

CURRICULUM VITAE

BIOGRAPHICAL

Name: **Lori Ann Birder**

Home Address: 2483 Mt. Royal Rd. Pittsburgh, PA 15217

Citizenship: U.S.A.

Business Address: University of Pittsburgh
School of Medicine
Department of Medicine
Renal-Electrolyte Division
A1217 Scaife Hall
Pittsburgh, PA 15261

Business Phone: (412) 383-7368
Business Fax: (412) 648-7197
Email Address: lbirder+@pitt.edu

EDUCATION AND TRAINING

UNDERGRADUATE:

1978-1982
Duquesne University, Pittsburgh, PA 15282
B.Sc. Chemistry Department of Chemistry

GRADUATE:

1982-1985
Duquesne University, Pittsburgh, PA 15282
M.S. Pharmacology, Department of Pharmacology

1985-1992
University of Pittsburgh School of Medicine Pittsburgh, PA 15213
Ph.D. Neuropharmacology Department of Pharmacology William C. de Groat (Advisor)

POSTGRADUATE:

1992
Showa University Tokyo Japan Department of Physiology

1992-1995
UNC Chapel Hill, Chapel Hill NC
NRSA Postdoctoral Fellow Physiology

1995-1997
UNC Chapel Hill, Chapel Hill NC
Research Associate Physiology

APPOINTMENTS AND POSITIONS

ACADEMIC:

2020-2024

Department of Urology
Tor Vergata Universita Degli Studi di Roma (Italy)

Adjunct Professorship

2020-2027

Department of Urology
University of Pennsylvania

Adjunct Professorship

2020-2027

Department of Urology
SUNY Downstate College of Medicine, Brooklyn NY

Adjunct Professorship

2018-current

UPMC-UPSOM Aging Institute
University of Pittsburgh, Pittsburgh, PA

Associate Faculty Member

2013-

Departments of Medicine and Pharmacology
Renal-Electrolyte Division
University of Pittsburgh Pittsburgh, PA

Professor (with Tenure)

2013-2015

Department of Urology
University of Antwerp, Belgium

Adjunct Professor

2007-2013

Departments of Medicine and Pharmacology
Renal-Electrolyte Division
University of Pittsburgh Pittsburgh, PA

Associate Professor (with Tenure)

2001-2007

Departments of Medicine and Pharmacology
Renal-Electrolyte Division
University of Pittsburgh Pittsburgh, PA

Assistant Professor (Tenure-stream)

1998-2001

Department of Pharmacology
University of Pittsburgh Pittsburgh, PA

Research Assistant Professor

1997-1998

Department of Pharmacology
University of Pittsburgh Pittsburgh, PA

Instructor

1997-1998

Department of Physiology
University of North Carolina Chapel Hill Chapel Hill, NC

Adjunct Instructor

1995-1997
Department of Physiology
University of North Carolina Chapel Hill Chapel Hill, NC

Research Associate

1992-1995
Department of Physiology
University of North Carolina Chapel Hill Chapel Hill, NC

NRSA Postdoctoral Research Fellow

1992
Department of Physiology
Showa University Tokyo, Japan

International Postdoctoral Research Fellow

1988-1992
Department of Pharmacology
University of Pittsburgh School of Medicine Pittsburgh, PA

**Pharmaceutical Manufacturer's
Association Foundation Graduate Student
Researcher**

MEMBERSHIP IN PROFESSIONAL AND SCIENTIFIC SOCIETIES

Society for Urodynamics and Female Urology (SUFU)
International Continence Society (ICS)
UCLA Center for Neurovisceral Sciences (CNS) and Women's Health
ESSIC: International Society for the Study of Bladder Pain Syndrome
IASP: International Association for the Study of Pain
INUS: International Neuro-Urology Society

HONORS AND OTHER PROFESSIONAL ACTIVITIES

Pittsburgh Center for Neuroscience Basic Science Research Award	1989
Advanced Predoctoral Fellowship Pharmaceutical Manufacturers Association Foundation, Inc.	1989-91
Graduate Student Travel Award (ASPET annual meeting)	1991
Assistant Project Director Serotonergic Regulation of Visceral and Somatic Pain: Studies of LY287416, LY191617 and LY233708 grant from Eli Lilly Pharmaceutical Company	1991
Showa University Japan Medical School International fellowship award	1992
NIH Individual National Research Service Award (NRSA): (<i>Injury induced Adrenergic Responsiveness of DRG Neurons</i>)	1993
IUPHAR Young Investigator Award (1 st place honors)	2002
Senior Vice Chancellor Seminar Series Participant	2003
APS Lazaro J. Mandel Young Investigator Award in Epithelial Physiology	2003
Participant, Neural Control Committee, 3 rd International Consultation on Incontinence, Monaco	2004
MERIT Award NIH/NIDDK	2007
Plenary Speaker GlaxoSmithKline Urology Therapy Area Review	2007
Chair, Neural Control Committee, 4 th -6 th International Consultation on Incontinence	2008-16
University Pittsburgh DOM Representative to Executive Committee of the Winters Foundation	2009-15
Member International Continence Society Scientific Executive Committee	2009
Plenary Speaker Honoree 10 th Annual Meeting Society for Interstitial Cystitis of Japan	2010
Animal Models of Diabetic Complications Consortium (AMDCC) Steering Committee	2009-11
External Advisor for INComb and TRUST European Research Networks	2010-13

Biography Included in American Men & Women of Science	2012
3 rd International Consultation on Interstitial Cystitis Japan Executive Board	2012-13
Adjunct Professorship University of Antwerp (Belgium)	2013-14
Chair Basic Science Program-Society for Urology and Female Urodynamics (SUFU)	2013-14
Basic Science Program Committee- SUFU	2014-19
Editor for special issue Autonomic Neuroscience: Nervous control of the LUT	2016
Co-Chair Scientific Committee International Continence Society	2016-18
Deputy Editor: International Neurourology Journal	2017-
American Urological Association (AUA) Research Council:	
Appointed Member AUA Research Grants and Investigator Support Committee	2017-19
Associate Member of UPMC-UPSOM Aging Institute	2018-
Elected representative to the UPSOM Executive Committee of the Faculty	2018-21
Appointed Member AUA Research Advocacy Committee	2019-22
Adjunct Professorship Tor Vergata Universita Degli Studi di Roma (Italy)	2020-22
International Continence Society Member Board of Trustees	2019-23
Member Med7 Flanders Research Foundation (FWO) European Grant Review Panel	2020-25
Member SUFU Executive Committee	2020-23
Nominator for the VinFuture Foundation	2021-22
International Continence Society Board of Trustee Member	2020-26
Founding Editor-in-Chief ICS open access journal ‘Continence’	2021-25

PUBLICATIONS

REFEREED ARTICLES:

1. **Birder LA**, Roppolo JR, Iadarola MJ and de Groat WC. Electrical stimulation of visceral afferent pathways in the pelvic nerve increases *c-fos* in the rat lumbosacral spinal cord. *Neuroscience Letters* 29:193-196, 1991. PMID:1745400
2. Foglia JP, **Birder LA** and Perel JP. A new method for the determination of fluvoxamine in human plasma for HPLC with ultraviolet detection. *Journal of Chromatography* 495:295-302, 1989. PMID:2515199
3. **Birder LA** and de Groat WC. The effect of glutamate antagonists on *c-fos* expression induced in spinal neurons after irritation of the lower urinary tract. *Brain Research* 580:115-120,1992. PMID:1354554
4. **Birder LA** and de Groat WC. Increased *c-fos* expression in spinal neurons after chemical irritation on the lower urinary tract in the rat. *Journal of Neuroscience* 12:4878-4889, 1992. PMID:1464772
5. **Birder LA** and de Groat WC. Induction of *c-fos* gene expression of spinal neurons of the rat by nociceptive and non-nociceptive stimulation of the lower urinary tract. *American Journal of Physiology* 265:R326-R333, 1993. PMID:8368386
6. Kawatani M, Matsumoto G, **Birder LA**, Fukuoka H, Yoshiyama M and Misaki A. Intrathecal administration of NK₁ receptor antagonist CP96345, inhibits the micturition reflex in the rat. *Regulatory Peptides* 46:392-395, 1993. PMID:7692546
7. Kanai AJ, Mesaros S, Finkel MS, Oddis CV, **Birder LA** and Malinski T. Beta-adrenergic regulation of constitutive nitric oxide synthase in cardiac myocytes. *American Journal of Physiology* 273:C1371-1377, 1997. PMID:9357783
8. **Birder LA**, Kanai AJ and de Groat WC. DMSO: Effect on bladder afferent neurons and nitric oxide release. *Journal of Urology* 158:1989-1995, 1997. PMID:9334655

9. **Birder LA**, Apodaca G, de Groat WC and Kanai AJ. Adrenergic and capsaicin evoked nitric oxide release from urothelium and afferent nerves in urinary bladder. *American Journal of Physiology* 275:F226-229, 1998. PMID:9691011
10. **Birder LA** and de Groat WC. Contribution of C-fiber afferent nerves and autonomic pathways in the urinary bladder to spinal *c-fos* expression induced by bladder irritation. *Somatosensory and Motor Research* 15(1):5-12, 1998. PMID:9583573
11. **Birder LA**, Roppolo JR, Erickson VE and de Groat WC. Increased *c-fos* expression in spinal projection and preganglionic neurons after irritation of the lower urinary tract in the rat. *Brain Research* 834:55-69, 1999. PMID:10407093
12. **Birder LA** and Perl ER. Expression of α_{2A} adrenergic receptors in rat primary afferent neurones after peripheral nerve injury or inflammation. *Journal of Physiology (London)* 515.2:533-542,1999. PMID:10050019
13. Lecci A., **Birder LA**, Meini S., Catalioto R.M., Tramontana M., Giuliani S., Criscuoli M. and Maggi CA. Pharmacologic evaluation of the role of cyclooxygenase isoenzymes on the micturition reflex following experimental cystitis in rats. *British Journal of Pharmacology* 130:331-338, 2000. PMID:10807670
14. Lecci A., Carini F., Tramontana M., **Birder L.**, de Groat W., Santicioli P., Giuliani S., Maggi CA. Urodynamic effects induced by intravesical capsaicin in rats and hamsters. *Autonomic Neuroscience* 91:37-46, 2001. PMID: 11515800
15. Kiss S, Yoshiyama M, Cao YQ, Basbaum AI, de Groat WC, Lecci A, Maggi CA and **Birder LA**. Impaired response to chemical irritation of the urinary tract in mice with disruption of the preprotachykinin gene. *Neuroscience Letters* 313:57-60, 2001. PMID:11684339
16. Kanai AJ, Pearce LL, Clemens PR, **Birder LA**, VanBibber MM, Choi SY, de Groat WC and Peterson J. Identification of a neuronal nitric oxide synthase in isolated cardiac mitochondria using electrochemical detection. *Proceedings of the National Academy of Sciences (USA)*, 98(24):14126-14131,2001. PMID:11717466
17. Tirney S, Mattes CE, Yoshimura N, Yokayama T, Ozawa H, Tzeng E, **Birder LA**, Kanai AJ, Huard J, de Groat WC and Chancellor M. Nitric oxide synthase therapy for erectile dysfunction: comparison of plasmid, adenovirus, and adenovirus-transduced myoblast vectors. *Molecular Urology* 5:37-43,2001. PMID:11689150
18. Pearce LL, Kanai AJ, **Birder LA**, Pitt BR and Peterson J. The catabolic fate of nitric oxide: the nitric oxide oxidase and peroxynitrite reductase activities of cytochrome oxidase. *Journal of Biological Chemistry*, 277(16):13556-13562, 2002. PMID:11825895
19. **Birder LA**, Kanai AJ, de Groat WC, Kiss S, Nealen M.L., Burke N.E., Dineley K.E., Watkins S, Reynolds I.J., and Caterina M.J. Functional vanilloid receptors in non-neuronal urinary bladder epithelial cells. *Proceedings of the National Academy of Sciences (USA)* 98(23):13396-13401, 2001. PMID:11606761
20. Kanai AJ, Zeidel ML, Lavelle JP, Greenberger J, **Birder LA**, de Groat WC, Apodaca GL, Meyers SA, Ramage R and Epperly M. Manganese superoxide dismutase gene therapy protects against irradiation-induced cystitis. *American Journal of Physiology Renal Physiology* 283:F1304-12, 2002. PMID:12426235
21. **Birder LA**, Nealen M, Kiss S, de Groat WC, Caterina MJ, Wang E, Apodaca G and Kanai AJ. β -adrenergic agonists stimulate endothelial nitric oxide synthase in rat urinary bladder urothelial cells. *Journal of Neuroscience* 22(18):8063-8070, 2002. PMID:12223560
22. **Birder LA**, Nakamura Y, Kiss S, Nealen M, Barrick S, Kanai AJ, Wang E, Ruiz G, de Groat WC, Apodaca G, Watkins S and Caterina MJ. Altered urinary bladder function in mice lacking the vanilloid receptor TRPV1. *Nature Neuroscience* 5(9):856-890, 2002. PMID:12161756
23. Kreiss C, **Birder LA**, Kiss S, vanBibber M and Bauer AJ. COX-2 dependent inflammation increases spinal fos expression during rodent postoperative ileus. *GUT* 52:527-534, 2003. PMID:12631664
24. **Birder LA**, Kiss S, de Groat WC, Lecci A and Maggi CA. Effect of nepadutant, an NK2 tachykinin receptor antagonist, on immediate-early gene expression following trinitrobenzenesulfonic acid (TNBS)-induced colitis in the rat. *Journal of Pharmacology and Experimental Therapeutics* 304:272-6, 2003. PMID:12490601

25. Apodaca G, Kiss S, Ruiz WG, Meyers S, Zeidel M and **Birder L**. Disruption of bladder epithelium barrier function after spinal cord injury. *American Journal of Physiology Renal Physiology* 284: F966-976, 2003. PMID: 12527557
26. Chancellor MB, Tirney S, Mattes CE, Tzeng E, **Birder LA**, Kanai AJ, de Groat WC, Huard J, Yoshimura N. Nitric oxide synthase gene transfer for erectile dysfunction in a rat model. *BJU International* 91: 691-696, 2003. PMID:12699487
27. **Birder LA**, Barrick S, Roppolo JR, Kanai AJ, de Groat WC, Kiss S and Buffington CA. Feline interstitial cystitis results in mechanical hypersensitivity and altered ATP release from bladder urothelium. *American Journal of Physiology Renal Physiology* 285:F423-429, 2003. PMID:12759226
28. Kanai A, Epperly M, Pearce L, **Birder L**, Zeidel M, Meyers S, Greenberger J, de Groat W, Apodaca G and Peterson J. Differing roles of mitochondrial nitric oxide synthase in cardiomyocytes and urothelial cells. *American Journal of Physiology Heart Circ Physiology* 286:H13-H21, 2004. PMID:14684357
29. Archaya P, Beckel J, Ruiz WG, Wang E, Rojas R, **Birder L** and Apodaca G. Distribution of the tight junction proteins ZO-1, Occludin, and Claudin-4, -8 and -12 in bladder epithelium. *American Journal of Physiology Renal Physiology* 287:F305-F318, 2004. PMID:15068973
30. **Birder LA**, Ruan HZ, Chopra B, Xiang Z, Barrick S, Buffington CA, Roppolo JR, Ford AP, de Groat WC and Burnstock G. Alterations in P2X and P2Y purinergic receptor expression in urinary bladder from normal cats and cats with interstitial cystitis. *American Journal of Physiology Renal Physiology* 287:F1084-1091, 2004. PMID:15251862
31. Chopra B, Barrick SR, Meyers S, Beckel JM, Zeidel ML, Ford AP, de Groat WC and **Birder LA**. Expression and function of bradykinin B1 and B2 receptors in normal and inflamed rat urinary bladder urothelium. *Journal Physiology (London)* 562:859-871, 2005. PMID:15576455
32. Roppolo JR, Tai C, Booth AM, Buffington CA, de Groat WC and **Birder LA**. Bladder A δ afferent nerve activity in normal cats and cats with feline interstitial cystitis. *Journal of Urology* 173:1011-1015, 2005. PMID:15711367
33. **Birder LA**, Wolf-Johnston A, Buffington CA, Roppolo JR, de Groat WC and Kanai AJ. Altered inducible nitric oxide synthase expression and nitric oxide production in urinary bladder from cats with feline interstitial cystitis. *Journal of Urology* 173:625-629, 2005. PMID:15643277
34. Sculptoreanu A, Buffington CA, de Groat WC and **Birder LA**. Abnormal excitability in capsaicin-responsive DRG neurons from cats with feline interstitial cystitis. *Experimental Neurology* 193:437-443, 2005. PMID:15869946
35. Sculptoreanu A, Buffington CA, de Groat WC and **Birder LA**. Protein kinase C contributes to abnormal capsaicin responses in DRG neurons from cats with feline interstitial cystitis. *Neuroscience Letters* 381:42-46, 2005. PMID:15882787
36. Ruan Huai-Zhen, **Birder Lori**, de Groat William, Tai Changfeng, Roppolo James, Buffington Charles and Burnstock Geoffrey. Localization of P2X and P2Y receptors in dorsal root ganglia of the cat. *Journal of Histochemistry and Cytochemistry* 53:1273-1282, 2005. PMID:15923368
37. Wang EC, Lee JM, Ruiz WG, Balestreire EM, von Bondungen M, Barrick S, Cockayne DA, **Birder LA** and Apodaca G. ATP and purinergic receptor-membrane traffic in bladder umbrella cells. *Journal of Clinical Investigation* 115:2412-22, 2005. PMID:16110327
38. Beckel JM, Kanai A, Lee SJ, de Groat WC and **Birder LA**. Expression of functional nicotinic acetylcholine receptors in rat urinary bladder epithelial cells. *American Journal of Physiology Renal Physiology* 290:F103-F110, 2006. PMID:16144967
39. Ruan HZ, **Birder LA**, Xiang Z, Chopra B, Buffington T, Tai C, Roppolo JR, de Groat WC and Burnstock G. Expression of P2X and P2Y receptors in the intramural parasympathetic ganglia of the cat urinary bladder. *American Journal of Physiology Renal Physiology* 2006: 290:F1143-1152. PMID:16332929
40. Zhou C, Ziegler C, **Birder LA**, Stewart A and Levitan ES. Angiotensin II and stretch activate NADPH oxidase to destabilize cardiac Kv4.3 channel mRNA. *Circulation Research* 2006: 98:1040-1047. PMID:16556864

41. **Birder LA**, Wolf-Johnston A, Griffiths D and Resnick N. Role of Urothelial Nerve Growth Factor in Human Bladder Function. *Neurourology and Urodynamics* 26:405-409, 2007. PMID:17266135
42. Kanai AJ, Roppolo J, Ikeda Y, Zabbarova I, Tai C, **Birder LA**, Griffiths D, de Groat WC and Fry CH. Origin of spontaneous activity in neonatal and adult rat bladders and its enhancement by stretch and muscarinic agonists. *American Journal of Physiology Renal Physiology* 292:F1065-1072, 2007. PMID: 17107944
43. Hanna-Mitchell AT, Beckel JM, Barbadora S, Kanai AJ, de Groat WC and **Birder LA**. Non-neuronal acetylcholine and urinary bladder urothelium. *Life Sciences* 80:2298-302, 2007. PMID:17363007
44. **Birder L**, Kullmann FA, Lee H, Barrick S, de Groat W, Kanai A and Caterina M. Activation of urothelial-TRPV4 by 4 α -PDD contributes to altered bladder reflexes in the rat. *Journal of Pharmacology and Experimental Therapeutics* 323:227-35, 2007. PMID:17636010
45. Kullman FA, Artim D, **Birder L** and de Groat WC. Activation of muscarinic receptors in rat bladder sensory pathways alters reflex bladder activity. *Journal of Neuroscience* 28:1977-87, 2008. PMID: 18287514
46. Chopra B, Gever J, Barrick SR, Hanna-Mitchell AT, Beckel JM, Ford AP and **Birder LA**. Expression and function of rat urothelial P2Y receptors. *American Journal of Physiology Renal Physiology* 294:F821-829, 2008. PMID:18216148
47. Girard BM, Wolf-Johnston A, Braas KM, **Birder LA** and Vizzard MA. PACAP-Mediated ATP release from rat urothelium and regulation of PACAP-VIP and receptor mRNA in micturition pathways after cyclophosphamide-cystitis. *Journal of Molecular Neuroscience* 36:310-320, 2008. PMID:18533302
48. Studeny S, Cheppudira BP, Meyers S, Balestreire EM, Apodaca G, **Birder LA**, Braas KM, Waschek JA, May V and Vizzard MA. Urinary bladder function and somatic sensitivity in vasoactive intestinal polypeptide (VIP)-/- mice. *Journal of Molecular Neuroscience* 36:175-87, 2008. PMID:18561033
49. Kullmann F, Artim D, Beckel J, Barrick, de Groat WC and **Birder L**. Heterogeneity of muscarinic receptor mediated Ca²⁺ responses in cultured urothelial cells from rat. *American Journal of Physiology Renal Physiology* 294:F971-981, 2008. PMID:18272602
50. Saban MR, Backer JM, Backer MV, Maier J, Fowler B, Davis CA, Simpson C, Wu XR, **Birder L**, Freeman MR, Soker S, Hurst RE and Saban R. VEGF receptors and neuropilins are expressed in the urothelial and neuronal cells in normal mouse urinary bladder and are up-regulated in inflammation. *American Journal of Physiology Renal Physiology* 295:F60-72, 2008. PMID:18463314
51. Ikeda Y, **Birder L**, Buffington C, Roppolo J and Kanai A. Mucosal muscarinic receptors enhance bladder activity in cats with feline interstitial cystitis. *Journal of Urology* 181:1415-22, 2009. PMID:19157447
52. Kullmann FA, Shah M, **Birder LA** and de Groat WC. Functional TRP and ASIC-like channels in cultured urothelial cells from the rat. *American Journal of Physiology Renal Physiology* 296:F892-901, 2009. PMID:19158342
53. **Birder LA**, Wolf-Johnston AS, Chib MK, Buffington CB, Roppolo JR and Hanna-Mitchell AT. Beyond neurons: involvement of urothelial and glial cells in bladder function. *Neurourology and Urodynamics* 29:88-96, 2010. PMID:20025015
54. Saban MR, Sferra TJ, Davis CA, Simpson C, Allen A, Maier J, Fowler B, Knowlton N, **Birder L**, Wu X-R and Saban R. Neuropilin-VEGF signaling pathway acts as a key modulator of vascular, lymphatic and inflammatory cell responses of the bladder to intravesical BCG treatment. *American Journal of Physiology Renal Physiology* 299:F1245-56, 2010. PMID:20861073
55. Kanai A, Zabbarova I, Ikeda Y, Yoshimura N, **Birder LA**, Hanna-Mitchell A and de Groat W. Sophisticated models and methods for studying neurogenic bladder dysfunction. *Neurourology and Urodynamics* 30:658-67, 2011. PMID:21661010
56. Ikeda Y, Zabbarova I, **Birder L**, de Groat C, McCarthy C, Hanna-Mitchell AT and Kanai AJ. Botulinum neurotoxin serotype A suppresses neurotransmitter release from afferent as well as efferent nerves in the urinary bladder. *European Urology* 62:1157-64, 2012. PMID:22480459
57. Wolf-Johnston AS, Hanna-Mitchell AT, Buffington CA, Shinde S, Roppolo JR, Mayer E and **Birder LA**. Alterations in the non-neuronal acetylcholine synthesis and release machinery in esophageal epithelium. *Life Sciences* 91:1065-9, 2012. PMID: 22569297

58. Beckel JM and **Birder LA**. Differential expression and function of nicotinic acetylcholine receptors in the urinary bladder epithelium of the rat. *Journal of Physiology (London)* 590:1465-80,2012. PMID:22250215
59. **Birder LA**, Wolf-Johnston AS, Sun Y and Chai TC. Alteration in TRPV1 and muscarinic (M3) receptor expression and function in idiopathic overactive bladder urothelial cells. *Acta Physiologica*, 207:123-9, 2013. PMID:22691178
60. Hanna-Mitchell AT, Ruiz G, Danesghari F, Liu G, Apodaca G, and **Birder L**. Impact of diabetes mellitus on bladder uroepithelial cells. *American Journal of Physiology Regulatory Function*, 304:R84-93, 2013. PMID:23174855
61. Hanna-Mitchell AT, Wolf-Johnston AS, Barrick SR, Kanai AJ, Chancellor MB, de Groat WC and **Birder LA**. Effect of botulinum toxin A on urothelial-release of ATP and expression of SNARE targets within the urothelium. *Neurourology and Urodynamics*, 2013. doi:10.1002/nau.22508.
62. Kullmann FA, Daugherty S, de Groat WC and **Birder LA**. Bladder smooth muscle strips as a method to evaluate lower urinary tract pharmacology. *JoVE the Journal of Visualized Experiments*, 90:e51807. PMID:25178111; PMCID:PMC4435542.
63. Charrua A, Pinto R, Taylor A, Canelas A, Ribeiro-da-Silva A, Cruz CD, **Birder LA** and Cruz F. Can the adrenergic system be implicated in the pathophysiology of bladder pain syndrome/interstitial cystitis? A clinical and experimental study. *Neurourology and Urodynamics* , 10.1002/nau22542, 2013.
64. Jiang Yuan-Hong, Liu Hsin-Tzu, Chuang Yao-Chi, **Birder Lori**, Chancellor MB and Kuo Hann-Chorng. Pilot study of liposome encapsulated onabotulinumtoxin A from patients with overactive bladder- a single center clinical results and changes of urothelial sensory proteins. *Eur Urol* 65:1117-24, 2014.PMID:24555904.
65. Sunagawa M, Wolf-Johnston A, Nomiya M, Sawada N, Andersson K-E, Hisamitsu T and **Birder L**. Urinary bladder mucosal responses to ischemia. *World J Urol* 33:275-080, 2015. PMID:24728265; PMCID:PMC4194265.
66. Hanna-Mitchell AT, Wolf-Johnston AS, Roppolo JR, Buffington CA and **Birder LA**. CRF family peptide signaling in feline bladder urothelial cells. *Journal of Endocrinology* 222:113-21, 2014.PMID:24829219; PMCID:PMC4137776.
67. Nirmal J, Wolf-Johnston AS, Tyagi P, Kaufman J, Anthony M and **Birder L**. Liposomes provide urothelial cell protection against acrolein-induced toxicity. *Int J Nephrol Urol* 46:1947-52, 2014. PMID:24875005.
68. Persyn S, de Wachter S, Wyndaele M, **Birder L** and Wyndaele JJ. Mechanisms of pelvic organ cross-talk: impact of urethral ligation on the inhibitory rectovesical reflex. *J Urology*, 192:1574-9, 2014. PMID:24835055.
69. Coelho A, Wolf-Johnston A, Shinde S, Cruz C, Avelino A, Cruz F and **Birder L**. Urinary bladder inflammation induces changes in urothelial nerve growth factor and TRPV1. *British Journal of Pharmacology*, 172:1691-9, 2015. PMID:25297375.
70. Sugino Y, O'Malley KJ, Wang Z, Tyagi P, **Birder LA**, Ogawa O and Yoshimura N. Laser-capture microdissection for analysis of cell type specific gene expression of muscarinic receptor subtypes in the rat bladder with cyclophosphamide-induced cystitis. *International Urology and Nephrology*, 47:637-42, 2015. PMID:25681120.
71. Gillespie JJ, Rouget C, Palea S, Granato C, **Birder L** and Korstanje C. The characteristics of intrinsic complex micro-contractile activity in isolated strips of the rat bladder. *Naunyn-Schmiedeberg's Arch Pharmacol*, 388:709-18, 2015. PMID:26004385.
72. Beckel J, Daugherty SL, Tyagi P, Wolf-Johnston WS, **Birder LA**, Mitchell CH and de Groat WC. Pannexin 1 channels mediate the release of ATP into the lumen of the rat urinary bladder. *Journal of Physiology*, 593:1857-71, 2015. PMID:25630792.
73. Chapple CR, Osman NI, **Birder L**, van Koevinge GA, Oelke M, Nitti VW, Drake MJ, Yamaguchi O, Abrams P and Smith PP. The underactive bladder: a new clinical concept? *Eur Urol*, 68:351-3, 2015. PMID:25770481.
74. Kadedawa K, Yoshimura N, Majima T, Wada N, Shimizu T, **Birder L**, Kanai A, de Groat W, Sugaya K and Yoshiyama M. Characterization of bladder and external urethral activity in mice with or without spinal cord

- injury- A comparison study with rats. *Am J Physiol-Regulatory, Integrative and Comparative Physiol.* 310: R752-8, 2016.
75. Jhang FJ, **Birder LA**, Chancellor MB and Kuo HC. Patient characteristics for different therapeutic strategies in the management of ketamine cystitis. *NeuroUrol Urodyn*, 2016. Doi:10.1002/nau.22996.
 76. Tsai YC, **Birder L** and Kuo HC. Abnormal sensory protein expression and urothelial dysfunction in ketamine-related cystitis in humans. *Int NeuroUrol J*; 20:197-202, 2016.
 77. Kullmann FA, Clayton, DR, Ruiz WG, Wolf-Johnston A, Gauthier C, Kanai A, ***Birder LA** and ***Apodaca G.** (*shared corresponding authors). Urothelial proliferation and regeneration after spinal cord injury. *American J Physiol-Renal*, 313:F85-102, 2017.
 78. Matos R, Serrao P, Rodriguez L, **Birder LA**, Cruz F and Charrua A. Water avoidance stress induces bladder pain due to prolonged alpha1A adrenoceptors stimulation. *Naunyn-Schmiedeberg's Archives of Pharmacology*, 390:839-44, 2017.
 79. Montalbetti N, Rued AC, Taiclet SN, **Birder LA**, Kullmann FA and Carattino MD. Urothelial tight junction barrier dysfunction sensitizes bladder afferents. *eNeuro*, ENEURO/0381-16.2017, 2017.
 80. Kullmann, FA, Chang HH, Gauthier C, McDonnell BM, Yeh JC, Clayton DR. Kanai AJ, de Groat WC, Apodaca GL and **Birder LA**. Serotonergic paraneurons in the female mouse urethral epithelium and their potential role in peripheral sensory information processing. *Acta Physiologica*, 2018: doi:10.1111/apha.12919.
 81. Cheng F, **Birder LA**, Kullmann FA, Hornsby J, Watton PN, Watkins S, Thompson M, Robertson AM. The layer dependent role of collagen recruitment during loading in the rat bladder wall. *Biomechanics and Modeling in Mechanobiology*, 17:403-17, 2018.
 82. Truschel ST, Clayton DR, Beckel J, Yabes JG, Yao Y, Wolf-Johnston A, **Birder LA** and Apodaca G. Age-related lysosome dysfunction in rat urothelium. *PLoS One*, 13(6):30198817, 2018.
 83. Zabbarova IV, Ikeda Y., Carder EJ, Wipf P, Wolf-Johnston AS, **Birder LA**, Yoshimura N, Getchell SE, Almansoori K, Tyagi P, Fry CH Drake MJ, Kanai AJ. Targeting p75 neurotrophin receptors ameliorates spinal cord injury-induced detrusor sphincter dyssynergia in mice. *NeuroUrology and Urodynamics*, 37:2452-61, 2018.
 84. Ikeda Y, Zabbarova IV, **Birder LA**, Wipf P, Getchell SE, Tyagi P, Fry CH, Drake MJ, Kanai AJ. Relaxin-2 therapy reverses radiation-induced fibrosis and restores bladder function in mice. *NeuroUrology and Urodynamics*, 37:2441-51, 2018.
 85. Celine Meriaux, Ramona Hohnen, Aryo Zare, Ali Jahanshahi, **Lori Birder**, Sandra Schipper, Yasin Temel, Gommert A. van Koeveringe. Neuronal activation in the periaqueductal gray matter upon electrical stimulation of the bladder. *Frontiers in Cellular Neuroscience*, doi:10.3389/fncel.2018.00133, 2018.
 86. Jhang JF, **Birder LA**, Hsu YH, Hiang YH, Ho HC and Kuo H-C. Dysregulation of corticotropin-releasing hormone receptor in the pathogenesis of human interstitial cystitis/bladder pain syndrome. *Scientific Reports Nature*, in press, 2018.
 87. Kullmann FA, McDonnell BM, Wolf-Johnston AS, Lynn A, Ruiz WG, Zabbarova IV, Ikeda Y, Kanai AJ, Roppolo J, Bastacky S, Apodaca G, Buffington CAT and **Birder LA**. Tissue remodeling in feline interstitial cystitis/bladder pain syndrome. *Frontiers in Neuroscience*, doi:10.3389/fnsys.2018.00013, 2018.
 88. Kullmann FA, Beckel J, McDonnell B, Gauthier C, Lynn A, Wolf-Johnston A, Kanai A, Zabbarova I, Ikeda Y, de Groat and **Birder LA**. Involvement of TRPM4 in detrusor overactivity following spinal cord transection in mice. *Naunyn-Schmiedeberg's Archives of Pharmacology*, 391:1191-1202, 2018.
 89. **Birder LA**, Wolf-Johnston A, Jackson EK, Wein A and Dmochowski R. Aging increases the expression of vasopressin receptors in both the kidney and urinary bladder. *NeuroUrol and Urodynamics*, doi:10.1002/nau.23830, 2018.
 90. Ikeda Y, Wolf-Johnston AS, Roppolo J, Buffington CA and **Birder LA**. Feline interstitial cystitis enhances mucosa-dependent contractile responses to serotonin. *International NeuroUrology Journal*, 22:246-51, 2018.
 91. FA Kullmann, BM McDonnell, AS Wolf-Johnston, AJ Kanai, S Shiva, T Chelimsky, L Rodriguez and **LA Birder**. Stress-induced autonomic dysregulation of mitochondrial function in the rat urothelium. *NeuroUrology and Urodynamics*, doi:10.1002/nau.23876, 2018.

92. Mizoguchi S, Wolf-Johnston AS, Mori K, Mimata H, Suzuki T, Takoka E, deFranco DB, Wang Z, **Birder LA** and Yoshimura N. The role of prostaglandin and EP4 receptors in development of bladder overactivity in a rat model of chemically induced prostatic inflammation. *BJU Int*, doi:10.1111/bju.14845, 2019.
93. Jia-Fong Jhang, **Lori Birder**, Yuan-Hong Jiang, Yung-Hsiang Hsu, Han-Chen Ho and Hann-Chorng Kuo. Dysregulation of bladder corticotrophin-releasing hormone receptor in the pathogenesis of human interstitial cystitis/bladder pain syndrome. *Scientific Reports*, 9:19169, 2019.
94. Kullmann FA, Truschel ST, Wolf-Johnston AS, McDonnell BM, Lynn AM, Kanai AJ, Kessler TM, Apocaca G and **Birder LA**. Acute spinal cord injury is associated with mitochondrial dysfunction in mouse urothelium. *Neurourology and Urodynamics*, 38:1551-59, 2019.
95. Jhang JF, Wang HF, Hsu YH, **Birder LA** and Kuo HC. Upregulation of neurotrophins and transforming growth factor-beta expression in the bladder may lead to nerve hyperplasia and fibrosis in patients with severe ketamine-associated cystitis. *Neurourol Urodyn*, doi:10.1002/nau.24139, 2019.
96. Birkhauser, V., Liechti MD, Anderson CE, Bachmann LM, Baumann S, Baumberger M, **Birder LA**, Botter SM, Bueler S, Cruz CD, David G, Freund P, Friedl S, Gross O, Hund-Georgiadis M, Jordan X, Husmann K, Koschorke M, Leitner L, Luca E., Mehnert U, Mohr S, Mohammadzade F, Monatyrskaya K, Pohl D, Sadri H, Sartori AM, Schubert M, Sprengel K, Stalder SA, Stoyanov J, Stress C, Tatu A, Tawadros C, van der Lely S, Wollner J, Zubler V, Curt A, Pannek J, Brinkhof MWG and Kessler TM. TASCI-transcutaneous tibial nerve stimulation in patients with acute spinal cord injury to prevent neurogenic detrusor overactivity: protocol for a nationwide, randomized, sham-controlled, double-blind clinical trial. *BJU Open*, 10(8):e039164, 2020.
97. Jiang YH, Jhang JF, Hsu YH, Ho HC, Lin TY, **Birder LA** and Kuo HC. Urothelial health after platelet-rich plasma injection in intractable recurrent urinary tract infection: improved cell proliferation, cytoskeleton and barrier function protein expression. *LUTS*, doi:10.1111/luts.12364, 2020.
98. Monaghan TF, Kavoussi AM, Agudelo CW, Rahman SN, Michelson KP, Bliwise DL, Lazar JM, **Birder LA**, Alwis US, Walle JV, Wein AJ, Blaivas JG, Weiss JP, Everaert K. Nocturnal urine production in women with global polyuria. *Int Neurourol J* 24:270-77, 2020.
99. Monaghan TF, Bliwise DL, Dmochowski RR, Lazar JM, **Birder LA**, Everaert K, Weiss, JP. Associations between nighttime and daytime maximum voided volumes: relevance for nocturia? *Neurourol Urodyn* 39:2301-2304, 2020. doi: 10.1002/nau.24485.
100. Jhang JF, Lin TY, Ho HC, Jiang YH, Hsu YH, **Birder LA**, Kuo HC. Deficits of urothelial cell proliferation, cytoskeleton, and barrier function protein expression in patients with recurrent and persistent urinary tract infections. *Lower Urinary Tract Symptoms*, doi:10.1111/luts/12351, 2020.
101. **Birder LA**, Wolf-Johnston A, Wein AJ, Grove-Sullivan M, Stoltz D, Watkins S, Newman D, Dmochowski RR, Jackson EK. A uro-protective agent with restorative actions on urethral and striated muscle morphology. *World J Urology* 2020. Doi: 10.1007/s00345-020-03492-6.
102. **Birder LA**, Wolf-Johnston A, Wein AJ, Cheng F, Grove-Sullivan M, Kanai AJ, Watson AM, Stoltz D, Watkins SC, Robertson AM, Newman D, Dmochowski RR and Jackson EK. Purine nucleoside phosphorylase inhibition ameliorates age-associated lower urinary tract dysfunctions. *Journal of Clinical Investigation Insight*, 5(20):140109, 2020 doi:10.1172/jci.insight.140109.
103. Monaghan T, Dmochowski RR, Verbalis JG, Wein AJ, Lazar JM, **Birder LA**, Everaert K, Weiss JP, Bliwise DL. First voided volume: a novel metric characterizing nocturia. *Neurourol Urodyn*, doi:10.1002/nau.24633, 2021.
104. Monaghan TF, Miller CD, Agudelo CW, Rahman SN, Everaert K, **Birder LA**, Wein AJ, Weiss JP and Lazar JM. Cardiovascular risk independently predicts small bladder capacity. *Int Urol Nephrol* 53:35-39, 2021.
105. Zabbarova I, Ikeda Y, Tyagi P, Birder LA, Andersson KE, Drake M, Fry M and Kanai AJ. Benign prostatic hyperplasia/obstruction ameliorated using a soluble guanylate cyclase activator. *J Pathology*, 256:442-454, 2022, doi:10.1002/path.5859. PMID:34936088.

106. de Rijk MM, Wolf-Johnston A, Kullmann A, Shiva S and **Birder LA**. Aging-associated changes in oxidative stress negatively impacts the urinary bladder urothelium. *International Neurourology Journal*, 26:111-119, 2022. PMID:3579389; PMCID: PMC9260322.
107. Jhang JF, Jiang YH, Hsu YH, Ho HC, **Birder LA**, Lin TY and Kuo HC. Improved urothelial cell proliferation, cytoskeletal and barrier function protein expression in the patients with interstitial cystitis/bladder pain syndrome after intravesical platelet-rich plasma injection. *Int Neurorol J* 26:S57-67, 2022.
108. Lakshay Khosla, Joseph Boroda, Joshua Salama, Syed Rahman, Jeffrey Weiss and **Lori Birder**. Impact of aging on urinary natriuretic peptides in nocturia. *Int Neurorol J* 26:3-19, 2022.
109. Ikeda Y, Zabbarova I, de Rijk M, Wolf-Johnston A, Weiss J and **Birder L**. Desmopressin promotes detrusor smooth muscle relaxation via mucosal vasopressin-2 receptors- implications for nocturia treatment. *Continence*, doi:10/1016/j.cont.2022.100032; PMID:3578681; PMCID: PMC9250757, 2022.
110. Cheng F., Watton PN, Pederani G, Kurobe M., Takoka E, Chapple C, **Birder L**, Yoshimura N and Robertson AM. A constrained mixture-micturition-growth (CMMG) model of the urinary bladder: integrative modelling of outlet obstruction. *J Mech Behav Biomed Mater*, 134:105337, 2022. PMID:35863296.
111. Mathijs M. de Rijk, Janine Janssen, Susanna Fernandez Chadily, **Lori A. Birder**, Mohammad S. Rahnama'I, Gommert A. van Koeveringe, Job van den Hurk. Group level analysis of MRI based functional organization related to autonomic processing in the human periaqueductal gray. *Neuroimage*, 16:1028925. Doi:10.3389/fnins.2022.1028925, 2022.
112. Tabansky I, Moldwin RM, Liu M, Najjar S, Keskin DB, Nursey V, Laurent M, **Birder LA**, Brusica V, Zhang G and Stern JHN. A shared B-cell clonotype in patients with interstitial cystitis/bladder pain syndrome presenting with Hunner lesions. *Continence Reports*, 4:100015, 2022.
113. Edwin K. Jackson, Elizabeth V. Menshikova, Vladimir B. Ritov, Zaichuan Mi and **Lori A. Birder**. Renal Pharmacology of 8-aminopurines. *Journal of Pharmacology and Experimental Therapeutics*, doi: 10.1124/jpet.122.001221, 2022.
114. de Rijk, M.M., Wolf-Johnston, A., Kullmann, A.F., Maringer, K., Sims-Lucas, S., van Koeveringe, G.A., Rodriguez, L.V., **Birder, L.A.**, Stress-induced changes in trophic factor expression in the rodent urinary bladder: possible links with angiogenesis. *International Neurourology Journal*, 26:299-307, 2022. PMID:36599338.
115. Sanses T., Zillioux J., High R., Dengler K., Ackenbom M., DuBeau C., Alperin M., Wagg A, **Birder L**, Dumoulin C and Bavendam T. Evidence-informed, inter-disciplinary, multi-dimensional action plan to advance overactive bladder (OAB) research and treatment initiatives: directives from state-of-the-science conference on OAB and cognitive impairment. *Urogynecology*, 29:S20-S39, 2023.
116. Jiang YH, Jhang JF, **Birder LA** and Kuo HC. Sensory receptor, inflammatory and apoptotic protein expression in the bladder urothelium of patients with different subtypes of interstitial cystitis/bladder pain syndrome. *International J Molecular Science*, 24:820, 2023.doi:10.3390/ijms24010820. PMID:36614264.
117. **Lori A. Birder**, Amanda S. Wolf-Johnston, Irina Zabbarova, Youko Ikeda, Ann. M. Robertson, Ricardo Cardozo, Fatemeh Azari, Anthony J. Kanai, George A. Kuchel and Edwin K. Jackson. Hypoxanthine induces signs of bladder aging with voiding dysfunction and lower urinary tract remodeling. *J. Gerontology A Biol Sci Med Sci*, 2023. doi:10.1093/Gerona/glad171.

Non-Refereed Articles/Other:

New Scientist, March 20, 1999; “Why the Pain of Wounds Comes Back to Haunt You”.

Interstitial Cystitis Network, 1999; “The Role of Nitric Oxide in Interstitial Cystitis”.

Pitt Med Magazine, 2004, “Cells lining the Bladder are Similar to Nerves”.

Cover of Journal of Stem Cells, volume 3 number 1 2008: *The expression of epithelial and neural markers of differentiating embryonic stem cells.* (Image Naira Serobyian, Jeanne Loring, Lori Birder and Sophia Khaldoyanidi).

BOOK CHAPTERS / INVITED REVIEWS:

1. Kawatani M, **Birder LA**, Weight FF, White G, Matsumoto G, Roppolo JR and de Groat WC. Nociceptive afferent pathways innervating the urogenital tract. In: *Symposium Proceedings, Elsevier Series, Excerpta Medica Internal Congress* (R. Inoki, Y. Shigenaga and M. Tohyama, eds), pp.15-21, 1992.
2. de Groat WC, **Birder LA**, Morgan CW, Roppolo JR, Yoshiyama M and Suzuki T. Recent developments in the neuropharmacology and neurophysiology of the lower urinary tract. *Neurourology and Urodynamics* 111:269-72,1992.
3. **Birder LA** and Perl ER. Cutaneous Sensory Receptors. In: H. Luders, ed. *Journal of Clinical Neurophysiology*. New York: Raven Press, Ltd., 1994:534-552. PMID:7860718
4. Lecci A, **L. Birder**, Meini S, Giuliani S, Tramontana M, Crisuoli M and Maggi CA. Capsaicin and the micturition reflex: Actions of tachykinins and other transmitters. *Research Trends: Current Topics in Pharmacology* 4:199-220, 1999.
5. **Birder LA**. Involvement of the urinary bladder urothelium in signaling in the lower urinary tract. *Proc West Pharmacol Soc* 44:85-6, 2001. PMID:11794006
6. **Birder LA**. Role of the urothelium in bladder function. *Scand Journal of Urology and Nephrology* 215:48-53, 2004. PMID:15545196
7. **Birder LA**. More than just a Barrier: Urothelium as a Drug Discovery Target for Urinary Bladder Pain. *Invited Review, American Journal of Physiology Renal Physiology* 289:F489-95, 2005. PMID:16093424
8. **Birder LA**. Urinary Bladder Urothelium: Molecular Sensors of Chemical/Thermal/Mechanical Stimuli. *Invited Review, Vascular Pharmacology* 45:221-6, 2006. PMID:16891158
9. J. Morrison, **L. Birder**, M. Craggs, W. de Groat, J. Downie, M. Drake, C. Fowler and K. Thor. Neural Control. In: Paul Abrams, Linda Cardozo, Saad Khoury and Alan Wein eds. *Incontinence: Basics and Evaluation*. Volume 1, Chapter 3, pps 363-422, 2005.
10. **Birder LA**. Review: Physiology of bladder urothelium. *AUA Update Series*, lesson 25, 2006.
11. **Birder LA**. Urothelium as a Pain Organ. In: *The Senses: A Comprehensive Reference*. (Ronald R. Hoy, Gordon M. Shepherd, Allan I. Basbaum, Akimichi Kaneko and Gerald Westheimer, eds). Oxford, Elsevier, Chapter 3, 2007.
12. Yoshimura N and **Birder LA**. Interstitial cystitis and related painful bladder syndromes: pathophysiology. In: J. Pasricha, W. Willis and G. Gebhart, eds. *Chronic Abdominal and Visceral Pain: Theory and Practice*. 2006.
13. **Birder LA**. Role of the Urothelium in Urinary Bladder Dysfunction following Spinal Cord Injury. In: L.C. Weaver, ed. *Progress in Brain Research* 152: 135-146, 2006. PMID:16144967
14. Kanai A, de Groat W, **Birder L**, Chai T, Hultgren S, Fowler C and Fry C. Symposium report on urothelium dysfunction: pathophysiology and novel therapeutics. *Journal of Urology* 175:1624-1629, 2006. PMID:16600715
15. **Birder L**, Kanai A, Liebert M and Saban R. Research priorities in urothelial cell physiology. *The Physiologist*, 49:106-111, 2006. PMID:16572557
16. Yoshimura N and **Birder LA**. Urothelial and afferent mechanisms inducing pain in interstitial cystitis. *Journal of Neuropathic Pain & Symptom Palliation*, 2:3-22, 2006.
17. **Birder LA** and de Groat WC. The Urothelium as a Sensory Organ. *Nature Clinical Practice Urology*, 4:46-54, 2007. PMID:17211425
18. Patel AK, Chapple CR, Koelbl H, Andersson K-E and **Birder L**. What's Hot from the ICS Annual Meeting 2006. *Neurourology and Urodynamics* 1-6, 2007.
19. Apodaca G, Balestreire E and **Birder LA**. The uroepithelial-associated sensory web. *Kidney International* 72:1057-64, 2007. PMID:17667988

20. **LA Birder**. TRPs in Bladder Disease. *BBA Molecular Mechanisms of Disease* 1772:879-84, 2007. PMID:17560087
21. **Birder LA**, de Groat WC and Apodaca G. Physiology of the Urothelium, in Textbook of the Neurogenic Bladder, edited by Corcos J, and Schick E. London; New York: Martin Dunitz, 2008, p 19-39.
22. Hanna-Mitchell AT and **Birder LA**. New insights into the pharmacology of the bladder. *Current Opinions in Urology* 18:347-52, 2008. PMID: 18520753
23. **Lori A. Birder** and Christopher Chapple. Prt II: Visceral Pain Syndromes, Chronic pelvic pain/interstitial cystitis. In: *Functional Pain Syndromes: Presentation and Pathophysiology*. (E.A. Mayer and M.C. Bushnell eds). IASP Press, Seattle WA, 7:151-168. 2009.
24. **Birder LA**, Hanna-Mitchell AT and Kanai AJ. Neural-epithelial communication and visceral pain. In: *Research Signposts: Textbook on Visceral Pain* (Dale Bjorling, ed). 2009.
25. **Birder L**, Drake M, Fowler C, de Groat W, Mayer E, Morrison J, Paton J, Griffiths D, Mills I and Thor K. Neural Control. In: Paul Abrams, Linda Cardozo, Saad Khoury and Alan Wein eds. *Incontinence: Basics and Evaluation*. Volume 1, Chapter 3, 2009.
26. Danesghari F, Giuming L, **Birder L**, Hanna-Mitchell A and Chacko S. Diabetic bladder dysfunction: current translational knowledge. *Journal of Urology* 182:18-26, 2009. PMID:19846137
27. **Birder LA**. Urothelial Signaling. In: G. Burnstock, A. Blackshaw and D. Grundy eds. "Visceral Afferents" *Autonomic Neuroscience* 153:33040, 2010. PMID:19666243.
28. Abrams P, Andersson KE, **Birder L**, Brubaker L, Cardozo L, Chapple C, Cottenden A, Davila W, de Ridder D, Dmochowski R, Drake M, Dubeau C, Fry C, Hanno P, Smith JH, Herschorn S, Hosker G, Kelleher C, Koelbl H, Khoury S, Madoff R, Milsom I, Moore K, Newman D, Nitti V, Norton C, Nygaard I, Payne C, Smith A, Staskin D, Tekgui S, Thuroff J, Tubaro A, Vodusek D, Wein A, Wyndaele JJ. Fourth international consultation on incontinence recommendations of the international scientific committee: Evaluation and treatment of urinary incontinence, pelvic organ prolapse and fecal incontinence. *Neurourology and Urodynamics* 29: 213-240, 2010. PMID:20025020
29. **Birder L**, de Groat W, Mills I, Morrison J, Thor K and Drake M. Neural control of the lower urinary tract: peripheral and spinal mechanisms. *Neurourology and Urodynamics* 29:128-39, 2010. PMID:20025024
30. Drake M, Fowler C, Paton J, Griffiths D, Mayer E and **Birder L**. Neural control of the lower urinary tract: midbrain-brainstem control of bladder function. *Neurourology and Urodynamics* 29:119-27, 2010. PMID:20025025
31. **Birder LA**, Kanai AJ, Cruz F, Moore K and Fry CH. Is the urothelium intelligent? *Neurourology and Urodynamics* 26: 7-12, 2010. PMID:20432329
32. Fry CH, Daneshgari F, Thor K, Drake M, Eccles R, Kanai AJ and **Birder LA**. Animal models and their use in understanding lower urinary tract dysfunction. *Neurourology and Urodynamics* 26:1-6, 2010. PMID:20432320
33. **Birder LA** and de Groat WC. Autonomic control of the lower urinary tract. In: D. Robertson, P. Low, I. Biaggioni, J. Paton and G. Burnstock eds. *Primer of the autonomic nervous system*, 2011.
34. **Birder LA**. Urothelial signaling. *Handbook of Experimental Pharmacology* 202:207-31, 2011. PMID:21290228
35. **Birder L**, Hanna-Mitchell A, Mayer E and Buffington C. Cystitis, co-morbid syndromes and associated epithelial dysfunction. *Neurourology and Urodynamics* 30:668-72, 2011. PMID:21661011
36. Hanno P, Andersson K-E, **Birder L**, Elneil S, Kanai K and Pontari M. Chronic pelvic pain syndrome/bladder pain syndrome: taking stock, looking ahead. *Neurourology and Urodynamics* 31:375-83,2012. PMID:22432362
37. Kirschner-Hermanns R, Daneshgari F, Vahabi B, **Birder L**, Oelke M and Chacko S. Does diabetes-mellitus induced bladder remodeling affect lower urinary tract function? *Neurourology and Urodynamics* 31:359-64, 2012. PMID:22415965
38. **Birder LA**, Ruggieri M, Takeda M, Veltkamp S, Korstanje C, van Koeveeringe GA, Parsons B and Fry CH. How does the urothelium affect bladder function in health and disease? *Neurourology and Urodynamics*, 31:293-9, 2012. PMID:22275289

39. **Lori Birder** and Jean-Jacques Wyndaele. From urothelial signaling to experiencing a sensation related to the urinary bladder. *Acta Physiologica*, 207:34-9, 2013. PMID:23110490.
40. Giuilano F, Uckert S, Maggi M, **Birder L**, Kissel J, Viktrup L. The mechanism of action of phosphodiesterase type 5 inhibitors in the treatment of lower urinary tract symptoms related to benign prostatic hyperplasia. *European Urology*, 63:506-16, 2013. PMID: 23018163.
41. Abrams,P., Andersson KE, Artibani W, **Birder L**, Bliss D, Brubaker L, Cardozo L, Chapple C, Cottenden A, de Ridder D, Dmochowski R, Doumolin C, Drake M, Fry C, Hanno P, Herschorn S, Kelleher C, Koelbl H, Khoury S, Madoff R, Milsom I, Moore KH, Moore KN, Newman D, Nijman R, Rosier P, Staskin D, Thuroff J, Tubaro A, Vodusek DB, Wein A. 5th International Consultation on Incontinence Recommendations of the International Scientific Committee: Evaluation and Treatment of Urinary Incontinence, Pelvic Organ Prolapse and Faecal Incontinence. *Neurourology and Urodynamics*, in press, 2013.
42. **Birder, LA**. Nervous network for lower urinary tract function. *International Journal of Urology*, 20:4-12, 2013. PMID:23088378.
43. **Birder LA** and Andersson KE. Urothelial Signaling. *Physiological Reviews*, 93:653-80, 2013. PMID:23589830.
44. Fry CH, Sahai A, Vahabi B, Kanai AJ and **Birder LA**. What is the role for biomarkers for lower urinary tract disorders? ICI-RS 2013. *Neurourology and Urodynamics*, 33:602-5, 2014. PMID:24436105.
45. **Birder LA**, de Wachter S, Gillespie J and Wyndaele Jean-Jacques. Urethral sensation: Basic mechanisms and clinical expressions. *International Journal of Urology*, 1:13-6, 2014. PMID:24807486.
46. **Birder LA**. Urinary Bladder, Cystitis and Nerve/Urothelial Interactions. *Autonomic Neuroscience: Basic and Clinical*. 182:89-94,2014.
47. Susan K. Keay, **Lori A. Birder** and Toby C. Chai. Evidence for bladder urothelial pathophysiology in functional bladder disorders. *Biomedical Research International*, 2014:865463. PMID:24900993.
48. **Birder LA**, Andersson KE, Kanai AJ, Hanna-Mitchell AT and Fry CH. Urothelial mucosal signaling and the overactive bladder- ICI-RS 2013. *Neurourology and Urodynamics*, 33:597-601, 2014.PMID:24838393.
49. Kanai A, Fry C, Hanna-Mitchell A, **Birder L**, Zabbarova I, Bijos D, Ikeda Y. Do we understand any more about bladder interstitial cells- ICI-RS 2013. *Neurourology and Urodynamics*, 33:573-6, 2014.PMID:24838179.
50. van Koeveringe G.A., Rademakers K.L.J., **Birder L.A.**, Korstanje C, Daneshgari F, Ruggieri M.R., Igawa Y., Fry C. Wagg A. Detrusor underactivity and aging; pathophysiological considerations, models and future research. ICI-RS 2013. *Neurourology and Urodynamics*, 33:591-6, 2014. PMID:24839258; PMCID:PMC4140393.
51. Tyagi P, Smith PP, Kuchel GA, de Groat WC, **Birder LA**, Chermansky CJ, Adam RM, Tse V, Chancellor MB and Yoshimura N. Pathophysiology and animal modeling of underactive bladder. *Int Urol Nephrol*, 1:S11-21, 2014.PMID:25238890.
52. Song Q-X, Chermansky C, **Birder L**, Li L and Damaser M. Brain-derived neurotrophic factor in urinary continence and incontinence. *Nature Reviews Urology*, 11:579-88, 2014. PMID:25224451.
53. Kirschner-Hermanns R, Anding R, **Birder L**, Rosier P, Andersson KE and Djurhuus JC. Urethral sphincter instability- a neglected contributing factor in patients with bladder dysfunction. Revisiting a long-known observation- ICI-RS 2014. *Neurourology and urodynamics*, 35:318-23, 2016. PMID:25872475.
54. **Birder LA**. The Exciting Urothelium. *European Medical Journal Urology*, in press, 2015.
55. Ford AP, Udem BJ, **Birder LA**, Grundy D, Pijacka W and Paton J. P2X3 receptors and sensitization of autonomic reflexes. *Autonomic Neuroscience: Clinical and Basic*, 191:16-24, 2015. PMID:25956567.
56. FA Kullmann, **LA Birder** and K-E Andersson. Translational research and functional changes in voiding function in older adults. *Clin Geriatric Med*. 31:435-48, 2015.
57. Smith PP, **Birder LA**, Abrams P, Wein AJ and Chapple CR. Detrusor underactivity and the underactive bladder: symptoms, function, cause-what do we mean? ICI-RS Think Tank 2014. *Neurourology and Urodynamics*, 35:312-7, 2016. PMID: 26872574.
58. Charrua A, Pinto, R, **Birder LA** and Cruz F. Sympathetic nervous system and chronic bladder pain: a new tune for an old song. *Translational Andrology and Urology*, 534-42, 2015.

59. **Birder, LA.** Editorial- Urothelial layers- not all created equal. *J Urology*, 195:534-42, 2016.
60. Toby C. Chai and **Lori A. Birder.** Pharmacology and physiology of the bladder and urethra. *Campbell-Walsh Urology*, 11th Edition, Ed AJ Wein, LR Kavoussi, AC Novick, AW Partin and CA Peters. Elsevier, 2015.
61. Kanai A, Fry C, Ikeda Y, Kullmann FA, Parsons B and **Birder L.** Implications for bidirectional signaling between afferent nerves and urothelial cells- ICI-RS 2014. *Neurourol Urodyn* 35:273-7, 2016.
62. Smith PP, **Birder LA**, Abrams P, Wein AJ and Chapple CR. Detrusor underactivity and the underactive bladder: symptoms, function, cause-what do we mean? ICI-RS think tank 2014. *Neurourol Urodyn* 35:312-7, 2016.
63. Kirschner-Hermanns R, Anding R, Rosier P, **Birder L**, Andersson KE, Djurhuus JC. Fundamentals and clinical perspective of urethral sphincter instability as a contributing factor in patients with lower urinary tract dysfunction- ICI-RS 2014. *Neurourol Urodyn* 35:318-23, 2016.
64. **Birder LA** and Klumpp DLJ. Host responses to urinary tract infections and emerging therapeutics: sensation and pain within the urinary tract. In: Urinary Tract Infections, 10.1128/microbiolspec.UTI-0023, 2016.
65. Chiu B, Tai HC, Chung SD and **Birder LA.** Botulinum toxin A for bladder pain syndrome/interstitial cystitis. *Toxins* 2016:E201.
66. Barasch J, Bavendam T, **Birder L**, Buffington CA, Campeau L, Dmochowski R, Hewitt S, Hill W, Hoshizaki D, Kim J, Klein J, Norton JM, Seed P, Williams J and Yu W. Urine: waste product or biologically active tissue? *Neurourology and Urodynamics*, in press, 2017.
67. Kullmann FA and **Birder LA.** Role of neurogenic inflammation in local activity in visceral mucosa. *Seminars in immunopathology: neurogenic inflammation.* 2018: doi:10.1007/s00281-018-0674-0.
68. Miyazato M, Kadekawa K, Kitta T, Wada N, Shimizu N, de Groat WC, **Birder LA**, Kanai AJ, Saito S, Yoshimura N. New frontiers of basic science research in neurogenic lower urinary tract dysfunction. *Urol Clin North Am*, 44:491-505, 2017.
69. Andersson KE and **Birder L.** Current pharmacologic approaches in painful bladder research- an update. *Int Neurourology J*, 21:235-242, 2018.
70. Vaughan CP, Markland AD, Smith PP, Abadir PM, Andersson KE, Bavendam TG, **Birder LA**, Burgio KL, Kuchel G and the American Geriatrics Society/National Institute on Aging Urinary Incontinence Conference Planning Committee and Faculty. Report and Research Agenda of the American Geriatrics Society and National Institute on Aging Bedside-to-Bench Conference on Urinary Incontinence in Older Adults: A translational research agenda for a complex geriatric syndrome. *JAGS*, 66:773-783, 2018.
71. **L Birder** and KE Andersson. Animal modeling of interstitial cystitis/bladder pain syndrome. *Int Neurourology J*, 22:S3-9, 2018.
72. McDonnell B and **Birder LA.** Recent advances in pharmacologic management of incontinence. *F1000 Research* 2017, 6:2148, 2018.
73. **Birder LA**, Kullmann FA and Chapple CR. The aging bladder: insights from animal models. *Asian J Urology*, 5:135-40, 2018.
74. **Birder LA.** Bladder Pain. In: Neuro-Urology: Theory and Practice, Springer, Limin Liao and H. Madersbacher, eds., 2018.
75. Abrams P, Andersson KE, Apostolidis A, Birder L, Bliss D, Brubaker L, Cardozo L, Castro-Diaz D, O'Connell PR, Cottenden A, Cotterill N, de Ridder D, Dmochowski R, Dumoulin C, Fader M, Fry C, Goldman H, Hanno P, Homma Y, Khullar V, Maher C, Milsom I, Newman D, Nijman RJM, Rademakers K, Robinson D, Rosier P, Rovner E, Salvatore S, Tadedo M, Wagg A, Wagner T, Wein A, members of the committees. 6th International Consultation on Incontinence, Recommendations of the International Scientific Committee; Evaluation and treatment of urinary incontinence, pelvic organ prolapse and faecal incontinence. *Neurourol Urodyn*, 37:2271-72, 2018.
76. Chapple CR, Osman NI, **Birder L**, Dmochowski R, Drake DJ, van Koevinge G, Nitti V, Oelke M, Smith PS, Yamaguchi O, Wein A, Abrams P. Terminology report from the International Continence Society (ICS) working group on underactive bladder. *Neurourology and Urodynamics*, 37:2928-31, 2018.

77. L. Birder. 4th International Consultation on Interstitial Cystitis, Japan (ICICJ): Pathophysiology of Interstitial Cystitis. *International Journal of Urology*. Suppl 1:12-15, 2019.
78. Pablo Gomery, **Lori Birder** and Thomas Kessler. Neuromodulation of Urinary Tract Function. *New England Journal of Medicine*, 380:2067-69, 2019.
79. **Birder LA**. Is there a role for oxidative stress and mitochondrial dysfunction in age-associated bladder disorders? *Tzu Chi Medical Journal*, 32:223-225, 2020.
80. Toby C. Chai and **Lori A. Birder**. Pharmacology and physiology of the bladder and urethra. *Campbell-Walsh Wein Urology*, 12th Edition, Ed A. Partin, R.R. Dmochowski, L.R. Kavoussi, C.A. Peters, A. Wein. Elsevier, 2020
81. Andersson KE, **L Birder**, C. Chermansky, R. Chess-Williams and Fry C. Are there relevant animal models to set research priorities in LUTD? *Neurourology and Urodynamics*, 3:S9-15, 2020.
82. Speich JE, Tarcan T, Hashitani H, Vahabi B, McCloskey KD, Andersson KE, Wein AJ and **Birder LA**. Are oxidative stress and ischemia significant causes of bladder damage leading to lower urinary tract dysfunction? Report from the ICI-RS 2019. *Neurourology and Urodynamics*, 2020, 3:S16-22, 2020.
83. **Birder LA**. Commentary on ‘Lower urinary tract dysfunction in adult patients with mitochondrial disease’. *Practice Update Urology*, 2020.
84. McCloskey DK, Wnydae JJ, Speich JE, **Birder L**, Nelson PP. Should we be revisiting LUT basic science and clinical measurement of LUT sensation to improve patient care: *Neurourology and Urodynamics*, 3:S23-29, 2020.
85. **Birder L**. Commentary on ‘Cognitive function and urologic medications for lower urinary tract symptoms’. *Int Neurorol J* 24:295, 2020.
86. **Birder Lori A** and Van Kerrebroeck Philip E.V. Pathophysiology of Nocturia and Nocturnal Polyuria: the contribution of cellular function, the urinary bladder urothelium and circadian rhythm. *Urology*, doi:10.1016/j.urology.133S:14-23, 2019.
87. Martin C. Michel and **Lori Birder**. Medications and drug targets for the treatment of diseases of the urinary bladder and urethra. In: ‘Pharmacology, 12th Edition’, Elsevier, Eds M Michel and T Kenakin, 2021.
88. Martin C. Michel and **Lori A. Birder**. Words of Wisdom: Piezo2 in sensory neurons and urothelial cells coordinate urination. *Eur Urol*, 2021.
89. **Lori A Birder** and Edwin K. Jackson. Viewpoint: Dysregulated purine metabolism contributes to age-associated lower urinary tract dysfunctions. *Advances in Geriatric Medicine and Research*, 3:e210018, 2021. PMID:34676378; PMCID:PMC8527459.
90. Lakshay Khosla, Susan Gong, Jeffrey P. Weiss and **Lori A. Birder**. Oxidative stress in age-related lower urinary tract disorders: a systematic review. *Int Neurorol J*, 26:3-19, 2022
91. **Lori A. Birder** and Edwin K. Jackson. Perspective: Purine nucleoside phosphorylase as a target to treat age associated LUT dysfunction. *Nature Urology Reviews*, 19:681-687, 2022.doi:10/1038/s41585-022-00642-w., PMID:36071153.
92. Dengler, KL, High, RA, Moga DC, Zillioux J, Wagg A, DeBeau C, Ackenbom MF, Alperin M, Dumoulin C. **Birder LA**, Mazloomdoost D, Lai HH, Sung VW, Gray SL and Sanses RVD. Overactive bladder and cognitive impairment: The American Urogynecologic Society and Pelvic Floor Disorders Research Foundation State-of-the-Science Conference Summary Report. *Urogynecology*, 29:S1-S19, 2023.
93. Hann-Chorng Kuo and **Lori Birder**. Pathophysiology, clinical presentation and management of ketamine-induced cystitis. *Tzu Chi Medical Journal*, 35:205-212, 2023. doi:10.4103/tcmj.tcmj_94_23.
94. Toby C. Chai and **Lori A. Birder**. Pharmacology and physiology of the bladder and urethra. *Campbell-Walsh Wein Urology*, 13th Edition, Ed A. Partin, R.R. Dmochowski, L.R. Kavoussi, C.A. Peters, A. Wein. Elsevier, 2025.
95. **Lori A. Birder** and Edwin K. Jackson. The rejuvenated bladder. *invited article for AUA’s monthly clinical news magazine-AUANews*, June 2023.
96. A.J. Kanai, K.E. Andersson, **L.A. Birder** and C.H. Fry. Soluble guanylate cyclase activators to treat benign prostatic hyperplasia and associated LUTS. *Continence*, 6, 2023.

97. Joel N.H. Stern, John Fallon, Inna Tabansky Stern, Micheline Laurent, **Lori Birder** and Robert. M. Moldwin. The immune system in interstitial cystitis/bladder pain syndrome and therapeutic agents. *Continence*, accepted, 2023.
98. Edwin Jackson, Yuanyuan Chen, Stephen Tofovic and **Lori Birder**. Purines in the cardiovascular system and beyond: recent advances. *Hypertension*, accepted, 2023.

DISSERTATIONS:

1. Characterization of antisera and development of a radioimmunoassay for methylphenidate. ***Masters Thesis, Duquesne University, 1985.***
 2. A neurochemical and electrophysiological analysis: nociceptive and non-nociceptive pathways from the lower urinary tract in the rat. ***Doctoral Dissertation. University of Pittsburgh School of Medicine, 1992.***
-

PROFESSIONAL ACTIVITIES

TEACHING:

Teaching: University of Pittsburgh/External Sites

Web-based lecture 'Impact of Aging on Lower Urinary Tract Function'
Urology Residents University of Rome Tor Vergata (2020)

Co-course director/lecturer: Biomedical Master's Program University of Pittsburgh/Department of Pharmacology and Chemical Biology (2017-19)

Active participant in Problem Based Learning Sessions (Pharmacology Block, Medical School Curriculum)
Medical students (MS-1), small group sessions (2000-2004; 2007-2015)
4 contact hours

Advanced Topics in Neuropharmacology-Basic Mechanisms of Pain 2001-2007
Graduate students and Research Associates; 1.5 contact hours

Advanced Topics in Neuropharmacology-Cholinergic Pharmacology 2006-current
Graduate students and Research Associates; 1.5 contact hours

Lecture on Introduction to Autonomic Pharmacology, 2009, 2010
Medical Students (MS-2); 1 lecture hour

Lecture on Geriatric Pharmacology, 2012-current
Medical Students (MS-2); 1 lecture hour

Teaching: JAA Charles Morris Nursing Home and Rehabilitation Center-Pittsburgh PA
4/2012 Lecture on Aging, Incontinence and Urinary Tract Infection
Clinicians and nursing staff; 3 contact hours

Teaching: Stanford University Department of Urology
4/2009 Lecture on the Basic Science of Bladder Sensation
Clinicians, Fellows and Basic Science Faculty/trainees; 2 contact hours

Teaching: University of Antwerpen, Belgium
3/2014 Lectures on the Basic Physiology of the Lower Urinary Tract and Treatment Approaches

Medical Students; 3 contact hours

Teaching: University of Rome Tor Vergata

12/2022 Lectures on the Basic Physiology of the Lower Urinary Tract and Treatment Approaches; Lectures on aging and oxidative stress and chronic pain disorders

Medical Students; 5 contact hours

Surgical Residents; 10 contact hours

Mentoring:

Supervision of undergraduate students / independent research projects:

Stacey R. Barrick	1999 ASPET Fellow
Jennifer Piccolo	2000 ASPET Fellow
Fareeha Ashraf	2002
Manju Chib	2005
Ameer Ali	2005 Pharmacology Summer Undergraduate Research Fellow
Stephanie Baradora	2006 NIH Summer Undergraduate Research Fellow
Ryan Burgess	2008-10
Christie Le	2008-10
Ibukun Kisimo	2009 Pharmacology Summer Undergraduate Research Fellow
Hilary Braun	2010-12
Sunita Shinde	2011-current
Amanda Wolf-Johnston	2010-current
Christian Gauthier	2013-2015
Uzoma Ahirakwe	2015-2016
Andrew Lynn	2017-2021 (Master's project Impact of Oxidative Stress)
Grace Chen	2022-24

Graduate Students/Graduate Rotation Students/ Residents/ Fellows

Jonathan Beckel	2003-2009 (graduate student Univ Pittsburgh)
Anny Ceceras	2011 (lab rotation: effect of hormones on epithelial signaling)
Ana Coelho	2011-2012 (Fulbright Scholar: University of Porto-University of Pittsburgh)
Sara Persyn and Monica Eggermont	2013- (University of Antwerpen- afferent signaling and sensation)
Mathijs de Rijk	2020-23 (Maastricht University-PDE inhibitors/oxidative stress on LUT dysfunction)
Lakshay Khosla	2020-22 (SUNY Downstate NY Valentine Scholar- impact aging on nocturia)

Postgraduate Fellows/Trainees/Junior Faculty

Bikramjit Chopra, Ph.D.	2002-2004	<i>Roche Bioscience Fellow</i>
Debbie Artim, Ph.D.	2005-2007	
Omar Aziz, Ph.D.	2004-2007	
Florenta Aura Negoita, Ph.D.	2004-2008	<i>AUA/AFUD Fellowship</i>
Ann Hanna-Mitchell, Ph.D.	2005-2012	<i>NIH K01</i>
Daniel Giglio, M.D., Ph.D.	2008-2009	<i>Wenner-Gren Swedish Research Foundation Fellowship</i>
Masataka Sunagawa, M.D.	2012-2013	<i>Showa University-Univ Pgh Health Science Scholar</i>
Hiroshi Nakagomi, M.D.	2013-2015	<i>Yamanashi University- Univ Pgh Health Science Scholar</i>
Florenta Aura Kullmann, Ph.D.	2013-18	<i>Research Assistant Professor</i>
Bronagh McDonnell	2015-18	<i>AUA/AFUD Fellowship</i>
Jia Fong Jhang, M.D.	2017-18	<i>Tzu Chi Hospital Fellowship</i>
Aleksandra Walasek	2019	<i>SUNY/University of Pittsburgh Research Elective</i>

Participation on Master's / Ph.D. Thesis Committees:

Edward Wang University of Pittsburgh School of Medicine-Cell Biology
Jodi Westrup Ohio State University Department of Veterinary Sciences
Julie Myers University of Pittsburgh School of Medicine-Urology
Weiqun Yu University of Pittsburgh School of Medicine-Cell Biology
Elena Balestaire University of Pittsburgh School of Medicine-Cell Biology
Fangzhou Cheng University of Pittsburgh- Biomedical Engineering- 2021
Ricardo Cardoza University of Pittsburgh Biomedical Engineering- 2021
Mathijs de Rijk Maastricht University, Netherlands- Department of Urology 2023
Fatemeh Azari. University of Pittsburgh-Biomedical Engineering 2023

Faculty Participation in University of Pittsburgh-Departmental Training grants (graduate/postdoctoral fellows)

Molecular Pharmacology Training program
Renal-Electrolyte Division NIH funded T32 training grant
Department of Anesthesiology NIH funded training grant

RESEARCH:**PATENTS:****Technology title: *Methods for treating bladder and urethral dysfunction***

Inventors: L. Birder, A. Wolf-Johnston, and E. Jackson
US Provisional Patent Application No. 62/877,220

Technology title: *Methods for treating bladder and urethral dysfunction and disease*

Inventors: L. Birder, A. Wolf-Johnston, and E. Jackson
PCT Application No. PCT/US2020/022697

Technology title: *Small molecules for treating age-related retinal diseases*

Inventors: L. Birder, A. Wolf-Johnston, Jose-Alain Sahel, Y. Chen and E. Jackson
US Provisional Patent Application No. 63/012,627 (filed April 20, 2020)

Technology title: *Small molecules for treating age-related retinal diseases*

Inventors: L. Birder, A. Wolf-Johnston, Jose-Alain Sahel, Y. Chen and E. Jackson
PCT Application No. PCT/US2021/027881 (filed April 19, 2021)

Technology title: *Endogenous small molecule with restorative actions on peripheral neuropathies*

Inventors: L. Birder, A. Wolf-Johnston and E. Jackson
US Provisional Patent Application No. 63/249,487 (filed September 28, 2021)

Technology title: *Methods for treating peripheral neuropathy*

Inventors: L. Birder, A. Wolf-Johnston and E. Jackson
PCT Application No. PCT/US2022/042471 (filed September 2, 2022)

Sources of Active Research Support

PNPase inhibition as an effective treatment for chronic bladder pain

Principal Investigators: Lori A. Birder, PhD (contact) and Edwin Jackson, PhD. (MPI)

Agency: NIH/NIDDK; **Type:** R01 DK135076-01; **Period:** 09/15/2022-08/31/2027

Goals: To validate a non-opioid based target, namely PNPase, for the treatment of visceral pain disorders.

Research to reverse organ aging

Principal Investigator: Lori A. Birder, Ph.D.

Agency: Richard King Mellon Foundation; **Period:** 06/01/23-05/31/24

Goals: To examine how changes in the enzyme PNPase reflects oxidative injury in organs negatively affected by aging.

Bladder mucosal dysfunction during aging

Principal Investigators: Lori A. Birder, Ph.D.

Agency: NIH/NIA; **Type:** 1R01 AG056944-01; **Period:** 04/1/18-03/31/24 (NCE)

Goals: To examine the effects of aging and oxidative stress on urothelial physiology and impact on cross-talk between urothelium and cells within the bladder wall.

Contribution of Stress Induced Autonomic and Urothelial Dysregulation to IC/BPS

Principal Investigators: Lori Birder, Ph.D. (contact) and Larissa Rodriguez. (Multi-PI)

Agency: NIH/NIDDK; **Type:** R01 DK115476; **Period:** 04/01/18-03/31/24 (NCE)

Goals: To examine the mechanisms underlying effect of chronic stress and increased sympathetic outflow on mitochondrial dysregulation and peripheral signaling in the context of bladder pain syndrome.

PDE5 Inhibition of Afferents and Interstitial Cells in Overactive Mouse Bladders

Principal Investigator: Anthony Kanai, Ph.D.

Role in Project: Co-Investigator

Agency: NIH/NIDDK; **Type:** R01 DK098361; **Period:** 07/01/2020-06/30/2025

Goals: To measure effects of PDE5 inhibition on afferent firing and neuropeptide release, in whole bladder sheets and cross sections from normal, SCT and acrolein instilled mice.

Novel mechanistic approaches in prevention, treatment and non-invasive assessment of radiation cystitis in mice

Principal Investigator: Anthony Kanai, Ph.D.

Agency: NCI; **Period:** 06/01/2021-05/31/2026

Goals: To characterize the pathophysiology of radiation cystitis and design clinically relevant treatment protocols.

Role: Co-Investigator

Nitric oxide-soluble guanylate cyclase pathway as a target for male bladder outlet obstruction and lower urinary tract symptoms in aging

Principal Investigator: Anthony Kanai, Ph.D.

Agency: NIDDK; **Period:** 07/01/2023-06/30/2028

Goals: To probe the role of the NO-sGC-cGMP signaling pathway in the pathogenesis of BPH in aged mice.

Role: Co-Investigator

PENDING SUPPORT:

Impact of dysfunctional purine metabolism and signaling in aging

Principal Investigator: Lori Birder, Ph.D.

Agency: NIH; **Type:** R01 (AG056944) competing renewal

Period: 10/01/23-09/30/28

Goals: To assess the impact of a dysfunctional purine metabolism in the aged LUT and treatment regimens that act as a geroprotector.

Purine dysregulation as a molecular mechanism underlying age-related changes in kidney-bladder axis

Principal Investigators: Lori Birder, Ph.D.(contact PI) and Edwin K. Jackson, PhD.

Agency: NIH; **Type:** U01

Period: 01/01/24-12/31/28

Goals: To assess how PNPase dysregulation in the kidney contribute to age-related lower urinary tract disorders.

COMPLETED SUPPORT:

Extramural support (NIH/DOD/Foundation):

Nitric Oxide in Bladder Neural-Epithelial Signaling

Principal Investigator: Lori A. Birder, Ph.D. (3 calendar) **MERIT AWARD**

Agency: NIH/NIDDK; **Type:** R37 DK54824-19; **Period:** 7/01/12-12/30/20 (NCE)

Goals: This competing renewal focuses on intracellular signaling mechanisms underlying the neuron-like properties of urothelial cells, urothelial-cell interactions and evaluates the effect of pathology on urothelial properties/signaling.

Discovery of a novel, first-in-class endogenous small molecule potent and efficacious protective agent with restorative actions on retinal degeneration

Principal Investigator: Yuanyuan Chen, Ph.D.

Agency: Bruce and Barbara Wiegand Entrepreneurial Research Award

Period: 9/1/20-12/31/23

Goals: To examine impact of aging on associated retinal dysfunction.

Role: Co-investigator

University of Pittsburgh O'Brien Cooperative Research Center Program

Principal Investigator: Wang Zhao

Agency: NIH; **Type:** U54DK112079; **Period:** 9/1/16-8/31/21

Goals: To examine afferent and urothelial plasticity underlying bladder sensitization in prostatic inflammation.

Role: Collaborator Project 2: (PI N. Yoshimura)

Role of Purine Dysregulation in the Underactive Bladder

Principal Investigator: Lori A. Birder, PhD

Agency: NIH/NIA; **Type:** R56 AG063753; **Period:** 09/15/2019-05/31/2022

Goals: To assess the impact of purine dysregulation in aging and bladder pathophysiology.

Effect of Aging on Urothelial Function

Principal Investigators: Lori Birder, Ph.D. and Gerard Apodaca, Ph.D. (Multi-PI)

Agency: NIH/NIA; **Type:** 1R56AG050408-01 **Period:** 09/01/15-08/31/17

Goals: To examine the involvement of urothelial-afferent signaling in aging-related changes in the urinary bladder.

NIH Administrative supplement to Birder NIA R01 AG056944

Principal Investigator: Lori Birder, Ph.D.

Agency: NIH/NIA; **Period:** 07/1/19-9/30/21

Goals: To assess the impact of aging, oxidative stress and purine dysregulation in stress urinary incontinence

Transcutaneous tibial nerve stimulation (TTNS) in patients with acute spinal cord injury to prevent neurogenic detrusor overactivity

Principal Investigator: Thomas Kessler, M.D., Ph.D.

Agency: Swiss National Science Foundation

Period: 1/1/19-12/31/22

Goals: To assess primary and secondary effects of TTNS in patients with acute spinal injury including assessment of central modulation

Role: Co-investigator

Mechanisms/Treatments of Lower Urinary Tract Dysfunction after Spinal Cord Injury

Principal Investigator: Anthony Kanai (Birder PI project 2)

Agency: NIH; **Type:** P01 DK093424-01; **Period:** 10/1/13-9/30/18

Goals: To examine the impact of spinal cord injury on urothelial barrier and sensory functions.

Biology and Function of the Bladder Umbrella Cell Paracellular Barrier

Principal Investigator: Gerard Apodaca

Role in Project: Collaborator

Agency: NIH; **Type:** R01 DK099196-01; **Period:** 7/1/13-6/30/18

Goals: To examine the biology of the urinary bladder urothelial barrier.

Role of Mitochondria in Interstitial Cystitis

Principal Investigator: Lori A. Birder, Ph.D.

Agency: ICA Pilot Research Program Grant.; **Period:** 07/1/16-06/30/17

Goals: To examine mitochondrial dysfunctions in a rodent (chronic stress) model for IC/BPS.

Influence of Chronic Stress on Sensory Changes in IC/PBS

Principal Investigator: Bronagh M. McDonnell, Ph.D.

Role in Project: Mentor(s)- Lori Birder and Larissa Rodriguez

Agency: Urology Care Foundation/American Urological Association; **Type:** Research Scholar Award;

Period: 07/1/15-06/30/17

Goals: To evaluate the effect of chronic stress on cellular changes as a contributing factor in IC/BPS.

Adrenergic System Involvement in Urinary Bladder Pain

Principal Investigators: Lori Birder, Ph.D. and Francisco Cruz, M.D., Ph.D.

Agency: International Association for the Study of Pain (IASP); **Type:** IASP Collaborative Research Grant;

Period: 01/01/15-12/31/15

Goals: To evaluate the involvement of the sympathetic nervous system in bladder pain syndrome.

Role of Nitric Oxide in Interstitial Cystitis

Principal Investigator: Lori A. Birder, Ph.D.

Agency: NIH/NIDDK; **Type:** R01 DK57284; **Period:** 08/01/99-07/31/16

Goals: The goals of this project are to identify how alterations in NO production (and other mediators) may play a role in the pathophysiology of interstitial cystitis (IC) studied in cats with a naturally occurring form of IC (feline interstitial cystitis).

Use of Optical Mapping to Evaluate Mechanisms and New Therapies for Bladder Dysfunction Due to Spinal Cord Injury (SCI)

Principal Investigator: Anthony Kanai, Ph.D.

Role in Project: Co-I

Agency: DOD; **Type:** CDMRP Investigator Initiated; **Period:** 09/30/11-10/29/14

Goals: To evaluate changes in bladder dysfunction using optical mapping strategies following SCI.

Evaluation of Stimulus-evoked membrane trafficking in bladder urothelial cells

Principal Investigator: Ann Hanna-Mitchell, Ph.D.

Role in Project: Sponsor

Agency: NIH/NIDDK; **Type:** K01; **Period:** 1/01/09-1/31/14

Goals: To utilize fluorescent dyes to track the movement of stimulus evoked dye-filled vesicles in order to provide information as to the trafficking events underlying transmitter release by urothelial cells.

UCLA Women's Health and Functional Visceral Disorders Center

Principal Investigator: Emeran Mayer, M.D.

Role in Project: PI-project IV

Agency: NIH/NIDDK; **Type:** Specialized Centers of Research (SCOR) P50 DK64539; **Period:** 7/01/07-8/31/12

Goals: To assess the effect of estrogen and CRF on urothelial function under basal and stress related conditions in IC cats.

Adenosine receptor function in bladder uroepithelium

Principal Investigator: Gerald Apodaca, Ph.D.

Role in Project: Co-I

Agency: NIH/NIDDK; **Type:** R01 DK77777; **Period:** 12/01/07-11/30/12

Goals: To evaluate the role of adenosine in membrane turnover and bladder function.

Univ of Maryland Baltimore Interdisciplinary Research Center in Benign Urology

Principal Investigators (multiple PI): Toby Chai, Susan Keay and Lori Birder

Agency: NIH/NIDDK; **Type:** P20 DK90985; **Period:** 9/1/10-8/31/12

Goals: To measure the variability of various markers or the response to various stimuli in cultured urothelial cells from overactive bladder (OAB) and control subjects.

Diabetes Induced Changes in Rat Urinary Bladder and Urethral Epithelium

Principal Investigator: Lori A. Birder, Ph.D.

Agency: AMDCC; **Type:** U24 DK076169; **Period:** 12/1/09-11/30/11

Goals: To investigate the properties of urinary bladder urothelium and urethral epithelium in a rat model for diabetes.

Roles of nitric oxide and superoxide in cystitis

Principal Investigator: Anthony J. Kanai, Ph.D.

Role in Project: Co-I

Agency: NIH/NIDDK; **Type:** RO1 DK07085; **Period:** 04/01/05-03/31/10

Goals: The goals of this grant are to investigate the involvement of NO and superoxide following induction of radiation cystitis.

Role of TRPV Channels in pain and Temperature Sensation

Principal Investigator: Michael J. Caterina, M.D., Ph.D.

Role in Project: Co-I

Agency: NIH/NINDS; **Type:** R01 NS051551; **Period:** 07/01/05-06/30/10

Goals: The goals of this grant will be to evaluate the role of TRP channels in thermosensation and nociception and the mechanisms by which keratinocytes communicate the presence of thermal stimuli to sensory neurons.

Neurotrophic Mechanisms in LUT Plasticity with Cystitis

Principal Investigator: Margaret Vizzard, Ph.D.

Role in Project: Co-I

Agency: NIH/NIDDK; **Type:** R01 DK065989; **Period:** 09/30/03-07/31/07

Goals: To investigate the role of PACAP in bladder urothelial-neural function and whether properties are altered following inflammation.

Mechanisms of Autonomic Neuropathy in Bladder Complications of Diabetes

Principal Investigator: Firouz Danesghari, M.D.

Role in Project: Co-I

Agency: National Juvenile Diabetes Foundation; **Period:** 10/01/06-09/30/08

Goals: The goals of this grant are to understand how accumulation of reactive oxygen species may play a role in autonomic and urothelial dysfunction in STZ induced diabetes in rats.

Study of Intrinsic Bladder Activity by Optical Imaging

Principal Investigator: Anthony Kanai, Ph.D.

Role in Project: Co-I

Agency: NIH/NIDDK; **Type:** R01 DK064280; **Period:** 01/14/04-11/30/07

Goals: To investigate the postnatal modulation of intrinsic bladder activity, the neural-chemical control of spontaneous activity and the origin of unstable bladder activity in partially obstructed bladders.

Cholinergic Mechanisms in Primary Sensory Bladder Afferent Neurons

Principal Investigator: Florenta A. Negoita, Ph.D.

Role in Project: Co-sponsor

Agency: American Foundation for Urologic Disease / American Urological Association (AFUD/AUA)

Type: Research Scholar Grant; **Period:** 07/01/05-06/30/07

Goals: To evaluate the role of cholinergic signaling mechanisms in urinary bladder function.

UCLA Women's Health and Functional Visceral Disorders Center: Central and Peripheral Sympathetic Effects (Sex and Neuroendocrine Effects) of Interstitial Cystitis

Principal Investigator: Emeran Mayer, M.D.

Role in Project: Co-I

Agency: NIH/NIDDK; **Type:** Specialized Centers of Research (SCOR) RFA; **Period:** 9/01/02-8/31/07

Goals: To assess the effect of sex hormones on urothelial function under basal and stress related conditions in IC cats.

Nitric Oxide and Methyl-Nitroso-Urea Evoked Bladder Cancer

Principal Investigator: Anthony Kanai, Ph.D.

Role in project: Co-I

Agency: American Cancer Society; **Type:** RSG-03-007-01-CNE; **Period:** 1/1/03-6/30/06

Goals: The specific aims of this project are to determine the involvement of NO and altered membrane resistance and permeability in MNU-induced urinary bladder cancer in the rat and to determine effectiveness of pharmacological NO modulation and surgical urinary diversion on the induction of bladder cancer by MNU.

Collaborative Urological Research in Spinal Cord Injury

Principal Investigator: Michael B. Chancellor, M.D.

Role in Project: Collaborator

Agency: NIH/NIDDK; **Type:** P01 HD39768-01A1; **Period:** 8/22/01-6/30/06

Goals: Measurement of alterations in the levels of nitric oxide production (microsensor) and intracellular calcium (rhod-2 fluorescence) in the urothelial cells and autonomic neurons of spinal cord injured cats.

Alterations in nitric oxide levels in the urinary bladder of cats with interstitial cystitis-determined using a porphyrinic microsensor

Principal Investigator: Lori A. Birder, Ph.D.

Agency: Interstitial Cystitis/Fishbein Foundation Grant; **Period:** 10/01/98-09/30/99;

Goals: The goals of this study were to evaluate differences in urothelial signaling molecules in normal cats versus cats diagnosed with feline interstitial cystitis.

Changes in properties of peptidergic/nitrergic cardiac nociceptors following myocardial infarction

Principal Investigator: Lori A. Birder, Ph.D.

Agency: American Heart Association; **Period:** 07/01/00-06/30/02.

Goals: The goals of this study were to characterize the properties of cardiac afferent neurons after induction of inflammation.

Extramural support (Industry):

Effect of Hormones on Bladder Afferent-Urothelial Signaling

Principal Investigators: Lori A. Birder, Ph.D.

Agency: Astellas Pharma, Inc.; **Period:** 12/1/13-01/30/17

Goals: To examine effect of hormones on afferent and urothelial signaling as a basis for understanding postmenopausal bladder disorders.

Effect of the tachykinin NK2 receptor antagonist, ibodutant on proto-oncogene expression, after TNBS-induced colitis in male and female guinea pig

Principal Investigator: Lori Birder, Ph.D.

Agency: A. Menarini Pharmaceuticals Firenze Italy; **Period:** 03/1/14-04/30/15

Goals: To evaluate role of the NK2 antagonist on inflammation-induced proto-oncogene expression.

Use of Microarray Technology to Evaluate Urothelial Targets within the Urinary Bladder

Principal Investigator: Lori A. Birder, Ph.D.

Agency: Roche Palo Alto CA; **Period:** 7/1/02-6/30/05

Goals: Use differential RNA expression to evaluate gene profiles in the rat and cat urinary bladder urothelium and to test selective probes (provided by Roche) to identify potential receptor urothelial targets.

Urothelial-cell sensory and transducer mechanisms underlying the pathophysiology of overactive bladder (OAB) syndrome

Principal Investigators: Lori Birder, Ph.D.

Agency: Pfizer; **Type:** Investigator-initiated; **Period:** 12/1/2010-8/30/2012

Goals: To examine mechanisms underlying urothelial disease progression and possible biomarkers in OAB versus control.

MOA of Mirabegron versus Solifenacin in Bladders of Normal Rats and Guinea Pigs

Principal Investigators: Lori A. Birder, Ph.D.

Agency: Astellas Pharma, Inc. **Period:** 12/1/12-12/31/13

Goals: To examine MOA on afferent firing and urothelial signaling in rat and guinea pig bladder preparations.

Mechanism of Botulinum toxin (BOTOX) within the urinary bladder

Principal Investigator: Anthony J. Kanai, Ph.D.

Role in Project: Co-I

Agency: Allergan, Inc **Period:** 12/01/08-11/30/9

Goals: The goals of this grant are to investigate mechanism of action of BOTOX within the urinary bladder.

The effect of the peptide NK2 receptor antagonist MEN 11420 on proto-oncogene (*c-fos* and *c-jun*) expression in rodents with experimental colitis

Principal Investigator: Lori A. Birder, Ph.D.

Agency: Menarini Recherche Firenze Italy; **Period:** 09/15/98-08/31/00

Goals: The goals of this study were to evaluate the efficacy of the neurokinin antagonist MEN 11420 on *c-fos* expression in a model for experimental colitis in the rodent

Program Participation

1991

- NIH, Bethesda, MD: *LUT Nociception: A Neurochemical Analysis*
- University of Iowa: *Neurochemical and Electrophysiological Analysis of Afferent Pathways from the LUT*

1992

- Department of Urology, Akita University Japan: *Increased Gene Expression in Spinal Neurons After LUT Irritation*
- Department of Physiology, Showa University School of Medicine Tokyo Japan: *Induction of C-fos Gene Expression After Nociceptive and Non-nociceptive Stimulation of the LUT*

1997

- IC/NIDDK International Interstitial Cystitis Scientific Symposium Participant: *Porphyritic Microsensor Measurements of Calcium-dependent and Independent Nitric Oxide Release Following Inflammation of the Urinary Bladder*

1998

- American Paraplegic Society Annual Meeting: *Spinal Injury Induces Urinary Bladder Nerve Proliferation/Nitric Oxide Release.*
- University of Chicago: *Neural-epithelial Interactions and Nitric Oxide Release from the Lower Urinary Tract.*

1999

- Guest Speaker Interstitial Cystitis Network : *New Findings in Interstitial Cystitis: Involvement of Nitric Oxide.*
- American Paraplegic Society Annual Meeting: *Altered C-fos Immunoreactivity and Nitric Oxide Release After Spinal Injury.*

2000

- NEOUCOM Departments of Pharmacology/Physiology: *Alterations in Neural-Epithelial Signaling in the Urinary Bladder.*

- University of Pittsburgh/Ohio State University Interstitial Cystitis Symposium: *Altered Neural-Epithelial Signaling in Feline Interstitial Cystitis.*
- Cleveland Clinic: *Neural-Epithelial Interactions and Nitric Oxide Release in Pelvic Viscera*
- University of Texas Medical Branch at Galveston: *Altered Neural-Epithelial Signaling in Feline Interstitial Cystitis.*
- Invited Speaker Tachykinins 2000 Montpellier, France Symposia: *Neural-Epithelial Interactions: Involvement in Nociception*

2001

- Pharmacology Vancouver: *Involvement of the urinary bladder urothelium in signaling in the lower urinary tract.*
- American Society for Cell Biology Urothelial Symposia Washington D.C.: *Neural-Epithelial Interactions in the Urinary Bladder*
- Spinal Cord Injury Symposia Sydney, Australia: *Mechanisms of Spinal Autonomic Reflexes and Their Plasticity: Involvement of nitric oxide in bladder afferent and urothelial abnormalities following chronic spinal cord injury*
- University of New South Wales Department of Physiology and Pharmacology: *Involvement of vanilloid and purinergic receptors in neurotransmitter release from urinary bladder urothelium.*

2002

- Department of Medicine University of Pittsburgh Young Investigators Invited Presentation: *Influence of the Urothelium on Urinary Bladder Function.*
- IUPHAR Young Investigator Presentation: *Role of VR1 in Mechanosensitive as well as Chemosensitive Mechanisms in the Urinary Bladder.*
- University College London Department of Neurology: *Nociception, Mechanosensation and the Urothelium.*
- International Continence Society Vanilloid Symposia Heidelberg Germany: *Role of TRPV1 (VR1) in Bladder Neural-Epithelial Signaling*
- Center for Urological Research Excellence: Spinal Cord Injury, University of Pittsburgh Speaker: *The Role of Bladder Urothelium in Signaling: Involvement in Injury*

2003

- Co-chair/Speaker Society for Neuroscience Annual Meeting Symposia: *Bladder epithelium as pain sensor: a model for reciprocal epithelial-neural communication.*
- Workshop Chair/Speaker International Continence Society Annual Meeting Florence Italy: *Urothelium as a Sensor: Involvement of the Urothelium in Bladder Function.*
- Symposia Chair/Speaker Experimental Biology Annual Meeting: *Epithelial-Neuronal Interactions Underlying Bladder Gene-Regulation and Sensory Function.*
- Symposium Speaker Intl Soc. for Autonomic Neuroscience (ISAN) Calgary Canada: *Peripheral mechanisms for disrupted urinary bladder control after spinal cord injury.*
- Symposium Speaker NIH/NIDDK Basic Mechanisms in Interstitial Cystitis Washington DC: *Vanilloid Receptors in Urothelium: Involvement in urothelial sensory function.*
- Invited Symposium Speaker OSLO Biannual Symposium on Lower Urinary Tract Physiology and Pathophysiology (OBSLUT) Norway: *The role of urothelial signaling in bladder function.*
- Invited Speaker Univ Pittsburgh Gastroenterology Journal Club: *TRPV1 in the Urinary Bladder: Involvement in Nociception and Mechanosensation.*
- University of Pittsburgh Senior Vice Chancellor Seminar Series Speaker: *Role of the Urothelium in Intracellular Signaling.*

2004

- Participant, Neural Control Committee, 3rd International Consultation on Incontinence, Monaco: *Role of the Bladder Urothelium*.
- UCLA Center for Neurovisceral Sciences and Women's Health Symposia Invited Symposium Speaker: *Alterations in the "Neuron-like" properties of bladder urothelial cells in feline interstitial cystitis: Role of the Bladder Urothelium*.
- McGill University, Montreal Canada, Departments of Physiology and Pharmacology: *Taking a TRP beyond nociception: Involvement of TRP Channels in Urothelial Function*.
- Symposium Speaker NIH/NIDDK Workshop Organ Innervation: *Development, Disease and Repair: Neural Injury/Autonomic Plasticity*.
- Workshop Speaker International Continence Society Annual Meeting Paris France. (*Understanding urothelial dysfunction: pathophysiology and novel therapies*) The role of ATP in urothelial signaling and cystitis.

2005

- Symposium participant 1st Annual Winter Tachykinin Meeting, Breckenridge Colorado: *Tachykinins and TRP channels: molecular sensors of chemical/thermal/mechanical stimuli in urinary bladder urothelium*.
- Symposium Co-Chair/Speaker: XXXV International Congress of Physiological Sciences. *Urothelial Cell Physiology in Normal and Disease States*.
- Symposium Speaker National Bladder Foundation's International Bladder Symposium Baltimore MD: *Exploration of druggable targets within the urothelium: a new approach for the clinical management of bladder disorders*.
- UPPRC 2005: *Urinary Bladder Urothelium as a novel drug target*.
- Symposium Speaker International Society for Autonomic Neuroscience (ISAN) Session for Visceral Pain Marseille France: *The urothelium as a sensory organ*.
- Symposium Speaker 11th World Congress on Pain Sydney Australia "*The spinal cord injured patient: pain and spinal autonomic regulation*": Disruption of the urothelium following spinal cord injury
- Satellite Symposium Speaker 11th World Congress on Pain Melbourne Australia, *Visceral Pain: The urothelium as a pain organ*.

2006

- Symposium Speaker Society for Urodynamics and Female Urology (SUFU) Annual Meeting, Grand Bahama Island: *Basic Topics in Bladder Function: the urothelium*.
- Speaker/Participant Urology Interagency Coordinating meeting, NIH: *More than just a barrier: Alterations in the urothelium following spinal cord injury*
- Symposium Speaker 5th International Congress of Pathophysiology (ISP2006), Beijing China: *Involvement of Bladder urothelium in pathology*.
- Symposium Speaker Second International Symposium on Non-neuronal Acetylcholine, Mainz Germany: *Non-neural ACh and the Urinary Bladder*.
- Plenary Speaker 50th Anniversary of Spinal Cord Service Melbourne Australia: *The Urothelium- Role in sensation and bladder function*.
- Plenary Speaker Australian and New Zealand Spinal Cord Society Meeting, Melbourne Australia: *The urothelium: an active player in bladder infection*.
- Session Chair/Speaker International Continence Society Annual Meeting, Christchurch New Zealand: *Urothelium as a drug target for urinary bladder pain*.

2007

- Keynote Speaker Center for Neurovisceral Sciences & Women's Health Basic and Translational Science Symposium, UCLA: *Neuro-Urothelial Interactions*.
- Speaker Society for Urodynamics and Female Urology Annual Meeting, San Diego CA: *New Findings in Urothelial Research*.
- Speaker La Jolla Institute for Molecular Biology Seminar Series: *The Urothelial Cell: A new player in the bladder to nervous system communication pathway*.
- Co-Chair/Speaker International Continence Society Annual Meeting Sponsored Workshop Rotterdam, Belgium: *"How does the bladder sense filling? Chemical versus mechanosensory mechanisms—implications for detrusor overactivity"*
- Speaker Biomedical Sciences Seminar Program University of Sheffield, Sheffield UK: *Taking a TRP beyond the sensory afferent: the role of the urothelium in bladder function*.
- Wake Forest University Institute of Regenerative Medicine, Wake Forrest NC: *Urothelial cells-critical participants in bladder pain*.

2008

- Speaker Society for Urodynamics and Female Urology (SUFU) Annual Meeting Miami Fl: *Urothelial Nociceptive Functions*.
- Workshop Chair/Speaker 12th World Congress on Pain, Glasgow Scotland: *Non-neuronal cells involved in pain processing: from the urothelium to the spinal cord*.
- Symposia Speaker International Continence Society Annual Meeting Cairo Egypt: *Role of the Urothelium in Health and Disease*.
- Speaker Urology Grand Rounds Department of Urology, Upstate University Syracuse New York: *Urothelium as a target for urological disorders*.

2009

- Speaker NIDDK Urologic Complications of Obesity and Diabetes, Baltimore MD: *The role of the urothelium in diabetes*.
- Co-Chair/Speaker ICI-RS, Bristol UK: *Optimizing animal models for translational research*.
- Speaker ICI-RS, Bristol UK: *Is the urothelium intelligent?*
- Neuro-epithelial Symposia UCLA: *Neural-epithelial interactions*.
- Speaker Magee Women's Hospital UPMC Department of Urogynecology: *The urothelium: role in painful bladder syndrome/interstitial cystitis*.
- Symposia Speaker International Continence Society Annual Meeting San Francisco: *The urothelium in health and disease*.
- NYU Departments of Urology and Dermatology: *Urothelial targets in bladder physiology and pathophysiology*.

2010

- Speaker UCLA Center for Neurobiology of Stress, Los Angeles CA January 2010: *Extra urinary bladder findings in feline interstitial cystitis*
- Speaker SUFU Basic Science Research Meeting St. Petersburg FL February 2010: *Bladder Signaling Panel Session: The urothelium*.
- Speaker AUA Urinary Incontinence Research Conference Linthicum MD August 2010: *Urothelium and incontinence*.
- Speaker International Continence Society Annual Meeting Toronto Canada August 2010: *Diseases and discoveries of the urothelium and pathophysiological mechanisms of detrusor overactivity and new therapeutic targets including afferent nerves, interstitial cells, trigone and urothelium*.

- Speaker Irish Society of Urology Annual Meeting September Dublin Ireland 2010: *Involvement of the urothelium in the neurogenic bladder.*
- Keynote speaker 10th Society of Interstitial Cystitis of Japan, Kofufujiya Japan 2010. *The role of the urinary bladder urothelium in the chronic pain syndrome interstitial cystitis.*
- Speaker University of Pennsylvania Urology Grand Rounds November 2010: *The urothelium and potential targets for therapeutics in urinary bladder disorders.*
- Symposium Speaker Society for Neuroscience Annual Meeting San Diego November 2010: *Visceral nociception: bidirectional interaction between the viscera and the brain.*

2011

- Speaker UCLA SCOR 2011 meeting Los Angeles CA 16-18 February. *Overview of project IV: stress-mediated changes in PBS/IC.*
- Speaker SUFU 2011 March Arizona. *Pathophysiologic Principles in OAB-Urothelial Afferent Signaling.*
- Speaker 26th Annual EAU Congress, Vienna Austria 18-22 March. *The role of the urothelium.*
- Speaker Society for Infection and Inflammation in Urology (SIIU) at the AUA 2011 Washington DC, May 2011. *The neurophysiology of bladder epithelium.*
- Speaker European Network (INComb) Stockholm, Sweden June 2011. *Urinary Incontinence-from basic science to clinical practice*
- Speaker-ICI-RS meeting Bristol UK June 2011. *How does the urothelium affect bladder/urethral function in health and disease?*
- Speaker 3rd Annual Non-neuronal acetylcholine symposium Groningen NT August 2011. *Role of non-neuronal acetylcholine in esophageal cells in health and disease*
- Symposium speaker International Continence Society Annual Meeting Glasgow UK August 2011. *New aspects of peripheral and central control of micturition in the overactive bladder*
- Plenary speaker Japanese Autonomic Neuroscience meeting Akita Japan October 2011. *The effect of the autonomic nervous system on epithelial structure and function*

2012

- Chair and speaker ICUD-EAU International Consultation on Incontinence Paris 2012. *Report of the neural control committee of the ICUD-EAU (5th ICI)*
- Speaker SUFU 2012 February New Orleans LA. *Urothelial regulation of bladder function*
- Speaker JAA 2012 Pittsburgh PA. *Aging, incontinence and urinary tract infection*
- Chair/Speaker International Society for the Study of Bladder Pain Syndrome (ESSIC), Porto 2012. *Interactions in the pelvic floor-impact on bladder pain.*
- Organizer/speaker International Society for the Study of Pain (IASP), Milan 2012. *New aspects in peripheral and central mechanisms of painful bladder syndrome*
- Speaker Loyola University Health System, Chicago 2012. *The roles of the urothelium in bladder health and disease*
- Speaker Framework 7 TRUST meeting Antwerp, Belgium 2012. *Bladder sensation and urothelial-afferent regulation in storage and voiding disorders.*

2013

- Speaker William Beaumont Hospital Department of Urology, Royal Oak, MI, January 2013. *Involvement of the urothelium in bladder disorders.*
- Speaker International Consultation on Interstitial Cystitis Japan (ICICJ), March 2013 Kyoto Japan. *Urothelial Function and Dysfunction.*

- Speaker Urology Biomarker Symposium Chang Gung Memorial Hospital Kaohsiung Taiwan, March 2013. *Functional Proteins and Biomarkers for IC/PBS.*
- Speaker Department of Urology Buddhist Tzu Chi General Hospital, Hualien Taiwan March 2013. *Sensory Changes and the Urothelium in Bladder Disorders.*
- Speaker and Visiting Scientist for European TRUST-FP7 Grant, Leiden NT May 2013. *Urothelium-function and mediators in health and disease.*
- Speaker-ICI-RS meeting Bristol UK June 2013. *Defining useful biomarker systems for detrusor and sphincter under or overactivity.*
- Speaker ICS meeting Barcelona Spain 2013. *Bidirectional influences in functional pain processing.*
- Speaker University of Antwerp, Belgium October 2013. *Biomarkers for lower urinary tract pathology.*
- Speaker 24th International Symposium on the Autonomic Nervous System, Hawaii October 2013. *Autonomic influence on urothelial functions.*
- Wake Forest p20 Seminar Series, Winston-Salem, NC October 2013. *Sensation and the urethra.*
- Speaker North American Neuromodulation Society (NANS) Scientific Meeting, Las Vegas, NV December 2013. *Sessions on: Neurourology, and Pain messenger systems of the pelvis.*
- Speaker and Visiting Scientist for European TRUST-FP7 Grant, Sheffield, UK December 2013. *Role of the urothelium in aging and bladder dysfunction.*

2014

- Invited Speaker Washington University in St. Louis, 2013. *Biology and pathophysiology of urothelium in bladder disease.*
- Chair Basic Science Sessions Winter Meeting: Society of Urodynamics, Female Pelvic Medicine & Urogenital Reconstruction (SUFU), Miami FL February 2014.
- Speaker Congress of Urologic Research and Education on Aging Underactive Bladder (CURE-UAB), Washington DC, February 2014. *Aging and urothelium, barrier function and infection.*
- Speaker University of Antwerpen, March 2014. *New techniques and methodologies used to investigate mechanisms underlying pelvic visceral dysfunction.*
- Speaker Maastricht University Medical Centre, Department of Urology, Maastricht, Netherlands April 2014. *Non-neuronal cells in bladder under/overactivity.*
- Chair Female Pelvic Program Basic Science and the Basic Science Symposium- New Perspectives in Pelvic Health, at the American Urological Association, Orlando FL May 2014.
- Speaker SBUR Spring Meeting, Orlando FL May 2014. *Of mice and men: Comparative measures of voiding dysfunction- impact of the uroepithelium.*
- Speaker Geriatric Urological Society (GUS) meeting, Orlando FL May 2014. *The influence of aging on structure and functions of the urinary bladder.*
- Plenary AUA speaker-Highlights of Benign Urology. AUA meeting Orlando FL May 2014.
- Speaker Physiological Society Symposium- Role of urothelium and other epithelia in pelvic organ function and pathology, London, UK June 2014. *Epithelium control over lower urinary tract function.*
- Workshop Speaker American Urogynecologic Society and International Urogynecologic Association (AUGS/IUGA)- Neuromodulation, Washington DC July 2014. *Basic Science of Neuromodulation.*
- Speaker Topical Workshop International Continence Society Meeting (ICS)- Rio de Janeiro, Brazil 2014. *Final Frontier in LUTS: Targeting the Urothelium to Treat OAB, IC/BPS, Hypersensitive Bladder and Ketamine Cystitis.*
- Speaker Topical Workshop 15th World Congress on Pain (IASP)- Central and peripheral mechanisms/therapeutic options underlying painful bladder syndrome/interstitial cystitis, Buenos Aires, Argentina, October 2014. *Involvement of the urothelium and lamina propria in bladder pain.*

- Speaker Topical Workshop 15th World Congress on Pain (IASP)- Cholinergic analgesia: central, peripheral and/or non-neuronal effect? Buenos Aires, Argentina, October 2014. *Involvement of the non-neuronal cholinergic system in pain and analgesia.*
- Speaker EU TRUST meeting, Sheffield UK November 2014. *New methods to assess bladder dysfunction*
- Symposium Speaker British Pharmacologic Society, London, December 2014. *Afferent sensitization of autonomic hyperreflexia: therapeutic potential in common diseases. Sensitization and urinary hyperreflexia.*

2015

- Invited speaker Society of Urodynamics, Female Pelvic Medicine & Urogenital Reconstruction (SUFU) meeting, Phoenix AZ February, 2015. *Grant writing 101.*
- Invited Plenary Speaker European Urology Meeting, Madrid Spain March 2015. *The exciting urothelium.*
- Invited speaker American Pain Society Spring Meeting, Palm Springs CA May 2015. *Human urothelium: offering bench-to-bedside target validity.*
- Co-chair Female Pelvic Program Basic Science and the Basic Science Symposium- Pelvic Organ Prolapse, at the American Urological Association, New Orleans, LA May 2015.
- Symposium speaker ‘Aging and Urologic Manifestations’ American Urological Association, New Orleans, LA May 2015: *Urothelial physiology in urinary continence and incontinence.*
- International Urogynecological Association Annual meeting workshop co-chair and speaker, Nice France June 2015: *Bladder and urethral signaling dysfunction as underlying contributor to LUTS.*
- Invited speaker Taiwan Urology Association annual meeting August 2015 Taiwan: *Contributors to bladder sensation.*
- Invited guest lecturer 22nd annual meeting of the Japanese Continence Society, September 2015 Sapporo Japan. *Involvement of neural-epithelial changes in the neurogenic bladder.*
- Invited symposia speaker 45th annual meeting International Continence Society, October 2015 Montreal Canada- The molecular mechanisms underpinning bladder sensation: *Neurotransmitters: cause or effect of bladder sensation?*

2016

- Invited speaker Geriatric Urological Society at the American Urological Society annual meeting, May 2016 San Diego CA. *Influence of aging on bladder remodeling and signaling.*
- Invited speaker Sociedade Ibero-Americana de Neuro-Urologia e Uroginecologia, July 2016 Porto, Portugal. *The role of the urothelium in neurogenic detrusor overactivity.*
- Invited Round Table Speaker- International Continence Society Annual Meeting Tokyo Japan September 2016. *How do findings in IC/BPS animal models provide insight into the human condition?*
- Invited Round Table Speaker- International Continence Society Annual Meeting Tokyo Japan September 2016. *TRP channels in bladder sensation.*
- Chair’s update committee 3: International consultation on incontinence neural control of the bladder. 2016, Tokyo Japan.
- Invited speaker U13 conference: urinary incontinence in the elderly, Bethesda MD October 16-18, 2016. *Effect of aging on mucosal/submucosal modeling.*
- Invited speaker Society for Basic Urologic Research (SBUR) Annual Fall Meeting ‘Cell-cell dynamics within the niche’, Scottsdale AZ November 11, 2016. *‘Urothelial cell signaling to neighboring cells via release of nitric oxide and ATP.*

2017

- Invited speaker International Neurourology Society (INUS) meeting, Zurich, Switzerland, January 2017, *‘Chronic pelvic pain: basic science perspectives’.*

- Invited speaker Society for Urodynamics, Female Pelvic Medicine & Urogenital Reconstruction (SUFU) meeting, Scottsdale AZ, February 2017, *'Factors and conditions that can impact bladder permeability'*.
- Invited speaker American Urological Association- Geriatric Urology Association, May 2017 Boston MA, *'Effect of age on bladder urothelial homeostasis'*.
- Invited speaker UPSOM O'Brien Benign Urology Research Center Mini-Symposium on BPH/LUTS, June 2017 Pittsburgh PA, *'Potential role of the bladder mucosa in BPH/LUTS.'*
- Invited speaker International Continence Society- September 2017 Florence Italy, *'Urothelial dysregulation in bladder pain syndrome'*.
- Invited speaker Continence Society University of Rome Tor Vergata, 2017, *'The role of inflammation in LUT and pelvic floor dysfunction'*.
- Invited speaker ESSIC annual meeting, Budapest, Hungary 2017, *'Urothelium and pain'*.
- Invited speaker Taiwan Continence Society Annual Meeting on Recent Advances in Interstitial Cystitis/Bladder Pain Syndrome/Hemorrhagic Cystitis, Taichung, Taiwan, 2017, *'Effect of environment on cellular remodeling and sensation in urological disorders'*.
- Invited speaker AUA sponsored Diabetes and Diabetic Uropathy Meeting Baltimore MD 2017, *'Diabetic changes in the urothelium'*

2018

- Invited speaker International Neurourology Society (INUS) meeting, Zurich, Switzerland, January 2018, *'Biomarkers in tissue and urine for the neurogenic bladder.'*
- Invited speaker INUS- joint session with SIUD, Zurich Switzerland 2018: *'Bladder Pain'*
- Invited speaker ICICJ meeting Kyoto Japan April, 2017, *'IC pathophysiology Updates'*.
- Member of organizing committee and invited speaker, Geriatric Urological Society session at the American Urological Association Annual meeting, May 2018 San Francisco, *'Remodeling in the lower urinary tract- impact on aging bladder function'*.
- Speaker International Continence Society Roundtable- *The life of the aging bladder*, August 2018 Philadelphia PA.
- Speaker International Continence Society- *Residents Program*, August 2018 Philadelphia PA.
- Invited speaker 13th Pan-Pacific Continence Society Annual Meeting, Hualien Taiwan October 2018- *'Urothelial pathophysiology of IC/BPS and treatment targets'*
- Invited speaker CURE-UAB 4th International Congress on Underactive Bladder, November 2018, Waikiki Hawaii. *'Urothelium and UAB'*
- Invited speaker ESSIC International Society for the Study of BPS, Florence Italy November 2018, *'Specific Biomarkers in CPP and Links with Inflammation'*
- Invited panel speaker ICS Regional Urology Meeting Brussels Belgium November 2018, *'Co-morbidities and cross-talk between organs'*

2019

- Invited speaker International Neurourology Society (INUS) meeting, Zurich, Switzerland, January 2019, *'Oxidative stress and mitochondrial dysfunction in aging and injury'*.
- Speaker SUFU annual meeting, Miami Florida February 2019, *'Fibrosis and Aging'*.
- Grand Rounds Speaker SUNY Downstate NY March 2019, *'Impact oxidative stress on aging associated LUT dysfunction'*.
- Speaker European Association of Urology, Barcelona March 2019, *'Bladder-Spinal Cord-Brain- new insights'*
- Speaker ICI-RS meeting Bristol UK 2019 topics include, *'what is oxidative stress?'* and *'urethral sensations'*.

- Speaker American Urological Association (AUA) May Chicago 2019, ‘*Aging associated urothelial mitochondrial dysregulation can lead to sensory and bladder dysfunction.*’
- Speaker American Urological Association (AUA) Geriatric Urology Society Chicago 2019, ‘*Role of oxidative stress in bladder pain.*’
- Invited speaker, Department of Urology, Oakland University William Beaumont School of Medicine, 2019, *Impact of oxidative stress on bladder dysfunctions.*
- Keynote Speaker, Duquesne University 2019, ‘From bench to bedside- the changing nature of biomedical research’.
- Speaker International Continence Society ICS Gothenburg Sweden September 2019- 3 topics, ‘*How to incontinence drugs really work?*’, ‘*How to apply for a research grant*’ and ‘*webcast- Tales of ideas gone big- translational science in incontinence*’.
- Invited speaker urology grand rounds University of Wisconsin, October 2019, ‘*Aging-associated changes in oxidative stress and metabolic processes in the bladder wall.*’
- Speaker ESSIC annual meeting Amsterdam December 2019, ‘*What is new in pathophysiology of BPS/IC*’

2020 (invited)

- Speaker INUS annual meeting, Istanbul Turkey January 2020, ‘*Novel therapeutic approaches to improve bladder function and morphology*’
- Speaker SUFU annual meeting, Scottsdale AZ February 2020, ‘*Autonomic dysregulation in stress-induced bladder dysfunction*’.
- ICS-SUFU guest lecture, Scottsdale AZ February 2020.
- University of Tor Vergata Rome Italy, Urology Residents Webinar April 2020, ‘*LUT function and impact of the overactive bladder in aged adults*’
- ICS Webinar Series on Laboratory Management during Covid, May 2020.
- Invited speaker Japanese Continence Society Annual Meeting, Tokyo Japan, October 2020 live web seminar, ‘*Overactive bladder- new insights on mechanisms and impact of aging*’
- Invited speaker Japanese Continence Society, Web-based live session ‘*Interstitial cystitis: mechanisms and treatments*’
- Invited speaker Urological Association of Asia annual congress Seoul South Korea 2020 – live web-based lecture, ‘*Application of botulinum neurotoxin in LUT dysfunction*’
- Speaker live web session ICS annual meeting 2020, ‘*Amelioration of age-associated changes in bladder collagen*’

2021 (invited)

- Invited live web-based state of the art lecture, University of Sao Paulo, Brazil, Brazilian Society of Urology ‘*The urothelium in OAB, IC and UAB*’
- Invited panelist/speaker: American Urological Association (AUA) Live Web-based summer course series: *Nocturia, advances in diagnosis and management including translational science.*
- Invited speaker/workshop panelist Live Web Based session for the International Continence Society (ICS), ‘*Inhibition of PNPase ameliorates age-associated changes in bladder collagen*’
- Invited speaker/co-chair Live Web Based session for the International Consultation on Incontinence (ICI-7, Melbourne Australia), ‘*Neural control*’
- Invited speaker State of the Science Conference- OAB and Cognitive Impairment, December 9-10 Baltimore MD. ‘*Purine metabolome and impact on OAB treatment in the older patient.*’

2022 (invited)

- Invited panelist/speaker: American Urological Association (AUA) Annual Meeting May 2022, New Orleans LA: *Nocturia, advances in diagnosis and management including translational science.*

- Invited speaker: Geriatric Urological Society May 2022, New Orleans, LA: *Aging-associated lower urinary tract dysfunction involves altered purine metabolism.*
- Invited speaker: Society for basic urologic research (SBUR), May 2022, New Orleans, LA: *Impact of PNPase dysregulation in the aging lower urinary tract.*
- Invited speaker: 2022 Duke KURe Research Symposium: *The science of the underactive bladder.*
- Invited State-of-the-Art Lecture (one of three invitees) at the 52nd Annual meeting of the International Continence Society (ICS), held in Vienna Austria (09/22): *The Rejuvenated Bladder*
- Invited speaker: Pain Therapeutics Summit, November 2022 Washington DC, *PNPase inhibition as an effective treatment for chronic pain disorders.*
- Invited speaker/Visiting Professor: University of Rome Tor Vergata, Rome Italy December 2022: *Influence of oxidative stress and inflammation on bladder structure and function*

2023 (invited)

- Invited speaker/Visiting Professor: Maastricht University, Netherlands March 2023: *Impact of PNPase inhibition as an effective treatment for chronic pain and aging disorders.*
- Invited speaker-Geriatric Urological Society May 2023, Chicago IL: *A novel therapy that is a Geroprotector for the aged bladder.*
- Webinar speaker: NOPIA Nocturia and Polyuria- Lifelong LUTS, May 2023: *Vasopressin receptor signaling in the urinary bladder- role in modulating detrusor smooth muscle tone.*
- Keynote lecture: International Neurourology Congress (INUS) June 2023, Athens Greece: *Novel treatments for the neurogenic bladder.*
- Invited speaker: ESSIC meeting New York City July 2023: *Free radicals: a role in IC/BPS pathophysiology?*
- Invited speaker 30th Annual Meeting of the Japanese Continence Society September 2023: *From bench to bedside: experimental view of the lower urinary tract.*
- Invited lecture: Pan-Pacific Continence Society meeting Kaohsiung, Taiwan October 2023: *A novel therapy for the treatment of chronic pelvic pain.*
- Invited speaker: Formosan IC Forum Taiwan October 2023: *Relevant translational models for examining pathophysiology of IC.*
- Invited speaker: Department of Urology National Taiwan University, Taipei Taiwan October 2023: *Insights into pharmacologic therapies for the treatment of urologic disorders.*
- Invited speaker/co-chair symposia: American Autonomic Society Annual Meeting, San Juan Puerto Rico November 2023: *Female reproductive health and the autonomic nervous system.*

Program Participation (Pharmaceutical):

1995

- RJ Reynolds, Inc., NC: *Comparison Between Neural Injury/Visceral Irritation*
- Eli Lilly Pharmaceutical Co, Inc, Indianapolis IN: *Visceral Versus Somatic Irritation: Ligand-mediated Changes at the Cellular Level*

1998

- Monsanto, Inc. Chicago IL: *Measurement of cNOS and iNOS Mediated Nitric Oxide Production Using a Porphyrinic Microsensor*
- Menarini Ricerche Pharmaceutical, Florence Italy: *Alterations in Nitric Oxide Production and Proto-oncogene Expression Following Injury or Inflammation*

1999

- Millennium Pharmaceuticals, Boston MA: *Urinary Bladder Epithelium: Source of Non-neuronal Nitric oxide and Modulator of Neurotransmission*

- Menarini Ricerche Pharmaceutical, Italy: *The Effect of the NK2 Antagonist, MEN 11420, on Proto-oncogene Expression Following TNBS induced Colitis in the Rat*
- 2000
- Roche Bioscience, Palo Alto CA: *Neural-Epithelial Interactions-Involvement of the Urothelium in Signaling in the Lower Urinary Tract*
- 2002
- Menarini Ricerche Pharmaceutical, Italy: *The Urinary Bladder Urothelium-More than just a Barrier*
 - Roche Bioscience: *Novel Targets for Urinary Bladder Dysfunction: Involvement of the Urothelium*
 - Pfizer Sandwich UK: *TRPV1 and Purinergic Interactions in the Urinary Bladder*
- 2003
- Merck Pharmaceuticals, Inc.: *The Neuron-like properties of urinary bladder urothelial cells*
- 2004
- Roche Bioscience, Inc. CA: *Development of Targets within the Urinary Bladder Urothelium.*
 - Plenary Speaker Yamanouchi Pharmaceutical 7th Urinary Tract and Prostate Symposium Tokyo Japan: *The role of the urothelium in bladder function*
- 2005
- Dynogen Pharmaceuticals NC: *More than just a barrier: urothelium as a drug target for bladder pain.*
 - Omeros Corporation Seattle WA: *Urothelial cells: key players in bladder pain & inflammation.*
- 2006
- Hydra Biosciences Urinary Bladder Symposium, Boston MA: *TRPV1 and incontinence: Role of the Urothelium*
- 2007
- Proctor & Gamble Pharmaceuticals, Cincinnati OH: *Urothelial cells emerge as bladder pain therapeutic targets*
 - GlaxoSmithKline Pharmaceuticals Philadelphia PA: *Key Therapeutic Areas in Urology*
- 2008
- Astellas Frontiers in Urology Meeting, San Francisco: *Role of urothelium in afferent function*
 - Astellas Urology San Francisco CA: *Role of hormones in women with OAB*
- 2009
- Pfizer Pharmaceuticals, Sandwich UK: *The bladder urothelium and sensation.*
 - Endo Pharmaceuticals, Inc.: *The role of the urothelium in bladder dysfunction.*
 - Pfizer-Japan ICS Symposia: *Involvement of bladder and urethral epithelium in lower urinary tract function*
- 2010
- Endo Pharmaceuticals, Inc. Philadelphia PA: *Involvement of Prostaglandin and Purinergic Signaling in overactive and painful bladder syndrome.*
 - Astellas Urology, Miami FL: *Neural pathways relating to urgency and OAB.*
 - Astellas Frontiers in Urology Oxford UK: *Animal models of bladder function and dysfunction: Urothelial dysfunction and cystitis models.*
 - Astellas Overactive Bladder mode of action meeting Copenhagen Denmark: *Mechanism of action regarding antimuscarinics and urgency.*
 - Keynote speaker and state of the art address--Pfizer Japan Sponsored 17th Annual Neurogenic Bladder Meeting Yamanashi Japan September 2010: *Involvement of non-neuronal cells in pain processing.*
 - Astellas Gynaecology/Uro-gynaecology Meeting Dubai, UAE: *Hormone-replacement therapy and mechanisms underlying urgency in OAB.*
- 2011
- Urogenix, Inc., Raleigh-Durham NC: *How the urothelium protects, signals and reacts to stress*

- Astellas Research Center Tsukuba Japan: *Involvement of the uro-epithelium in current and future therapeutic strategies for urology*

2012

- American Medical Systems, Minneapolis, MN: *Role of neural-epithelial interactions in bladder dysfunctions.*

2013

- Medtronic Interstim Fellows Program, Fort Worth, TX: *Neuropathophysiology of voiding function and dysfunction.*
- Astellas sponsored working group meeting, Barcelona Spain: *Results I: MOA of Mirabegron and Solifenacin on Bladder Functions.*

2014

- Astellas sponsored specialty sales representative meeting March 2014 Chicago, IL: *Anatomy and Physiology of Overactive Bladder Syndrome.*

2015

- Medtronic Minneapolis MN, September 2015: *Urothelial Pathophysiology and Potential Biomarkers in IC/BPS.*

2018

- Allergan sponsored urology meeting, May 2018 Irvine CA: *Stress Induced Autonomic and Mitochondrial Dysregulation and Bladder Pain*
- Iqvia-Ferring sponsored urology meeting on nocturia and nocturnal polyuria, November 2018 NYC: *Pathophysiology of nocturia-impact of altered cellular function and oxidative stress and involvement of the urinary bladder urothelium*

2019

- Ferring sponsored meeting, February NJ, *Aging and impact of nocturia/nocturnal polyuria and new directions.*

2023

- Axonics Fellows program, Irvine CA April 2023: *Neurophysiology of voiding function and dysfunction.*

Service (University Committee / Other):

NIH Study Section (Ad hoc)

Special Emphasis Panel, Renal and Urological Sciences, 2004-2009

NIDDK Central Repositories Non-Renewable Sample Access Grant (XO1) Review, 2010

NIDDK Pilot & Feasibility Diabetes Complications Consortium, 2012

NIDDK KUH Fellowship Review Panel, 2012

NIH/NIDDK SEP Panel ZKK1-GRB-S (M3), 2018

NIH/NIDDK ZRG DKUS-L11B Small Business: Kidney and Urologic Diseases, July 2020

Other Study Section/Grant/Panel Review (Ad hoc) Participation

UK Research into Ageing (2008; 2010; 2012)

The Wellcome Trust (2006-2008)

Wellbeing of Women, London UK (2008)

AUA/AFUD Research Scholars (2007)

Lori Birder Curriculum Vitae Revised September 2023

US Department of Defense (DOD)-US Army Medical Research and Material Command (2008; 2011; 2018)
Canadian Institutes of Health Research (CIHR) (2007, 2008)
Innovation Partnership in Pennsylvania-SBIR reviewer (2009)
James & Ester King Biomedical Research Program (2010; 2011)
Bankhead-Coley Cancer Research Program (2010)
Medical Research Council (MRC) Review Panel (2012)
North Carolina Biotechnology Center (2013)
Canada- Instiut Rick Hansen (2014)
French National Research Agency (2014)
SUFU-Pfizer Grant committee (2015)
AUA Research Scholars Award Grant Review Panel (2016)
Diokno-Lapides Essay Contest Review Panel (2016-19)
SUFU Foundation Grant Review Panel (2016, 2017)
Medical Research Council (MRC) grant review, Grant Review 2017-18
2019 Urology Care Foundation Summer Medical Student Fellowship Grant Review
Member Med7 Flanders Research Foundation (FWO) European Grant Review Panel 2020-24
Department of Defense (DOD) Urologic Disease (UD) peer review panel 2023

University Committee Service

Medical School Faculty Medical Student Admissions Interview Committee (2005-2008)
Graduate Executive Curriculum Committee (Pharmacology) (2006-current)
University of Pittsburgh Dept of Medicine Appointments and Promotions Executive Committee (2008-current)
University of Pittsburgh School of Medicine Representative to the Executive Committee of the Winters Foundation (2009-2015)
University of Pittsburgh Standing Committee for Tenured Faculty Promotions and Appointments (TFPA) 2011-2014
Co-Course Director Biomedical Master's Program UPSOM 2018-19
UPSOM/UPMC Grant Review Committee 2017-2019

Executive Committees

Secretary/Treasurer ASPET Division Systems/Integrative Pharmacology 2005-2007
ASPET Division Systems/Integrative Pharmacology Executive Committee 2005-2010
Committee on Women in Pharmacology (ASPET) 2008-2011
Member Scientific Executive Committee - Int Continence Society Annual Meeting (2009) San Francisco, CA.
Animal Models of Diabetes Complications Consortium Steering Committee (2009-2011)
International Consultation on Incontinence Neural Control Committee (participant-2004; Chair-2008;2012; 2016)
Basic Science Society for Urology and Female Urodynamics (SUFU) Planning Committee (2012-2014)
International Continence Society Chronic Pelvic Pain Working Group-Committee Member (2011-2012)
3rd International Consultation on Interstitial Cystitis Japan Executive Board Member (2012-2013)
Chair Basic Science Committee for Urology and Female Urodynamics (SUFU) (2013-2017)
Chair Basic Science Committee for AUA/ICS/SUFU (2013-2015)
Wake Forest University NIH P20 External Advisory Board: Regeneration, repair and remodeling of the lower urinary tract (2013-15)
Co-Chair Basic Science Committee International Continence Society (2018)
National Urology Research Agenda Committee (NURA) 2017
Elected representative to the University of Pittsburgh School of Medicine's Executive Committee of the Faculty (2018-21)
SUFU Executive Committee member (2020-2023)
Lori Birder Curriculum Vitae Revised September 2023

International Continence Society Board of Trustee Member (2020-2026)

Editorships

International Continence open access Journal- ‘Continence’ (**Founding Editor-in-Chief, 2021**)
Bladder (**co-Editor in Chief, 2014-2021**)

International Neurourology Journal (**Deputy Editor, since 2017**)

Neurourology and Urodynamics (**Associate Editor, since 2003**)

Autonomic Neuroscience: Basic and Clinical (**Editorial Board, since 2014**)

Lower Urinary Tract Symptoms (**Editorial Advisory Board, since 2008**)

UroToday (**Editorial Advisory Board, since 2008**)

Frontiers in Urology (**Editorial Board Member, 2020-**)

American Journal of Physiology Renal Physiology (**Editorial Board Member, 2001-2007, 2008**)

Textbook of Female Urology (4th5th and 6th Edition, Cardozo & Staskin);(**Ch 3 Basic Science Editor**)

European Urological Scientific External Advisory Board Participation

External Advisor for INComb—clinical and translational research on overactive bladder syndrome (2010-12)

Advisory Board Member for Training Urology Scientists (TRUST) European Consortium (2011-15)