Anna (Annie) L. Blobaum, Ph.D.

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Research Assistant Professor of Pharmacology

Vanderbilt Center for Neuroscience Drug Discovery, Drug Metabolism and Pharmacokinetics

Experienced scientist and project leader with excellent technical, analytical, leadership, and communication skills. Independent researcher and course instructor with a diverse background in multiple scientific areas. Extensive experience in student/staff training and mentoring with prior success in grant applications. Self-motivated with expertise in establishing and executing tiered *in vitro* and cellular studies related to enzymology and drug metabolism, analyzing and interpreting *in vivo* pharmacokinetic parameters, and understanding PK:PD relationships.

CORE COMPETENCIES and INTERESTS

- P450 enzymology (metabolism and inhibition)
- Hepatocyte and other cell culture techniques
- *In vivo* DMPK sample/tissue prep and analysis
- Metabolite identification and isolation
- Human PK predictions and dose projections
- Leadership and communication skills
- *In vitro* DMPK assay development
- Establishing IV:IVC and predicting DDI potential
- Expertise in multiple LC-MS/MS platforms
- Protein expression and purification
- Diversity in scientific and technical background
- Data interpretation, presentation; grant writing

PROFESSIONAL EXPERIENCE

Vanderbilt Center for Neuroscience Drug Discovery **2010 – Present**

Research Assistant Professor – DMPK, Department of Pharmacology (Current)

Drug Discovery Scientist – DMPK, Department of Pharmacology (2010-2015)

Independent Research

- Investigation of atypical kinetics and auto-induction phenomena with CYP enzymes. Research into the contribution of non-CYP enzymes to the metabolism and clearance of drugs. Findings presented at multiple international/national meetings
- Trained and supervised post-doctorate, doctorate and masters level students and staff

Project Leader (DMPK Science) – Drug Discovery Programs in VCNDD

- Co-director of DMPK group within the VCNDD managing multiple projects and staff
- Project leader (active discovery projects). Delivering *in vitro* and *in vivo* DMPK science and team guidance to enable partnership and drug candidacy selection
- Consultant/advisor (active development projects). Providing DMPK data, writing IND reports, advising in preclinical DMPK and toxicology studies
- Worked closely with others in establishing an integrated DMPK group in the VCNDD with efforts in defining mechanisms of clearance, P450 metabolism and inhibition, non-P450 contributions to metabolism, general enzymology, metabolite identification, drug efflux, *in vitro* and *in vivo* pharmacokinetics, human PK predictions, and PK:PD relationships
- Designed, established and executed critical tier 1 and tier 2 DMPK assays during lab build-out

ACADEMIC EXPERIENCE

Vanderbilt University **2008 – 2010**
Research Instructor – Department of Biochemistry

- Performed selective, targeted imaging of COX-2 in murine tumors and inflammatory lesions
- Designed and screened (enzyme assays) fluorescent and radiochemical probes for COX-2
- Identified molecular and kinetic basis for probe binding to COX-2 and inhibition of the enzyme
- Designed, developed, screened COX-1 selective inhibitors in reconstituted or cellular systems
- Performed ADME characterization of COX probes and inhibitors; metabolite identification
- Course instructor for graduate student IGP modules and medical student MFM Biochemistry

Vanderbilt University **2005 – 2008**
Post-Doctoral Research Fellow – Department of Biochemistry
Mentor – Lawrence J. Marnett

- Acquired a departmental training grant and a NIH NRSA to support independent research
- Designed, synthesized and characterized novel COX-2 selective inhibitors by MS/NMR for the treatment of osteo- and rheumatoid arthritis and for cancer chemoprevention
- Determined IC_{50} values for COX-2 inhibition in reconstituted or cellular systems; established isoform selectivity; performed in-depth binding and kinetic analyses
- Performed site-directed mutagenesis and expressed/purified various COX-2 active site mutants to establish the mechanism of binding of each inhibitor
- Evaluated COX-2 selective inhibitors in animal models of arthritis and/or inflammation
- Awarded "Most Outstanding Presentation" at Vanderbilt-Ingram Cancer Center Retreat ('08)
- Directed junior post-doctoral and graduate students with research projects; presented research at international/national meetings

EDUCATION

The University of Michigan **2000 – 2004**
Graduate Thesis – Department of Pharmacology
Mentor – Paul F. Hollenberg
"Inactivation of cytochromes P450 2E1 and 2E1 T303A by *tert*-butyl acetylenes"

- Acquired two departmental training grants and a NIH NRSA to support graduate research
- Awarded "Excellence in Teaching and Research/Service" by School of Graduate Studies
- Developed skills in P450 enzymology, mechanism-based inactivation, and drug metabolism
- Utilized LC-MS/MS and NMR to isolate and characterize the identity of heme and protein adducts to various P450 isoforms, specifically 2E and 2B
- Performed site-directed mutagenesis and protein expression/purification to generate various P450 active site mutants to determine residues implicated in MBI and adduction
- Evaluated natural products and potential carcinogens as potential MBIs in reconstituted P450 systems with wild-type and mutant enzymes
- Directed junior graduate students with research projects; presented research at meetings

West Virginia University (WVU) **1995 – 2000**
Undergraduate Research Student and Research Assistant Level II
Mary Babb Randolph Cancer Center – Section of Hem/Oncology
Mentor – Solveig G. Ericson

- Acquired critical skills in handling, preparing and analyzing human blood and tissue samples
- Developed skills in sterile cell culture, flow cytometry, confocal microscopy, ELISA, and RNA/DNA/protein analysis
- Studied the effect of MIP-1α and analogues on the Fc gamma receptor expression and phagocytic function by human neutrophils

B.A. Biology, B.A. Chemistry, Minors in History/Spanish
University Honors Scholar, *Summa Cum Laude*
1997 Goldwater Scholar in Math, Science, and Engineering
1999 Named to All USA College Academic Team

GRANTS AND AWARDS

VCNDD – Department of Pharmacology

- Invited Speaker: Careers for Chemists Program, 20th Annual Event, WVU (2014)
- Invited Keynote Speaker, Special Symposium: ISSX, Toronto (2013)

Vanderbilt University – Department of Biochemistry

- Vanderbilt-Ingram Cancer Center Retreat, Most Outstanding Presentation (2008)
- NIH Ruth L. Kirschstein National Research Service Award (2006-2008), CA 119629
- Biochemical and Chemical Training Grant for Cancer Research (2005-2006), CA 09582

The University of Michigan

- Rackham School of Graduate Studies “Excellence in Research/Service” Award (2004)
- Rackham School of Graduate Studies “Excellence in Teaching” Award (2003)
- NIH Ruth L. Kirschstein National Research Service Award (2003-2004), DA 017029
- Pharmacological Sciences Training Program, PSTP (2002-2003), GM 07767 NIGMS
- Pharmacological Sciences Training Program, PSTP (2001-2002), GM 07767 NIGM

PROFESSIONAL AFFLILIATIONS

The American Chemical Society (ACS)
International Society for the Study of Xenobiotics (ISSX)

PUBLICATIONS

Waterson AG, Scott SA, Kett NR, **Blobaum AL**, Alex Brown H, Lindsley CW. (2018) Isoform selective PLD inhibition by novel, chiral 2,8-diazaspiro[4.5]decan-1-one derivatives. *Bioorg. Med. Chem. Lett.* Epub ahead of print

Panarese JD, Engers DW, Wu YJ, Guernon JM, Chun A, Gregro AR, Bender AM, Capstick RA, Wieting JM, Bronson JJ, Macor JE, Westphal R, Soars M, Engers JE, Felts AS, Rodriguez AL, Emmitte KA, Jones CK, **Blobaum AL**, Jeffrey Conn P, Niswender CM, Hopkins CR, Lindsley CW. (2018) The discovery of VU0652957 (VU2957, Valiglurax): SAR and DMPK challenges en route to an $mGlu_4$ PAM development candidate. *Bioorg. Med. Chem. Lett.* Epub ahead of print

Friggeri L, Hargrove TY, Rachakonda G, **Blobaum AL**, Fisher P, de Oliveira GM, da Silva CF, Soeiro MNC, Nes WD, Lindsley CW, Villalta F, Guengerich FP, Lepesheva GI. (2018) Sterol 14α-demethylase structure-based optimization of drug candidates for human infections with the protozoan trypanosomatidae. *J. Med. Chem.* Epub ahead of print

Felts AS, Bollinger KA, Brassard CJ, Rodriguez AL, Morrison RD, Scott Daniels J, **Blobaum AL**, Niswender CM, Jones CK, Jeffrey Conn P, Emmitte KA, Lindsley CW. (2018) Discovery of 4-alkoxy-6-methylpicolinamide negative allosteric modulators of metabotropic glutamate receptor subtype 5. *Bioorg. Med. Chem. Lett.* Epub ahead of print

Childress ES, Wieting JM, Felts AS, Breiner MM, Long MF, Luscombe VB, Rodriguez AL, Cho HP, **Blobaum AL**, Niswender CM, Emmitte KA, Conn PJ, Lindsley CW. (2018) Discovery of novel central nervous system penetrant metabotropic glutamate receptor subtype 2 ($mGlu_2$) negative allosteric modulators (NAMs) based on functionalized pyrazolo[1,5- a]pyrimidine-5-carboxamide and thieno[3,2- b]pyridine-5-carboxamide cores. *J. Med. Chem.* Epub ahead of print

Engers JL, Childress ES, Long MF, Capstick RA, Luscombe VB, Cho HP, Dickerson JW, Rook JM, **Blobaum AL**, Niswender CM, Engers DW, Conn PJ, Lindsley CW. (2018) VU6007477, a novel M1 PAM based on a pyrrolo[2,3-b]pyridine carboxamide core devoid of cholinergic adverse events. *ACS Med. Chem. Lett.* 9(9): 917-922.

Bollinger S, Engers DW, Panarese JD, West M, Engers JL, Loch MT, Rodriguez AL, **Blobaum AL**, Jones CK, Thompson Gray A, Conn PJ, Lindsley CW, Niswender CM, Hopkins CR. (2018) The discovery, SAR and biological characterization of a novel series of 6-((1H-pyrazolo[4,3-b]pyridin-3-yl)amino)-benzo[d]isothiazole-3-carboxamides as positive allosteric modulators of the metabotropic glutamate receptor 4 (mGlu4). *J. Med. Chem.* Epub ahead of print

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. (2018) Activation of the $mGlu_1$

metabotropic glutamate receptor has antipsychotic-like effects and is required for efficacy of M_4 muscarinic receptor allosteric modulators. *Mol. Psychiatry* Epub ahead of print

Engers JL, Bender AM, Kalbfleisch JJ, Cho HP, Lingenfelter KS, Luscombe VB, Han C, Melancon BJ, **Blobaum AL**, Dickerson JW, Rook JM, Niswender CM, Emmitte KA, Conn PJ, Lindsley CW. (2018) Discovery of tricyclic triazolo- and imidazopyridine lactams as M1 positive allosteric modulators. *ACS Chem. Neurosci.* Epub ahead of print

Engers DW, Bollinger SR, Engers JL, Panarese JD, Breiner MM, Gregro A, **Blobaum AL**, Bronson JJ, Wu YJ, Macor JE, Rodriguez AL, Zamorano R, Conn PJ, Lindsley CW, Niswender CM, Hopkins CR. (2018) Discovery and characterization of N-(1,3-dialkyl-1H-indazol-6-yl)-1H-pyrazolo[4,3-b]pyridin-3-amine scaffold as $mGlu_4$ positive allosteric modulators that mitigate CYP1A2 induction liability. *Bioorg. Med. Chem. Lett.* 28(15): 2641-2646.

Kharade SV, Kurata H, Bender AM, **Blobaum AL**, Figueroa EE, Duran A, Kramer M, Days E, Vinson P, Flores D, Satlin LM, Meiler J, Weaver CD, Lindsley CW, Hopkins CR, Denton JS. (2018) Discovery, characterization, and effects on renal fluid and electrolyte excretion of the Kir4.1 potassium channel pore blocker, VU0134992. *Mol. Pharmacol.* 94(2): 926-937.

Friggeri L, Hargrove TY, Wawrzak Z, **Blobaum AL**, Rachakonda G, Lindsley CW, Villalta F, Nes WD, Botta M, Guengerich FP, Lepesheva GI. (2018) Sterol 14α-demethylase structure-based design of VNI ((R)- N-(1-(2,4-dichlorophenyl)-2-(1 H-imidazol-1-yl)ethyl)-4-(5-phenyl-1,3,4-oxadiazol-2-yl)benzamide)) derivatives to target fungal infections: synthesis, biological evaluation, and crystallographic analysis. *J. Med. Chem.* 61(13): 5679-5691.

Bertron JL, Cho HP, Garcia-Barrantes PM, Panarese JD, Salovich JM, Nance KD, Engers DW, Rook JM, **Blobaum AL**, Niswender CM, Stauffer SR, Conn PJ, Lindsley CW. (2018) The discovery of VU0486846: steep SAR from a series of M1 PAMs based on a novel benzomorpholine core. *Bioorg. Med. Chem. Lett.* 28(12): 2175-2179.

Felts AS, Rodriguez AL, Morrison RD, **Blobaum AL**, Byers FW, Daniels JS, Niswender CM, Conn PJ, Lindsley CW, Emmitte KA. (2018) Discovery of 6-(pyrimidin-5-ylmethyl)quinoline-8-carboxamide negative allosteric modulators of metabotropic glutamate receptor subtype 5. *Bioorg. Med. Chem. Lett.* 28(10):1679-1685.

Rook JM, Bertron JL, Cho HP, Garcia-Barrantes PM, Moran SP, Maksymetz JT, Nance KD, Dickerson JW, Remke DH, Chang S, Harp JM, **Blobaum AL**, Niswender CM, Jones CK, Stauffer SR, Conn PJ, Lindsley CW. (2018) A novel M1 PAM VU0486846 exerts efficacy in cognition models without displaying agonist activity or cholinergic toxicity. *ACS Chem. Neurosci.* 9(9): 2274-2285.

Reed CW, McGowan KM, Spearing PK, Stansley BJ, Roenfanz HF, Engers DW, Rodriguez AL, Engelberg EM, Luscombe VB, Loch MT, Remke DH, Rook JM, **Blobaum AL**, Conn PJ, Niswender CM, Lindsley CW. (2017) VU6010608, an novel mGlu7 NAM from a series of N-(2-(1H-1,2,4-triazol-1-yl)-5-(trifluoromethoxy)phenyl)benzamides. *ACS Med. Chem. Lett.* 8(12): 1326-1330.

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.* 8(10): 1110-1115.

Felts AS, Rodriguez AL, Morrison RD, Bollinger KA, Venable DF, **Blobaum AL**, Byers FW, Thompson Gray A, Daniels JS, Niswender CM, Jones CK, Conn PJ, Lindsley CW, Emmitte KA. (2017) Discovery of imidazo[1,2-a]-,[1,2,4]triazolo[4,3-a]-, and [1,2,4]triazolo[1,5-a]pyridine-8-carboxamide negative allosteric modulators of metabotropic glutamate receptor subtype 5. *Bioorg. Med. Chem. Lett.* 27(21): 4858-4866.

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.* 8(9): 925-930.

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. (2017) Design and synthesis of mGlu2 NAMS with improved potency and CNS penetration based on a truncated picolinamide core. *ACS Med. Chem. Lett.* 8(9): 919-924.

Crouch RD, **Blobaum AL**, Felts AS, Conn PJ, Lindsley CW. (2017) Species-specific involvement of aldehyde oxidase and xanthine oxidase in the metabolism of the pyrimidine-containing mGlu5-negative allosteric modulator VU0424238 (Auglurant). *Drug Metab. Dispos.* 45(12): 1245-1259.

Gogliotti RG, Senter RK, Fisher NM, Adams J, Zamorano R, Walker AG, **Blobaum AL**, Engers DW, Hopkins CR, Daniels JS, Jones CK, Lindsley CW, Xiang Z, Conn PJ, Niswender CM. (2017) mGlu7 potentiation rescues cognitive, social, and respiratory phenotypes in a mouse model of Rett syndrome. *Sci. Transl. Med.* 9(403).

Felts AS, Rodriguez AL, **Blobaum AL**, Morrison RD, Bates BS, Thompson Gray A, Rook JM, Tantawy MN, Byers FW, Chang S, Venable DF, Luscombe VB, Tamagnan GD, Niswender CM, Daniels JS, Jones CK, Conn PJ, Lindsley CW, Emmitte KA. (2017) Discovery of N-(5-Fluoropyridin-2-yl)-6-methyl-4-(pyrimidin-5-yloxy)picolinamide (VU0424238): A novel negative allosteric modulator of metabotropic glutamate receptor subtype 5 selected for clinical evaluation. *J. Med. Chem.* 60(12): 5072-5085.

Li Z, Tseng PY, Tiwari V, Xu Q, He SQ, Wang Y, Zheng Q, Han L, Wu Z, **Blobaum AL**, Cui Y, Tiwari V, Sun S, Cheng Y, Huang-Lionnet JH, Geng Y, Xiao B, Peng J, Hopkins C, Raja SN, Guan Y, Dong X. (2017) Targeting human Mas-related G protein-coupled receptor X1 to inhibit persistent pain. *Proc. Natl. Acad. Sci. USA* 114(10):E1996-E2005.

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. (2017)

Discovery of VU0467485/AZ13713945: An M4 PAM evaluated as a preclinical candidate for the treatment of Schizophrenia. *ACS Med. Chem. Lett.* 8(2):233-238.

Nance KD, Days EL, Weaver CD, Coldren A, Farmer TD, Cho HP, Niswender CM, **Blobaum AL**, Niswender KD, Lindsley CW. (2017) Discovery of a novel series of orally bioavailable and CNS penetrant glucagon-like peptide-1 receptor (GLP-1R) noncompetitive antagonists based on a 1,3-disubstituted-7-aryl-5,5-bis (trifluoromethyl)-5,8-dihydropyrimido[4,5-d]pyrimidine-2,4(1H,3H)-dione core. *J. Med. Chem.* 60(4): 1611-1616.

Rook JM, Abe M, Cho HP, Nance KD, Luscombe VB, Adams JJ, Dickerson JW, Remke DH, Garcia-Barrantes PM, Engers DW, Engers JL, Chang S, Foster JJ, **Blobaum AL**, Niswender CM, Jones CK, Conn PJ, Lindsley CW. (2017) Diverse effects on M1 signaling and adverse effect liability within a series of M1 ago-PAMs. *ACS Chem. Neurosci.* 8(4): 866-883.

Duvernay MT, Temple KJ, Maeng JG, **Blobaum AL**, Stauffer SR, Lindsley CW, Hamm HE. (2016) Contributions of protease-activated receptors PAR1 and PAR4 to thrombin-induced GPIIbIIa activation in human platelets. *Mol. Pharmacol.* 91(1):39-47.

Temple KJ, Duvernay MT, Maeng JG, **Blobaum AL**, Stauffer SR, Hamm HE, Lindsley CW. (2016) Identification of the minimum PAR4 inhibitor pharmacophore and optimiziation of a series of 2-methoxy-6-arylimidazo[2,1-b][1,3,4]thiadiazoles. *Bioorg. Med. Chem. Lett.* 26(22):5481-5486.

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. (2016) Prefrontal cortex-mediated impairments in a genetic model of NMDA receptor hypofunction are reversed by the novel M1 PAM VU6004256. *ACS Chem. Neurosci.* 7(12): 1706-1716.

Bertron JL, Ennis EA, Tarr CJ, Wright J, Dickerson JW, Locuson CW, **Blobaum AL**, Rook JM, Blakely RD, Lindsley CW. (2016) Optimization of the choline transporter (CHT) inhibitor ML352: Development of VU6001221, an improved in vivo tool compound. *Bioorg. Med. Chem. Lett.* 26 (19): 4637-40.

Temple KJ, Duvernay MT, Young SE, Wen W, Wu W, Maeng JG, **Blobaum AL**, Stauffer SR, Hamm HE, Lindsley CW. (2016) Development of a series of (1-benzyl-3-(6-methoxypyrimidin-3-yl)-5-(trifluoromethoxy)-1H-indol-2-yl) methanols as selective protease activated receptor (PAR4) antagonists with in vivo utility and activity against y-thrombin. *J. Med. Chem.* 59(16): 7690-5.

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. (2016) 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.* 7 (9): 1201-11.

Swale DR, Kurata H, Kharade SV, Sheehan J, Raphemot R, Voigtritter KR, Figueroa EE, Meiler J, **Blobaum AL**, Lindsley CW, Hopkins CR, Denton JS. (2016) ML418: The first selective, sub-micromolar pore blocker of Kir7.1 potassium channels. *ACS Chem. Neurosci.* 7(7): 1013-23.

Panarese JD, Cho HP, Adams JJ, Nance KD, Garcia-Barrantes PM, Chang S, Morrison RD, **Blobaum AL**, Niswender CM, Stauffer SR, Conn PJ, Lindsley CW. (2016) Further optimization of the M1 PAM VU0453595: Discovery of novel heterobicyclic core motifs with improved CNS penetration. *Bioorg. Med. Chem. Lett.* 26(15): 3822-5.

Gogliotti RD, **Blobaum AL**, Morrison RM, Daniels JS, Salovich JM, Cheung YY, Rodriguez AL, Loch MT, Conn PJ, Lindsley CW, Niswender CM, Hopkins CR. (2016) Discovery and characterization of a novel series of N-phenylsulfonyl-1H-pyrrole picolinamides as positive allosteric modulators of the metabotropic glutamate receptor 4 (mGlu4). *Bioorg. Med. Chem. Lett.* 26(13): 2984-7.

Gogliotti RD, Engers DW, Garcia-Barrantes PM, Panarese JD, Gentry PR, **Blobaum AL**, Morrison RD, Daniels JS, Thompson AD, Jones CK, Conn PJ, Niswender CM, Lindsley CW, Hopkins CR. (2016) Discovery of 3-aminopicolinamides as metabotropic glutamate receptor subtype 4 (mGlu4) positive allosteric modulator warheads engendering CNS exposure and in vivo efficacy. *Bioorg. Med. Chem. Lett.* 26(12): 2915-9.

Witt JO, McCollum AL, Hurtado MA, Huseman ED, Jeffries DE, Temple KJ, Plumley HC, **Blobaum AL**, Lindsley CW, Hopkins CR. (2016) Synthesis and characterization of a series of chiral alkoxymethyl morpholine analogs as dopamine receptor 4 (D4R) antagonists. *Bioorg. Med. Chem. Lett.* 26(10): 2481-8.

Engers DW, **Blobaum AL**, Gogliotti RD, Cheung YY, Salovich JM, Garcia-Barrantes PM, Daniels JS, Morrison R, Jones CK, Soars MG, Zhuo X, Hurley J, Macor JE, Bronson JJ, Conn PJ, Lindsley CW, Niswender CM, Hopkins CR. (2016) Discovery, synthesis, and preclinical characterization of N-(3-chloro-4-fluoropheynyl)-1H-pyrazolo[4,3-b]pyridine-3-amine (VU0418506), a novel positive allosteric modulator of the metabotropic glutamate receptor 4 (mGlu4). *ACS Chem. Neurosci.* 7(9): 1192-200.

Garcia-Barrantes PM, Cho HP, Starr TM, **Blobaum AL**, Niswender CM, Conn PJ, Lindsley CW. (2016) Re-exploration of the mGlu1 PAM Ro 07-11401 scaffold: Discovery of analogs with improved CNS penetration despite steep SAR. *Bioorg. Med. Chem. Lett.* 26(9): 2289-92.

Felts AS, Rodriguez AL, Morrison RD, Venable DF, **Blobaum AL**, Byers FW, Daniels JS, Niswender CM, Jones CK, Conn PJ, Lindsley CW, Emmitte KA. (2016) N-Alkylpyrido[1',2':1,5]pyrazolo-[4,3-d] pyrimidin-4-amines: A new series of negative allosteric modulators of mGlu1/5 with CNS exposure in rodents. *Bioorg. Med. Chem. Lett.* 26(8): 1894-900.

Garcia-Barrantes PM, Cho HP, **Blobaum AL**, Niswender CM, Conn PJ, Lindsley CW. (2016) Lead optimization of the VU0486321 series of mGlu1 PAMs. Part 3: Engineering plasma stability by discovery and optimization of isoindolinone analogs. *Bioorg. Med. Chem. Lett.* 26(8): 1869-72.

Garcia-Barrantes PM, Cho HP, Metts AM, **Blobaum AL**, Niswender CM, Conn PJ, Lindsley CW. (2016) Lead optimization of the VU0486321 series of mGlu1 PAMs. Part 2: SAR of alternative 3-methyl heterocycles and progress towards an in vivo tool. *Bioorg. Med. Chem. Lett.* 26(3): 751-6.

Konkle ME, **Blobaum AL**, Moth CW, Prusakiewicz JJ, Xu S, Ghebreselasie K, Akingbade D, Jacobs AT, Rouzer CA, Lybrand TP, Marnett LJ. (2015) Conservative secondary shell substitution in cyclooxygenase-2 reduces inhibition by indomethacin amides and esters via altered enzyme dynamics. *Biochemistry* 55(2): 348-59.

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Garcia-Barrantes PM, Cho HP, **Blobaum AL**, Niswender CM, Conn PJ, Lindsley CW. (2015) Lead optimization of the VU0486321 series of mGlu1 PAMs. Part 1: SAR of modifications to the central aryl core. *Bioorg. Med. Chem. Lett.* 25 (22): 5107-10.

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Engers JL, Rodriguez AL, Konkol LC, Morrison RD, Thompson AD, Byers FW, **Blobaum AL**, Chang S, Venable DF, Loch MT, Niswender CM, Daniels JS, Jones CK, Conn PJ, Lindsley CW, Emmitte KA. (2015) Discovery of a selective and CNS penetrant negative allosteric modulator of metabotropic glutamate receptor subtype 3 with antidepressant and anxiolytic activity in rodents. *J. Med. Chem.* 58 (18): 7485-500.

Jalan-Sakrikar N, Roper-Field J, Klar R, Mattman M, Walker AG, Zamorano R, Xiang Z, Byers CF, **Blobaum AL**, Engers D, Weaver CD, Days E, Utley TJ, Melancon B, Daniels JS, Wood MR, Lindsley CW, Conn PJ, Hopkins CR, Niswender CM. (2015) The discovery and characterization of a centrally penetrant (ML396) and a peripherally restricted (ML397) pan-Group III mGlu positive allosteric modulators. Probe Reports from the NIH Molecular Libraries Program, Bethesda (MD): National Center for Biotechnology Information (US).

Blobaum, A.L., Byers, F.W., Bridges, T.M., Locuson, C.W., Conn, P.J., Lindsley, C.W., and Daniels, J.S. (2015) A screen of approved drugs identifies the androgen receptor antagonist flutamide and its pharmacologically active metabolite 2-hydroxyflutamide as heterotropic activators of cytochrome P450 3A in vitro and in vivo. *Drug Metab. Dispos.* 43 (11): 1718-26.

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