CURRICULUM VITAE

Michael Bubser, PhD

Office/Lab Address: Department of Pharmacology
Vanderbilt Center for Neuroscience Drug Discovery
422B Preston Research Building
2220 Pierce Avenue
Vanderbilt University
Nashville, TN 37232-6600
Phone: (615) 322-6347
Cell: (615) 308-4714

Email: michael.bubser@vanderbilt.edu

Education and Training

1987	Diploma in Biology (Dipl. Biol.) University of Stuttgart, Stuttgart, Germany
1992	Ph.D. (Dr. rer. nat.) Biology, University of Stuttgart, Stuttgart, Germany; Mentor: Werner J. Schmidt Thesis: "Verhaltenspharmakologische und neurochemische Characterisierung der Funktion von Dopamin im medialen präfrontalen Cortex der Ratte"
1992-1994	Postdoctoral Fellow, Department of Neuropharmacology, University of Tübingen, Tübingen, Germany. Supervisor: Werner J. Schmidt
1994-1995	Postdoctoral fellow (van den Houten Foundation), Netherlands Institute for Brain Research, Amsterdam, The Netherlands. Supervisor: Matthijs G. P. Feenstra
1995	Postdoctoral Fellow, Department of Psychiatry, Yale University School of Medicine, New Haven, CT, U.S.A. Supervisor: Ariel Y. Deutch
1996	Postdoctoral Associate, Department of Psychiatry, Yale University School of Medicine, New Haven, CT, U.S.A. Supervisor: Ariel Y. Deutch
1996-2002	Research Fellow, Department of Psychiatry, Vanderbilt University School of Medicine, Nashville, TN, U.S.A. Supervisor: Ariel Y. Deutch

Academic Appointments

1985-1987	Teaching Assistant, University of Stuttgart, Biological Institute, PI Dr. Peter Kunze, Experimental course in Animal Physiology (for undergraduates)
1989-1994	Teaching Assistant, University of Tübingen, Division of Zoology, PI Dr Werner Schmidt, Experimental Course in Behavioural Pharmacology (for undergraduates)
2002-2009	Research Instructor, Department of Psychiatry, Vanderbilt University School of Medicine, Nashville, TN, U.S.A. Supervisor: Ariel Y. Deutch
2009-2011	Research Instructor, Department of Pharmacology, Vanderbilt University School of Medicine, Nashville, TN, U.S.A. Supervisors: P. Jeffrey Conn / Carrie K. Jones
2011-2018	Research Assistant Professor, Department of Pharmacology and Vanderbilt Center for Neuroscience Drug Discovery, Vanderbilt University School of Medicine, Nashville, TN, U.S.A. Supervisors: P. Jeffrey Conn / Carrie K. Jones

Professional Organizations

Deutsche Gesellschaft für Experimentelle und Klinische Pharmacologie und Toxicologie 1992-present

Reviewing Activities

***Ad hoc* for the following journals:**

Archives Internationales de Pharmacodynamie et de Therapie, Biological Psychiatry, Brain Research, CNS Drugs, European Journal of Pharmacology, Experimental Neurology, Frontiers in Systems Neuroscience, International Journal of Neuropsychopharmacology, Journal of Neural Transmission, Journal of Neurochemistry, Neuropsychoparmacology, Neuroscience, Pharmacological Reports, Progress in Neurobiology, Schizophrenia Bulletin, Scientific Reports, Synapse

Awards or Recognitions for professional activities:

1988	Diploma thesis awarded with a prize by the "Friends and Alumni of the University of Stuttgart"
1990	Travel award by the European Science Foundation for attending the Annual Meeting of the European Neuroscience Association in Stockholm, Sweden
1994	Postdoctoral fellowship award (Van Den Houten Foundation), Amsterdam, The Netherlands
1997	Young Investigator Award, International Congress on Schizophrenia Research, Colorado Springs, CO, U.S.A.
1998	Young Investigator Award, National Alliance for Research on Schizophrenia and Depression (NARSAD) 07/1998 - 06/2000

Teaching Activities

1992-1994	University of Tübingen, Department of Neuropharmacology, PI Dr Werner Schmidt, Design and coordination of neurochemical research projects; advisor for neurochemical and behavioural research projects of graduate students
1992-1993	University of Tübingen, Faculty of Biology (winter semester 1992-1993) Graduate student seminar (weekly), "Intracerebral microdialysis and related techniques: theoretical aspects and application to neuroscience"

Vanderbilt University School of Medicine Courses:

1999	Neuropharmacology section of the pharmacology course for graduate students “Animal behavioural models of neurological and neuropsychiatric disorders”
2009	Short Course: An Organ Systems Approach to Experimental Targeting of the Metabolic Syndrome
2011	Short Course: An Organ Systems Approach to Experimental Targeting of the Metabolic Syndrome
2011	PHAR 327 Modern Drug Discovery: In vivo pharmacology
2012	Short Course: An Organ Systems Approach to Experimental Targeting of the Metabolic Syndrome

Research Supervision

Postdoctoral Fellows:

2002-2009	Hui-Dong Wang
2009-2011	Kera Lawson

Vanderbilt Undergraduate Student Researchers:

2002-2004	Sheila Kusnoor
2010-2011	Nikhila Reddy
2012-2014	Rachael Saporito
2013-2016	Xuewen Gong
2015-2016	Caroline Bertsch
2016-2018	Lee S. Schmidt
2019-present	Edith Duncan

Graduate Students:

2004-2009	Sheila Kusnoor
2005-2006	Jennifer Madison
2006-2008	Brian Mathur
2010-2016	Michael D. Grannan
2011-2014	Michael Nedelcovych
2018-present	Laura Teal
2019-present	Jason Russell

Research Staff Scientists:

2003-2005	Tamara Geraci
2009-2013	Rebekah Lambert
2009-2013	Sarah Jo Howard
2010-2015	Jermaine Wilson
2011-2015	Weimin Peng
2013-2014	Grant Muller
2013-2014	Rafael Perez
2014-2016	Josh Luffman
2017-present	Rebecca Sales
2018-present	Hudson Robb
2019-present	Madeline Ragland
2019-present	Davin Bryant
2019-present	Avi Prajapati

Summer Student Researchers:

Charee Stanley
Tabitha Jarman

Bibliography

Bilbiometrics (based on Web of Knowledge Database)

- Total citations (1989-2018): 2715
- Average citations per manuscript: 30.17
- h-index: 26

Bilbiometrics (based on Google Scholar)

- Total citations (1994-2018): 3702
- h-index: 31
- i10-index: 58

Primary Publications:

1. Schmidt WJ, **Bubser M.** Anticataleptic effects of the N-methyl-D-aspartate antagonist MK-801 in rats. Pharmacol Biochem Behav. 1989. 32:621-623.
2. **Bubser M**, Schmidt WJ. 6-hydroxydopamine lesion of the rat prefrontal cortex increases locomotor activity, impairs acquisition of delayed alternation tasks but does not affect uninterrupted maze tasks. Behav Brain Res. 1990. 37:157-168.
3. Schmidt WJ, **Bubser M**, Hauber W. Excitatory amino acids and Parkinson's disease. Trends Neurosci. 1990. 13:46-47.

4. Schmidt WJ, **Bubser M**, Hauber W. Excitatory amino acid antagonists and Parkinson's disease - Reply. Trends Neurosci. 1990. 13:327.

5. **Bubser M**, Keseberg U, Notz PK, Schmidt, WJ. Differential behavioural and neurochemical effects of competitive and non-competitive NMDA receptor antagonists in rats. Eur J Pharmacol. 1992. 229:75-82.

6. Schmidt WJ, **Bubser M**, Hauber W. Behavioural pharmacology of glutamate in the basal ganglia. J Neural Transm [Suppl]. 1992. 38:65-89.

7. **Bubser M**, Bartmann M. Effect of carbon in-line filters on the analysis of catecholamines by high-performance liquid chromatography with coulometric electrochemical detection. J Chromatogr. 1993. 615:339-342.

8. **Bubser M**. 6-Hydroxydopamine lesions of the medial prefrontal cortex of rats do not affect dopamine metabolism in the basal ganglia at short and long postsurgical intervals. Neurochem Res. 1994. 19:421-425.

9. **Bubser M**, Koch M. Prepulse inhibition of the acoustic startle response of rats is reduced by 6-hydroxydopamine lesions of the medial prefrontal cortex. Psychopharmacology. 1994. 113:487-492.

10. **Bubser M**, Schmidt WJ. Injection of apomorphine into the medial prefrontal cortex of the rat increases haloperidol-induced catalepsy. Biol Psychiatry. 1994. 36:64-67.

11. Hauber W, **Bubser M**, Schmidt WJ. 6-hydroxydopamine lesion of the rat prefrontal cortex impairs motor initiation but not motor execution. Exp Brain Res. 1994. 99:524-528.

12. Koch M, **Bubser M**. Deficient sensorimotor gating after 6-hydroxydopamine lesion of the rat medial prefrontal cortex is reversed by haloperidol. Eur J Neurosci. 1994. 6:1837-1845.

13. **Bubser M**, Tzschentke T, Hauber W. Behavioural and neurochemical interactions of the AMPA antagonist GYKI 52466 and the non-competitive NMDA antagonist dizicilpine in rats. J Neural Transm (Gen Sect). 1995. 101:115-126.

14. Kretschmer BD, **Bubser M**, Schmidt WJ. Behavioral and neurochemical aspects of the strychnine-insensitive glycine receptor antagonist 7-chlorokynurenate in rats. Eur J Pharmacol. 1995. 280:37-45.

15. **Bubser M**, Feenstra MGP, Erdtsieck-Ernste, EBHW, Botterblom MHA, van Uum HFM, Pool, CW. Modulatory role of catecholamines in the transsynaptic expression of c-fos in the rat medial prefrontal cortex induced by disinhibition of the mediodorsal thalamus: a study employing microdialysis and immunohistochemistry. Brain Res. 1997. 749:214-225.

16. **Bubser M**, Zadow B, Kronthaler UO, Felsheim U, Rückert NGH Schmidt WJ. Behavioural pharmacology of the non-competitive NMDA antagonists dextrorphan and ADCI: relations between locomotor stimulation, anticataleptic potential and forebrain dopamine metabolism. Naunyn-Schmiedeberg’s Arch Pharmacol. 1997. 355:767-773.

17. Feenstra M, **Bubser M**, Erdtsieck-Ernste E, van der Wal A, Botterblom M, van Uum H. Neuronal activation visualized by Fos expression after intracerebral microdialysis of drugs. In: Teelken and Korf (eds) Neurochemistry: Cellular, molecular, and clinical aspects, Plenum Press, New York, 1997. 1161-1166.

18. Rückert NGH, **Bubser M**, Schmidt WJ. 6-hydroxydopamine lesions of locus coeruleus and the antiparkinsonian potential of NMDA-receptor antagonists. J Neural Transm. 1997. 104: 363-377.

19. **Bubser M**, Deutch AY. Thalamic paraventricular nucleus neurons collateralize to innervate the prefrontal cortex and nucleus accumbens. Brain Res. 1998. 787:304-310.

20. **Bubser M**, de Brabander JM, Timmerman W, Feenstra MGP, Erdtsieck-Ernste EBHW, Rinkens A, van Uum JFM, Westerink BHC. Disinhibition of the mediodorsal thalamus induces Fos-like immunoreactivity

in both pyramidal and GABA-containing neurons in the medial prefrontal cortex of rats, but does not affect prefrontal extracellular GABA levels. Synapse. 1998. 30:156-165.

21. Deutch AY, **Bubser M**, Young CD. Psychostimulant-induced Fos expression in the thalamic paraventricular nucleus. J Neurosci. 1998. 18:10680-10687.
22. Abi-Saab WM, **Bubser M**, Roth RH, Deutch AY. 5-HT2 receptor regulation of extracellular GABA levels in the prefrontal cortex. Neuropsychopharmacology. 1999. 20:92-96.
23. **Bubser M**, Deutch AY. Stress induces Fos expression in neurons of the thalamic paraventricular nucleus that innervate limbic forebrain sites. Synapse. 1999. 32:13-22.
24. Young CD, **Bubser M**, Meltzer HY, Deutch AY. Clozapine pretreatment modifies haloperidol-elicited Fos induction: a regionally-specific double dissociation. Psychopharmacology. 1999. 144:255-263.
25. **Bubser M**, Scruggs JL, Young CD, Deutch AY. The distribution and origin of the calretinin-containing innervation of the nucleus accumbens of the rat. Eur J Neurosci. 2000. 12:1591-1598.
26. Scruggs JL, Patel S, **Bubser M**, Deutch AY. DOI-induced activation of the cortex: dependence on 5-HT2A heteroceptors on thalamocortical glutamatergic neurons. J Neurosci. 2000. 20:8846-8852.
27. **Bubser M**, Backstrom JR, Sanders-Bush E, Roth BL, Deutch AY. Distribution of serotonin 5-HT2A receptors in afferents of the rat striatum. Synapse. 2001. 39:297-304.
28. Roth-Härer A, Lilienthal H, **Bubser M**, Kronthaler U, Mundy WR, Ward TR, Schmidt W, Winterhoff H, Winneke G. Neurotransmitter concentrations and binding at dopamine receptors in rats after maternal exposure to 3,4,3',4'-tetrachlorobiphenyl: the role of reduced thyroid hormone concentrations. Environ Toxicol Pharmacol. 2001. 9:103-115.
29. **Bubser M**, Deutch AY. Differential effects of typical and atypical antipsychotic drugs on striosome and matrix compartments of the striatum. Eur J Neurosci. 2002. 15:713-720.
30. Fadel J, **Bubser M**, Deutch AY. Differential activation of orexin neurons by antipsychotic drugs associated with weight gain. J Neurosci. 2002. 22: 6742-6746.
31. Petrie KA, **Bubser M**, Casey CD, Davis MD, Roth BL, Deutch AY. The neurotensin agonist PD 149163 increases Fos expression in the prefrontal cortex of the rat. Neuropsychopharmacology. 2004. 29:1878-1888.
32. Petrie KA, Schmidt D, **Bubser M**, Fadel J, Carraway RE, Deutch AY. Neurotensin activates GABAergic interneurons in the prefrontal cortex. J Neurosci. 2004. 25: 1629-1936.
33. **Bubser M**, Fadel JR, Jackson LL, Meador-Woodruff JH, Jing D, Deutch AY. Dopaminergic regulation of orexin neurons. Eur J Neurosci. 2005. 11: 2993-3001.
34. Deutch AY, Fadel J, **Bubser M**. Dopamine - hypocretin/orexin interactions: The prefrontal cortex and schizophrenia. In: de Lecea, L., Sutcliffe J.G. (Eds.) Hypocretins - Integrators of Physiological Functions. Springer, New York, U.S.A. 2005. 339-351.
35. de Lecea L, Jones BE, Boutrel B, Borgland SL, Nishino S, **Bubser M**, DiLeone R. Addiction and arousal: Alternative roles of hypothalamic peptides. J Neurosci. 2006. 26: 10372-10375.
36. Deutch AY, **Bubser M**. The orexins/hypocretins and schizophrenia. Schizophr Bull. 2007. 1277-1283.
37. Jones CK, Brady AE, Davis AA, Xiang Z, **Bubser M**, Tantawy MN, Kane AS, Bridges TM, Kennedy JP, Bradley SR, Peterson TE, Ansari MS, Baldwin RM, Kessler RM, Deutch AY, Lah JJ, Levey AI, Lindsley CW, Conn PJ. Novel selective allosteric activator of the M1 muscarinic acetylcholine receptor regulates amyloid processing and produces antipsychotic-like activity in rats. J Neurosci. 2008. 28:10422-10433.
38. Nayyar T, **Bubser M**, Ferguson MC, Neely MD, Goodwin JS, Montine TJ, Deutch AY, Ansah TA. Cortical serotonin and norepinephrine denervation in parkinsonism: Preferential loss of the beaded serotonin innervation. Eur J Neurosci. 2009. 30:207-216.

39. Gustin RM, Bichell TJ, **Bubser M**, Daily J, Filonova I, Mreshavili D, Deutch AY, Colbran RJ, Weeber EJ, Haas KF. Tissue-specific variation of Ube3a protein eExpression in rodents and in a mouse model of Angelman syndrome. Neurobiol Dis. 2010. 39:283-291.

40. **Bubser M**, Byun N, Wood MR, Jones CK. Muscarinic receptor pharmacology and circuitry for the modulation of cognition. Handbook of Experimental Pharmacology. 2012. 208:121-166.

41. Digby GJ, Noetzel MJ, **Bubser M** Utley TJ, Walker AG, Byun NE, Lebois EP, Xiang Z, Sheffler DJ, Cho HP, Davis AA, Nemirovski NE, Mannenga SE, Camp BW, Bimonte-Nelson HA, Bode J, Italiano K, Morrison R, Daniels JS, Niswender CM, Olive MF, Lindsley CW, Jones CK, Conn PJ. Novel allosteric agonists of M1 muscarinic acetylcholine receptors induce brain region-specific responses that correspond with behavioral effects in animal models. J Neurosci. 2012. 32:8532-8544.

42. Herman EJ, **Bubser M**, Conn PJ, Jones CK. Metabotropic glutamate receptorsfor new treatments in schizophrenia. Handbook of Experimental Pharmacology. 2012. 213:297-365.

43. Jones, C.K., **Bubser, M**., Thompson, A.D., Dickerson, J.W., Turle-Lorenzo, N., Amalric, M., Blobaum, A.L., Bridges, T.M., Morrison, R.D., Jadhav, S., Engers, D.W., Italiano, K., Bode, J., Daniels, J.S., Lindsley, C.W., Hopkins, C.R., Conn, P.J., Niswender, C.M. (2012) The mGlu4 positive allosteric modulator VU0364770 produces efficacy alone and in ombination with L-DOPA or an adenosine A2A antagonist in preclinical rodent models of Parkinson's disease. J Pharmacol Exp Ther. 340:404-421.

44. Jones CK, Byun N, **Bubser M**. Muscarinic and nicotinic acetylcholine receptor agonists and allosteric modulators for the treatment of schizophrenia. Neuropsychopharmacology. 2012. 37:16-42.

45. Kusnoor SV, **Bubser M**, Deutch AY. The effects of nigrostriatal dopamine depletion on the thalamic parafascicular nucleus. Brain Res. 2012. 1446:46-55.

46. Johnson KA, Jones CK, Tantawy MN, **Bubser M**, Marvanova M, Ansari MS, Baldwin RM, Conn PJ, Niswender CM. (2013) The metabotropic glutamate receptor 8 agonist (S)-3,4-DCPG reverses motor deficits in prolonged but not acute models of Parkinson's disease. Neuropharmacology. 2013. 66:187-195.

47. Engers DW, Jones CK, **Bubser M**, Thompson AD, Blobaum AL, Sheffler DJ, Zamorano R, Carrington SJS, Bridges TM, Morrison RD, Daniels JS, Conn PJ, Lindsley CW, Niswender CM, Hopkins CR. Discovery of a novel metabotropic glutamate receptor 4 (mGlu4) positive allosteric modulator (PAM) extended probe: Characterization of ML292, a potent and selective mGlu4 PAM which produces efficacy alone or in combination with L-DOPA in preclinical rodent models of Parkinson's disease. 2012 Apr 2 [Updated 2013 Feb 25]. In: Probe Reports from the NIH Molecular Libraries Program [Internet]. Bethesda (MD): National Center for Biotechnology Information (US); 2012. Available from: http://www.ncbi.nlm.nih.gov/books/NBK133426/.

48. Berry CG, **Bubser M**, Jones CK, Hayes JP, Wepy JA, Locuson C, Daniels JS, Lindsley CW, Hopkins CR. Discovery and characterization of ML398, a potent and selective antagonist of the D4 receptor with in vivo activity. ACS Med Chem Lett. 2014. 5: 1060-1064.

49. **Bubser M**, Bridges TM, Dencker D, Gould RW, Grannan M, Noetzel MJ, Lamsal A, Niswender CM, Daniels JS, Poslusney MS, Melancon BJ, Tarr JC, Byers FW, Wess J, Duggan ME, Dunlop J, Wood MW, Wood MR, Lindsley CW, Conn PJ, Jones CK. Positive Allosteric Modulation of M4 Muscarinic Acetylcholine Receptors Reverses MK-801-induced Behavioral Impairments and Enhances Associative Learning in Rodents. ACS Chem Neurosci. 2014. 5: 920-942.

50. Byun NE, Grannan M, **Bubser M**, Barry RL, Thompson A, Rosanelli J, Gowrishankar R, Kelm NS, Damon S, Bridges T, Melancon BJ, Tarr JC, Brogan JT, Avison MJ, Deutch A, Wess J, Wood MR, Lindsley CR, Gore JC, Conn PJ, Jones CK. Antipsychotic-like and cognitive enhancing effects of the selective M4 muscarinic acetylcholine receptor positive allosteric modulator VU0152100. Neuropsychopharmacology. 2014. 39: 1578-1593.

51. Cho HP, Garcia-Barrantes PM, Brogan JT, Hopkins CR, Niswender CM, Rodriguez AL, Venable DF, Morrison RD, **Bubser M**, Daniels JS, Jones CK, Conn PJ, Lindsley CW. Chemical modulation of mutant mGlu1 receptors derived from deleterious GRM1 mutations found in schizophrenics. ACS Chem Biol. 2014. 9: 2234.2346.

52. Nedelcovych MT, Gould RW, Zhan X, **Bubser M**, Gong X, Grannan M, Thompson AT, Ivarsson M, Lindsley CW, Conn PJ, Jones CK. A Rodent Model of Traumatic Stress Induces Lasting Sleep and Quantitative Electroencephalographic Disturbances. ACS Chem Neurosci. 2015. 6: 485-493.

53. Iderberg H, Maslava N, Thompson AD, **Bubser M**, Niswender CM, Hopkins CR, Lindsley CW, Conn PJ, Jones CK, Cenci MA. Pharmacological stimulation of metabotropic glutamate receptor type 4 in a rat model of Parkinson's disease and l-DOPA-induced dyskinesia: Comparison between a positive allosteric modulator and an orthosteric agonist. Neuropharmacology. 2015. 95: 121-129.

54. Rook JM, Xiang Z, Lv X, Ghoshal A, Dickerson JW, Bridges TM, Johnson KA, Foster DJ, Gregory KJ, Vinson PN, Thompson AD, Byun N., Collier RL, **Bubser M**, Nedelcovych MT, Gould RW, Stauffer SR, Daniels JS, Niswender CM, Lavreysen H, Mackie C, Conde-Ceide S, Alcazar J, Bartolomé-Nebrada JM, Macdonald GJ, Talpos JC, Steckler T, Jones CK, Lindsley CW, Conn PJ. Biased mGlu5 positive allosteric modulators provide in vivo efficacy without potentiating mGlu5 modulation of NMDAR currents. Neuron. 2015. 86: 1029-1040.

55. Gould RW, Dencker D, Grannan M, **Bubser M**, Zhan X, Wess J, Xiang Z, Locuson C, Lindsley CW, Conn PJ, Jones CK. (2015) Role for the M1 Muscarinic Acetylcholine Receptor in Top-Down Cognitive Processing Using a Touchscreen Visual Discrimination Task in Mice. ACS Chem Neurosci. 2015. 6: 1683-1695.

56. Gould RW, Amato RJ, **Bubser M**, Joffe ME, Nedelcovych MT, Thompson, AD, Nickols HH, Yuh JP, Zhan X, Felts AS, Rodriguez AL, Morrison RD, Byers FW, Rook JM, Daniels JS, Niswender CM, Conn PJ, Emmitte KA, Lindsley CW, Jones CK. Partial mGlu5 Negative Allosteric Modulators Attenuate Cocaine-Mediated Behaviors and Lack Psychotomimetic-Like Effects. Neuropsychopharmacology. 2016. 41: 1166-1178.

57. Gould RW, Nedelcovych MT, Gong X, Tsai E, **Bubser M**, Bridges TM, Wood MR, Duggan ME, Brandon NJ, Dunlop J, Wood MW, Ivarsson M, Noetzel MJ, Daniels JS, Niswender CM, Lindsley CW, Conn PJ, Jones CK. State-dependent alterations in sleep/wake architecture elicited by the M4 PAM VU0467154 – Relation to antipsychotic drug-like effects. Neuropharmacology. 2016. 102: 244-253.

58. Grannan MD, Mielnik CA, Moran SP, Gould RW, Ball J, Lu Z, **Bubser M**, Ramsey AJ, Abe M, Cho HP, Nance KD, Blobaum AL, Niswender CM, Conn PJ, Lindsley CW, Jones CK Prefrontal cortex-mediated impairments in a genetic model of NMDA receptor hypofunction are reversed by the novel M1 PAM VU6004256. ACS Chem Neurosci. 2016. 7: 1706-1716.

59. Nickols HH, Yuh JP, Gregory KJ, Morrison RD, Bates BS, Stauffer SR, Emmitte KA, **Bubser M**, Peng W, Nedelcovych MT, Thompson A, Lv X, Xiang Z, Daniels JS, Niswender CM, Lindsley CW, Jones CK, Conn PJ. VU0477573: Partial negative allosteric modulator of the subtype 5 metabotropic glutamate receptor with in vivo efficacy. J Pharmacol Exp Ther. 2016. 356: 123-136.

60. Niswender CM, Jones CK, Lin X, **Bubser M**, Thompson Gray A, Blobaum AL, Engers DW, Rodriguez AL, Loch MT, Daniels JS, Lindsley CW, Hopkins CR, Javitch JA, Conn PJ. Development and antiparkinsonian activity of VU0418506, a selective positive allosteric modulator of metabotropic glutamate receptor 4 homomers without activity at mGlu2/4 heteromers. ACS Chem Neurosci. 2016. 7: 1201-1211.

61. White MG, Cody PA, **Bubser M**, Wang HD, Deutch AY, Mathur BN. Cortical hierarchy governs rat claustrocortical circuit organization. J Comp Neurol. 2016. 525: 1347-1362.

62. Wood MR, Noetzel MJ, Engers JL, Bollinger KA, Melancon BJ, Tarr JC, Han C, West M, Gregro AR, Lamsal A, Chang S, Ajmera S, Smith E, Chase P, Hodder PS, **Bubser M**, Jones CK, Hopkins CR,

Emmitte KA, Niswender CM, Wood MW, Duggan ME, Conn PJ, Bridges TM, Lindsley CW. Discovery and optimization of a novel series of highly CNS penetrant M4 PAMs based on a 5,6-dimethyl-4-(piperidin-1-yl)thieno[2,3-d]pyrimidine core. Bioorg Med Chem Lett. 2016. 26: 3029-3033.

63. Wood MR, Noetzel MJ, Poslusney MS, Melancon BJ, Tarr JC, Lamsal A, Chang S, Luscombe VB, Weiner RL, Cho HP, **Bubser M**, Jones CK, Niswender CM, Wood MW, Engers DW, Brandon NJ, Duggan ME, Conn PJ, Bridges TM, Lindsley CW. Challenges in the development of an M4 PAM in vivo tool compound: The discovery of VU0467154 and unexpected DMPK profiles of close analogs. Bioorg& Med Chem Lett. 2017. 27: 171-175

64. Wood MR, Noetzel MJ, Melancon BJ, Poslusney MS, Nance KD, Hurtado MA, Luscombe VB, Weiner RL, Rodriguez AL, Lamsal A, Chang S, **Bubser M**, Blobaum AL, Engers DW, Niswender CM, Jones CK, Brandon NJ, Wood MW, Duggan ME, Conn PJ, Bridges TM, Lindsley CW. Discovery of VU0467485/AZ13713945: An M4 PAM evaluated as a preclinical candidate for the treatment of schizophrenia. ACS Medl Chem Lett. 2017. 8: 233-238.

65. Melancon BJ, Wood MR, Noetzel MJ, Nance KD, Engelberg EM, Han C, Lamsal A, Chang S, Cho HP, Byers FW, **Bubser M**, Jones CK, Niswender CM, Wood MW, Engers DW, Wu D, Brandon NJ, Duggan ME, Conn PJ, Bridges TM, Lindsley CW. Optimization of M4 positive allosteric modulators (PAMs): The discovery of VU0476406, a non-human primate in vivo tool compound for translational pharmacology. Bioorg Med Chem Lett. 2017. 27: 2296-2301.

66. Zike ID, Chohan MO, Kopelman JM, Krasnow EN, Flicker D, Nautiyal KM, **Bubser M**, Kellendonk C, Jones CK, Stanwood G, Tanaka KF, Moore H, Ahmari SE, Veenstra-VanderWeele J. OCD candidate gene SLC1A1/EAAT3 impacts basal ganglia-mediated activity and stereotypic behavior. Proc Natl Acad Sci USA. 2017. 114: 5719-5724.

67. Bollinger KA, Felts AS, Brassard CJ, Engers JL, Rodriguez AL, Weiner RL, Cho HP, Chang S, **Bubser M**, Jones CK, Blobaum AL, Niswender CM, Conn PJ, Emmitte KA, Lindsley CW. Design and synthesis of mGlu2 NAMs with Improved Potency and CNS Penetration Based on a Truncated Picolinamide Core. ACS Med Chem Lett. 2017. 8: 919-924.

68. Engers JL, Bollinger KA, Weiner RL, Rodriguez AL, Long MF, Breiner MM, Chang S, Bollinger SR, **Bubser M**, Jones CK, Morrison RD, Bridges TM, Blobaum AL, Niswender CM, Conn PJ, Emmitte KA, Lindsley CW. (2017) Design and Synthesis of N-Aryl Phenoxyethoxy Pyridinones as Highly Selective and CNS Penetrant mGlu3 NAMs. ACS Med. Chem Lett. 2017. 8: 925-930.

69. Gunter BW, Gould RW, **Bubser M**, McGowan KM, Lindsley CW, Jones CK. Selective inhibition of M5 muscarinic acetylcholine receptors attenuates cocaine self-administration in rats. Addict Biol. 2017. doi: 10.1111/adb.12567.

70. Abe M, Seto M, Gogliotti RG, Loch MT, Bollinger KA, Chang S, Engelberg EM, Luscombe VB, Harp JM, **Bubser M**, Engers DW, Jones CK, Rodriguez AL, Blobaum AL, Conn PJ, Niswender CM, Lindsley CW. (2017) Discovery of VU6005649, a CNS Penetrant mGlu7/8 Receptor PAM Derived from a Series of Pyrazolo[1,5-a]pyrimidines. ACS Med Chem Lett. 2017. 8: 1110-1115.

71. Gould RW, Grannan MD, Gunter BW, Ball J, **Bubser M**, Bridges TM, Wess J, Wood MW, Brandon NJ, Duggan ME, Niswender CM, Lindsley CW, Conn PJ, Jones CK. Cognitive enhancement and antipsychotic-like activity following repeated dosing with the selective M4 PAM VU0467154. Neuropharmacology. 2018. 128: 492-502.

72. Yohn SE, Foster DJ, Covey DP, Moehle MS, Galbraith J, Garcia-Barrantes PM, Cho HP, **Bubser M**, Blobaum AL, Joffe ME, Cheer JF, Jones CK, Lindsley CW, Conn PJ. Activation of the mGlu1 metabotropic glutamate receptor has antipsychotic-like effects and is required for efficacy of M4 muscarinic receptor allosteric modulators. Mol Psychiatry. 2018. doi: 10.1038/s41380-018-0206-2 (Epub ahead of print).

73. Abney KK. **Bubser M**, Du Y, Kozek KA, Bridges TM, Lindsley CW, Daniels JS, Morrison R, Wickman K, Hopkins CR, Jones CK, Weaver CD. Analgesic effects of the GIRK Activator, VU0466551, alone and in combination with morphine in acute and persistent pain models. ACS Chem Neurosci. 2019. 8: 1294-1299.

74. Engers DW, Melancon BJ, Gregro AR, Bertron JL, Bollinger SR, Felts AS, Konkol LC, Wood MR, Bollinger KA, Luscombe VB, Rodriguez AL, Jones CK, Bubser M, Yohn SE, Wood MW, Brandon NJ, Dugan ME, Niswender CM, Jeffrey Conn P, Bridges TM, Lindsley CW-.VU6005806/AZN-00016130, an advanced M_4 positive allosteric modulator (PAM) profiled as a potential preclinical development candidate. Bioorg Med Chem Lett. 2019. 29: 1714-1718.

Abstracts:

1. **Bubser M**, Schmidt WJ (1987) 6-Hydroxydopamine lesions of the prefrontal cortex reduce stereotypy and enhance catalepsy. In: Elsner N, Creutzfeldt O (eds), Proceedings of the 15th Göttingen Neurobiology Conference, Thieme Verlag, Stuttgart, p. 278.
2. Schmidt, WJ, **Bubser M** (1987) Präfrontaler Cortex, Dopamin und Verhalten. Verh. Dtsch. Zool. Ges. Fischer, Stuttgart.
3. **Bubser M**, Schmidt WJ (1988) The NMDA antagonist MK-801 counteracts haloperidol-induced catalepsy. In: Elsner N, Barth FG (eds), Proceedings of the 16th Göttingen Neurobiology Conference, Thieme Verlag, Stuttgart, p. 356.
4. Schmidt WJ, Tiedtke P, Hauber W, **Bubser M** (1988) Behavioural pharmacology of NMDA receptor antagonists. Eur J Neurosci [Suppl.] 1:1326.
5. **Bubser M** (1989) Maze preformance after 6-hydroxydopamine lesion of the prefrontal cortex. In: Elsner N, Singer W (eds), Proceedings of the 17th Göttingen Neurobiology Conference, Thieme Verlag, Stuttgart, p. 413.
6. **Bubser M** (1990) Behavioural effects produced by local injections of dopaminergic agents into the prefrontal cortex of the rat. In: Elsner N, Roth G (eds), Proceedings of the 18th Göttingen Neurobiology Conference, Thieme Verlag, Stuttgart, p. 449.
7. **Bubser M** Schmidt WJ (1990) 6-hydroxydopamine lesions of the medial prefrontal cortex and acquisition of maze tasks. Psychopharmacology [Suppl] 101:S8.
8. **Bubser M** Schmidt WJ (1990) Interaction of prefrontal dopamine with basal ganglia functions: no neurochemical changes in subcortical areas after prefrontal 6-OHDA lesion. Naunyn-Schmiedeberg's Arch Pharmacol [Suppl] 342:R6.
9. Schmidt WJ, **Bubser M**, Hauber W (1990) Anticataleptic effects of NMDA receptor antagonists. Eur J Neurosci [Suppl] 3:118.
10. **Bubser M** (1991) Prefrontal dopamine and allocentric orientation of the rat: evidence for a memory function of the prefrontal cortex. In: Elsner N, Penzlin H (eds), Proceedings of the 19th Göttingen Neurobiology Conference, Thieme Verlag, Stuttgart, p. 444.
11. **Bubser M**, Hauber W, Schmidt WJ (1991) The contribution of the corticostriatal "cognitive loop" to the acquisition of maze performance. Eur J Neurosci [Suppl] 4:167.
12. **Bubser M**, Keseberg U, Notz P, Schmidt WJ (1991) NMDA-antagonists and dopamine metabolism. In: Rollema H, Westerink B, Drijfhout WJ (eds), Monitoring Molecules in Neuroscience. Proceedings of the 5th International Conference on In Vivo Methods, University Centre for Pharmacy, Groningen, pp. 317-320.
13. Hauber W, **Bubser M** (1991) The role of the prefrontal system in reaction time performance. In: Elsner N, Penzlin H (eds), Proceedings of the 19th Göttingen Neurobiology Conference, Thieme Verlag, Stuttgart, p 445.

14. Hauber WJ, **Bubser M**, Schmidt WJ (1991) Corticostriatal functional loops and reaction time performance. Eur J Neurosci [Suppl] 4:253.

15. Keseberg U, **Bubser M**, Schmidt WJ (1991) Effects of the non-competitive NMDA-antagonist dizocilpine on open-field activity and on dopamine metabolism in the rat. In: Elsner N, Penzlin H (eds), Proceedings of the 19th Göttingen Neurobiology Conference, Thieme Verlag, Stuttgart, p. 448.

16. Bartmann M, **Bubser M**, Schaeffel F (1992) Inter-individual variability in retinal dopamine levels and deprivation myopia in chickens. In: Elsner N, Richter DW (eds), Proceedings of the 20th Göttingen Neurobiology Conference, Thieme Verlag, Stuttgart, p. 400.

17. Bubser M, Keseberg U, Notz P, Schmidt WJ (1992) Locomotion and dopamine metabolism of the forebrain are differentially affected by competitive and non-competitive NMDA-antagonists. In: Elsner N, Richter DW (eds), Proceedings of the 20th Göttingen Neurobiology Conference, Thieme Verlag, Stuttgart.

18. Bubser M, Keseberg U, Kretschmer B, Notz PK, Schmidt WJ (1993) Biochemical and behavioural correlates of NMDA receptor antagonism. Amino Acids 5:168.

19. Bubser M, Koch M (1993) 6-Hydroxydopamine lesions of the medial prefrontal cortex reduce prepulse inhibition of the acoustic startle response in rats. In: Elsner N, Heisenberg M (eds), Proceedings of the 21st Göttingen Neurobiology Conference, Thieme Verlag, Stuttgart, p 467.

20. Bubser M, Koch M (1993) Prefrontal dopamine and prepulse inhibition of the acoustic startle response in rats. Pharmacopsychiatry 26.

21. Rückert N, **Bubser M**, Schmidt WJ (1993) Central noradrenergic depletion by lesions of the locus ceruleus affects dopaminergic and glutamatergic mediated locomotion. Amino Acids 5:160.

22. Bubser M, Koch M (1994) Haloperidol reduces the sensorimotor gating deficit that is induced by dopamine depletion of the medial prefrontal cortex of rats. Soc Neurosci Abstr 20, Part 1:828.

23. Bubser M, Zadow B, Rückert NGH, Keseberg U, Kronthaler U, Schmidt WJ (1994) Behavioural actions of the non-competitive NMDA antagonists dextrorphan and ADCI in relation to dopaminergic mechanisms. Behav Pharmacol [Suppl] 5:117-118.

24. Hauber W, Andersen R, **Bubser M**, Tzschentke T, Waldenmeier MT (1994) Behavioral pharmacology of the AMPA antagonist GYKI 52466. Behav Pharmacol [Suppl] 5:57.

25. Koch M, **Bubser M** (1994) Effects of 6-OHDA lesions of the medial prefrontal cortex on sensorimotor gating in rats: possible relevance to schizophrenia. Behav Pharmacol [Suppl] 5:35-36.

26. Koch M, **Bubser M** (1994) Sensorimotor gating deficit after depletion of dopamine, but not noradrenaline in the rat medial prefrontal cortex - reversal by haloperidol. In: Breer H, Elsner N (eds), Göttingen Neurobiology Report, Georg Thieme Verlag, Stuttgart, p 552.

27. Kretschmer BD, Zadow B, **Bubser M**, Schmidt WJ (1994) Behavioral pharmacology of allosteric, non-competitive and competitive NMDA receptor antagonists. Behav Pharmacol [Suppl] 5:44.

28. Kronthaler UO, B**ubser M**, Schmidt WJ (1994) Behavioural functions of the mesostriatal system as revealed by 6-OHDA lesions in the striatum of rats. In: Breer H, Elsner N (eds), Göttingen Neurobiology Report, Georg Thieme Verlag, Stuttgart, p 761.

29. Kronthaler UO, **Bubser M**, Schmidt WJ (1994) Dopamine-dependent behaviour induced by NMDA-receptor antagonists as revealed by 6-OHDA lesions. Naunyn-Schmiedeberg's Arch Pharmacol [Suppl] 350:R12.

30. Kronthaler UO, **Bubser M**, Schmidt WJ (1994) Striatal 6-OHDA lesions and sensorimotor functions in rats. Behav Pharmacol [Suppl] 5:117.

31. Rückert NGH, **Bubser M**, Schmidt WJ (1994) Lesion of the locus coeruleus affects dopamine and glutamate mediated behavior in the rat. Behav Pharmacol [Suppl] 5:124.

32. Weinand-Härer A, Lilienthal H, **Bubser M**, Schmidt W, Winneke G (1994) Comparison of effects of a coplanar PCB or PTU on neurotransmitter levels in rat brain. Naunyn-Schmiedeberg's Arch Pharmacol [Suppl] 350:R22.

33. Zadow B, **Bubser M**, Keseberg U, Rückert N, Schmidt WJ (1994) Behavioural and neurochemical effects of the noncompetitive NMDA receptor antagonist dextrorphan in the rat. Naunyn-Schmiedeberg's Arch Pharmacol 350:R84.

34. Zadow B, **Bubser M**, Schmidt WJ (1994) Quinolinic acid-induced lesion of the substantia nigra pars reticulata: behavioural and neurochemical effects. Soc Neurosci Abstr 20, Part 2:1365.

35. Feenstra MGP, van der Weij W, Botterblom MHA, **Bubser M**, Heinsbroek RPW (1994) Local application of a competitive NMDA antagonist in the medial prefrontal cortex increases in vivo DA but not NA release. Br J Pharmacol [Suppl] 114:328P.

36. **Bubser M**, Feenstra MGP, Erdtsieck-Ernste EBHW, Botterblom MHA, van Uum HFM (1995) Thalamocortical fos expession and behavioural activation: modulation by catecholamine depletion. Soc Neurosci Abstr 21:933.

37. Feenstra M, **Bubser M**, Erdtsieck-Ernste E, Botterblom M (1995) Stimulation of the mediodorsal thalamus-prefrontal cortex pathway: in vivo transmitter release, Fos expression and behaviour. Eur J Neurosci [Suppl] 8:102.

38. Kronthaler UO, **Bubser M**, Schmidt WJ (1995) MK-801 mediates behaviour via dopaminergic neurons. Behav Pharmacol 6:623.

39. Kronthaler UO, **Bubser M**, Schmidt WJ (1995) Dopamine dependency of MK-801 induced locomotion as revealed by nucleus accumbens 6-OHDA lesions. In: Elsner N, Menzel R (eds), Proceedings of the 23rd Göttingen Neurobiology Conference, Georg Thieme Verlag, Stuttgart.

40. Lilienthal H, Weinand-Härer, A, **Bubser M**, Schmidt WJ, Winneke G (1995) Significance of thyroid hormones in PCB-induced neuronal effects in rats. In: Elsner N, Menzel R (eds), Proceedings of the 23rd Göttingen Neurobiology Conference, Georg Thieme Verlag, Stuttgart.

41. Schmidt WJ, Kretschmer BD, Zadow B, **Bubser M** (1995) Psychomotor-related diseases and schizophrenia. Behav. Pharmacol. 6:632.

42. **Bubser M**, Young CD, Deutch AY (1996) Projections of the thalamic paraventricular nucleus to the limbic forebrain of the rat: neuroanatomical and functional characterization. Soc Neurosci Abstr 22:2031.

43. Feenstra M, **Bubser M**, Erdtsieck-Ernste E, van der Wall A, Botterblom M, van Uum H (1996) Neuronal activation visualized by fos-expression after intracerebral microdialysis of drugs. J Neurochem 66: S93.

44. **Bubser M**, Young CD, Deutch AY (1997) Involvement of glutamatergic mechanisms in the biochemical actions of the atypical neuroleptic clozapine. Schizophr Res 24:74.

45. **Bubser M**, Young CD, Deutch AY (1997) Glutamatergic modulation of antipsychotic drug-induced Fos expression in the nucleus accumbens. Soc Neurosci Abstr 23:2328.

46. **Bubser M**, Backstrom JR, Sanders-Bush E, Roth BL, Deutch AY (1999) Localization of serotonin 5-HT2a receptor in identified striatal afferents and pallidal projection neurons. Schizophr Res 36:61-62.

47. **Bubser M**, Feenstra MPG, Roeling TAP, Groenewegen HJ, Deutch AY (1999) The innervation of the nucleus accumbens by the paraventricular thalamic nucleus as assessed by tract-tracing techniques and functional neuroanatomical approaches using microdialysis and Fos immunohistochemistry. In: Rollema H, Abercrombie E, Sulzer D, Zackheim J (eds), Monitoring Molecules in Neuroscience. Proceedings of the 8th International Conference on In Vivo Methods, Center for Molecular & Behavioral Neuroscience, Rutgers, The State University of New Jersey, Newark, NJ, pp 1167-1168.

48. **Bubser M**, Scruggs JL, Young CD, Deutch AY (1999) Characterization of the innervation of the rat nucleus accumbens by calretinin-containing neurons of the thalamic paraventricular nucleus. Soc Neurosci Abstr 55:1158.

49. **Bubser M**, Stanley CM, Deutch AY (1999) Differential actions of typical and atypical antipsychotic drugs on striatal patch and matrix compartments. Schizophr Res 36:62.

50. Patel S, Abi-Saab W, **Bubser M**, Deutch AY (1999) DOI-elicited Fos expression in cerebral cortex is subserved by 5-HT2A receptors in non-pyramidal cells. Soc Neurosci Abstr 25:1660.

51. **Bubser M**, Stanley CM, Deutch AY (2000) Differential effects of typical and atypical antipsychotic drugs on Fos protein expression in striatal patch and matrix compartments. Soc Neurosci Abstr 26:1487.

52. **Bubser M**, Deutch AY (2002) Do antipsychotic drugs modulate the activity of striatal local circuit neurons? Program No. 264.14. 2002 Abstract Viewer/Itinerary Planner. Washington, DC: Society for Neuroscience, 2002. CD-ROM.

53. Fadel J, **Bubser M**, Petrie K, Deutch AY (2002) Orexin regulation of catecholamine release in prefrontal cortex. Program No. 359.1. 2002 Abstract Viewer/Itinerary Planner. Washington, DC: Society for Neuroscience , 2002. CD-ROM.

54. **Bubser M**, Fadel JR, Meador-Woodruff JH, Jing D, Deutch AY (2003) Dopaminergic regulation of orexin neurons. Program No. 705.11. 2003 Abstract Viewer/Itinerary Planner. Washington, DC: Society for Neuroscience, 2002. CD-ROM.

55. Jing D, **Bubser M**, Deutch AY (2003) Clozapine activates neurons in the thalamic paraventricular nucleus that project to the amygdala, nucleus accumbens, and prefrontal cortex. Program No. 848.7. 2003 Abstract Viewer/Itinerary Planner. Washington, DC: Society for Neuroscience, 2002. CD-ROM.

56. Petrie KA, Schmidt D, **Bubser M**, Deutch AY (2003) Neurotensin activates GABAergic interneurons in the prefrontal cortex of the rat. Program No. 919.2. 2003 Abstract Viewer/Itinerary Planner. Washington, DC: Society for Neuroscience, 2003. CD-ROM.

57. **Bubser M**, Deutch AY, (2004) The dopaminergic innervation of the lateral hypothalamus of the rat: origin, immunohistochemical characterization and relation to orexin neurons. Program No. 754.7. 2004 Abstract Viewer/Itinerary Planner. Washington, DC: Society for Neuroscience.

58. Deutch AY, **Bubser M** (2004) Regionally specificity in determining the atypical antipsychotic drug profile. J. Neurochem. 90 [Suppl. 1]: 56.

59. **Bubser M**, Jackson LL, Fadel JR, Meador-Woodruff JH, Deutch AY (2005) Regulation of orexin/hypocretin neuron activity by dopamine agonists: involvement of the dopaminergic innervation of the lateral hypothalamus? Schizophr Bull 31: 245-246.

60. Deutch AY, Jackson LL, **Bubser M** (2005) Disruption of orexin/hypocretin signaling blocks the effects of clozapine on the prefrontal cortex. Schizophrenia Bull. 31: 510.

61. Jones CK, Brady AE, **Bubser M**, Deutch AY, Williams LC, Hammond AS, Williams R, Conn JP (2006) TBPB is a highly selective M1 allosteric mscarinic receptor agonist in vitro and produces robust antipsychotic-like effects in vivo. Neuropsychopharmacology 31: S116-117.

62. Deutch AY, Mathur BN, **Bubser M** (2007) Activation of the claustrum by antipsychotic drugs Schizophrenia Bull 33: 252.

63. Ansah TA, Ferguson MC, Nayyar T, **Bubser M**, Deutch AY (2007) Acute but not subchronic MPTP administration decreases serotonin in the prefrontal cortex. Program No. 686.14. 2007 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2007. Online.

64. Kusnoor SV, **Bubser M**, Deutch AY (2007) Dopaminergic regulation of the parafascicular and centrolateral thalamic nuclei. Program No. 590.13. 2007 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2007. Online.

65. Mathur BN, **Bubser M**, Deutch AY (2007) New insights into the structural organization of the rat claustrum. Program No. 830.12. 2007 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2007. Online.

66. Madison JL, **Bubser M**, Deutch AY (2009) Tyrosine hydroxylase antibody recognizes noradrenergic fibers in the rat prefrontal cortex. Program No. 395.17. 2008 Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2008.

67. Ansah T, Nayyar T, **Bubser M**, Ferguson T, Montine T, Deutch, A.Y. (2010) Cortical serotonin and norepinephrine denervation in parkinsonism: preferential loss of beaded serotonin innervations. Parkinsonism & Related Disorders 15 (Suppl. 2): S88.

68. Jones CK, Byun N, Rosanelli JD, **Bubser M**, Bridges TM, Lindsley CW, Conn PJ (2010) VU0152100, a selective positive allosteric modulator of M4 muscarinic acetylcholine receptors, produces antipsychotic-like activity and enhancement of cognition in rats. Program No. 225.3. 2010 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2010. Online.

69. Nayyar T, **Bubser M**, Ferguson MC, Deutch AY, Ansah T (2010) Age related changes in brain monoamines in a murine model of Parkinson's disease. FASEB J. 24

70. Niswender CM, Hopkins CR, Jones CK, Engers D, Thompson AD, Gogliotti RD, Blobaum AE, Jadhav S, Salovich JM, Cheung YY, Morrison RD, Mulder J, Bollinger J, Dawson ES, Zamorano R, Vinson PN, **Bubser M**, Brewer KA, Daniels JS, Lindsley CW, Conn PJ (2010) mGluR4 positive allosteric modulator development for the treatment of CNS disorders. Program No. 642.9. 2010 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2010. Online.

71. Thompson AD, Jones CK, **Bubser M**, Niswender CM, Hopkins CR, Engers D, Jadhaw S, Lindsley CW, Conn PJ (2010) VU0364770, a potent and systemically active positive allosteric modulator of mGluR4, produces robust efficacy in preclinical rodent models of Parkinson's Disease. Program No. 642.10. 2010 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2010. Online.

72. Niswender CM, Jones CK, Hopkins CR, Thompson AD, **Bubser M**, Engers D, Gogliotti RD, Blobaum AL, Salovich JM, Cheung YY, Morrison RD, Dawson ES, Zamorano R, Brewer KA, Daniels JS, Lindsley CW, Conn PJ (2011) mGlu4 Receptor Positive Allosteric Modulator Development for the Treatment of CNS Disorders. Current Neuropharmacology 9 [Suppl. 1]: 48.

73. Grannan MD, **Bubser M**, Mulder MJ, Byun NE, Bridges TM, Lindley CW, Conn PJ, Jones CK (2012) The role of the M4 positive allosteric modulator VU0152100 in mediating mesolimbic and mesocortical dopamine release. Program No. 38.01. 2012 Neuroscience Meeting Planner. New Orleans, LA: Society for Neuroscience, 2012. Online.

74. Nedelcovych M, Sheffler DJ, **Bubser M**, Conn PJ, Lindsley CW, Jones CK (2012) Enhanced extinction of conditioned fear reponses in rats using selective glyt1 inhibitors: Implications for PTSD. Program No. 200.10. 2012 Neuroscience Meeting Planner. New Orleans, LA: Society for Neuroscience, 2012. Online.

75. Gould RW, Nedelcovych MT, Grannan MD, **Bubser M**, Wood MR, Lindsley, CW, Xiang ZX, Wess J, Conn PJ, Jones CK (2013) Effects of M1 and M4 muscarinic acetylcholine receptor positive allosteric modulators on sleep and cognition in rodents. FASEB J 27: 661.8.

76. Jones CK, Bridges TM, **Bubser M**, Gould RW, Thorbek DD, Grannan MD, Daniels JS, Noetzel MJ, Niswender CM, Duggan ME, Brandon NJ, Dunlop J, Wood MW, Lindsley CW, Conn PJ (2013) Characterization of the novel M4 muscarinic acetylcholine receptor positive allosteric modulator VU0467154 in animal models of antipsychotic-like activity, cognitive enhancement and changes in sleepwake architecture. Neuropsychopharmacology 38 [Suppl 2]: W208.

77. Dencker D, Gould R, **Bubser M**, Bridges T, Wood M, Duggan M, Wood M, Fink-Jensen A, Wess J, Conn PJ Jones C (2014) M4 muscarinic acetylcholine receptor modulation of associative learning and behavioral flexibility in a novel touchscreen cognitive assessment. FASEB J 28 [Suppl]: S745.8.

78. Grannan MD, **Bubser M**, Bridges TM, Gould RW, Thorbek DD, Daniels J, Noetzel M, Niswender C, Duggan M, Brandon N, Dunlop J, Wood M, Wess J, Wood M, Lindsley C, Conn P, Jones C (2014) Effects of the M4 muscarinic receptor positive allosteric modulator VU0467154 on cognition and pyramidal cell firing properties in layer V of the mPFC. FASEB J 28 [Suppl]: S845.9.

79. Grannan MD, **Bubser M**, Bridges TM, Gould RW, Dencker D, Daniels JS, Noetzel MJ, Niswender CM, Duggan ME, Brandon, NJ, Dunlop J, Wood MW, Wess J, Wood MR, Lindsley CW, Conn PJ, Jones CK (2015) Effects of the M4 positive allosteric modulator VU0467154 on cognition and electrophysiological properties in the mPFC. Biol Psychiat 77 [Suppl]: S740.

80. Nickols H, Gregory K, Morrisin R, Bates B, Stauffer S, Emmitte K, **Bubser M**, Peng W, Nedelcovych M, Thompson A, Daniels J, Niswender C, Jones C, Lindsley C, Conn P (2015) VU0477573: Partial negative allosteric modulator of the subtype 5 metabotropic glutamate receptor with in vivo efficacy. J Neuropath Exp Neurol 74: 618.

81. Nedelcovych M, Gould RW, Felts A, Zhan XY, **Bubser M**, Thompson A, Emmitte K, Lindsley C, Conn PJ, Jones CK (2015) Selective antagonism of metabotropic glutamate receptor 5 modulates sleep-wake and quantitative electroencephalographic alterations in a rodent model of traumatic stress. Biol Psychiat 77: S729.

82. Zurawki Z, **Bubser M**, Hyde K, Rodriguez S, Alford S, Jones C, Hamm H (2016) Behavioral characterization of the SNAP25Δ3 mouse, a putative mouse model deficient in the Gβγ-SNARE interaction. 125.01. 2016 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2016. Online.

83. Gunter B, Gould RW, Miller MP, **Bubser M**, Lindsley CW, Jones CK (2017) The selective M5 negative allosteric modulator ML375 attenuates remifentanil self-administration without blocking morphine-induced analgesia in rats. 421.13. 2017 Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2017. Online.

84. Jones CK, Schmidt LS, Bertsch CS, **Bubser M**, Gunter B, Gould RW (2017) Cognitive and sleep/wake architecture abnormalities in Cntnap2 and Fmr1 knockout rat models of autism spectrum disorders. Program No. 241.18. 2017 Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2017. Online.

85. Aumann M, **Bubser M**, Shekara A, Jones C, Zald D (2018) Validating PET dopamine receptor imaging with microPET and microdialysis. Program No. 199.14. 2018 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2018. Online.

Invited Presentations:

1. "Control af behaviour by dopaminergic activity of the rat prefrontal cortex", September 5th 1989, REGIO NEUREX (France, Germany, Switzerland) Meeting, Freiburg i. Br. Germany.

2. "The contribution of the cortico-striatal "cognitive" loop to the acquisition of maze performance in rats", September 1991, Annual Meeting of the European Neuroscience Association, Cambridge, U.K.

3. "Neuropharmakologische Untersuchungen zur Funktion von Dopamin im präfrontalen Cortex der Ratte", July 23rd 1992, TROPON, Cologne, Germany.

4. "Behavioural pharmacology of dopamine and glutamate in the basal ganglia", February 9th 1993, Hoffmann-La Roche, Basel, Switzerland.

5. "Behavioural functions of dopamine and glutamate in the prefrontal system", March 15th 1993, SANDOZ Research Institute, Berne, Switzerland.

6. “Untersuchungen zur Dopamin-Glutamat-Interaktion in den Basalganglien: Verhaltenspharmakologische und neurochemische Effekte von NMDA-Antagonisten”, July 2nd 1993, Institute for Pharmacology, University of Mainz, Mainz, Germany.

7. “Behavioural and biochemical correlates of NMDA receptor antagonism”, August 24th 1993, Third Congress on Amino Acids, Vienna, Austria.

8. “Behavioural functions of dopamine and glutamate in the basal ganglia”, September 7th 1993, German-Polish Symposium on Psychopharmacology, Zakopane, Poland.

9. "Verhaltenspharmakologische und neurochemische Wirkungen von NMDA-Antagonisten", September 16th 1993, 2nd Meeting on Neuropharmacology and Toxicology, Dresden, Germany.

10. "Transsynaptic changes in the medial prefrontal cortex in response to thalamic stimulation", April 19th 1995, Department of Anatomy and Embryology, Free University, Amsterdam, The Netherlands.

11. “Zur Funktion von Dopamin im präfrontalen Cortex: Von der Verhaltenspharmakologie bis zur Gen-expression”, June 7th 1995, Psychiatric Hospital, University of Mainz, Mainz, Germany.

12. “The paraventricular nucleus of the thalamus: anatomical and functional relations with the limbic forebrain”, April 3rd, 1998, Department of Neuroscience, University of Pittsburgh, Pittsburgh, PA, U.S.A.

13. “Thalamic regulation of limbic structures”, Mai 28th 1998, Department of Neuropharmacology, University of Tübingen, Tübingen, Germany.

14. “Thalamic interactions with the limbic forebrain: anatomical and functional studies”, March 31st 1999, Department of Biomedical Sciences, Marquette University, Milwaukee, WI, U.S.A.

15. “Mechanisms of action of antipsychotic drugs as determined by immediate-early gene expression: focus on motor side effects and weight gain”, May 17th 2002, Department of Pharmacal Sciences, Auburn University, Auburn, AL, U.S.A.

16. “Orexin-dopamine interactions”, July 22nd 2005, International Symposium Orexins/Hypocretins, Düsseldorf / Cologne, Germany.

17. “Dopaminergic regulation of orexin”, October 17th 2006, Symposium “Addiction and arousal: Alternative roles of hypothalamic peptides”, 36th Annual Meeting of the Society for Neuroscience, Atlanta, GA, U.S.A.