991.
  51. Wilson D, Soma LR. Cardiopulmonary effects of positive end-expiratory pressure in anesthetized, mechanically ventilated ponies. *Am J Vet Res* 51:734-739, 1990.
  52. Sweeney CR, Maxson AD, Soma LR. Endoscopic findings in the upper respiratory tract of 678 Thoroughbred racehorses. *J Am Vet Med Assoc* 198:1037-1038, 1991.
  53. Kauffman VG, Soma LR, Divers TJ, Perkons SZ. Extrapyramidal side effects caused by fluphenazine (prolixen decanoate) in a horse. *Am Vet Med Assoc*, 1990.
  54. Soma LR, Rudy J, Uboh CE, Fegely J. Plasma concentration of flunixin in the horse: Its relationship to thromboxane B<sub>2</sub> production. *J Vet Pharmacol Ther* 15:292-300, 1992.
  55. Uboh C, Soma LR, Sams R. Plasma concentrations of furosemide vs. specific gravity of urine in predicting the dose of furosemide in racehorses. *Research Communications in Chemical Pathology and Pharmacology* 77:201-218, 1992.
  56. Sweeney RW, Bardalaye PC, Smith CM, Soma LR, Uboh CE: A pharmacokinetic model for predicting disposition of sulfamethazine in the pig. *Am J Vet Res* 54:750-754, 1993.
  57. Olson KN, Klein LV, Nann LE, Soma LR. Closed-circuit liquid injection isoflurane anesthesia in the horse. *Vet Surg.* 1993 22(1):73-8.
  58. Maxson AD, Soma LR, May LL, Martini JA. Effects of furosemide, exercise and atropine on tracheal mucous transport rate of the horse. *Am J Vet Res* 56:908-912, 1995.
  59. Soma LR, Uboh CE, Rudy JA, Perkowski SZ. Plasma and synovial fluid kinetics, disposition and urinary excretion of naproxen in the horse. *Am J Vet Res* 56(8):1075-1080, 1995.
  60. Uboh CE, Soma LR, et al. Post mortem tissue samples: An alternative to urine and blood for drug analysis in racehorses. *J Analyt Toxicol* 16:1-9, 1995.
  61. Soma LR, Tierney WJ, Hogan GK, Satoh N. The effects of multiple administrations of sevoflurane to Cynomolgus monkeys: Clinical pathologic, hematologic and pathologic study. *Anesth Analg* 81:347-352, 1995.
  62. Fennell MA, Uboh CE, Sweeney RW, **Soma LR**. Gentamicin in tissue and whole milk: An improved method for extraction and cleanup of samples for quantitation on HPLC. *J Agric Food Chem* 43(7):1849-1852, 1995.
  63. **Soma LR**, Uboh C, Rudy J, Smith M. Disposition and excretion of 6MNA in the Horse: The Active Metabolite of Nabumetone. *Am J Vet Res* 57(4) 517-521, 1995.
  64. **Soma LR**, Uboh CE, Nann L, Gerber AL. Pre-race venous blood acid-base values in Standardbred horses. *Equine Vet J* 28(5) 390-396, 1996.
  65. Tomasic M, Mann **LR**, **Soma**. Effect of sedation, anesthesia, and endotracheal intubation on respiratory mechanics in adult horses. *Excepted Am J Vet Res* 1997
  66. **Soma LR**, Uboh CE. Review of furosemide in horse racing: its effects and regulation. *J Vet Pharmacol. Thera.* 21, 228-240, 1998

67. Luo Y., B. McNamara, M.A. Fennell, D.C. Teleis, L. May, J. Rudy, A.O. Watson, C.E. Uboh and **L.R. Soma**. HPLC Quantitation of Penicillin-G and Procaine in Equine Urine and Plasma. *Journal of Chromatography B*, 714, 1998 269-276
68. Klein LV, **Soma LR**, Nann LE. Accuracy and precision of the portable StatPal II and the laboratory-based NOVA Stat Profile 1 for Measurement of pH, PCO<sub>2</sub> and PO<sub>2</sub> in equine blood. *Vet Anesth* 1999;28:67-76.
69. Uboh CE, **LR Soma**, Y Luo, B McNamara, MA Fennell, L May, DC Teleis and JA. Rudy. Comparison of Pharmacokinetics of Procaine Penicillin-G with Procaine Hydrochloride and Penicillin-G Administration in the Horse. *Am. J. Vet. Res.* 61 (7) (2000) 811-815
70. **Soma LR**, EK Birks, CE Uboh L May, D Teleis, and J Martini. The effects of frusemide on racing times of Standardbred Pacers. *Vet. Equine Journal*. (2000) 32(4) 334-340
71. Guan F, CE Uboh, **LR Soma**, EK Birks, D Teleis, JA Rudy, AO Watson, D Tsang: Quantification of phenytoin and its metabolites in equine plasma and urine using high-performance liquid chromatography. *J. of Chromatography B*, 746 (2000) 209-218
72. **Soma LR**, CE Uboh; F Guan, EK Birks; D Teleis, JA Rudy, AO Watson, Disposition, elimination, and bioavailability of phenytoin and its metabolite in the horse. *Am. J. Vet. Res.* 62 (4) (2001) 483-489
73. Guan F, CE Uboh, **LR Soma**, Y Luo, et al. Quantification of Clenbuterol in Equine Plasma, Urine and Tissue by Liquid Chromatography coupled on-line with Quadrupole Time-of-Flight Mass Spectrometry (LC/QTOF-MS/MS). *Rapid Commun. in Mass Spectrom.* 16: (2002) 1642-1651
74. Birks EK, KM Schuler, **LR Soma**, BB Martin, L Marconato, F Del Piero, DC Teleis, d. Schar, AE Hessinger, and CE. Uboh. EIPH: endoscopic evaluation if Standardbreds and Thoroughbreds. *Equine Exercise Physiology, Equine vet J. Suppl.* 34: (2002) 375-378
75. Guan, F., C.E. Uboh, **LR Soma**, D. Teleis, Y. Luo, and D.S. Tsang. Sensitive LC-MS/MS method for the analysis of beclomethasone dipropionate and its metabolites in equine plasma and urine. *J. of Mass Spectrometry*, 38: (2003) 823-838.
76. Luo Y, JA Rudy, CE Uboh, **LR Soma**, F Guan, JM Enright and DS Tsang. Quantification and Confirmation of Flunixin in Equine Plasma by Liquid Chromatography-Quadrupole Time-Of-Flight Tandem Mass Spectrometry (LC/Q-Tof-MS/MS). (2004) *Journal of Chromatography B* 801, 173-184
77. **Soma LR**, CE Uboh, F Guan, D Teleis, and EK Birks. Pharmacokinetics, disposition and elimination of clenbuterol in the horse. (2004) *J. Vet. Pharmacol. & Therap.* 27, 71-77.
78. **Soma LR**, CE Uboh, F Guan, Y Luo, D Teleis, EK Birks, JA Rudy, DS Tsang and P Habecker. Tissue distribution of clenbuterol in the horse. (2004) *J. Vet. Pharmacol & Therap.* 27, 91-98
79. Guan F, CE Uboh, **LR Soma**, Y Luo, JS Jahr, and B Driessen. Confirmation and Quantification of hemoglobin-Based oxygen Carriers in Equine and Human Plasma by Liquid Chromatography Hyphenated with Tandem Mass Spectrometry. *Analytical Chemistry*. 2004, 76, 5127-5135.
80. Guan F, CE Uboh, **LR Soma**, Y Luo, and B Driessen. Unique Tryptic Peptides Specific for Bovine and Human Hemoglobin in the Detection and Confirmation of Hemoglobin-Based Oxygen Carriers. *Analytical Chemistry*. 2004. 76, 5118-5126.
81. **Soma LR**, CE Uboh, Y Luo, F Guan, PJ Moat, RC Boston. Pharmacokinetics of

- Dexamethasone in the Horse and a Pharmacokinetic/Pharmacodynamic Model of the Effect of Dexamethasone on Endogenous Hydrocortisone and Cortisone. *Journal of Veterinary Pharmacology & Therapeutics*. 2005;28,71-80
82. **Soma LR**, F Guan, CE Uboh, Y Luo, and B Driessen. Pharmacokinetics of hemoglobin-based oxygen carrier-200 (HBOC-200; Oxyglobin<sup>®</sup>) in the Horse. *Aesthesia & Analgesia*. 2005;100, 1570-1575.
  83. Luo Y, CE Uboh, **LR Soma**, F Guan, JA Rudy, and DS Tsang. Resolution, quantification, and confirmation of betamethasone and dexamethasone in equine plasma by liquid chromatography/tandem mass spectrometry. *Rapid Communications in Mass Spectrometry*. 2005;19, 825-832.
  84. Luo Y, CE Uboh, **LR Soma**, F Guan, JA Rudy, and DS Tsang. Simultaneous analysis of twenty-one glucocorticoids in equine plasma by liquid chromatography/tandem mass spectrometry. *Rapid Communications in Mass Spectrometry*. 2005;19: 1245-1256
  85. Guan F, CE. Uboh, **LR Soma**, Y Luo, J Rudy, and T Tobin; Detection, quantification and confirmation of anabolic steroids in equine plasma by liquid chromatography and tandem mass spectrometry. *Journal of Chromatography B*, 2005; 829: 56-59.
  86. **Soma LR**, CE Uboh, Y Luo, F Guan, PJ Moat, RC Boston. Pharmacokinetics of Intra-articular Administration of Methylprednisolone Acetate: Effect on Endogenous Hydrocortisone and Cortisone in the Horse. *American Journal of Veterinary Research*. 2006, 67(4): 654-662
  87. Guan F, CE Uboh, **LR Soma**, Y Luo, and S Petterman. Collision-induced decomposition of anabolic steroids by electrospray ionization quadrupole time-of-flight (QTOF) Mass Spectrometry. 2006, 17(4): 477-489
  88. Lankveld, D.P.K., B. Driessen, **L.R. Soma**, P.J. Moate, J. Rudy, C.E. Uboh, P. van Dijk & L.J. Hellebrekers. Pharmacodynamic effects and pharmacokinetic profile of a long-term continuous rate infusion of racemic ketamine in healthy conscious horses. *J Vet Pharmacol & Therap*. 29; 2006. 477- 488
  89. Orsini, JA, PJ Moate, K. Kuersten, **LR Soma**, and RC Boston. Pharmacokinetics of fentanyl delivered transdermally in healthy adult horses-variability among horses and clinical implications. *J Vet Pharmacol & Therap*. 29; 2006. 539-546
  90. **LR Soma**, CE Uboh, F Guan, S McDonnell, and J Pack. Pharmacokinetics of Boldenone and Stanozolol and the Results of Screening for Anabolic and Androgenic Steroids and in Race Horses and Non-Race Horses. *J of Vet Pharmacol & Therap*. 30, 2006. 101-108.
  91. Guan, F. CE. Uboh, **LR. Soma**, E. Birks, J. Chen, Y. You, F. Xu, and G. Mbuy Extraction and Confirmation of Recombinant Human Epo and Darbepoetin-Alpha in Equine Plasma by LC-MS. *Anal. Chem.*, **2007**, 79:4627-4635
  92. You, Y. CE. Uboh, **LR. Soma**, F. Guan, and J. Rudy. Determination of Alcohol Administration Biomarkers: Ethyl Glucuronide and Ethyl Sulfate in Equine Urine by Liquid Chromatography-Tandem Mass Spectrometry. *Rapid Communications Mass Spectrometry* 21, 3785-3794, 2007
  93. **Soma, LR**, JA. Rudy, CE. Uboh, F. Xu, HM. Snapp. Pharmacokinetics and effects of aminorex in horses. 2007. *Am J Vet. Res*, 69: 675-681
  94. Guan F, CE. Uboh, **LR. Soma**, EK. Birks, and J. Chen. Identification of Darbepoetin Alfa in Human Plasma by Liquid Chromatography Coupled to Mass Spectrometry for Doping Control. 2008. *International Journal of Sports Medicine*. 30: 80-86
  95. Guan, F, CE. Uboh, **LR. Soma**, EK Birks, J. Chen, Y. You, JA. Rudy, and X. Li.



- Differentiation and Identification of Recombinant Human Erythropoietin and Darbepoetin Alfa in Equine Plasma by LC-MS/MS for Doping Control. 2008, *Analytic Chemistry*, 79: 4627-4635
96. Chen, JW, CE. Uboh, **LR. Soma**, X. Li, F. Guan, and Y. You. Microsatellite loci in urine supernatant and stored samples from racehorses. 2008 *Am J Vet. Res*
  97. **Soma, LR**, CE. Uboh, F. Guan, and S. McDonnell. Plasma concentrations of testosterone and 19-nortestosterone (nandrolone) in non-racing intact male horses. 2008. *J Vet Pharmacol and Therap.* 31:587-590
  98. Ahern, BJ, **LR, Soma**; JA, Rudy; CE, Uboh; and TP, Schaer. Comparison of the analgesic properties of transdermally administered fentanyl and intramuscularly administered buprenorphine during and following experimental orthopedic surgery in sheep. 2009 *Am J Vet. Res.* 70:418-422
  99. You, Y, CE. Uboh, **LR. Soma**, F Guan, X Li<sup>1</sup>, JA. Rudy and J. Chen. Screening, Quantification and Confirmation of Phenylbutazone and Oxyphenbutazone in Equine Plasma by Liquid Chromatography-Tandem Mass Spectrometry. 2008; *Journal of Analytical Toxicology.* 33:41-50.
  100. Ahern, BJ, **LR, Soma**; JA, Rudy; CE, Uboh; and TP, Schaer. Pharmacokinetics of Transdermal Fentanyl in a Sheep Model. *Am J Vet. Res.* 2009; 70:418-22,
  101. Y You, F Guan, X Li, CE. Uboh, **LR. Soma**, and J Chen. UPLC-MS/MS in high-throughput detection, quantification and confirmation of anabolic steroids in equine plasma. 2009. *Rapid Communications In Mass Spectrometry.* 23: 13; 2035-2044
  102. Ahern, BJ, **LR, Soma**; JA, Rudy; CE, Uboh; and TP, Schaer. Pharmacokinetics of Transdermal Fentanyl in a Sheep Model., October, 2009 *Am J Vet. Res.*
  103. Chen JW. Uboh CE. **Soma LR**. Li X. Guan F. You Y. Microsatellite loci in urine supernatant and stored samples from racehorses. *Am J Vet Res.* 2009,70(5):648-57
  104. Chen, JW, CE. Uboh, **LR. Soma**, X. Li, F. Guan, and Y. You. Identification of racehorse and sample contamination by novel 24-plex STR system. *Forensic Science International: Genetics.* 2010, 4: 158-167.
  105. Chen, J.-W., Uboh, CE., **Soma, LR.**, Li, XQ., Guan, FY, You, YW and Liu Y (2010) Determining the source of blood stains by dinucleotide repeats, *Journal of Forensic Science*, 55(6):1610-1614.
  106. Li XQ; CE Uboh, **LR Soma**, FY Guan, YW You, JA Rudy, Y Liu and JW Chen. Simultaneous separation and confirmation of amphetamine and related drugs in equine plasma by non-aqueous capillary electrophoresis-tandem mass spectrometry. *Drug Testing and Analysis* 2, 70-81, 2010 (DOI 10:1002/dta.102, published online on February 9, 2010)
  107. You Y, CE Uboh, **LR Soma**, F Guan, X Li, Y Liu, J Chen, and D Tsang. Simultaneous Determination of Testosterone and Testosterone Enanthate in Equine Plasma by UHPLC-MS-MS (2010). *Chromatographia: Volume 72(11).* 1097.
  108. Guan F, CE. Uboh, **LR. Soma**, Y.You, Y.Liu, and X.Li: Correlation of product ion profiles with molecular structures of androgenic and anabolic steroids in ESI MS/MS. *Mass Spectrometry*, 2010, wileyonlinelibrary.com) DOI 10.1002/jms.1816
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- L.R. Soma, C.E. Uboh, Pennsylvania guidelines for medications in racehorses, Dec.1998, 1999

Grants or Contracts:

1964	McNeil Laboratories, NIH, Investigator
1966	A.H. Robins Company, Investigator
1978-70	Training in Veterinary Anesthesia, Seeing Eye, Investigator
1968-70	Career Development Award, NIH, Investigator
1967-71	Effects of General Anesthesia on the Fetus, NIH, Investigator
1974-75	Special Fellowship, Heart & Lung Institute, NIH, Investigator
1968	Astra Pharmaceutical Company, Co-Investigator
1970	Parke Davis Pharmaceutical, Co-Investigator
1971-75	Center Grant Dept. of Anesthesia, University of Pennsylvania, School of Medicine, Co-Investigator
1981-82	American Horse Show Association, Investigator
1980-81	Sunkist Corporation, Investigator
1980-81	Herst Corporation, CoInvestigator
1985-86	Grayson Foundation, Investigator
1984-86	University Veterinary Research Partners, Investigator
1987-88	Schering Corporation, Investigator
1988-89	Jockey Club, Co-Investigator
1995-present	Pennsylvania Horsemen's Benevolent and Protective Association

1995-present	Pennsylvania Harness Horsemen's Association
1995-97	Mindbody Corporation
1978-present	PA Racing Commissions/Pennsylvania Department of Agriculture
1998-2000	Association Racing Commissions International
2001-2002	Boehringer Ingelheim Pharmaceutical Company
2000-2001	Association Racing Commissions International
2003-2004	Racing Medication and Testing Consortium
2004-2006	Racing Medication and Testing Consortium