

CURRICULUM VITAE
The Johns Hopkins University School of Medicine



Barbara Stauch Slusher, Ph.D., M.A.S

May, 2019

DEMOGRAPHIC AND PERSONAL INFORMATION

Current Appointment:

- 2013 – present Professor, Departments of Neurology (*primary*), Psychiatry, Neuroscience, Medicine, Oncology
- 2010 – present Director, Johns Hopkins Drug Discovery
- 2011 - present Director, JHU NIMH Therapeutic Core
- 2016 – present Adjunct Professor, Czech Academy of Sciences

Personal Data:

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Education and Training:

- Undergraduate
- 1986 B.S., Chemistry, Dickinson College, Carlisle, PA; *summa cum laude*, valedictorian
- Graduate
- 1990 Ph.D., Pharmacology & Molecular Sciences, Johns Hopkins School of Medicine, Baltimore, MD
- 1991 M.A.S., Management, Johns Hopkins Carey Business School (*formerly Johns Hopkins School of Continuing Studies*), Baltimore, MD
- Postdoctoral
- 1992 Postdoctoral Fellow, University of Pennsylvania, Philadelphia, PA and ICI Pharma, Wilmington, DE

Professional Experience:

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|-----------|--|--|
| 1984–1985 | Educational Software Developer | Aardvark Enterprises |
| 1986 | Neuropharmacology Technician | US Medical Research Institute of Chemical Defense |
| 1986–1990 | Student, Doctoral Thesis | Johns Hopkins University School of Medicine |
| 1988–1991 | Student, MAS Program | Johns Hopkins Carey Business School (<i>formerly School of Continuing Studies</i>) |
| 1991–1992 | Post-Doctoral Fellow | University of Pennsylvania/ICI Pharma Inc. |
| 1992–1994 | Research Pharmacologist | ICI Pharmaceuticals Inc. |
| 1992–1996 | Adjunct Professor, Course Director | University of Delaware |
| 1993–1995 | Adjunct Professor, Course Director | Johns Hopkins School of Continuing Studies |
| 1994–1995 | Senior Research Pharmacologist | Zeneca Pharmaceuticals Inc. |
| 1995–1998 | Director, Neurobiology | Guilford Pharmaceuticals Inc. |
| 1998–2000 | Clinical Development Program Leader and Principal Scientist | Guilford Pharmaceuticals Inc. |
| 2000–2002 | Vice President (VP), Neurobiology | Guilford Pharmaceuticals Inc. |
| 2002–2004 | Senior VP, Research, | Guilford Pharmaceuticals Inc. |

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| | Toxicology & Pharmacokinetics | |
| 2004–2005 | CEO, Divestiture Opportunity | Calvert Pharmaceuticals |
| 2005–2007 | Senior VP, Research & Scientific Alliances | MGI PHARMA, Inc. |
| 2005–2008 | MGI Site Head, Baltimore | MGI PHARMA, Inc. |
| 2007–2008 | Senior VP, Research & Translational Development | MGI PHARMA, Inc. |
| 2008–2009 | Eisai Site Head, Baltimore | Eisai Research Institute |
| 2008–2009 | Senior VP, Research & Translational Development | Eisai Research Institute |
| 2009–2012 | Associate Professor, Neurology (<i>primary</i>) and Psychiatry; Director, Brain Science Institute Drug Discovery Program | Johns Hopkins University |
| 2013- | Professor, Neurology (<i>primary</i>), Psychiatry, Neuroscience, Medicine, and Oncology; Director, Johns Hopkins Drug Discovery Director, JHU NIMH Therapeutic Core | Johns Hopkins University |
| 2016- | Adjunct Professor | Czech Academy of Sciences Institute of Organic Chemistry & Biochemistry |

RESEARCH ACTIVITIES

Original peer-reviewed publications:

(*maiden name **Stauch**)

1. Tsai G, Forloni G, Robinson MB, ***Stauch B**, Coyle JT. "Calcium-dependent evoked release of N-[³H]Acetylaspartate from the optic pathway." *J Neurochem*, 1988, 51:1956-1959
2. ***Stauch B**, Robinson MB, Forloni G, Tsai G, Coyle JT. "The effects of N-acetylated alpha-linked acidic dipeptidase (NAALADase) inhibitors on [³H]NAAG catabolism *in vivo*." *Neurosci Lett*, 1989, 100:295-300
3. Rothstein JD, Tsai G, Kuncl RW, Clawson L, Cornblath DR, Drachman DB, Pestronk A, ***Stauch B**, Coyle JT. "Abnormal excitatory amino acid metabolism in amyotrophic lateral sclerosis." *Annals of Neurol*, 1990, 28:18-25
4. Tsai G, ***Stauch B**, Vornov JJ, Coyle JT. "Selective release of N-acetylaspartylglutamate from rat optic nerve terminals *in vivo*." *Brain Research*, 1990, 518:313-316
5. **Slusher BS**, Robinson MB, Tsai G, Simmons ML, Richards SS, Coyle JT. "Rat brain N-acetylated alpha-linked acidic dipeptidase activity: purification and immunologic characterization." *J Biol Chem*, 1990, 265:21297-21301
6. Tsai G, **Slusher BS**, Sim L, Hedreen JC, Coyle JT. "Reduced excitatory amino acids in amyotrophic lateral sclerosis CNS." *Brain Research*, 1991, 556:151-156
7. Coyle JT, **Slusher BS**, Tsai G, Rothstein JD, Meyerhoff J, "N-acetyl aspartyl glutamate (NAAG): recent developments." *Excitatory Amino Acid Research*, (R.S. Meldrum, F. Moroni, R.P. Simon, and J.H. Woods, eds.) Raven Press, New York, 1991, 69-77
8. Meyerhoff JL, Carter RE, Yourick DL, **Slusher BS**, Coyle JT. "Activity of a NAAG-hydrolyzing enzyme in brain may affect seizure susceptibility in genetically epilepsy-prone rats." *Epilepsy Research Suppl*, 1992, 9:163-172
9. Meyerhoff JL, Carter RE, Yourick DL, **Slusher BS**, Coyle JT. "Genetically epilepsy-prone rats have increased brain regional activity of an enzyme which liberates glutamate from N-acetyl-aspartyl-glutamate." *Brain Research*, 1992, 593(1):140-3
10. **Slusher BS**, Tsai G, Yoo GJ, Coyle JT, "Immunocytochemical localization of N-acetylated alpha-linked acidic dipeptidase in rat brain." *J Comp Neurol*, 1992, 315:217-229

11. Tsai G, **Slusher BS**, Sim L, Coyle JT. "Immunocytochemical distribution of N-acetylaspartylglutamate in the rat forebrain and glutamatergic pathways." *J Chem Neuroanat*, 1993, 6(5):277-92
12. Tsai G, Cork LC, **Slusher BS**, Price D, Coyle JT. "Abnormal acidic amino acids and N-acetylaspartylglutamate in hereditary canine motoneuron disease." *Brain Research*, 1993, 629(2):305-9
13. **Slusher BS**. "NAALADase: a potential regulator of synaptic glutamate." *BioTech Update*, 1994, 9(2):37-39
14. **Slusher BS**, Zacco AE, Maslanski JA, Norris T, McLane MW, Moore WC, Rogers NE, Ignaro LJ. "The Cloned Neurotensin receptor mediates cyclic GMP formation when coexpressed with nitric oxide synthase cDNA." *Molecular Pharmacology*, 1994, 46:115-121
15. **Slusher BS**, Risollo K, Jackson PF, Pullan L. "Centrally-administered glycine antagonists stimulate locomotion in reserpine-treated mice." *J Neural Transmission*, 1994, 97:175-185
16. **Slusher BS**, Risollo K, Anziolotti KA, Jackson PF. "Centrally-administered AMPA antagonists stimulate locomotion in parkinsonian rats." *J Neural Transmission*, 1994, 9:145-149
17. **Slusher BS**, Jackson PE, Arvanitis L. "Parkinson's disease: Current and Future Drug Therapies." *Emerging Therapeutics in Neurology* (J. Patel and L. Pullan, eds.) Humana Press, 1994, 343-387
18. Tsai G, Passani LA, **Slusher BS**, Carter R, Baer L, Kleinman JE, Coyle JT. "Abnormal excitatory neurotransmitter metabolism in schizophrenic brains." *Arch Gen Psychiatry*, 1995, 52(10):829-36
19. Jackson PF, Cole DC, **Slusher BS**, Stetz SL, Ross LE, Donzanti B, Trainor DA. "Design, Synthesis, and Biological Activity of a Potent Inhibitor of the Neuropeptidase NAALADase." *J Med Chem*, 1996, 39:619
20. **Slusher BS**, Jackson PF. "A shot in the arm for cocaine addiction." *Nature Medicine*, 1996, 2(1):26-7
21. **Slusher BS**, Tiffany CW, Olkowski, JL, Jackson PF. "Use of identical assay conditions for cocaine analog binding and dopamine uptake to identify potential cocaine antagonist." *Drug and Alcohol Dependence*, 1997, 48:43-50
22. Hacker HD, Yourick DL, Koenig ML, **Slusher BS**, Meyerhoff JL. "Neuroprotection in rabbit retina with NAAG and 2-PMPA." *Ophthalmic Technologies*, 1999, 3591:422-429
23. Vornov JJ, Wozniak K, Lu M, Jackson P, Tsukamoto T, Wang E, **Slusher BS**. "Blockade of NAALADase: a novel neuroprotective strategy based on limiting glutamate and elevating NAAG." *Ann NY Acad Sci*, 1999, 890:400-5
24. **Slusher BS**, Vornov JJ, Thomas AG, Hurn PD, Traystman RJ, Robinson MB, Britton P, Lu M, Tortella FC, Wozniak K, Yudkoff M, Jackson PF. "An inhibitor of NAAG hydrolysis prevents ischemic glutamate release and provides neuroprotection." *Nature Medicine*, 1999, 5:1396-1402
25. Thomas AJ, Olkowski JH, Vornov JJ, **Slusher BS**. "Toxicity induced by a polyglutamated folate analog is attenuated by NAALADase inhibition." *Brain Research*, 1999, 843, 48-52
26. Tiffany CW, Lapidus RG, Merion A, Calvin DC, **Slusher BS**. "Characterization of the enzymatic activity of PSM: Comparison with brain NAALADase." *The Prostate*, 1999, 39: 28-35
27. Harada C, Harada T, **Slusher BS**, Yosida K, Matsuda H, Wada K. "N-acetylated-alpha-linked-acidic dipeptidase inhibitor has a neuroprotective effect on mouse retinal ganglion cells after pressure-induced ischemia." *Neuroscience Letters*, 2000, 292(2):134-6
28. Shippenberg TS, Rea W, **Slusher BS**. "Modulation of behavioral sensitization to cocaine by NAALADase inhibition." *Synapse*, 2000, 38(2):161-6
29. Lapidus RG, Tiffany CW, Isaacs JT, **Slusher BS**. "Prostate-specific membrane antigen (PSMA) enzyme activity is elevated in prostate cancer cells." *The Prostate* 2000, 45: 350-354
30. **Slusher BS**, Tiffany CW, Merion A, Lapidus RG, Jackson PF. "Suramin Potently Inhibits the Enzymatic Activity of PSM." *The Prostate* 2000, 44:55-60
31. Lu XM, Tang Z, Liu W, Lin Q, **Slusher BS**. "N-acetylaspartylglutamate protects against transient focal cerebral ischemia in rats." *European Journal of Pharmacology*, 2000, 408(3):233-9
32. Thomas AJ, Vornov JJ, **Slusher BS**. "NAALADase converts NAAG from a neuroprotectant to a neurotoxin." *Journal of Pharmacology and Experimental Therapeutics*, 2000, 295(1):16-22
33. Tortella FC, Lin Y, Ved H, **Slusher BS**, Dave J. "Neuroprotection produced by the NAALADase inhibitor 2-PMPA in rat cerebellar neurons." *European Journal of Pharmacology*, 2000, 402(1-2):31-7
34. Jackson PF, Tays KL, Maclin KM, Ko Y-S, Li W, Vitharana D, Tsukamoto T, Lu X-CM, Wozniak K, **Slusher BS**. "Design and pharmacological activity of phosphinic acid based NAALADase inhibitors." *J Med Chem*, 2001,

44(24):4170-5

35. **Slusher BS**, Thomas A, Paul M, Schad CA, Ashby CR Jr. "Expression and acquisition of the conditioned place preference response to cocaine in rats is blocked by selective inhibitors of the enzyme N-acetylated-alpha-linked-acidic dipeptidase (NAALADASE)." *Synapse*, 2001, 41(1):22-8
36. Thomas AG, Liu W, Olkowski JL, Tang Z, Lin Q, Lu XC, **Slusher BS**. "Neuroprotection mediated by glutamate carboxypeptidase II (NAALADase) inhibition requires TGF-beta." *Eur J Pharmacol*, 2001, 430(1):33-40
37. Urazaev AK, Buttram Jr JG, Deen JP, Gafurov, BS, **Slusher BS**, Grossfeld RM, Lieberman EM. "Mechanisms for clearance of released N-acetylaspartylglutamate in crayfish nerve fibers: implications for axon-glia signaling." *Neuroscience*, 2001, 107(4):697-703
38. Thomas AG, Olkowski JL, **Slusher BS**. "Neuroprotection afforded by NAAG and NAALADase inhibition requires glial cells and metabotropic glutamate receptor activation." *Eur J Pharmacol*, 2001, 426(1-2):35-8
39. Tiffany CW, Cai NS, Rojas C, **Slusher BS**. "Binding of the glutamate carboxypeptidase II (NAALADase) inhibitor 2-PMPA to rat brain membranes." *Eur J Pharmacol*, 2001, 427(2):91-6
40. Williams AJ, Lu XM, **Slusher BS**, Tortella FC. "Electroencephalogram analysis and neuroprotective profile of the N-acetylated-alpha-linked acidic dipeptidase inhibitor, GPI5232, in normal and brain-injured rats." *J Pharmacol Exp Ther*, 2001, 299(1):48-57
41. Jackson PF, **Slusher BS**. "Design of NAALADase (GCP II) inhibitors: a novel neuroprotective strategy." *Curr Med Chem*, 2001, 8(8):949-57
42. Barinka C, Rinnova M, Sacha P, Rojas C, Majer P, **Slusher BS**, Konvalinka J. "Substrate specificity, inhibition and enzymological analysis of recombinant human glutamate carboxypeptidase II." *J Neurochem*, 2002, 80(3):477-87
43. Tiffany CW, **Slusher BS**. "Measurement of glutamate carboxypeptidase II (NAALADase) enzyme activity by the hydrolysis of [³H]-N-acetylaspartylglutamate (NAAG)." *Current Protocols in Pharmacology*, 2002, 3.10.1–3.10.12
44. Bacich D, O'Keefe DS, Heston WDW, Callizot N, Poindron P, Baillet C, Tiffany C, Lu XC, Wozniak KM, **Slusher BS**. "NAAG and NAALADase: Functional Properties in the Central and Peripheral Nervous System." *Journal of Neurochemistry*, 2002, 81:69–70
45. **Slusher BS**, Rojas C, Sima A, Majer P, Tsukamoto T, Jackson PJ, Dal Canto M, Lu XM, Vomov JJ, Burak E, Rhodes C, Limsakun T, Potter B, Wozniak K. "NAALADase (GCP II) inhibition as a novel therapeutic target for neuropathic pain, diabetic neuropathy, and ALS." *Journal of Neurochemistry*, 2002, 81:69–70
46. Chen SR, Wozniak KM, **Slusher BS**, Pan HL. "Effect of 2-(phosphono-methyl)-pentanedioic acid on allodynia and afferent ectopic discharges in a rat model of neuropathic pain." *J Pharmacol Exp Ther*, 2002, 300(2):662-7
47. Rojas C, Frazier ST, Flanary J, **Slusher BS**. "Kinetics and inhibition of glutamate carboxypeptidase II using a microplate assay." *Anal Biochem*, 2002, 310(1):50-4
48. Tsukamoto T, Flanary JM, Rojas C, **Slusher BS**, Valiaeva N, Coward JK. "Phosphonate and phosphinate analogues of N-acylated gamma-glutamylglutamate potent inhibitors of glutamate carboxypeptidase II." *Bioorg Med Chem Lett*, 2002, 12(16):2189-92
49. Witkin JM, Gasior M, Schad C, Zapata A, Shippenberg T, Hartman T, **Slusher BS**. "NAALADase (GCP II) inhibition prevents cocaine-kindled seizures." *Neuropharmacology*, 2002, 43(3):348-56
50. Zhang W, **Slusher BS**, Murakawa Y, Wozniak KM, Tsukamoto T, Jackson PF, Sima AA. "GCP II (NAALADase) inhibition prevents long-term diabetic neuropathy in type 1 diabetic BB/Wor rats." *J Neurol Sci*, 2002, 194(1):21-8
51. Berger UV, Lu XC, Liu W, Tang Z, **Slusher BS**, Hediger MA. "Effect of middle cerebral artery occlusion on mRNA expression for the sodium-coupled vitamin C transporter SVCT2 in rat brain." *J Neurochem*, 2003, 86(4):896-906
52. Carpenter KJ, Sen S, Matthews EA, Flatters SL, Wozniak KM, **Slusher BS**, Dickenson AH. "Effects of GCP-II inhibition on responses of dorsal horn neurons after inflammation and neuropathy: an electrophysiological study in the rat." *Neuropeptides*, 2003, 37(5):298-306
53. Ghadge GD, **Slusher BS**, Bodner A, Canto MD, Wozniak K, Thomas AG, Rojas C, Tsukamoto T, Majer P, Miller RJ, Monti AL, Roos RP. "Glutamate carboxypeptidase II inhibition protects motor neurons from

- death in familial amyotrophic lateral sclerosis models." *Proc Natl Acad Sci*, 2003, 100(16):9554-9
54. Majer P, Jackson PF, Delahanty G, Grella BS, Ko YS, Li W, Liu Q, Maclin KM, Polakova J, Shaffer KA, Stoermer D, Vitharana D, Wang EY, Zakrzewski A, Rojas C, **Slusher BS**, Wozniak KM, Burak E, Limsakun T, Tsukamoto T. "Synthesis and biological evaluation of thiol-based inhibitors of glutamate carboxypeptidase II: discovery of an orally active GCP II inhibitor." *J Med Chem*, 2003, 46(10):1989-96
 55. Popik P, Kozela E, Wrobel M, Wozniak KM, **Slusher BS**. "Morphine tolerance and reward but not expression of morphine dependence are inhibited by the selective glutamate carboxypeptidase II (GCP II, NAALADase) inhibitor, 2-PMPA." *Neuropsychopharmacology*, 2003, 28(3):457-67
 56. Stoermer D, Liu Q, Hall MR, Flanary JM, Thomas AG, Rojas C, **Slusher BS**, Tsukamoto T. "Synthesis and biological evaluation of hydroxamate-Based inhibitors of glutamate carboxypeptidase II." *Bioorg Med Chem Lett*, 2003, 13(13):2097-100
 57. Rojas C, Thomas AG, Majer P, Tsukamoto T, Lu XM, Vornov JJ, Wozniak KM, **Slusher BS**. "Glutamate carboxypeptidase II inhibition as a novel therapeutic target." *Adv Exp Med Biol*, 2003, 524:205-13
 58. Strisovsky K, Jiraskova J, Barinka C, Majer P, Rojas C, **Slusher BS**, Konvalinka J. "Mouse brain serine racemase catalyzes specific elimination of L-serine to pyruvate." *FEBS Lett*, 2003, 535(1-3):44-8
 59. Thomas AG, Corse AM, Coccia CF, Bilak MM, Rothstein JD, **Slusher BS**. "NAALADase inhibition protects motor neurons against chronic glutamate toxicity." *Eur J Pharmacol*, 2003, 471(3):177-84
 60. Barinka C, Mlcochova P, Sacha P, Hilgert I, Majer P, **Slusher BS**, Horejsi V, Konvalinka J. "Amino acids at the N- and C-termini of human glutamate carboxypeptidase II are required for enzymatic activity and proper folding." *Eur J Biochem*, 2004, 271(13):2782-90
 61. Barinka C, Sacha P, Sklenar J, Man P, Bezouska K, **Slusher BS**, Konvalinka J. "Identification of the N-glycosylation sites on glutamate carboxypeptidase II necessary for proteolytic activity." *Protein Sci*, 2004, 13(6):1627-35
 62. Berent-Spillon A, Robinson AM, Golovoy D, **Slusher BS**, Rojas C, Russell JW. "Protection against glucose-induced neuronal death by NAAG and GCP II inhibition is regulated by mGluR3." *J Neurochem*, 2004, 89(1):90-9
 63. Lumley LA, Robison CL, **Slusher BS**, Wozniak KM, Dawood M, Meyerhoff JL. "Reduced isolation-induced aggressiveness in mice following NAALADase inhibition." *Psychopharmacology (Berl)*, 2004, 171(4):375-81
 64. Sanabria ER, Wozniak KM, **Slusher BS**, Keller A. "GCP II (NAALADase) inhibition suppresses mossy fiber-CA3 synaptic neurotransmission by a presynaptic mechanism." *J Neurophysiol*, 2004, 91(1):182-93
 65. Lautar SL, Rojas C, **Slusher BS**, Wozniak KM, Wu Y, Thomas AG, Waldon D, Li W, Ferraris D, Belyakov S. "DPP IV inhibitor blocks mescaline-induced scratching and amphetamine-induced hyperactivity in mice." *Brain Research*, 2005, 1048(1-2):177-84
 66. Dar DE, Thiruvazhi M, Abraham P, Kitayama S, Kopajtic TA, Gamliel A, **Slusher BS**, Carroll FI, Uhl GR. "Structure-activity relationship of trihexyphenidyl analogs with respect to the dopamine transporter in the on going search for a cocaine inhibitor." *European Journal of Medicinal Chemistry*, 2005, 40(10):1013-1021
 67. Tsukamoto T, Majer P, Vitharana D, Ni C, Hin B, Lu XC, Thomas AG, Wozniak KM, Calvin DC, Wu Y, **Slusher BS**, Scarpetti D, Bonneville GW. "Enantiospecificity of glutamate carboxypeptidase II inhibition." *J Med Chem*, 2005, 48(7):2319-24
 68. Long JB, Yourick DL, **Slusher BS**, Robinson MB, Meyerhoff JL. "Inhibition of glutamate carboxypeptidase II (NAALADase) protects against dynorphin A-induced ischemic spinal cord injury in rats." *Eur J Pharmacol*, 2005, 508(1-3):115-22
 69. Kozela E, Wrobel M, Kos T, Wojcikowski J, Daniel WA, Wozniak KM, **Slusher BS**, Popik P. "2-MPPA, a Selective Glutamate Carboxypeptidase II Inhibitor, Attenuates Morphine Tolerance but not Dependence in C57/BI mice." *Psychopharmacology*, 2005, 183(3):275-284
 70. Bacich DJ, Wozniak KM, Lu X-CM, O'Keefe DS, Callizot N, Heston WDW, **Slusher BS**. "Mice Lacking Glutamate Carboxypeptidase II are Protected From Peripheral Neuropathy and Ischemic Brain Injury." *Journal of Neurochemistry*, 2005, 95(2):314-323
 71. Dar DE, Thiruvazhi M, Abraham P, Kitayama S, Kopajtic TA, Gamliel A, **Slusher BS**, Carroll FI, Uhl GR. "Structure-activity Relationship of Trihexyphenidyl Analogues With Respect to the Dopamine Transporter in

- the Ongoing Search for a Cocaine Inhibitor." *European Journal of Medicinal Chemistry*, 2005, 40(10):1013-1021
72. Humblet V, Lapidus R, Williams LR, Tsukamoto T, Rojas C, Majer P, Hin B, Ohnishi S, De Grand AM, Zaheer A, Renze J, Nakayama A, **Slusher BS**, Frangioni JV. "High-affinity near-infrared fluorescent small-molecule contrast agents for in vivo imaging of prostate-specific membrane antigen." *Molecular Imaging*. 2005, 1-15
73. Van der Post JP, De Visser SJ, De Kam ML, Woelfler M, Hilt DC, Vornov J, Burak ES, Bortey E, **Slusher BS**, Limsakun T, Cohen AF, Van Gerven JMA. "The central nervous system effects, pharmacokinetics and safety of the NAALADase-inhibitor GPI 5693." *Br J Clin Pharm*, 2005, 60(2):128-136
74. Zhang J, Murakawa Y, Wozniak KM, **Slusher BS**, Sima AAF. "The Preventive and Therapeutic Effects of GCPII (NAALADase) Inhibition on Painful and Sensory Diabetic Neuropathy." *Journal of Neurological Sciences*, 2006, 247(2):217-223
75. Majer P, Hin B, Stoermer D, Adams J, Xu W, Duvall BR, Delahanty G, Liu Q, Stathis MJ, Wozniak KM, **Slusher BS**, Tsukamoto T. "Structural Optimization of Thiol-Based Inhibitors of Glutamate Carboxypeptidase II by Modification of the P1' Side Chain." *Journal of Medicinal Chemistry*, 2006, 49(10):2876-2885
76. Mesters JR, Barinka C, Li W, Tsukamoto T, Majer P, **Slusher BS**, Konvalinka J, Hilgenfeld R. "Structure of Glutamate Carboxypeptidase II, A Drug Target in Neuronal Damage and Prostate Cancer." *EMBO Journal*, 2006, 25(6):1375-1384
77. Rubenstein EB, **Slusher BS**, Rojas C, Navari RM. "New Approaches to Chemotherapy-Induced Nausea and Vomiting: From Neuropharmacology to Clinical Investigations." *The Cancer Journal*, 2006, 12(5):341-7
78. Thomas AG, Wozniak KM, Tsukamoto T, Calvin D, Wu Y, Rojas C, Vornov J, **Slusher BS**. "Glutamate carboxypeptidase II (NAALADase) inhibition as a novel therapeutic strategy." In *N-Acetylaspartate: A Unique Neuronal Molecule in the Central Nervous System*, Moffett JR, Tieman SB, Weinberger DR, Coyle JT, Namboodiri AMA. (Editors), Springer Science+Business Media, Inc. Publishers, New York. *Adv Exp Med Biol* 2006, 576, 327-337
79. Meyerhoff JL, Yourick DL, **Slusher BS**, Long JB. "N-acetylaspartylglutamate (NAAG) in spinal cord injury and disease," In *N-Acetylaspartate: A Unique Neuronal Molecule in the Central Nervous System*, Moffett JR, Tieman SB, Weinberger DR, Coyle JT, Namboodiri AMA. (Editors), Springer Science+Business Media, Inc. Publishers, New York. *Adv Exp Med Biol*. 2006 (576) 339-51
80. Barinka C, Rovenska M, Mlcochova P, Hlouchova K, Plechanovova A, Majer P, Tsukamoto T, **Slusher BS**, Konvalinka J, Lubkowski J. "Structural Insight into the Pharmacophore Pocket of Human Glutamate Carboxypeptidase II." *Journal of Medicinal Chemistry*, 2007, 50(14):3267-3273
81. Rojas C, Stathis M, Thomas A, Massuda E, Alt J, Zhang J, Rubenstein E, Sebastiani S, Cantoreggi S, **Slusher BS**. "Palonosetron, in contrast to ondansetron and granisetron, exhibits two-site binding to the 5-HT₃ receptor and causes long lasting functional inhibition even after dissociation." *Supportive Care in Cancer*, 2007, 15(6):685-686
82. Tsukamoto T, Wozniak KM, **Slusher BS**. "Progress in the Discovery and Development of Glutamate Carboxypeptidase II Inhibitors." *Drug Discovery Today*, 2007, 12(17&18), 767-776
83. Rojas C, Stathis M, Thomas AG, Massuda E, Alt J, Zhang J, Luby T, Rubenstein E, Sebastiani S, Cantoreggi S, Snyder SH, **Slusher BS**. "Palonosetron exhibits unique molecular interactions with the 5-HT₃ receptor." *Anesthesia and Analgesia*, 2008 Aug; 107(2):353-5
84. Obrosova IG, Xu W, Lyzogubov VV, Ilynska O, Mashtalir N, Vareniuk I, Pavlov IA, Zhang J, **Slusher BS**, Drel VR. "PARP Inhibition or Gene Deficiency Counteracts Intraepidermal Nerve Fiber Loss and Neuropathic Pain in Advanced Diabetic Neuropathy." *Free Radical Biology & Medicine*, 2008, 44(6):972-981
85. Barinka C, Hlouchova K, Rovenska M, Majer P, Dawer M, Tsukamoto T, **Slusher BS**, Konvalinka J, Lubkowski J. "Structural Basis of Interactions Between Human Glutamate Carboxypeptidase II and its Substrate Analogs." *Journal of Molecular Biology*, 2008, 376(5): 1438-1450
86. Russo AL, Kwo H-C, Burgan WE, Carter D, Beam K, Weizheng X, Zhang J, **Slusher BS**, Chakravarti A, Tofilon PJ, Camphausen K. "In Vitro and In Vivo Radiosensitization of Glioblastoma Cells by the Poly (ADP-Ribose) polymerase Inhibitor." *Clinical Cancer Research*, 2009, 15(2):607-612

87. Drel VR, Xu W, Zhang J, Kador PF, Ali TK, Shin J, Ulrich J, **Slusher BS**, Remessy AB, Obrosova IG. "Poly(ADP-ribose) Polymerase Inhibition Counteracts Cataract Formation and Early Retinal Changes in Streptozotocin-Diabetic Rats." *Invest Ophthalmology Vision Sciences*, 2009, 50(4):1778-90
88. Carrozi VA, Chiorazzi A, Canta A, Lapidus R, **Slusher BS**, Wozniak K, Cavaletti G. "Glutamate Carboxypeptidase Inhibition Reduces the Severity of Chemotherapy-Induced Peripheral Neurotoxicity in Rat." *J Neurotox Res*, 2009, 17 (4):381-391
89. Drel VR, Xu W, Zhang Z, Pavlov IA, Shevalye H, **Slusher BS**, Obrosova OG. "Poly(ADP-ribose) Polymerase (PARP) inhibition counteracts multiple manifestations of experimental type I diabetic neuropathy." *Endocrinology*, 2009, Dec. 150(12):5273-83
90. Stavniichuk SH, Xu W, Zhang J, Lupachyk S, Maksimchuk Y, Drel VR, Floyd EZ, **Slusher BS**, Obrosova IG. "POLY(ADP-RIBOSE) POLYMERASE (PARP) Inhibition Counteracts Multiple Manifestations of Kidney Disease in Long-term Streptozotocin-Diabetic Rat Model." *Biochemical Pharmacology*, 2010, Apr. 1;79(7):1007-14
91. Xi ZX, Li X, Peng XQ, Li J, Chun L, Gardner EL, Thomas AG, **Slusher BS**, Ashby CR. "Inhibition of NAALADase by 2-PMPA attenuates cocaine-induced relapse in rats: a NAAG-mGluR2/3-mediated mechanism. *Journal of Neurochemistry*, 2010, 112(2):564-76
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Inventions and Patents/Applications:

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|-----|----------|-----------|--|
| 1. | 05/28/97 | 6,001,021 | Methods of Using NAALADase Inhib for Prostate Cancer |
| 2. | 07/23/97 | 5,977,090 | Pharmaceutical Compositions & Methods of Treating a Compulsive Disorders Using NAALADase Inhibitors. |
| 3. | 09/30/97 | 5,672,592 | Certain Phosphonomethyl Pentanedioic Acid Derivatives Thereof. |
| 4. | 11/16/97 | 5,985,855 | Treatment of Global & Focal Ischemia Using NAALADase Inhibitors. |
| 5. | 12/04/97 | 5,981,209 | Use of NAALADase Activity to Identify Prostate Cancer & Benign Prostatic Hyperplasia. |
| 6. | 08/18/98 | 5,795,877 | Inhibitors of NAALADase Enzyme Activity. |
| 7. | 09/08/98 | 5,804,602 | Methods of Cancer Treatment Using NAALADase Inhibitors. |
| 8. | 10/20/98 | 5,824,622 | Treatment of Global & Focal Ischemia Using NAALADase Inhibitors. |
| 9. | 01/26/99 | 5,863,536 | Phosphoramidate Derivatives. |
| 10. | 03/09/99 | 5,880,112 | NAALADase Inhibitors. |
| 11. | 05/11/99 | 5,902,817 | Thio Derivatives as NAALADase Inhibitors. |
| 12. | 10/05/99 | 5,962,521 | Hydroxamic Acid Derivatives. |
| 13. | 10/19/99 | 5,968,915 | NAALADase Inhibitors. |
| 14. | 11/02/99 | 5,977,090 | Pharmaceutical Compositions & Methods of Treating Compulsive Disorders Using NAALADase Inhibitors. |
| 15. | 11/09/99 | 5,981,209 | Use of NAALADase Activity to Identify Prostate Cancer & Benign Prostatic Hyperplasia. |
| 16. | 12/21/99 | 6,004,946 | Treatment of Global & Focal Ischemia Using NAALADase Inhibitors. |
| 17. | 01/04/00 | 6,011,021 | Methods of Using NAALADase Inhib for Prostate Cancer. |
| 18. | 01/25/00 | 6,017,903 | Pharmaceutical Compositions & Methods of Treating a Glutamate Abnormality & Effecting a Neuronal Activity in an Animal Using NAALADase Inhibitors. |
| 19. | 02/15/00 | 6,025,345 | Inhibitors of NAALADase Enzyme Activity. |
| 20. | 02/15/00 | 6,025,344 | Certain Dioic Acid Derivatives Useful as NAALADase Inhibitors. |
| 21. | 04/04/00 | 6,046,180 | NAALADase Inhibitors. |
| 22. | 04/25/00 | 6,054,444 | Phosphonic Acid Derivatives. |
| 23. | 06/06/00 | 6,071,965 | Phosphinic Alkanoic Acid Derivatives. |
| 24. | 09/19/00 | 6,121,252 | Phosphinic Acid Derivatives. |

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| 25. | 05/08/01 | 6,228,888 | Pharmaceutical Compositions & Methods for Treating Anxiety, Disorders & Memory Impairment Using NAALADase Inhibitors. |
| 26. | 05/30/01 | US02-0013295 | NAALADase inhibitors for treating amyotrophic lateral sclerosis |
| 27. | 06/15/01 | US01-0044459 | Hydroxamic acid derivatives |
| 28. | 07/24/01 | 6,265,609 | Thio-Substituted Pentanedioic Acid Derivatives. |
| 29. | 08/07/01 | 6,271,245 | Hydroxamic Acid Derivatives. |
| 30. | 09/11/01 | 6,288,046 | Phosphonic Acid Derivatives. |
| 31. | 11/06/01 | 6,313,159 | Metabotropic Glutamate Receptor Ligand Derivatives as NAALADase Inhibitors. |
| 32. | 01/28/02 | US02-0151503 | Thiol-based NAALADase inhibitors |
| 33. | 02/20/02 | US03-0013687 | Pharmaceutical compositions and methods for treating anxiety, disorders and memory impairment using NAALADase inhibitors |
| 34. | 02/19/02 | 6,348,464 | Pyrrolocarbonylimino Derivatives As NAALADase Inhibitors. |
| 35. | 04/16/02 | 6,372,726 | Methods of Cancer Treatment Using NAALADase Inhibitors. |
| 36. | 04/23/02 | 6,376,478 | Pharmaceutical Compositions and Methods for Treating Anxiety, Disorders and Memory Impairment Using NAALADase Inhibitors. |
| 37. | 05/07/02 | 6,384,022 | Prodrugs of NAALADase Inhibitors. |
| 38. | 05/28/02 | 6,395,718 | Pharmaceutical Compositions and Methods of Inhibiting Angiogenesis Using NAALADase Inhibitors. |
| 39. | 06/10/02 | US03-0083374 | NAALADase inhibitors useful as pharmaceutical compounds and compositions |
| 40. | 07/02/02 | 6,413,948 | Pharmaceutical Compositions and Methods of Effecting a Neuronal Activity in an Animal Using NAALADase Inhibitors. |
| 41. | 09/03/02 | 6,444,657 | Methods for Treating Certain Diseases Using NAALADase Inhibitors |
| 42. | 09/17/02 | 6,452,044 | Benzenedicarboxylic Acid Derivatives. |
| 43. | 10/01/02 | 6,458,775 | NAALADase Inhibitors Useful as Pharmaceutical Compounds and Compositions. |
| 44. | 11/12/02 | 6,479,471 | Certain Dioic Acid Derivatives Useful as NAALADase Inhibitors. |
| 45. | 07/01/03 | 6,586,623 | Thiol-Based NAALADase Inhibitors. |
| 46. | 07/01/03 | 6,586,623 | Thiol-Based NAALADase Inhibitors. |
| 47. | 05/25/04 | 6,740,777 | Thiolalkyl Benzoic Acid Derivatives. |
| 48. | 10/19/04 | 6,806,261 | Methods for Treating Certain Diseases Using NAALADase Inhibitors. |
| 49. | 11/02/04 | 6,812,364 | Thiol-Based NAALADase Inhibitors. |
| 50. | 01/03/04 | US04-0186081 | NAALADase inhibitors for treating opioid tolerance |
| 51. | 01/03/05 | US05-0080139 | NAALADase inhibitors for treating Huntington's disease |
| 52. | 02/07/05 | US05-0171065 | Benzenedicarboxylic acid derivatives |
| 53. | 02/08/05 | 6,852,750 | Benzenedicarboxylic acid derivatives. |
| 54. | 01/03/06 | US06-0135812 | Thiol based NAALADase inhibitors |
| 55. | 01/31/06 | 6,992,215 | Thiol-Based Naaladase Inhibitors. |
| 56. | 10/24/06 | 7,125,907 | Thiolactones |
| 57. | 05/22/07 | 7,220,780 | Naaladase Inhibitors for Treating Retinal Disorders and Glaucoma. |
| 58. | 08/30/07 | US07-0202158 | Methods of Admin Water-Soluble Prodrugs of Propofol For Ext Sedation |
| 59. | 09/04/08 | US08-0214508 | Methods of Administering Water-Soluble Prodrugs of Propofol |
| 60. | 12/14/10 | WO2012082903 A2 | Inhibition of GCPII for the treatment of cognitive deficits in MS |
| 61. | 1/05/11 | 8,771,975 | Quantitation of GCPII activity in biological samples |
| 62. | 7/3/2014 | US2014/0187540A1 | Compounds/ Methods of Use For Treating Neurodegenerative Disorders |
| 63. | 10/13/11 | 8,778,688 | High-throughput methods for determining pharmacological levels of plasma D-serine |
| 64. | 3/9/12 | US14/420,236 | Inhibitors of D-amino Acid Oxidase |
| 65. | 4/9/14 | 9,988,407 | Prodrugs of Prostate Specific Membrane Antigen (PSMA/GCPII) Inhibitor |

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| 66. | 5/27/14 | US15/502,009 | Inhibitors of Prostate Specific Membrane Antigen (PSMA/GCPII) for the Treatment of Inflammatory Bowel Disease (IBD) |
| 67. | 6/30/14 | US15/324,835 | Delivery of Glutaminase Inhibitors by Nanoparticles |
| 68. | 11/25/14 | US15/542,175 | Intranasal delivery of GCPII inhibitors |
| 69. | 8/13/15 | WO 2016/025745 | Dendrimer-drug Delivery Systems for Treatment of Rett Syndrome |
| 70. | 1/8/15 | US15/542,164 | Bioanalysis of the 6-Diazo-5-oxo-L-norleucine (DON) and other glutamine antagonists |
| 71. | 7/29/16 | US15/885,258 | Prodrugs of Glutamine Analogs |
| 72. | 7/29/16 | US15/885,147 | New Uses for Glutamine Analogues including DON |
| 73. | 7/29/16 | US15/884,974 | Glutamine Antagonists for the Treatment of Cognitive Deficits, including NeuroAIDs |
| 74. | 7/29/16 | US15/885,275 | Methods for Cancer and Immunotherapy using Glutamine Analogues |
| 75. | 4/13/17 | PCT/US2018/027106 | Prodrugs of 2-PMPA for Non-prostate Tissue Protection During PSMA-targeted Prostate Cancer Imaging or Radiotherapy |
| 76. | 5/25/17 | US16/304,800 | Buccal & Nasal delivery of Fospropofol |
| 77. | 10/6/17 | PCT/US2018/054581 | Tumor Targeted Glutamine Antagonists |
| 78. | 11/12/17 | PCT/US2017/0625665 | Prodrug compositions and utility of hydroxamate-based GCPII inhibitors |
| 79. | 1/10/18 | PCT/US2018/012699 | Discovery of Small Molecule Inhibitors of Neutral Sphingomyelinase (nSMase2) |
| 80. | 2/1/18 | PCT/US2018/016428 | Prodrugs of Glutamine Analogs II (Acivicin) |
| 81. | 2/8/18 | US62/627,810 | Mebendazole Prodrugs with Enhanced Solubility and Oral Bioavailability |
| 82. | 3/1/18 | US62/636,901 | Inhibition of nSMase for the Treatment of Human Immunodeficiency Virus Infection |
| 83. | 3/1/18 | US62/636,998 | Discovery of DPTIP a Small Molecule Inhibitor of nSMase for the Treatment of Neurodegenerative and Oncologic diseases |

Extramural Sponsorship:

CURRENT:

R01CA161056 (Slusher PI), NIH/NCI, 5/09/12 – 4/30/19

GCPII inhibitors for the treatment of chemotherapy-induced neuropathy

P30 MH075673 (McArthur PI; Slusher Therapeutic Core PI), NIH/NIMH, 5/8/17 – 2/28/22

Center for novel therapeutics for HIV-associated cognitive disorders

R25 NS077582 (Slusher, Rogawski, Scheidt, MPis), NIH/NINDS, 5/15/17 – 2/28/22

Training in Neurotherapeutics Discovery and Development for Academic Scientists

R01 EB018306 (Rangaramanujam PI; Slusher co-investigator), NIH/NIBIB, 4/01/14 – 3/31/19

Nanotherapies for the treatment of neurodevelopmental disorders

R01 HD076901 (Rangaramanujam PI; Slusher co-investigator), NIH/NICHHD, 4/01/14 – 4/30/19

Postnatal combination therapy for cerebral palsy

UL1 TR001079 (Ford PI; Slusher Translational Community Lead), NIH/NCATS, 9/26/13 – 6/30/19

Institute for Clinical and Translational Science (ICTR)

R01 EY025304 (Rangaramanujam PI; Slusher co-investigator), NIH/NEI, 5/01/15 – 3/31/20

Systemic nanotherapies for ocular inflammation and choroidal neovascularization

P01MH105280 (McArthur PI; Slusher Preclinical Core Lead), NIH/NIMH, 6/01/15 – 5/31/20

Intranasal Insulin Therapy for HIV- Associated Neurocognitive Disorders

R01CA193895 (Slusher/Le/Hanes MPI), NIH/NCI, 12/01/15 – 11/30/20
Glutaminase Inhibitor Drug Discovery and Nanoparticle-Based Delivery for Pancreatic Cancer Therapy

National MS Society (Slusher PI), 4/01/16 – 3/31/19
Development of 2-PMPA prodrugs for the treatment of cognitive impairment in multiple sclerosis

R01NS093416 (Kannan, Slusher, MPIS), 9/1/16-8/31/21
Targeting glutamate carboxypeptidase in perinatal brain injury

Eisai (Slusher PI), 9/1/15 – 12/31/19
Elucidating the molecular mechanism of action of NEPA

Children Cancer Foundation (Raabe PI; Slusher co-investigator), 11/1/16 – 10/31/18
Validating new anti-metabolic drugs for MYC-driven medulloblastoma

R21NS101954 (Tsukamoto), Slusher (co-I), 4/01/17 – 3/31/19
Positive allosteric modulators of MrgX1 for the treatment of chronic pain

R01 HL131812 (D'Alessio), Slusher (co-I), 9/01/17 – 8/31/21
Lung Injury Repair by Regulatory T cell LGP2

R01 EY016151 (Lutty), Slusher (co-I), 5/01/17 – 4/30/21
Inflammatory cells of choroid: a therapeutic target in AMD

Institute of Organic Chemistry (Slusher), 1/4/17 – 1/3/22
JHU-IOCB Translational Research Collaboration

Inception IBD, Inc (Slusher), 5/01/17 – 5/31/19
IBD Drug Discovery Program

RG-1507-05403 (Slusher), 04/01/16-03/31/19
Development of 2-PMPA prodrugs for the treatment of cognitive impairment in multiple sclerosis

Trevena Inc. (Slusher), 07/01/17 – 05/16/19
CIPN studies for Trevena

W81XWH-16-RTRP-IIRA - DOD (Brandacher/Slusher/Powell), 9/30/17 – 9/29/20
Preclinical development of a novel small molecule T Cell metabolism inhibitor to prevent rejection and enable calcineurin inhibitor-free allograft survival in VCA

NIDA – Contract (Slusher), 5/1/17 – 5/31/19
Pharmacologic Characterization Support Services

Crohn's and Colitis Foundation (Slusher), 12/1/17 – 5/31/19
FOLH1/GCPII Inhibition for Treatment of Inflammatory Bowel Disease (IBD)

Bloomberg Kimmel Institute for Cancer Immunotherapy (Pardoll), 1/1/16 – 12/31/20
Bloomberg Philanthropies – Drug Discovery core synthesizes and characterizes new small molecule immunotherapies.

U01NS103882-01 (Rangaramanujam), 3/15/18 – 2/28/22

NIH/NINDS

NINDS Create Discovery: Development of dendrimer-N-acetylcysteine for the treatment of neonatal brain injury.

R01CA229451 (Slusher), 7/01/18 – 6/30/23

NIH/NCI

Cell-targeted glutamine antagonists as a novel therapy for lymphoma

Celgene Corp. (Feinberg), 4/20/18 – 4/19/23

Celgene License Pathway Agreement

Novel inhibitor of oxPPP pathway for treatment of pancreatic ductal adenocarcinoma (PDAC).

R01 AG059799-01 (Rojas, Slusher, Tsukamoto, MPI), 7/01/18 – 6/30/23

NIH/NIA

Regulation of Exosome Secretion as a novel therapeutic approach for Alzheimer's Disease

R01NS103927 (Slusher), 8/01/18 – 5/31/22

NIH/NINDS

Novel brain penetrant metabolic inhibitors to treat MYC-driven medulloblastoma

Lorem (Slusher), 7/01/17 – 12/14/18

IP Group

Design, synthesize and characterize novel prodrugs of Dacogen.

Alex's Lemonade Stand Foundation (Raabe), 2/01/19 – 1/31/21

Identifying a therapeutic partner for TAK228 for pediatric phase II brain tumor studies

R01 CA226765 (Powell), 12/01/18 – 11/30/23

NIH/NCI

Targeting tumor metabolism as a means of enhancing immunotherapy

Alzheimer's Association (Rojas), 6/01/18 – 5/31/22

Regulation of nSMase2 as a novel therapeutic approach for AD

PREVIOUS:

| | |
|-----------|---|
| 1999-2002 | Design and Development of a Cocaine Antagonist: a potential medicine for cocaine addiction and overdose. SBIR Grant No. DABT63-97-C-0017 PI: Slusher BS |
| 2000-2001 | High-Throughput Screening to Identify Cocaine Antagonists. SBIR Grant No. 3 R43 DA11615-01S1, PI: Slusher BS |
| 2004-2005 | PSMA Ligands for Targeted Prostate Cancer Radiotherapy SBIR Grant No. R43 1 CA103568-01 PI: Slusher BS |
| 2010-2011 | Characterization of Phosphate-Activated Glutaminase in SIV-Infected Macaques NIMH Center Pilot Grant: NeuroAids PI: Slusher BS |
| 2010-2012 | Astroglial monocarboxylic acid transport (MCT-1) pathway in |

- neurodegeneration: assay development for high throughput screening
3R01NS033958-15S1
 NINDS Supplemental Grant
 PI: Rothstein JD
 Role: Co-I
- 2009-2011
 Development of GCPII Biomarkers
90039683
 Eisai, Inc.
 PI: Slusher BS
- 2010-2013
 High Throughput Screening to Identify Small Molecule Phosphate-Activated
 Glutaminase Inhibitors
1R03MH093170-01A1
 NIH
 PI: Slusher BS
- 2012-2013
 Pharmacological interaction between 5HT3/NK-1 Receptors
80023210
 Helsinn Health Care, Unrestricted funding
 PI: Slusher BS
- 2010-2013
 Comparison on Paclitaxel versus Eribulin-induced Neuropathy
90039683
 Eisai, Inc.
 PI: Slusher BS
- 2010-2014
 High Throughput Screening for Glutaminase Inhibitors
R03 DA032470
 NIH/NIMH
 PI: Slusher BS
- 2011-2013
 Preclinical Development of Novel Neurogenic Depression Candidate
11021090
 Maryland Biotechnology Center Translational Research Award
 Co-PIs: Kelleher J and Slusher BS
- 2013 -2014
 Pharmacokinetic and Pharmacodynamic Characterization of Buprenorphine
 Prodrug(s)
 Transcept, Inc.
 PI: Slusher BS
- 2012-2014
 Assay development for high throughput screening for Xct-inhibitors
R21 NS 074062-01
 NIH/NINDS
 PI: Slusher BS
- 2013-2014
 Preclinical Development of Novel Modafinil Analogues and D3 receptor Selective
 Antagonists and Partial Agonists for the Treatment of Substance Abuse and
 Cognitive Enhancement
HHSN271201300403P
 NIH/NIDA Contract
 CoPIs: Newman A and Slusher BS
- 2012–2015
 Identification and Characterization Small Molecule Inhibitors of D-Amino Acid
 Oxidase (DAAO)
 Cerecor, Inc.
 MPI: Slusher BS and Tsukamoto T
- 2013-2015
 Regulation of GCPII for the Diagnosis and Treatment of Neurofibromas
 Neurofibromatosis Translational Acceleration Program (NTAP)
 PI: Slusher BS

- 2014-2015 Synergies in 5HT3/NK-1 Receptor Signaling
Helsinn Health Care, Unrestricted funding
PI: Slusher BS
- 2011-2014 Development of a Neuroprotective Molecule for the Treatment of Atrophic Age-Related macular Degeneration
Medical Foundation
PI: Zack D
Role: co-I
- 2014-2015 Small Molecule PSMA Inhibitor to Treat Inflammatory Bowel Disease (IBD)
Maryland Innovation Award
PI: Slusher BS
- 2014-2016 Evaluation of the tubulin inhibitor PM060184 (& related agents) in a rodent chemotherapy-induced neuropathy model
PharmaMar USA, Inc.
PI: Slusher BS
- 2013-2015 Sponsored Research Award, Eisai, Inc., Chemotherapy Neuropathy Studies
PI: Slusher BS
- 2015-2016 Novel prodrugs of the glutamine antagonist Diazo-5-oxo-L-noroleucine (DON) to treat hematological malignancies
Maryland Innovation Initiative Award - TEDCO
PI: Slusher BS
- 2015-2016 Nanotechnology-Enhanced Delivery of a Novel Glutaminase Inhibitor: A New Treatment for Pancreatic Cancer
Maryland Innovation Initiative Award – TEDCO
PI: Le A; Co-I: Slusher BS
- 2015-2016 Sanofi Innovation Award
Evaluate the efficacy of PSMA inhibition in preclinical models of inflammatory bowel disease.
PI: Slusher BS
- 2014-2017 Sponsored Research Award, Eisai, Inc.
Comparative recovery of CIPN induced by Eribulin, Paclitaxel, Ixabepilone, and Vinorelbine
PI: Slusher BS
- 2015-2017 SBIR, Diagnostic Biochips (Slusher Subaward PI)
Microfabricated tool for integrated PK/PD studies of CNS drugs
- 2016-2018 Alleghany Health Network
Development of a novel drug to enhance immunotherapy
Co-I: Powell J; Slusher BS
- 2015-2018 HM Jackson Foundation
Amelioration of soman-induced neuropathology with NAAG-related compounds R21NS089488
McCabe PI; Slusher Subaward PI
- 2016-2018 Alex's Lemonade Stand Foundation
Pre-clinical Testing of Novel Glutamine Metabolic Inhibitors in MYC-driven Medulloblastoma
Raabe PI; Slusher co-PI
- 2017-2018 TEDCO Maryland Innovation Initiative
JHU-2545 as a Kidney Shielding Agent for PSMA-Targeted Radiotherapy
Slusher, PI

Research Leadership / Program Building:

in the pharmaceutical industry:

- 1995-1996 **Built a Neurobiology Department**
 Guilford Pharmaceuticals
 Established a neurobiology department for the newly formed company through the construction of laboratories and the recruitment of key staff. Within the first year, hired 12 scientists, built 10,000 sq feet of laboratory space, and initiated three drug discovery projects. Eventually department grew to over 80 scientists with 12 drug discovery programs.
- 1998-2000 **Led an International Clinical Development Team**
 Guilford Pharmaceuticals
 Led an interdisciplinary 30-person team to explore a novel treatment for neuropathic pain and peripheral neuropathy through drug discovery, preclinical evaluation, European regulatory filing, and completion of Phase I clinical trials in Amsterdam.
- 2000-2005 **Served as Departmental Vice President, Medicinal Chemistry, Neurobiology, Toxicology, and Drug Metabolism and Pharmacokinetics**
 Guilford Pharmaceuticals
 Responsible for the strategic direction and supervision of the research and preclinical development departments from drug discovery through IND filing, managing over 80 scientists and \$20M annual budget.
- 2005 **Founded a start-up company**
 Guilford Divestiture, Calvert Pharmaceuticals
 In 2005 a corporate decision was made to divest Guilford's drug discovery and early clinical development programs and spin-out a new company. Chosen by the Board of Directors to lead the divestment activities and become the CEO of the new entity. Within 4 months, acquired term sheets totaling \$40 M to establish "Calvert Pharmaceuticals". Before closing the transaction, however, Guilford was acquired by MGI Pharma.
- 2005-2007 **Led Scientific Alliance Team in US/Europe**
 MGI Pharma
 Led interdisciplinary team of scientists and commercial professionals in the acquisition of new product opportunities from US and European academic and corporate alliances to support sustained growth of the MGI R&D pipeline.
- 2006-2008 **Chaired Research and Translational Development Committee**
 MGI Pharma
 Chaired the corporate Research and Translational Medicine Committee of 15 senior PhD and MD-level scientists, clinicians, and commercial professionals; responsible for drug discovery through Phase IIa clinical development.
- 2006-2008 **Served as Senior Executive/Site Manager**
 MGI Pharma
 Served as the senior executive and site manager for MGI's Baltimore facility; one of three corporate locations overseeing 125 employees.
- 2008-2009 **Led US/Japan Corporate Transition**
 Eisai Research Institute
 Led the transition and integration of legacy MGI programs into Eisai's R&D pipeline in Japan and US.

at Johns Hopkins:

- 2010- **Built Johns Hopkins Drug Discovery** (<https://drugdiscovery.jhu.edu/>)
 Recruited a team of 25 drug discovery scientists, most with significant pharmaceutical industry

experience, to form the largest integrated drug discovery team at Johns Hopkins consisting of medicinal chemists, assay developers, pharmacologists, toxicologists, pharmacokinetic and drug metabolism experts. Team is charged with translating JHU faculty's discoveries into new small molecule therapeutics. In its inaugural years of operation, the team: (1) initiated collaborations in ten different departments across the university, (2) aided 100+ faculty with tool compound syntheses, pharmacokinetic studies, and high throughput assay designs to support/grow translational activities, (3) was awarded 50+ translational grants/contracts totaling over \$30M, (4) submitted 25 patent applications, (5) organized 3 Translational conferences/workshops on campus, (6) started three new graduate level Drug Discovery courses, (7) obtained drug discovery HTS screening corporate partnership, (8) founded four new companies, Cerecor, Dracen Pharmaceuticals, Lorem Therapeutics, and Adarga, and (9) founded and serve as President of the International Academic Drug Discovery Consortium with >150 academic drug discovery centers and >1500 members

2010 **Executed Drug Discovery Licensing Deal with Pharma**

Executed a licensing agreement with Eisai, Inc. to develop small-molecule glutamate carboxypeptidase II (GCPII) inhibitors for the treatment of peripheral neuropathy, Alzheimer's disease and stroke. Eisai has an exclusive option to commercialize JHU-identified inhibitors.

2011 **Founded Biotech Company, Cerecor**

<http://www.cerecor.com/>

In collaboration with Drs. Solomon Snyder, Blake Paterson, and Isaac Blech founded Cerecor to develop and commercialize neurotherapeutics derived from JHU research. Raised \$65M Million in Series A/B financing and went public in 2015 (CERC). Currently serving on Cerecor's Scientific Advisory Board.

2011 **Executed Broad High Throughput Screening (HTS) Collaboration with Pharma**

Executed HTS partnership with Eisai, Inc. to discover and develop drugs for CNS diseases providing JHU faculty access to the company's proprietary drug library. Under the agreement, Eisai will screen their drug collection for interaction with Hopkin's target; all "hit" compounds will be transferred to JHDD drug discovery team for development. Three HTS projects are underway; negotiations on first project in-licensing is expected in 2017.

2011 **Founded and Serve as President, International Academic Drug Discovery Consortium (ADDC)**
(<http://addconsortium.org>)

Led the formation of the first international consortium of academic drug discovery scientists designed to share know-how, maximize collaboration, and advocate to NIH. Recruited over 150 academic drug discovery centers. Established ADDC website including center portfolios, job postings, partnership information, and drug discovery training materials. Currently have over 1500 members from 45 states and 12 countries. Serve as ADDC founder and president.

2017 **Licensed system xc- inhibitor project to Eisai Pharma**

Licensed lead series of system xc- small molecules inhibitors to Eisai Pharma bringing in \$1M upfront with additional downstream royalties for any marketed product ([Press Release](#))

2017 **Executed Postdoctoral Agreement with Institute of Organic and Biochemistry (IOCB)**

Executed joint Postdoctoral Agreement with Institute of Organic Chemistry and Biochemistry (IOCB) in Prague where IOCB chemists train at JHDD with shared salary support; first 2 postdocs started Jan 2017 ([Press Release](#))

2018 **Founded Oncology Company, Lorem Pharmaceuticals**

Funded by the IP Group, founded Lorem to develop and commercialize prodrugs of nucleoside analogs for the treatment of oncological and immunological disease. [Press Release](#)

- 2018 **Founded ImmunoOncology Company, Dracen Pharmaceuticals**
 In collaboration with Drs. Jonathan Powell, Rana Rais and Pavel Majer, founded Dracen to develop and commercialize novel glutamine antagonist prodrugs. Raised \$40 Million in Series A financing. <http://www.dracenpharma.com/>; [Press Release](#)

EDUCATIONAL ACTIVITIES

Teaching:

Classroom Instruction

- 1991-1992 Instructor, *Medical Pharmacology*
 University of Pennsylvania School of Medicine, Philadelphia, PA.
- 1992–1994 Course Director, *Chemical Basis of Nerve Function*
 Johns Hopkins School of Continuing Studies (currently Carey Business School), Baltimore, MD.
- 1993-1994 Course Director, *Pharmacological Chemistry of the Brain*
 University of Delaware, Departments of Chemistry and Biochemistry. Wilmington, DE.
- 2012-2022 Course Co-Director, NIH-sponsored *Training in Neurotherapeutics Discovery and Development for Academic Scientists* (<http://www.neurotherapeuticscourse.org>)
 Four-day course for junior faculty including didactic lectures and individualized drug discovery and long term mentoring. Course will be taught once annually for 10 years.

CME Instruction

- 2/12 American Society of Experimental Therapeutics (ASENT), lecturer, “The Changing Paradigm of Academic Drug Discovery” Washington DC
- 4/12 American Academy of Neurology, lecturer, “NeuroTranslation, Neurologists and Neuroscientists: Defining the Next Generation of CNS Therapies” New Orleans, LA
- 6/13 ANA Translational and Clinical Research Course, lecturer, “How to Do Translational Neurology in Academia”, Baltimore, MD
- 7/14 ANA Translational and Clinical Research Course, lecturer, “How to Do Translational Neurology in Academia”, Chicago, IL
- 7/15 ANA Translational and Clinical Research Course, lecturer, “How to Do Translational Neurology in Academia”, Baltimore, MD
- 7/16-18 ANA Translational and Clinical Research Course, lecturer, “How to Do Translational Neurology in Academia”, Chicago, IL

Workshops

- 4/29/10 Translational Research Workshop, Organizer and lecturer, taught in collaboration with Johns Hopkins Carey Business School, Baltimore MD
- 10/3/10 Workshop on Drug Discovery and Development, Organizer and lecturer, taught in collaboration with Biogen Idec. Baltimore, MD

Mentoring:

in the pharmaceutical industry:

- 1993-1994 Kert Anzilotti, MD
Position under my direction: Research Associate, Zeneca Pharmaceuticals
Current: Chairman of the Department of Radiology, Christiana Care Health System, Wilmington, DE
- 1995-2005 Jie Zhang, Ph.D.
Position under my direction: Principal Scientist, Guilford Pharmaceuticals
Current: Senior Director of Biology, Profectus BioSciences, Baltimore, MD

- 1997-2005 Pavel Majer, Ph.D.
Position under my direction: Principal Scientist, Guilford Pharmaceuticals
Current: Director, Medicinal Chemistry, Institute of Organic Chemistry and Biochemistry Academy of Sciences of the Czech Republic, Prague
- 1997-2004 May X.-C. Lu, PhD.
Position under my direction: Senior Scientist, Guilford Pharmaceuticals
Current: Retired. Previously Walter Reed Army Institute of Research, Silver Spring, MD
- 1999-2005 Sergei Belyakov, Ph.D.
Previous position under my direction: Sr Scientist II, Medicinal Chemistry, Guilford and MGI PHARMA
Current: Managing Director, Theracross Technologies, AMRI Singapore
- 2000-2007 Weizheng Xu, Ph.D.
Position under my direction: Senior Scientist II, Medicinal Chemistry, MGI PHARMA
Current: President, Suzhou Kangrun Pharmaceuticals, Inc., Suzhou, China
- 2000-2004 Eric Wang, Ph.D.
Position under my direction: Senior Scientist I, Guilford Pharmaceuticals
Current: Principal Scientist, La Jolla Pharmaceutical Company, San Diego, CA
- 2000-2005 Lawrence Williams, Ph.D. (2000-2005)
Position under my direction: Principal Scientist, Guilford Pharmaceuticals,
Current: Retired. Formerly Directorate of Toxicology, US Army Public Health Command, Aberdeen MD
- 2002-2005 Vincent Kalish, Ph.D.
Position under my direction: Senior Director, Medicinal Chemistry, Guilford Pharmaceuticals
Current: CSO, Deerfield, Baltimore, MD
- 2005-2007 Bert Thomas, Ph.D.
Position under my direction: Senior Scientist, Scientific Alliance, MGI PHARMA
Current: Director, American Association for Cancer Research
- 2005-2006 Greg Hamilton, Ph.D.
Position under my direction: Senior Director, Medicinal Chemistry, MGI PHARMA
Current: President, Global Patent Group, LLC
- 2005-2008 Thomas Luby, Ph.D.
Position under my direction: Director, Biology, MGI PHARMA
Current: Sr. Director, Johnson and Johnson, Boston, MA
- 2005-2008 Andrew Kiorpes, D.M.V., Ph.D.
Position under my direction: Director, Toxicology, MGI PHARMA
Current: retired. Previously University of Minnesota, College of Veterinary Medicine, President Northland Society of Toxicology
- 2006-2009 Adaline Smith, Ph.D.
Position under my direction: Director, Toxicology, Eisai
Current: Senior Director of Toxicology, Ironwood Pharma, Boston, MA
- at Johns Hopkins:**
- 1996-present Krystyna Wozniak, Ph.D.
Previous: Senior Scientist, Guilford Pharmaceuticals; Principal Scientist, MGI Pharma; Director of Animal Pharmacology, Eisai Inc.
Current: Staff scientist, Wilmer, JHU, Baltimore, MD
- 1999-present Takashi Tsukamoto, Ph.D.
Previous: Principal Scientist, Guilford Pharmaceuticals; Director of Chemistry, MGI Pharma; Senior Director of Chemistry, Eisai Inc.
Current: Associate Professor of Neurology, JHU, Baltimore, MD

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| 1999-present | Camilo Rojas, Ph.D. <i>Previous:</i> Principal Scientist, Guilford Pharmaceuticals; Director of Biochemistry and Enzymology, MGI Pharma; Director of Biology, Eisai Inc. <i>Current:</i> Assistant Professor, Molecular and Comparative Pathobiology, JHU Baltimore, MD |
| 2009-2012 | Krupa Shukla, Ph.D. <i>Current:</i> Patent Examiner, US Patent and Trademark Office |
| 2010-present | Rana Rais, Ph.D. <i>Current:</i> Assistant Professor, Department of Neurology, JHU, Baltimore, MD |
| 2011-2013 | James Berry, Ph.D. <i>Current:</i> Research Fellow, US Army Research Laboratory |
| 2012-2014 | Mithun Raje, Ph.D. <i>Current:</i> Postdoctoral Fellow, Rosalind Franklin University |
| 2012-2014 | Michele Potter, Ph.D. <i>Current:</i> Senior Scientist, Merck |
| 2012-2015 | Mariana Figuera Losada, Ph.D. <i>Current:</i> Research Associate, Albert Einstein |
| 2014-present | Kristen Hollinger, Ph.D. <i>Current:</i> Instructor, Department of Psychiatry, JHU, Baltimore, MD |
| 2014-2017 | Sarah Zimmermann, Ph.D. <i>Current:</i> Chemist, U.S. Food and Drug Administration (FDA) |
| 2016-present | Michael Nedelcovych, Ph.D. <i>Current:</i> Postdoctoral Fellow |
| 2016-present | Kathryn Lemberg, M.D., Ph.D. <i>Current:</i> Postdoctoral Fellow, Pediatric Hematology/Oncology Fellow, Johns Hopkins Children's Center |
| 2016-present | Diane Peters, DVM, MS, Ph.D. <i>Current:</i> Postdoctoral Fellow, Department of Molecular and Comparative Medicine |
| 2017-present | Eva Prchalova, Ph.D. <i>Current:</i> Postdoctoral Fellow |
| 2017-present | Ondrej Stepanek, Ph.D. <i>Current:</i> Postdoctoral Fellow |
| 2017-present | Ranjeet Dash, Ph.D. <i>Current:</i> Postdoctoral Fellow |
| 2017-present | Carolyn Tallon, Ph.D. <i>Current:</i> Postdoctoral Fellow |
| 2018-present | Ondrej Nešuta, Ph.D. <i>Current:</i> Postdoctoral Fellow |
| 2018-present | Vijaya Veeravalli, Ph.D. <i>Current:</i> Postdoctoral Fellow |
| 2019-present | Benjamin Bell, Ph.D. <i>Current:</i> Postdoctoral Fellow |

ORGANIZATIONAL ACTIVITIES

Editorial Activities:

Guest Editor

2011-2012 *Current Medicinal Chemistry*, co-edited a 13-chapter journal issue dedicated to Glutamate Carboxypeptidase II with Dr. Guido Cavaletti

Journal peer-review activities - reviewer for the following:

2009-present *Journal of Neurochemistry*
2009-present *Analytical Biochemistry*

2009-present *European Journal of Pharmacology*
 2009-present *Psychopharmacology*
 2009-present *Experimental Neurology*
 2009-present *Neuropsychopharmacology*
 2013-present *Journal of Biomolecular Screening*
 2014-present *ACS Chemical Neuroscience*
 2014-present *Molecular Neurodegeneration*
 2015-present *Neurobiology of Disease*
 2015-present *Journal of Clinical Investigation*
 2016-present *Molecular Pain*
 2016-present *J Medicinal Chemistry*

Advisory Committees/Review Groups/Study Sections:

2009-present Eisai, Inc. Tokyo, Japan
 Eribulin Preclinical Development Advisory Committee

2010-2011 La Jolla Pharmaceutical Company, San Diego, CA
 Clinical Development Advisory Board

2010-2014 Grant reviewer
 Czech Science Foundation grants (GACR)

2011-present Cerecor, Baltimore, MD
 Scientific Advisory Board

2012-2014 American Neurological Association
 Business Partner Task Force

2012-2014 Grant reviewer
 Thierry Latran Foundation

2012-present Neurofibromatosis Therapeutic Acceleration Program
 Principal and Scientific Advisory Board member

2012-present American Society for Experimental Therapeutics
 Board of Directors, ex officio

2013 NIH SBIR study section in Chemistry, Biochemistry and Drug Development (IMST 10)

2013 NIH study section Bioengineering of Neuroscience, Vision and Low Vision Technologies (BNVT 10)

2013 Canada Foundation for Innovation, Expert study section panel (462)

2104-present Johns Hopkins Institute for Clinical and Translational Research, drug and device grant review committee

2014 Clinical Translational External Advisory Group, NIH-NICHD Intellectually and Developmental Disability Research Center

2015-present Scientific Advisory Board, Discovery Sciences, JOHNSON AND JOHNSON, La Jolla, CA

2015-present Consultant, BRAEBURN PHARMA, Princeton, NJ

2015-present Scientific Advisor, LONGEVITI Neurosolutions, Baltimore, MD

2015-present Scientific Advisor, DIAGNOSTIC BIOCHIP (www.diagnosticbiochips.com), Baltimore, MD

2015-present Scientific Steering Committee, BAYER Ophthalmology, Wuppertal Germany

2016-present Scientific Steering Committee, PFIZER Center for Translational Innovation (CTI) at Johns Hopkins

2017-present Scientific Advisory Committee, BLUEFIELD Innovations, JHU-Deerfield Management partnership

2018-present Scientific Advisory Board, Ashvatta Therapeutics

2018-present Scientific Advisory Committee, Orpheris

Professional Societies:

1988-present Society for Neuroscience, member

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| 2008-2010 | American Society of Clinical Oncology, member |
| 2008-2010 | American Association of Cancer Research, member |
| 2011-present | American Society for Experimental NeuroTherapeutics, <i>ex-officio</i> board member |
| 2011-present | Peripheral Nerve Society, member |
| 2011-present | Academic Drug Discovery Consortium, founding member and President |
| 2013-present | American Society for Pharmacology and Experimental Therapeutics, member |
| 2013-present | American Neurology Association, member |
| 2014-present | American Association of Pharmaceutical Sciences, member |

Conference Organizer:

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|-------------|---|
| 4/29/10 | <p>NeuroTranslational Conference</p> <p>In collaboration with the Carey School of Business, organized the first JHU Translational conference devoted to the topic of how to successfully translate academic research findings into therapeutics. Gave the plenary opening lecture.</p> |
| 11/10-11/13 | <p>Life Science Summit</p> <p>Since 2010 have served on the steering committee of an annual NeuroTranslational Conference held at Stony Brook University in New York to promote academic-pharmaceutical collaborations. Participated in plenary and translational lecture series.</p> |
| 10/19/11 | <p>1st International Conference on Drug Discovery in Academia</p> <p>Organized the first ever conference on “Drug Discovery in Academia” bringing together leaders of Pharma and US, Canadian, and European academic drug discovery centers to discuss the new future of drug discovery. Raised \$130K to support the event, held >200 partnering meeting, and had >550 registrants.</p> |
| 10/9/13 | <p>Academic Drug Discovery Conference 2013</p> <p>In collaboration with the Vanderbilt Center for Neuroscience, organized the inaugural meeting of the Academic Drug Discovery Consortium (ADDC) in Nashville TN. Raised over \$200K to support the event and had >600 attendees. Meeting event was covered in <i>Forbes</i>, the <i>Pink Sheet</i>, <i>In Vivo</i>, and <i>Nature Reviews Drug Discovery</i>.</p> |
| 10/23/14 | <p>Addressing Irreproducibility in Academic Research</p> <p>In collaboration with AGM, organized conference at Novartis in Cambridge, MA to address growing concerns regarding the reproducibility of biomedical research. Engaged multiple perspectives from journals, Pharma, academia, and NIH.</p> |
| 4/7/2016 | <p>Drug Discovery in Academia: Recent Successes and Emerging Opportunities</p> <p>In collaboration with ASPET, organized colloquium at Experimental Biology 2016 to highlight and share examples of recent successes coming out of academic drug discovery</p> |
| 2/24/2017 | <p>Johns Hopkins - U Maryland Joint Symposium on Drug Discovery</p> <p>Organized by Johns Hopkins Drug Discovery and U MD School of Pharmacy. Sponsored by the Academic Drug Discovery Consortium and Millipore Sigma. Bringing together local community of drug discovery scientists. Over 150 attendees.</p> |
| 10/13/2017 | <p>“Fueling Innovation: Public Programs Driving Drug Discovery Symposium”</p> <p>Organized international conference with NIH and ASPET. Conference was held at the Natcher Conference Center at NIH in Bethesda, MD with over 200 attendees.</p> |

Consultantships:

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|-----------|---|
| 2009-2010 | <p>Lontra Ventures, Austin, TX</p> <p>Drug Discovery Consultant</p> |
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|----------------|--|
| 2009-present | Helsinn HealthCare, Lugano, Switzerland R&D advisor |
| 2009-present | Eisai, Inc, Tsukuba, Japan Eribulin Advisor |
| 2010-2011 | Tesaro Bioscience, Boston, MA R&D Acquisition Advisor |
| 2012-present | Neurofibromatosis Therapeutic Acceleration Program, Baltimore, MD Translational Advisor |
| 2013-2015 | Transcept / Oncomed Pharmaceuticals, Pt. Richmond, CA Buprenorphine Prodrug advisor |
| 2013-2016 | Consultant, NIH Fast-Fail Trials in Psychotic Spectrum Disorders (FAST-PS) |
| 2014-2016 | Diagnostic Biochips, Columbia, MD Drug Discovery Consultant |
| 2014-2015 | BioMotiv, Cleveland, OH Drug Discovery Consultant |
| 2014-2015 | Kennedy Krieger Institute Behavioral Psychology Consultant (IDDRC grant) |
| 2015-2017 | Braeburn Pharmaceuticals, Princeton, NJ Drug Discovery and Development Consultant |
| 2015-present | Janssen Pharma, Discovery Sciences, Scientific Advisory Board Consultant, Scientific Advisory Board |
| 2015-present | Longevity Neuro Solutions, Consultant |
| 2016 | Abbvie, Consultant |
| 2016 – present | BAYER Ophthalmology, Wuppertal, Germany. JHU-Bayer Scientific Steering Committee |
| 2018 | Virginia Drug Discovery Consortium, Scientific Advisor (<i>Slusher</i>) |
| 2018 - present | CAMDEN NEXUS FUND, Venture Partner (<i>Slusher</i>) |

RECOGNITION

Awards, Honors

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|------|---|
| 2011 | Reipe Alumni Award |
| 2010 | Hematology/Oncology Convention Platform Award |
| 2009 | Eisai Scientific Merit Award |
| 2005 | Guilford CEO Achievement Award |
| 1991 | Sandoz Pharmaceutical Award |
| 1991 | Edward J. Stegmann Award |
| 1986 | Johns Hopkins Chemistry Prize |
| 1985 | Dana Scholar |
| 1985 | Omicron Delta Kappa Leader-of-the-Year Award |
| 1985 | Analytical Chemistry Award |
| 1984 | Phi Beta Kappa |
| 1983 | Delaplaine McDaniels Award |

Invited Talks, Panels

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|-------|---|
| 5/90 | Slusher BS , Tsai G, Rothstein JD, Meyerhoff J, Coyle JT. "N-acetyl aspartyl glutamate (NAAG): an acidic dipeptide partially co-localized to putative glutamatergic systems." <i>Excitatory Amino Acid Symposium</i> , Venice, Italy |
| 11/93 | Slusher BS , Risollo K, Anzilotti KF, Stetz SL, Pullan LM, Jackson PF. "Glutamate antagonists reverse parkinsonism in rodents." <i>IBC Neurodegenerative Diseases Symposium</i> , Walt Disney World, FL |
| 2/97 | Slusher BS . "The development of small molecule cocaine antagonists." Medications Development Division of NIDA, Washington, DC |

- 4/97 **Slusher BS.** "The identification and characterization of selective cocaine antagonists." *IBC Conference Dopaminergic Disorders* Boston, MA
- 12/97 **Slusher BS.** "Use of identical assay conditions for cocaine analog binding and dopamine uptake to identify potential cocaine antagonists." *ACNP Annual Meeting*, Kona, Hawaii
- 2/98 **Slusher BS.** "New Neuroprotection Strategy: NAALADase Inhibition as a Novel Mechanism of Regulating Synaptic Glutamate." *National Institute of Drug Addiction*
- 2/98 **Slusher BS.** "Neuroprotective Activity of NAALADase Inhibition." Johns Hopkins University School of Medicine Clinical Neurosciences Seminar Series
- 4/98 **Slusher BS.** "Neuroprotective Activity of NAALADase Inhibition." *IBC Glutamate Pharmacology: Therapeutic Implications*. San Francisco, CA
- 4/98 **Slusher BS.** "Regulation of Extracellular Glutamate Via Inhibition of the Brain Enzyme NAALADase." NorthWestern School of Medicine, Department of Neuropathology
- 5/98 **Slusher BS.** "Inhibition of NAAG Hydrolysis Via NAALADase Inhibition Prevents Ischemic Glutamate Release and Provides Neuroprotection." Johns Hopkins Hospital Wilmer Eye Institute
- 7/98 **Slusher BS, Smith CR, Suzdak PS, and Snyder SH.** "Neuroscience Symposium on Drug Discovery." *World Trade Center*, New York City
- 10/98 **Slusher BS.** "NAALADase Inhibition as a Novel Mechanism of Regulating Synaptic Glutamate: Efficacy in Animal Models of Stroke, ALS, Pain, Spinal Cord Injury and Drug Addiction." Indiana University School of Medicine, Department of Pharmacology
- 11/98 **Slusher, BS.** "Inhibition of NAAG Hydrolysis Via NAALADase Inhibition Prevents Ischemic Glutamate Release and Provides Neuroprotection." *IBC Seventh Annual Ischemic Stroke Conference*, Washington DC
- 12/98 **Slusher BS.** "NAALADase Inhibition as A Novel Neuroprotective and Analgesic Strategy." Allegany University, Philadelphia, PA
- 5/00 **Slusher BS.** "Inhibition of NAALADase as a strategy for preventing sensitization to the convulsant effects of cocaine." *College on Problems of Drug Dependence*, Puerto Rico
- 9/04 **Slusher BS.** "NAALADase Inhibition as a Novel Therapeutic Target." *NAA Conference*, Washington, DC
- 11/04 **Slusher BS.** "NAALADase Inhibition as a Novel Therapeutic Target." *UMD BioSciences Conference*, College Park, MD
- 10/05 **Slusher BS, Tsukamoto T, Wozniak KM.** "Inhibitors of GCPII (NAALADase): A Novel Target for Peripheral Neuropathy and Neuropathic Pain." *GTC BIO: Therapeutic Strategies against Neurodegeneration*, Boston, MA
- 4/07 **Slusher BS.** "Pharmacological Differences Among 5-HT₃ Receptor Antagonists." *Mayo Clinic Oncology Meeting*
- 7/07 **Slusher BS.** "GCPII Inhibition Protects Against Cisplatin Induced Peripheral Neurotoxicity in a Rat Model." *Peripheral Nerve Society*
- 6/07 **Slusher BS.** "Palonosetron, in contrast to ondansetron and granisetron, exhibits two-site binding to the 5-HT₃ receptor and causes long lasting inhibition even after dissociation." *Multinational Association of Supportive Care in Cancer (MASSC)*
- 10/07 **Slusher BS.** "Pharmacological Differences Among 5-HT₃ Receptor Antagonists." *International Chemotherapy-induced Nausea and Vomiting Advisory Committee*, Dublin, Ireland
- 3/08 **Slusher BS.** "Evidence of Palonosetron's Molecular Differentiation Distinguish it as a Unique Antinausea and Antiemetic Agent." *82nd International Anesthesia Research Society (IARS) Clinical & Scientific Congress*, San Francisco, CA
- 3/08 **Slusher BS.** "Pharmacological Differences Among 5-HT₃ Receptor Antagonists." *Aloxi University at the National Sales Meeting*, Phoenix, AZ
- 7/08 **Slusher BS, Rojas C, Thomas AG, Zhang J, Luby T, Rubenstein E, Sebastiani S, Cantoreggi S.** "Palonosetron, but not Ondansetron or Granisetron, Exhibits Receptor Internalization and Long-term Inhibition of Function." *Hematology/Oncology Pharmacy Association (HOPA)*

- 6/09 **Slusher BS.** "Palonosetron, in contrast to ondansetron and granisetron, induces 5HT₃ receptor internalization and attenuates NK1 receptor functioning." *Multinational Association of Supportive Care in Cancer (MASSC)*, Rome, Italy
- 7/09 **Slusher BS.** "Direct comparison of the neuropathy-inducing effects of Eribulin, Ixabepilone, and Paclitaxel in mice." *Conference on Microtubule-directed agents and their side effects*. Woodcliff Lake, New Jersey
- 3/10 **Slusher BS.** "Palonosetron uniquely inhibits NK-1 agonist responses in vitro and in vivo." *Hematology/Oncology Pharmacy Association (HOPA)*, New Orleans, LA
- 4/10 **Slusher BS.** "Strategies for Pre-Clinical Translational Research" *Translational Research Workshop*, Baltimore, MD
- 9/10 **Slusher BS.** "Why is it important to move academic innovation into therapeutic development and how can we do it better?" Life Science Summit, Opening Plenary Session speaker, Translational Research, New York, NY
- 9/10 **Slusher BS.** "Practical Applications of Drug Discovery in Academia." Life Science Summit, Translational Research Panel speaker, New York
- 12/10 **Slusher BS.** "Pharmacological Differences Among 5-HT₃ Receptor Antagonists." *International Meeting of Supportive Care Therapeutics*, Dublin, Ireland
- 2/11 **Slusher BS.** "GCP11 inhibition for the treatment of peripheral neuropathy and neuropathic pain." *American Society of Experimental Therapeutics (ASENT)*, Washington DC
- 2/11 **Slusher BS.** "DAAO inhibition for the treatment of schizophrenia." *American Society of Experimental Therapeutics (ASENT)*, Washington DC
- 10/11 **Slusher BS.** "NeuroTranslational Drug Discovery Model" *Drug Discovery in Academia*, Johns Hopkins, Baltimore MD
- 11/11 **Slusher BS.** "Drug Development Basics: It is a very multidisciplinary effort." Life Science Summit, Translational Research Panel, New York
- 2/12 **Slusher BS.** "The Changing Paradigm of Academic Drug Discovery." *American Society of Experimental Therapeutics (ASENT)*, Washington DC
- 2/12 **Slusher BS.** "Inhibition of System xc- for the treatment of brain cancer." *American Society of Experimental Therapeutics (ASENT)*, Washington DC
- 4/12 **Slusher BS.** "NeuroTranslation, Neurologists and Neuroscientists: Defining the Next Generation of CNS Therapies." *American Academy of Neurology*, New Orleans, LA
- 9/12 **Slusher BS.** "Changing Landscape of Drug Discovery in the US." European Symposium on the Design of Academic Drug Discovery, Copenhagen, Denmark
- 9/12 **Slusher BS.** "Translational Activities: the Data Package". The Plexiform Neurofibroma Scientific Summit, Farmington, PA
- 10/12 **Slusher BS.** "Academics in CNS Therapy Discovery". ASENT-ANA Satellite Workshop on *Enhancing CNS Therapy Development*, Boston, MA
- 11/12 **Slusher BS.** "Evolution or Revolution? Transforming How Basic Research Discoveries Become Life Saving Therapies". Life Science Summit, Translational Research Panel, New York, NY
- 1/13 **Slusher BS.** "HTS and Early Drug Discovery in Industry and Academia. Collaboration: Is the Sum Greater Than the Two Parts?" Society for Laboratory Automation and Screening (SLAS) Annual Meeting. Orlando, FL
- 2/13 **Slusher BS.** "Overview of the Drug Discovery Process". Training in Neurotherapeutics Discovery and Development for Academic Scientists. Bethesda, MD.
- 2/13 **Slusher BS.** "Neuropathy Inducing Effect of Microtubule Binding Agents", Eribulin Scientific Advisory Board, Hoboken, NJ
- 6/13 **Slusher BS.** ANA Translational and Clinical Research Course, "How to Do Translational Neurology in Academia", Baltimore, MD
- 10/13 **Slusher BS.** "Founding the Academic Drug Discovery Consortium: implications and future", 2013 ADDC Conference, Nashville, TN
- 10/13 **Slusher BS.** "How to fund academic drug discovery", 2013 ADDC Conference, Nashville, TN

- 10/13 **Slusher BS.** "The changing ecosystem of drug discovery in the US: DAAO inhibition for the treatment of schizophrenia as an example of an academic drug discovery program", Keynote address for the 30th annual University of Pennsylvania Pharmacology Symposium, Philadelphia, PA
- 11/13 **Slusher BS.** "Targeting xCT for NeuroAIDS", 2013 International Society of NeuroVirology (ISNV), Plenary lecture, Washington DC
- 12/13 **Slusher BS.** "Challenges and Opportunities in Developing New Drugs for Neurological Disease", Lecture in the JHU Diseases and Disorders of the Nervous System Course, Baltimore, MD
- 2/14 **Slusher BS.** "Peripheral nerve accumulation of tubulin agents", Eribulin Scientific Advisory Board, Hoboken, NJ
- 3/14 **Slusher BS.** "Drug Discovery Goes back to School", FPN International Research Symposium, Chicago, IL
- 6/14 **Slusher BS.** "Fundamentals of Drug Discovery", University of MD Pharmacy School, Regulatory Science Course Lecture, Baltimore MD
- 6/14 **Slusher BS.** "Rise of Academic Drug Discovery", SelectBio Virtual Drug Discovery & Development Conference, (DDD 2014)
- 6/14 **Slusher BS.** "Johns Hopkins Drug Discovery". Research Matters. Cigarette Restitution Fund Conference, Maryland Implementation of Cancer Biotech Development, Baltimore, MD
- 7/14 **Slusher BS.** "How to Do Translational Neurology in Academia", ANA Translational and Clinical Research Course, Chicago, IL
- 8/14 **Slusher BS.** Symposium on Technology for the Future - Personalized Medicine. Co-organized by National Taiwan University and the Arizona-Taiwan Society of Technology. Taiwan
- 10/14 **Slusher BS.** "Opening Remarks and Welcome" Addressing Irreproducibility in Target Validation Conference, Cambridge, MA
- 10/14 **Slusher BS.** "The Academic Drug Discovery Consortium as a New Model for BioInnovation" Technology Transfer Society Conference, Baltimore, MD
- 2/15 **Slusher BS.** "Small molecule inhibitors of system xc- and glutamate carboxypeptidase II". (plenary lecture) Institute of Organic Chemistry and Biochemistry, Prague, Czech Republic
- 2/15 **Slusher BS.** "Differential neuropathy induced by chemotherapies". Peripheral Neuropathy Symposium, Santa Barbara, CA
- 5/15 **Slusher BS.** "Therapy Development in the Era of Team Science and Big Data: What will the Future Bring to the Patient with Epilepsy?" University of Utah Anticonvulsant Drug Development Symposium, Park City, UT
- 5/15 **Slusher BS.** "Development of PSMA and system xc- inhibitors as examples of academic drug discovery". Clinical Pharmacology Seminar, Baltimore MD
- 6/15 **Slusher BS.** "The role of Academia in discovering new therapies for pediatric brain cancers". (plenary lecture), Children's Tumor Foundation, La Jolla, CA
- 7/15 **Slusher BS.** "How to Do Translational Neurology in Academia" 7th Annual Translational and Clinical Research Course for Clinician-Scientists, sponsored by the American Neurological Association, Mt. Washington Conference Center, Baltimore, MD
- 9/15 **Slusher BS.** "Pharma-academic collaborations in drug discovery" (plenary lecture). Cutting Edge Drug Discovery & Development in Michigan Symposium, East Lansing, MI
- 10/15 **Slusher BS.** "How can Academia and Industry work together to benefit Patients?" Eisai presentation for Human Healthcare Week, Baltimore, MD
- 10/15 **Slusher BS.** "No Longer Lost in Translation: Johns Hopkins Drug Discovery and its innovative public-private partnership for the development of system xc- inhibitors, Brain Night, Baltimore, MD
- 12/15 **Slusher BS.** "Drug Discovery Goes Back to School: GCPII and xCT projects as examples of academic drug discovery." University of Maryland, Baltimore, MD
- 3/16 **Slusher BS.** "Development of system xc- inhibitors for brain tumor-associated seizures." Dickinson College. Carlisle, PA

- 4/16 **Slusher BS.** "Public-private partnership to develop brain cancer treatments" Keynote address, Northwestern Center for Molecular Innovation and Drug Discovery 20th Annual Drug Discovery Symposium, Chicago, IL
- 6/16 **Slusher BS.** "Johns Hopkins Drug Discovery" presented to Johns Hopkins Cancer Chemical and Structural Biology Program, Baltimore, MD
- 7/16 **Slusher BS.** "How to Do Translational Neurology in Academia" 8th Annual Translational and Clinical Research Course for Clinician-Scientists, sponsored by the American Neurological Association, Chicago, IL
- 11/16 **Slusher BS.** "Transformation of Drug Discovery; role of academia and public-private partnerships", Keynote address, Abbvie Celebration of Science Symposium, Chicago, IL
- 11/16 **Slusher BS.** "Importance of Collaboration: Stories from the front line", JHU SOM Research Integrity Colloquium, Baltimore, MD
- 2/17 **Slusher BS.** "I Dream About Drugs" InCMED Translational Community, Department of Medicine, Johns Hopkins, Baltimore, MD
- 2/17 **Slusher BS.** "Johns Hopkins Drug Discovery" Johns Hopkins and UMB Drug Discovery Symposium, Baltimore, MD
- 5/17 **Slusher BS.** "Drug Development in Academia" Virginia CancerRx Symposium, Richmond, VA
- 7/17 **Slusher BS.** "How to Do Translational Neurology in Academia", American Neurology Association, Translational and Clinical Research Course, Chicago, IL
- 10/17 **Slusher BS.** "Glutamine Antagonists as Novel Targets for immunotherapy", American Society for Pharmacology and Experimental Therapeutics / Academic Drug Discovery Colloquium, Bethesda, MD
- 10/17 **Slusher BS.** "How to Prep for Successful Acquisitions", TEDCO's Entrepreneur Expo & Stem Cell Symposium, Baltimore, MD
- 10/17 **Slusher BS.** "Drug Discovery in Academia: *the role of Pharma-Academic Partnerships in the development of new medicines*", Fall Howard County General Hospital Forum Event, Howard County, MD
- 2/18 **Slusher BS.** "Discovery of novel brain penetrable system xc-" (plenary lecture). Drug Discovery for Neurodegeneration Conference, Alzheimer's Drug Discovery Foundation, Washington, DC
- 4/18 **Slusher BS.** "Developing the Treatments of Tomorrow: Taking Molecules from the Lab to Man". Annual Meeting of the American Academy of Neurology. Los Angeles, CA
- 4/18 **Slusher BS.** "Glutamine Antagonists as Novel Targets for immunotherapy", UCSF Drug Discovery Chemical Biology lecture series. San Francisco, CA.
- 5/18 **Slusher BS.** "Drug Discovery Goes to School" (plenary lecture), Crohn's & Colitis Foundation "Voices of Progress", New York, NY
- 11/18 **Slusher BS.** "Development of GCP inhibitors for IBD", Crohn's & Colitis Foundation "IBD INNOVATE 2018", New York, NY
- 1/19 **Slusher BS.** "How JHDD can help you turn your discoveries into drugs", Institute of Genetic Medicine lecture series. Baltimore, MD

OTHER PROFESSIONAL ACCOMPLISHMENTS

Drugs Discovered, Developed, and Supported:

Marketed Drugs:

1. Quetiapine (Seroquel™)
Antipsychotic; responsible for preclinical receptor pharmacology
2. Palonosetron (Aloxi™)
Anti-emetic; responsible for pharmacological differentiation from first generation 5HT3 antagonists
3. Fospropofol (Lucedra™)
Procedural sedative; responsible for preclinical toxicology/pharmacokinetics; NDA submission
4. Eribulin (Halavan™)

Antineoplastic; responsible for neurotoxicity differentiation from other taxanes used for breast cancer; NDA submission

5. Netupitant/Palonosetron (Akynzeo™)

Anti-emetic; responsible for 5HT3 and NK1 synergistic pharmacology characterization; gave opening lecture at drug launch

Drugs in Development:

6. GPI 5693 (GCPII inhibitor)

Neuropathic pain; Inventor; led both research and development teams; responsible for IND submission and completion of Phase 1 trials

7. E2016 (PARP inhibitor)

Breast/Ovarian cancer; Managed research, clinical candidate selection, and preclinical development

Founded Biotechnology Companies:

Founded Cerecor <https://www.cerecor.com/>

In collaboration with Drs. Solomon Snyder, Blake Paterson, and Isaac Blech founded Cerecor to develop and commercialize neurotherapeutics derived from JHU research. Raised \$65M Million in Series A/B financing and went public in 2015 (CERC).

Founded Oncology Company, Lorem Pharmaceuticals [Press Release](#)

Funded by the IP Group, founded Lorem to develop and commercialize prodrugs of nucleoside analogs for the treatment of oncological and immunological disease.

Founded ImmunoOncology Company, Dracen Pharmaceuticals

<http://www.dracenpharma.com/>; [Press Release](#)

In collaboration with Drs. Jonathan Powell, Rana Rais and Pavel Majer, founded Dracen to develop and commercialize novel glutamine antagonist prodrugs. Raised \$40 Million in Series A financing.