SHAUN R. STAUFFER, Ph.D.

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PROFESSIONAL

- Experienced medicinal chemist versed in multiple small molecule modalities spanning probe to drug-discovery settings: allosteric (PAM, SAM, NAM), noncovalent, covalent, PPI surface-based, PROTAC, and biotinylated probes.
- Engaging collaborator in team settings targeting diverse drug-target families and therapeutic areas from discovery to early clinical development stage.
- Successful group leader in structure and fragment-based approaches to progress drug discovery programs targeting signaling disruption/modulation of protein-protein interactions (PPI) for cancer therapy.
- Successful group leader in allosteric GPCR CNS discovery programs targeting glutamate and muscarinic receptor subtypes.
- Target families: transcription factors, chromatin scaffold proteins, histone modifying enzymes, PPI interfaces, proteases (peripheral and CNS specific), $G_{\beta\gamma}$ effector interactions, GPCRs (class A and C), ion channels, DNA repair enzymes, metabolic enzymes for cancer, and other cell surface receptors.

2014 –present

Research Assistant Professor of Pharmacology
Research Assistant Professor of Chemistry
Associate Director of Medicinal Chemistry, VICB Synthesis Core
Vanderbilt University School of Medicine, Nashville, TN

- Group leader of WDR5 inhibitor program using fragment-based approaches to identify and progress WIN and WBM-site WDR5 inhibitors targeting chromatin delocalization as a strategy for the treatment of cancer. Successfully funded through the NCI Experimental Therapeutics Program (NExT) and the Kleberg Foundation via the Vanderbilt Ingram Cancer Center (June 2015 – current).
- Provide guidance for VICB HTS hit triage, hit-to-lead, and lead optimization.
- Direct VICB SynCore collaborator sponsored programs, including medicinal chemistry optimization and DMPK workflow activities.
- Direct and oversee VICB library expansion initiative focusing on acquisition of epigenetic and PPI compound collections for the VICB research community.
- Director *in vitro* and *in vivo* DMPK studies for internal and VICB programs.
- Consultant for *in vivo* formulation, parallel chemistry, library synthesis, high-throughput experimentation, catalysis, and organometallic chemistry.

2008 –2014

Research Assistant Professor of Pharmacology
Research Assistant Professor of Chemistry
Associate Director of Medicinal Chemistry, VCNDD
Co-director Vanderbilt Specialized Center for Probe Development
Vanderbilt University Medical Center, Nashville, TN

Vanderbilt Center for Neuroscience Drug Discovery

- Team leader for external industry sponsored research targeting positive allosteric modulators for the metabotropic glutamate receptor 5 (Johnson & Johnson 2008-2012). 3Q2011 team delivered a clinical candidate as a novel therapeutic for schizophrenia (**VU0409551/JNJ-46778212**) and was granted sponsored research extension to support a one year backup program. Oversaw day-to-day medicinal chemistry activities and collaborated with JNJ counterparts (medicinal chemistry, pharmacology, DMPK, safety and toxicology). Led and coordinated monthly team meetings and quarterly F2F site visits with project leadership.
- Extensive experience in the development of potent and specific allosteric ligands (SAMs, NAMs, PAMs) for class A and C GPCRs (muscarinic, metabotropic receptors).
- Participant in lead optimization, identification, and nomination of selective probe molecules for various target families within MLPCN initiative (ML initiative see http://mli.nih.gov/mli)- allosteric modulation of class A and C cell surface GPCR receptors (PAMs, SAMs), coronavirus protease inhibitors for MERs/SARs, tethered ligand based PAR receptor antagonists, PPI disruptors for menin-MLL, and ion channel transporters.

2001 – 2008 **Research Fellow, Medicinal Chemistry**
MERCK & CO., INC. West Point, PA

- Experience with drug discovery programs in the areas of anti-thrombotics, anti-hypertension, sleep augmentation, neuropathic pain and Alzheimer's
- Project co-leader and lead in LO and pre-LO capacity
- Participant and/or contributed to four preclinical candidates including **MK-8290**, **MK-5381**, **MK-8931** (Alzheimer's disease), **MK-3901** (chronic pain).
- Collaborator in custom library design and outsourcing to enhance company screening collection
- Participant in the design of custom monomers for MRL RAP initiative
- Initiated and supervised implementation of catalyst high-throughput screening facility for medicinal chemistry department
- Catalysis Champion liaison for process research and medicinal chemistry WP
- Collaborated and interfaced routinely with colleagues within Molecular Systems, DMPK, Safety, Process Research & Development and Analytical

1999 - 2001 **NIH Postdoctoral Research Fellow with Professor John F. Hartwig**
YALE UNIVERSITY New Haven, CT

- Developed fluorescence based high throughput assay for screening homogenous metal catalyzed coupling reactions using custom reaction block
- Synthesized library of novel phosphines, Pd(0) pre-catalysts, and carbene ligands for HTS FRET assay
- Developed and improved conditions for multiple metal-catalyzed cross-coupling reactions: amination reaction in polar medium, saturated NHC carbene ligands for cross-coupling amines at room temperature, first general cyanoester arylation and room-temperature Heck conditions for aryl bromides

1994 - 1999 **Research Assistant with Professor John A. Katzenellenbogen**

UNIVERSITY OF ILLINOIS Urbana, IL

- Optimized synthetic methods on solid and solution phase for the development of library synthesis of novel non-steroidal estrogen receptor ligands
- Identified ER pyrazole ligand PPT, first highly ER-α subtype selective agonist, commercially available from Aldrich: www.sigmaaldrich.com/catalog/product/sigma/h6036?lang=en&region=US
- Developed custom solid and liquid phase multi-well reaction blocks and resins
- Utilized molecular modeling (Macromodel, Sybyl) to predict binding orientation and design antagonists of ER-α using known molecular pharmacology switch
- Voted Outstanding Teaching Assistant four out of four semesters (UIUC-LAS)

1993 - 1994 **Teaching Assistant**
IOWA STATE UNIVERSITY Ames, IA

- Directed and supervised general chemistry laboratory and lecture sections

1993 **Research Chemist**
MALLINCKRODT MEDICAL, INC. St. Louis, MO

- Performed applied developmental research on Tc-99m heart imaging agent
- Co-author of two technical reports on formulation composition of novel Tc99m imaging agent leading to improvements in formulation stability

EDUCATION

NIH Postdoctoral Fellow 1999-2001
YALE UNIVERSITY New Haven, CT
Advisor: Prof. John F. Hartwig

Ph.D. Organic Chemistry May 1999
UNIVERSITY OF ILLINOIS Urbana, IL
Thesis Advisor: Prof. John Katzenellenbogen
Development of Combinatorial Approaches Towards Selective Estrogen Receptor Modulators: Investigations of Acyclic Amides and Tetra-Substituted Pyrazoles

B.S. Chemistry (ACS) December 1992
SOUTHERN ILLINOIS UNIVERSITY Carbondale, IL
Thesis Advisor: Prof. Mike Groziak
Chemical and Enzymatic Synthesis of Adenine Analogs

AWARDS

- Merck Research Labs Special Achievement Award 2007
- Merck Catalysis Champion 2007 – 2008, West Point
- Merck Award for Excellence, Merck Research Laboratories 2005, 2006
- Merck Research Labs Stock Option Award 1Q2007
- Innovator/contributor to three Merck preclinical candidates: **MK-8290, MK-5381** (Alzheimer's Disease, 2005-2007), and **MK-3901** (chronic pain, 2008).
- NIH postdoctoral fellowship 1999 - 2001
- Outstanding Teaching Assistant Organic Chemistry- College of Liberal Arts University of Illinois, 1995 - 1996
- Kenneth and Clara Craver Scholarship SIU-C, 1993

TEACHING **Vanderbilt University**

- 2009 - 2017
  Pharm 327 Modern Drug Discovery Course- Case Studies in Lead Optimization: Beta secretase inhibitors as a therapeutic strategy for the treatment of Alzheimer's disease
- 2010 - current
  CPB 320 Chemical Biology- Parallel Synthesis and HTE
- 2010 Spring
  Chem 223 Advanced Organic Reactions- Functional Group Interconversions at sp3 Carbons
- 2015 Fall
  Chem 6050 Organic Special Topics- Cross-Coupling Chemistry
- 2017 Summer
  NSF-REU Program at Vanderbilt- Practitioner of Molecular Mimicry

ACS Division of Medicinal Chemistry (MEDI) / IUPAC

- 30th Annual Residential School of Medicinal Chemistry and Biology in Drug Discovery at Drew University, **June 8th, 2016** (MEDI)
  1) Hit-to-Lead Process in Drug Discovery
  2) mGlu5 Positive Allosteric Modulators Case Study

- Medicinal Chemistry and Drug Discovery & Development, India 2017 (MCADDI 2017), **February 14-18th, 2017** (MEDI / IUPAC)
  1) Hit-to-Lead Process in Drug Discovery
  2) Lead Optimization Principles and Case Studies
  3) GPCRs: mGluR5 Positive Allosteric Modulators, From Concept to Clinic

CURRENT & FORMER ACTIVITIES (MEMBERSHIPS, BOARDS)

- American Chemical Society- Medicinal and Organic Divisions (since 1992)
- Society for Neuroscience (since 2009)
- New York Academy of Sciences (since 2010)
- Mid-South Chapter Alzheimer's Association Board of Directors (since 2011, vice-chair 2012-2014, chair 2014-2016)
- Editorial Board Central Nervous System Agents in Medicinal Chemistry (2014-current)
- Reviewer roles: Journal of Medicinal Chemistry, Bioorganic and Medicinal Chemistry Letters, Organic Letters, Journal of the American Chemical Society
- Merck Institute for Scientific Excellence Outreach Volunteer 2003 – 2008
- Encouraging Tomorrow's Chemists 1995 – 1998
- Chairperson Allerton Research Conference UIUC 1997
- ACS Student Affiliate President SIU-C 1990 – 1992

CURRENT FUNDING

16X117 HHSN261200800001E (Fesik) NIH/NCI NExT
06/01/2015 – 01/30/2018
Discovery of small molecule inhibitors of the WDR5-MLL1 interaction
Role: Project Leader, Medicinal Chemistry Lead.

VICC Award, c/o TJ Martell and the Kleberg Foundations (Tansey, Fesik)
07/01/2015 – 06/30/2018
Inhibitors of the MYC-WDR5 Interaction
Role: co-Investigator, Medicinal Chemistry

R01 CA206563 (El-Rifai) NIH/NCI 09/25/2015 – 08/31/2020
Molecular functions of APE1 in Barrett's Tumorigenesis
Role: co-Investigator, Medicinal Chemistry

COMPLETED FUNDING

R01 MH101679 (Hamm, Stauffer), NIH 06/01/2014 – 05/31/2017
Optimization of modulators of G$\beta\gamma$-SNARE interaction
Role: co-PI, Medicinal Chemistry activities.

U54 MH084659 (Lindsley, C.) NIH/MLPCN 09/01/2008-05/31/2014
The Vanderbilt Specialized Chemistry Center for Accelerated Probe Development.
Role: co-director Medicinal Chemistry, VSCC

R03 MH084162 (Lindsley, Stauffer) NIH/MLPCN 06/01/2011-05/31/2013
DMPK and In Vivo Studies of the Highly Selective Non-Covalent SARS Main Proteinase 3CLpro Inhibitor ML188
Role: co-PI/Lead Medicinal Chemist

R03 MH084875 (Lindsley, Stauffer) NIH/MLPCN 06/01/2011-05/31/2012
DMPK and In Vivo Studies of the First Sub-Micromolar Disruptor of the Menin-Mixed Lineage Leukemia (MLL) Interaction by ML227
Role: co-PI/Lead Medicinal Chemist

VUMC34998 (Conn) 12/09/2008-12/09/2012
Johnson & Johnson Industry Sponsored Contract
Role: Project co-Leader, Medicinal Chemistry

R01 NS081669 (Hamm, Lindsley), NIH 09/01/2013 – 08/30/2016
Optimization of PAR-4 Antagonists
Role: Co-Investigator, Medicinal Chemistry

PEER REVIEWED PUBLICATIONS

1) Fink, B. E.; Mortensen, D. S.; Stauffer, S. R.; Aron, Z. D.; Katzenellenbogen, J. A. Novel Structural Templates for Estrogen-Receptor Ligands and Prospects for Combinatorial Synthesis of Estrogens. *Chem. Biol.*, **1999**, *6*, 205 - 219.

2) Stauffer, S. R.; Katzenellenbogen, J. A. Solid Phase Synthesis of Tetrasubstituted Pyrazoles, Novel Ligands for the Estrogen Receptor. *J. Comb. Chem.*, **2000**, *2*, 318 - 329.

3) Stauffer, S. R.; Sun, J.; Katzenellenbogen, B. S.; Katzenellenbogen, J. A. Acyclic Amides as Estrogen Receptor Ligands: Synthesis, Binding, Activity and Receptor Interaction. *Bioorg. Med. Chem.*, **2000**, *8*, 1293 - 1316.

4) Stauffer, S. R.; Lee, S.; Stambuli, J. P.; Hauck, S. I.; Hartwig, J. F. High Turnover Number and Rapid, Room-Temperature Amination of Chloroarenes Using Saturated Carbene Ligands. *Org. Lett.*, **2000**, *2*, 1423 - 1426.

5) Stauffer, S. R.; Coletta, C. J.; Tedesco, R.; Nishiguchi, G.; Carlson, K.; Sun, J.; Katzenellenbogen, B. S.; Katzenellenbogen, J. A. Pyrazole Ligands: Structure-Affinity/Activity Relationships of Estrogen Receptor-α Selective Agonists. *J. Med. Chem.*, **2000**, *43*, 4934-4947.

6) Stauffer, S. R.; Huang, Y. R.; Coletta, C. J.; Tedesco,R.; Katzenellenbogen, J. A. Estrogen Pyrazoles: Defining the Pyrazole Core Structure and the Orientation of Substituents in the Ligand Binding Pocket of the Estrogen Receptor. *Bioorg. Med. Chem.*, **2001**, *9*, 141-150.

7) Stauffer, S. R.; Huang, Y. R.; Aron, Z. A.; Coletta, C. J.; Sun, J.; Katzenellenbogen, B. S.; Katzenellenbogen, J. A. Triarylpyrazoles with Basic Side Chains: Development of Pyrazole-Based Estrogen Receptor Antagonists. *Bioorg. Med. Chem.*, **2001**, *9*, 151-161.

8) Stambuli, J. P.; Stauffer, S. R.; Shaughnessy, K. H.; Hartwig, J. F. Screening of Homogeneous Catalysts by Fluorescence Resonance Energy Transfer. Identification of Catalysts for Room Temperature Heck Reactions. *J. Amer. Chem. Soc.*, **2001**, *123*, 2677-2678.

9) Stauffer, S. R.; Beare, N. F.; Stambuli, J. P.; Hartwig, J. F. Palladium-Catalyzed Arylation of Ethyl Cyanoacetate. Fluorescence Resonance Energy Transfer as a Tool for Reaction Discovery *J. Amer. Chem. Soc.*, **2001**, *123*, 4641-4642.

10) Stauffer, S. R.; Hartwig, J. F. Fluorescence Resonance Energy Transfer (FRET) as a High-Throughput Assay for Coupling Reactions. Arylation of Amines as a Case Study. *J. Amer. Chem. Soc.*, **2003**, *125*, 6977-6985.

11) Barrow, J. C.; Nantermet, P. G.; Stauffer, S. R.; Ngo, P. L.; Steinbeiser, M. A.; Mao, S.-S.; Carroll, S. S.; Bailey, C.; Colussi, D.; Bosserman, M.; Burlein, C.; Cook, J. J.; Sitko, G.; Tiller, P. R.; Miller-Stein, C. M.; Rose, M.; McMasters, D. R.; Vacca, J. P.; Selnick, H. G. Synthesis and Evaluation of Imidazole Acetic

Acid Inhibitors of Activated Thrombin-Activatable Fibrinolysis Inhibitor as Novel Antithrombotics. *J. Med. Chem*., **2003**, *46*, 5294-5297.

12) Stauffer, S. R.; Steinbeiser, M. A. Pd-Catalyzed amination in a polar medium: rate enhancement, convenient product isolation and tandem Suzuki cross-coupling. *Tetrahedron Lett*., **2005**, *46*, 2571-2575.

13) McGaughey, G. B.; Colussi, D.; Graham, S. L.; Lai, M.; Munshi, S. K.; Nantermet, P. G.; Pietrak, B.; Rajapakse, H. A.; Selnick, H. G.; Stauffer, S. R.; Holloway, M. K. β-Secretase (BACE-1) inhibitors: Accounting for 10s loop flexibility using rigid active sites. *Bioorg. Med. Chem. Lett.*, **2007**, *17*, 1117-1121.

14) Stauffer, S. R.; Stanton, M. G.; Gregro, A. R.; Steinbeiser, M. A.; Shaffer, J. R.; Nantermet, P. G.; Barrow, J. C.; Rittle, K. E.; Collusi, D.; Espeseth, A. S.; Lai, M.; Pietrak, B. L.; Holloway, M. K.; McGaughey, G. B.; Munshi, S. K.; Hochman, J. H.; Simon, A. J.; Selnick, H. G.; Graham, S. L.; Vacca, J. P. Discovery and SAR of isonicotinamide BACE-1 inhibitors that bind β-secretase in a N-terminal 10s-loop down conformation. *Bioorg. Med. Chem. Lett*., **2007**, *17*, 1788-1792.

15) Stanton, M. G.; Stauffer, S. R.; Gregro, A. R.; Steinbeiser, M.; Nantermet, P.; Sankaranarayanan, S.; Price, E. A.; Wu, G.; Crouthamel, M.; Ellis, J.; Lai, M.; Espeseth, A. S.; Shi, X.; Jin, L.; Colussi, D.; Pietrak, B.; Huang, Q.; Xu, M.; Simon, A. J.; Graham, S. L.; Vacca, J. P.; Selnick, H. Discovery of Isonicotinamide Derived β-Secretase Inhibitors: In Vivo Reduction of β-Amyloid. *J. Med. Chem*., **2007**, *50*, 3431-3433.

16) Stauffer, S. R. Small molecule inhibition of the Bcl-X_L-BH3 protein-protein interaction: proof-of-concept of an in vivo chemopotentiator ABT-737. *Curr. Topics in Med. Chem.* **2007**, *7*, 961-965.

17) Barrow, J. C.; Stauffer, S. R.; Rittle, K. E.; Ngo, P. L.; Yang, Z.; Selnick, H. G.; Graham, S. L.; Munshi, S; McGaughey, G. B.; Holloway, M. K.; Simon, A. J.; Price, E. A.; Sankaranarayanan, S.; Colussi, D.; Tugusheva, K.; Lai, M-T.; Espeseth, A. S.; Xu, M.; Huang, Q.; Wolfe, A.; Pietrak, B.; Zuck, P.; Levorse, D. A.; Hazuda, D.; Vacca, J. P. Discovery and X-ray Crystallographic Analysis of a Spiropiperidine Iminohydantoin Inhibitor of β-Secretase. *J. Med. Chem.* **2008**, *51*, 6259-6262.

18) Deng, J. Z.; Paone, D. V.; Ginnetti, A. T.; Kurihara, H.; Dreher, S. D.; Weissman, S. A.; Stauffer, S. R.; Burgey, C. S. Copper-Facilitated Suzuki Reactions: Application to 2-Heterocyclic Boronates. *Org. Lett.* **2009**, *11*, 345-347.

19) Sankaranarayanan, S.; Holahan, M. A.; Colussi, D.; Crouthamel, M-C.; Devanarayan, V.; Ellis, J.; Espeseth, A.; Gates, A. T.; Graham, S. L.; Gregro, A. R.; Hazuda, D.; Hochman, J. H.; Holloway, K.; Jin, L.; Kahana, J.; Lai, M-T.; Lineberger, J.; McGaughey, G.; Moore, K. P.; Nantermet, P.; Pietrak, B.; Price,

E. A.; Rajapakse, H; Stauffer, S. R.; Steinbeiser, M. A.; Seabrook, G.; Selnick, H. G.; Shi, X-P.; Stanton, M. G.; Swestock, J.; Tugusheva, K.; Tyler, K. X.; Vacca, J. P.; Wong, J.; Wu, G.; Xu, M.; Cook, J. J.; Simon, A. J. First demonstration of cerebrospinal fluid and plasma Aβ-lowering with oral administration of a β-site amyloid precursor protein-cleaving enzyme 1 inhibitor in nonhuman primates. *J. Pharm. Exp. Ther.* **2009**, *328*, 131-140.

20) Nantermet, P. G.; Rajapakse, H. A.; Stanton, M. G.; Stauffer, S. R.; Barrow, J. C.; Gregro, A. R.; Moore, K. P.; Steinbeiser, M. A.; Swestock, J.; Selnick, H. G.; Graham, S. L.; McGaughey, G. B.; Colussi, D.; Lai, M-T.; Sankaranarayanan, S.; Simon, A. J.; Munshi, S.; Cook, J. J.; Holahan, M. A.; Michener, M S.; Vacca, J. P. Evolution of tertiary carbinamine BACE-1 inhibitors: Aβ reduction in rhesus CSF upon oral dosing. *ChemMedChem* **2009**, *4*, 37-40.

21) Uebele, V. N.; Nuss, C. E.; Santarelli, V. P.; Garson, S. L.; Barrow, J. C.; Stauffer, S. R.; Koblan, K. S.; Renger, J. J.; Aton, S.; Seibt, J.; Dumoulin, M.; Jha, S. K.; Coleman, T.; Frank, M. G. T-type calcium channels regulate cortical plasticity in-vivo NR-D-08-7049. *NeuroReport* **2009**, *20*, 257-262.

22) Zhou, Y; Manka, J.; Rodriguez, A. L.; Weaver, C. D.; Days, E. L.; Vinson, P. N.; Jadhav, S.; Hermann, E. J.; Jones, C. K.; Conn, P. J.; Lindsley, C. W.; Stauffer, S. R. Discovery of N-Aryl Piperazines as Selective mGlu5 Potentiators with Efficacy in a Rodent Model Predictive of Anti-Psychotic Activity. *ACS Med. Chem. Lett.* **2010**, *1*, 433-438.

23) Rodriguez, A. L., Grier, M. D., Jones, C. K., Herman, E. J., Kane, A. S., Smith, R. L., Williams, R., Zhou, Y., Marlo, J. E., Days, E. L., Blatt, T. N., Jadhav, S., Menon, U. N., Vinson, P. N., Rook, J. M., Stauffer, S. R., Niswender, C. M., Lindsley, C. W., Weaver, C. D., Conn, P. J. Discovery of novel allosteric modulators of metabotropic glutamate receptor subtype 5 reveals chemical and functional diversity and in vivo activity in rat behavioral models of anxiolytic and antipsychotic activity. *Mol. Pharm.* **2010**, *78*, 1105-1123.

24) Williams, R., Manka, J. T., Rodriguez, A. L., Vinson, P. N., Niswender, C. M., Weaver, C. D., Jones, C. K., Conn, P. J., Lindsley, C. W., Stauffer, S. R. Synthesis and SAR of centrally active mGlu5 positive allosteric modulators based on an aryl acetylenic bicyclic lactam scaffold. *Bioorg. Med. Chem. Lett.*, **2011**, *21*, 1350-1353.

25) Stauffer, S. R. Progress towards positive allosteric modulators of the metabotropic glutamate receptor subtype 5 ($mGluR_5$). *ACS Chemical Neuroscience*, **2011**, *2*, 450-470.

26) Noetzel, M. J.; Rook, J. M.; Vinson, P. N.; Cho, H.; Days, E.; Zhou, Y.; Rodriguez, A. L.; Lavreysen, H.; Stauffer, S. R.; Niswender, C. W.; Xiang, Z.; Daniels, J. S.; Jones, C. K.; Lindsley, C. W.; Weaver, C. D.; Conn, P. J. Functional Impact of Allosteric Agonist Activity of Selective Positive Allosteric

Modulators of mGlu5 in Regulating CNS Function. *Mol. Pharmacol.* **2012**, *81*, 120-133.

27) Sheffler, D. S.; Wenthur, C. J.; Bruner, J. A.; Carrington, S. J. S.; Vinson, P. N.; Gogi, K. K.; Blobaum, A. L.; Morrison, R. D.; Vamos, M.; Cosford, N. D. P.; Stauffer, S. R.; Daniels, J. S.; Niswender, C. M.; Conn, P. J.; Lindsley, C. W. Development of a novel, CNS-penetrant, metabotropic glutamate receptor 3 (mGlu3) NAM probe (ML289) derived from a closely related mGlu5 PAM. *Bioorg. Med. Chem. Lett*., **2012**, *22,* 3921-3925.

28) D'Amorea, V.; Santolinia, I.; van Rijnb, C. M.; Biagionia, F.; Molinaroa, G.; Pretea, A.; Conn, P. J.; Lindsley, C. W.; Zhou, Y.; Vinson, P. N.; Rodriguez, A. L.; Jones, C. K.; Stauffer, S. R.; Nicolettia, F.; van Luijtelaarb, G.; Ngombaa, R. T. Potentiation of mGlu5 receptors with the novel enhancer, VU0360172, reduces spontaneous absence seizures in WAG/Rij rats. *Neuropharmacology*, **2012**, *66*, 330-338*.*

29) Gregory, K. J.; Noetzel, M. J.; Rook, J. M.; Vinson, P. N.; Stauffer, S. R.; Rodriguez, A. L.; Emmitte, K. A.; Zhou, Y.; Chun, A. C.; Felts, A. S.; Chauder, B. A.; Lindsley, C. W.; Niswender, C. M.; Conn, P. J. Investigating mGlu5 allosteric modulator cooperativity, affinity and agonism: enriching structure-function studies and structure-activity relationships. *Mol. Pharmacol.* **2012**,*82*, 860-875.

30) Manka, J. T.; Vinson, P. N.; Gregory, K. J.; Zhou, Y.; Williams, R.; Gogi, K.; Days, E.; Jadhav, S.; Herman, E. J.; Lavreysen, H.; Mackie, C.; Bartolomé, J. M.; MacDonald, G. J.; Steckler, T.; Daniels, J. S.; Weaver, C. D.; Niswender, C. M.; Jones, C. K.; Conn, P. J.; Lindsley, C. W.; Stauffer, S. R. Optimization of an ether series of mGlu5 positive allosteric modulators: molecular determinants of MPEP-site interaction crossover. *Bioorg. Med. Chem. Lett*., **2012**, 6481-6485.

31) Rodriguez, A.L.; Zhou, Y.; Williams, R.; Weaver, C. D.; Vinson, P. N.; Daniels, J. S.; Dawson, E. S.; Steckler, T.; Lavreysen, H.; Mackie, C.; Bartolomé, J. M.; MacDonald, G. J.; Niswender, C. M.; Conn, P. J.; Lindsley, C. W.; Stauffer, S. R. Discovery and SAR of a novel series of non-MPEP site mGlu5 PAMs based on an aryl glycine sulfonamide scaffold. *Bioorg. Med. Chem. Lett*., **2012**, *22*, 7388-7392.

32) Rook, J. M.; Noetzel, M. J.; Pouliot, W. A.; Bridges, T. M.; Vinson, P. N.; Cho, H. P.; Zhou, Y.; Gogliotti, R. D.; Manka, J. T.; Gregory, K. J.; Stauffer, S. R.; Dudek, F. E.; Xiang, Z.; Niswender, C. M.; Daniels, J. S.; Jones, C. K.; Lindsley, C. W.; Conn, P. J. Unique signaling profiles of positive allosteric modulators of metabotropic glutamate receptor subtype 5 determine differences in in vivo activity. *Biol. Psych.*, **2013**, *73*, 501-509.

33) Kiritoshi, T.; Sun, H.; Ren, W.; Stauffer, S. R.; Lindsley, C. W.; Conn, P. J.; Neugebauer, V. Modulation of pyramidal cell output in the medial prefrontal

cortex by mGluR5 interacting with CB1. *Neuropharmacology*, **2013**, *66*, 170-178.

34) Jacobs, J.; Tokars, V.; Zhou, Y.; Turlington, M.; Saldanha, S. A.; Chase, P.; Eggler, A.; Dawson, E. S.; Baez, Y.; Lindsley, C. W.; Hodder, P.; Mesecar, A.; Stauffer, S. R. Discovery, synthesis, and structure-based optimization of a series of N-(tert-butyl)-2-(N-arylamido)-2-(pyridin-3-yl) acetamides (ML188) as potent noncovalent small molecule inhibitors of the Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV) 3CL protease. *J. Med. Chem.* **2013**, *56*, 534-546.

35) Lindsley, C. W.; Stauffer, S. R. Metabotropic glutamate receptor 5- positive allosteric modulators for the treatment of schizophrenia (2004-2012). *Pharm. Patent Analyst*, **2013**, *2*, 93-108.

36) Xu, J.; Zhu, Y.; Kraniotis, S.; He, Q.; Marshall, J. J.; Nomura, T.; Stauffer, S. R.; Lindsley, C. W.; Conn, P. J.; Contractor, A. Potentiating mGluR5 function with a positive allosteric modulator enhances adaptive learning. *Learn. Mem.* **2013**, *20*, 438-445.

37) Noetzel, M. J.; Gregory, K. J.; Vinson, P. N.; Manka, J. T.; Stauffer, S. R., Lindsley, C. W.; Niswender, C. M.; Xiang, Z.; Conn, P. J. A Novel Metabotropic Glutamate Receptor 5 Positive Allosteric Modulator Acts at a Unique Site and Confers Stimulus Bias to mGlu5 Signaling. *Mol. Pharmacol.* **2013**, *83*, 836-847.

38) Gregory, K. J.; Nguyen, E. D.; Reiff, S. D.; Squire, E. F.; Stauffer, S. R.; Lindsley, C. W.; Meiler, J.; Conn, P. J. Probing the Metabotropic Glutamate Receptor 5 (mGlu5) Positive Allosteric Modulator (PAM) Binding Pocket: Discovery of Point Mutations that Engender a "Molecular Switch" in PAM Pharmacology. *Mol. Pharmacol.* **2013**, *83*, 991-1006.

39) Bridges, T. M.; Rook, J. M.; Noetzel, M. J.; Morrison, R. D.; Zhou, Y.; Gogliotti, R. D.; Vinson, P. N.; Jones, C. K.; Niswender, C. M.; Lindsley, C. W.; Stauffer, S. R.; Conn, P. J.; Daniels, J. S. Biotransformation of a Novel Positive Allosteric Modulator of Metabotropic Glutamate Receptor Subtype 5 Contributes to Seizure-Like Adverse Events in Rats Involving a Receptor Agonism-Dependent Mechanism. *Drug Metabolism and Disposition*, **2013**, *41 (9),* 703-714.

40) Blobaum, A. L.; Bridges, T. M.; Byers, F. W.; Turlington, M. L.; Mattmann, M. L.; Morrison, R. D.; Mackie, C.; Lavreysen, H.; Bartolomé, J. M.; Macdonald, G. J.; Steckler, T.; Jones, C. K.; Niswender, C. M.; Conn, P. J.; Lindsley, C. W.; Stauffer, S. R.; Daniels, J. S. Heterotropic Activation of the Midazolam Hydroxylase Activity of P450 3A by a Positive Allosteric Modulator of Metabotropic Glutamate Receptor 5: In Vitro to In Vivo Translation and Potential Impact on Clinically Relevant Drug-Drug Interactions. *Drug Metabolism and Disposition*, **2013**, *41*, 2066-2075.

41) Bartolomé-Nebreda,J. M.; Conde-Ceide, S.; Delgado, F.; Iturrino, L.; Pastor, J.; Pena, M. Á.; Trabanco, A. A.; Tresadern, G.; Wassvik, C. M.; Stauffer, S. R.; Noetzel, M. J.; Jadhav, S.; Gogi, K.; Vinson, P. N.; Days, E.; Weaver, C. D.; Lindsley, C. W.; Niswender, C. M.; Jones, C. K.; P. Conn, P. J.; Rombouts, F.; Lavreysen, H.; Macdonald, G. J.; Mackie,C.; Steckler, T. Dihydrothiazolopyridone Derivatives as a Novel Family of Positive Allosteric Modulators of the mGlu5 Receptor. *J. Med. Chem.* **2013**, *56*, 7243-7259.

42) Schulte, M. L.; Turlington, M. L.; Phatak, S. S.; Harp, J. M.; Stauffer, S. R.; Lindsley, C. W. Total Synthesis of Stemaphylline N-Oxide and Related C(9)a-Epimeric Analogues. *Chem. Eur. Journ.* **2013**, *19*, 11847-11852.

43) Gregory, K. J.; Herman, E. J.; Ramsey, A. J.; Hammond, A. S.; Byun, N. E.; Stauffer, S. R.; Manka, J. T.; Jadhav, S. Bridges, T. M.; Weaver, C. D.; Niswender, C. M.; Steckler, T.; Drinkenburg, W. H.; Ahnaou, A.; Lavreysen, H.; Macdonald, G. J.; Bartolomé, J. M.; Mackie, C.; Hrupka, B. J.; Caron, M. G.; Daigle, T. L.; Lindsley, C. W.; Conn, P. J.; Jones, C. K. *N*-aryl piperazine metabotropic glutamate receptor 5 positive allosteric modulators possess efficacy in pre-clinical models of NMDA hypofunction and cognitive enhancement. *J. Pharmacol. Exp. Ther.* **2013**, *347*, 438-457.

44) Turlington, M.; Noetzel, M. J.; Chun, A.; Zhou, Y.; Gogliotti, R. D.; Nguyen, E. D.; Gregory, K. J.; Vinson, P. N.; Rook, J. M.; Gogi, K. K.; Xiang, Z.; Bridges, T. M.; Daniels, J. S.; Jones, C.; Niswender, C. M.; Meiler, J.; Conn, P. J.; Lindsley, C. W.; Stauffer, S. R. Exploration of Allosteric Agonism Structure-Activity Relationships within an Acetylene Series of Metabotropic Glutamate Receptor 5 (mGlu5) Positive Allosteric Modulators (PAMs). *J. Med. Chem.* **2013**, *56*, 7976-7996.

45) Turlington, M.; Chun, A.; Tokars, V.; Jacobs, J.; Daniels, J. S.; Dawson, E.; Saldanha, A.; Chase, P.; Eggler, A.; Baez-Santos, Y. M.; Tomar, S.; Mielechg, A. M.; Bakerg, S. C.; Lindsley, C. W.; Hodder, P.; Mesecar, A.; Stauffer, S. R. Discovery of *N*-(benzo[1,2,3]triazol-1-yl)-*N*-(benzyl)acetamido)phenyl) carboxamides as severe acute respiratory syndrome coronavirus (SARS-CoV) 3CLpro inhibitors: identification of ML300 and non-covalent nanomolar inhibitors with an induced-fit binding. *Bioorg. Med. Chem. Lett*., **2013**, *23,* 6172-6177.

46) Gregory, K. J.; Nguyen, E. D.; Malosh, C.; Mendenhall, J. L.; Zic, J. Z.; Bates, B. S.; Noetzel, M. J.; Squire, E. F.; Turner, E. M.; Rook, J. M.; Emmitte, K. A.; Stauffer, S. R.; Lindsley, C. W.; Meiler, J.; Conn, P. J. Identification of Specific Ligand−Receptor Interactions That Govern Binding and Cooperativity of Diverse Modulators to a Common Metabotropic Glutamate Receptor 5 Allosteric Site. *ACS Chem. Neurosci.* **2014**, *5*, 282-295.

47) He, S.; Senter, T. J.; Pollock, J.; Han, C.; Upadhyay, S. K.; Purohit, T.; Gogliotti, R. D.; Lindsley,C. W.; Cierpicki, T.; Stauffer, S. R.; Grembecka, J. High-Affinity Small-Molecule Inhibitors of the Menin-Mixed Lineage Leukemia

(MLL) Interaction Closely Mimic a Natural Protein−Protein Interaction. *J. Med. Chem.* **2014**, *57*, 1543-1556.

48) Turlington, M.; Noetzel, M. J.; Bridges, T. M.; Vinson, P. N.; Steckler, T.; Lavreysen, H.; Mackie, C.; Bartolomé-Nebreda, J. M.; Conde-Ceide, S.; Tong, H. M.; Macdonald, G. J.; Daniels, J. S.; Jones, C. K.; Niswender, C. M.; Conn, P. J.; Lindsley, C. W.; Stauffer, S. R. Discovery and SAR of a novel series of metabotropic glutamate receptor 5 positive allosteric modulators with high ligand efficiency. *Bioorg. Med. Chem. Lett*., **2014**, *24*, 3641-3646.

49) D'Amore, V.; Santolini, I.; Celli, R.; Lionetto, L.; De Fusco, A.; Simmaco, M.; van Rijn, C. M.; Vieira, E.; Stauffer, S. R.; Conn, P. J.; Bosco, P.; Nicoletti, F.; van Luijtelaar, G.; Ngomba, R. T. Head-to head comparison of mGlu1 and mGlu5 receptor activation in chronic treatment of absence epilepsy in WAG/Rij rats. *Neuropharmacology*, **2014**, *85*, 91-103.

50) Turlington, M.; Malosh, C.; Jacobs, J.; Manka, J. T.; Noetzel, M. J.; Vinson, P. N.; Jadhav, S.; Herman, E. J.; Lavreysen, H.; Mackie, C,; Bartolome-Nebreda, J. M.; Conde-Ceide, S.; Martin-Martin, M. L.; Tong, H. M.; Lopez, S.; MacDonald, G. J.; Steckler, T.; Daniels, J. S.; Weaver, C. D.; Niswender, C. M.; Jones, C. K.; Conn, P. J.; Lindsley, C. W.; Stauffer, S. R. Tetrahydronaphthyridine and Dihydronaphthyridinone Ethers As Positive Allosteric Modulators of the Metabotropic Glutamate Receptor 5 (mGlu5). *J. Med. Chem.* **2014**, *57*, 5620-5637.

51) Wen, W., Young, S. E.; Duvernay, M. T.; Schulte, M. L.; Nance, K. D.; Melancon, B. J.; Engers, J.; Locuson II, C. W.; Wood, M. R.; Daniels, J. S.; Wu, W.; Lindsley, C. W.; Hamm, H. E.; Stauffer, S. R. Substituted Indoles as Selective Protease Activated Receptor 4 (PAR-4) Antagonists: Discovery and SAR of ML354. *Bioorg. Med. Chem. Lett*., **2014**, *24*, 4708-4713.

52) Rook, J. M.; Tantawy, M. N.; Ansari, M. S.; Felts, A. S.; Stauffer, S. R.; Emmitte, K. A.; Kessler, R. M.; Niswender, C. M.; Daniels, J. S.; Jones, C. K.; Lindsley, C. W.; Conn, P. J. Relationship between in vivo receptor occupancy and efficacy of metabotropic glutamate receptor subtype 5 allosteric modulators with different in vitro binding profiles. *Neuropsychopharm.* **2014***,* DOI: 10.1038/npp.2014.245

53) Han, C.; Chatterjee, A.; Noetzel, M. J.; Panarese, J. D.; Smith, E.; Chase, P.; Hodder, P.; Niswender, C.; Conn, P. J.; Lindsley, C. W.; Stauffer, S. R. Discovery and SAR of muscarinic receptor subtype 1 (M1) allosteric activators from a molecular libraries high throughput screen. Part I: 2,5-dibenzyl-2H-pyrazolo[4,3-c] quinolin-3(5H)-ones as positive allosteric modulators. *Bioorg. Med. Chem. Lett*., **2015**, *25*, 384-388.

54) Martin-Martin, M. L.; Bartolome-Nebreda, J. M.; Conde-Ceide, S.; Alonso de Diego, S. A.; Lopez, S.; Martinez-Viturro, C. M.; Tong, H. M.; Lavreysen, H.; MacDonald, G. J.; Steckler, T.; Mackie, C.; Bridges, T. M.; Daniels, J. S.; Niswender, C. M.; Noetzel, M. J.; Jones, C. K.; Conn, P. J.; Lindsley, C. W.;

Stauffer, S. R. Discovery and SAR of novel series of imidazopyrimidinones and dihydroimidazopyrimidinones as positive allosteric modulators of the metabotropic glutamate receptor 5 (mGlu5). *Bioorg. Med. Chem. Lett*., **2015**, *25*, 1310-1317.

55) Senter, T.; Gogliotti, R. D.; Han, C.; Locuson, C. W.; Morrison, R.; Daniels, J. S.; Cierpicki, T; Grembecka, J.; Lindsley, C. W.; Stauffer, S. R. Progress towards small molecule Menin-Mixed Lineage Leukemia (MLL) interaction inhibitors with in vivo utility. *Bioorg. Med. Chem. Lett*., **2015**, *25*, 2720-2725.

56) Rook, J. M.; Xiang, Z.; Lv, X,; Ghoshal, A.; Dickerson, J. W.; Bridges, T. W.; Johnson, K. A.; Foster, D. J.; Gregory, K. J.; Vinson, P. N.; Thompson, A. D.; Byun, N.; Collier, R. L.; Bubser, M.; Nedelcovych, M. T.; Gould, R. W.; Stauffer, S. R.; Daniels, J. S.; Niswender, C. M.; Lavreysen, H.; Mackie, C.; Conde-Ceide, S.; Alcazar, J.; Bartolome-Nebreda, J. M.; Macdonald, G. J.; Talpos, J. C.; Steckler, T.; Jones, C. K.; Lindsley, C. W.; Conn, P. J. Biased mGlu5-Positive Allosteric Modulators Provide In Vivo Efficacy without Potentiating mGlu5 Modulation of NMDAR Currents. *Neuron*, **2015**, *86*, 1029-1040.

57) Du, Y.; Days, E. L.; Romaine, I. M.; Abney, K. K.; Kaufmann, K. W.; Sulikowski, G. A.; Stauffer, S. R.; Lindsley, C. W.; Weaver, C. D. Development and Validation of a Thallium Flux-Based Functional Assay for the Sodium Channel NaV1.7 and Its Utility for Lead Discovery and Compound Profiling. *ACS Chem. Neuro*. **2015**,*6*, 871-878.

58) Conde-Ceide, S.; Martínez-Viturro, C. M.; Alcázar, J.; Garcia-Barrantes, P. M.; Lavreysen, H.; Mackie, C.; Vinson, P. N.; Rook, J. M.; Bridges, T. M.; Daniels, J. S.; Megens, A.; Langlois, X.; Drinkenburg, W. H.; Ahnaou, A.; Niswender, C. M.; Jones, C. K.; Macdonald, G. J.; Steckler, T.; Conn, P. J.; Stauffer, S. R.; Bartolomé-Nebreda, J. M.; Lindsley, C. W. Discovery of VU0409551/JNJ-46778212: An mGlu5 Positive Allosteric Modulator Clinical Candidate Targeting Schizophrenia. *ACS Med. Chem. Lett.* **2015**,*6*, 716-720.

59) Schreiber, S. L.; Kotz, J. D.; Li, M.; Aube, J.; Austin, C. P.; Reed, J. C.; Rosen, H.; White, E. L.; Sklar, L. A.; Lindsley, C. W.; Alexander, B. R.; Bittker, J. A.; Clemons, P, A.; de Souza, A.; Foley, M. A.; Palmer, M.; Shamji, A.; Wawer, M. J.; Mcmanus, O. B.; Wu, M.; Zou, B.; Yu, H.; Golden, J. E.; Schoenen, F. J.; Pinkerton, A. B.; Chung, T. D.; Griffin, P. R. Cravatt, B. F.; Hodder, P. S.; Roush, W. R.; Roberts, E.; Chung, D.-H.; Jonsson, C.; Noah, J. W.; Severson, W. E.; Ananthan, S. A.; Edwards, B. S.; Oprea, T. I.; Conn, P. J.; Hopkins, C. R.; Wood, M. R.; Stauffer, S. R.; Emmitte, K. A. Advancing Biological Understanding and Therapeutics Discovery with Small-Molecule Probes. *Cell*, **2015**, *161*, 1252-1265.

60) St. John, S. E.; Tomar, S.; Stauffer, S. R.; Mesecar, A. D. Targeting zoonotic viruses: structure-based inhibition of the 3C-like protease from bat coronavirus HKU4 - the likely reservoir host to the human coronavirus that causes Middle East Respiratory Syndrome (MERS). *Bioorg. Med. Chem.,* **2015**, *17*, 6036-6048.

61) Zhou, Y.; Malosh, C.; Conde-Ceide, S.; Martínez-Viturro, C. M.; Alcázar, J.; Lavreysen, H.; Mackie, C.; Bridges, T. M.; Daniels, J. S.; Niswender, C. M.; Jones, C. K.; Macdonald, G. J.; Steckler, T.; Conn, P. J.; Stauffer, S. R.; Bartolomé-Nebreda, J. M.; Lindsley, C. L. Further optimization of the mGlu5 PAM clinical candidate VU0409551/JNJ-46778212: Progress and challenges towards a back-up compound. *Bioorg. Med. Chem. Lett*., **2015**,*17*, 3515-3519.

62) Egbertson, M.; McGaughey, G. B.; Pitzenberger, S. M.; Stauffer, S. R.; Coburn, C. A.; Stachel, S. J.; Yang, W.; Barrow, J. C.; Neilson, L. A.; McWherter, M.; Perlow, D.; Fahr, B.; Munshi, S.; Allison, T. A.; Holloway, K.; Selnick, H.; Yang, Z.; Swestock, J.; Simon, A. J.; Sankaranarayanan, S.; Colussi, D.; Tugusheva, K.; Lai, M.-T.; Pietrak, B.; Haugabook, S.; Jin, L.; Chen, I.-W.; Holahan, M.; Stranieri-Michener, M.; Cook, J. J.; Vacca, J.; Graham, S. L. Methyl-substitution of an iminohydantoin spiropiperidine β-secretase (BACE-1) inhibitor has a profound effect on its potency. *Bioorg. Med. Chem. Lett*., **2015**, *25*, 4812-4819.

63) Ahowesso, C.; Black, P. N.; Saini, N.; Montefusco, D.; Chekal, J.; Malosh, C.; Lindsley, C. W.; Stauffer, S. R.; DiRusso, C. C. Chemical inhibition of fatty acid absorption and cellular uptake limits lipotoxic cell death. *Biochemical Pharmacology*, **2015**, *98*, 167-181.

64) Malosh, C.; Turlington, M.; Bridges, T. M.; Rook, J. M.; Noetzel, M. J.; Vinson, P. N.; Steckler, T.; Lavreysen, H.; Mackie, C.; Bartolomé-Nebreda, J. M.; Conde-Ceide, S.; Martínez-Viturro, C. M.; Piedrafita, M.; Sánchez-Casado, M. R.; Macdonald, G. J.; Daniels, J. S.; Jones, C. K.; Niswender, C. M.; Conn, P. J.; Lindsley, C. W.; Stauffer, S. R. Acyl dihydropyrazolo[1,5-*a*]pyrimidinones as metabotropic glutamate receptor 5 positive allosteric modulators. *Bioorg. Med. Chem. Lett*. **2015**, *25*, 5115-5120.

65) Ghoshal, A.; Rook, J. M.; Dickerson, J. W.; Poslusney, M.; Roop, G. N.; Morrison, R.; Noetzel, M. N.; Stauffer, S. R.; Xiang, Z.; Daniels, S. J.; Niswender, C. M.; Jones, C. K.; Lindsley, C. W.; Conn, P.J. Potentiation of M1 muscarinic receptors reverses plasticity deficits and negative and cognitive symptoms in a schizophrenia mouse model. *Nature Neuroscience*, **2016**, *41*, 598-610.

66) Nickols, H. H.; Yuh, J. P.; Gregory, K. J.; Morrison, R. D.; Bates, B.; Stauffer, S. R.; Emmitte, K. A.; Bubser, M.; Peng, W.; Nedelcovych, M. T.; Thompson, A.; Lv, X.; Xiang, Z.; Daniels, J. S.; Niswender, C. M.; Lindsley, C. W.; Jones, C. W.; Conn, P. J. VU0477573: Partial negative allosteric modulator of the subtype 5 metabotropic glutamate receptor with in vivo efficacy. *J. Pharmacol. Exp. Ther.* **2016**, *356*, 123-136.

67) Wu, Y.; Stauffer, S. R.; Stanfield, R. L.; Tapia, P. H.; Ursu, O.; Fisher, G. W.; Szent-Gyorgyi, C.; Evangelisti, A.; Waller, A.; Strouse, J. J.; Carter, M. B.; Bologa, C.; Gouveia, K.; Poslusney, M.; Waggoner, A. S.; Lindsley, C. W.; Jarvik, J. W.; Sklar, L. A. Discovery of Small-Molecule Nonfluorescent Inhibitors

of Fluorogen–Fluorogen Activating Protein Binding Pair. *J. Biomol. Screen.*, **2016**, *21*, 74-87.

68) Condé-Ceidé, S.; Alcazar, J.; Alonso de Deigo, S. A.; Lopéz, S.; Martín-Martín, M. L.; Martinez-Viturro, C. M.; Pena, M.-A.; Tong, H. M.; Lavreysen, H.; Mackie, C.; Bridges, T. M.; Daniels, J. S.; Niswender, C. M.; Jones, C. K.; Macdonald, G. J.; Steckler, T.; Conn, P. J.; Stauffer, S. R.; Lindsley, C. W.; Bartolomé-Nebreda, J. M. Preliminary investigation of 6,7-dihydropyrazolo[1,5-a]pyrazin-4-one derivatives as a novel series of mGlu5 receptor positive allosteric modulators with efficacy in preclinical models of schizophrenia. *Bioorg. Med. Chem. Lett*., **2016**, *25*, 429-434.

69) Gogliotti, R. G.; Klar, R.; Rook, J. M.; Ghoshal, A.; Zamorano, R.; Malosh, C.; Stauffer, S. R.; Bridges, T. M.; Bartolome, J. M.; Daniels, J. S.; Jones, C.; Lindsley, C. W.; Conn, P. J.; Niswender, C. M. mGlu5 Positive allosteric modulation normalizes synaptic plasticity defects and motor phenotypes in a mouse model of Rett Syndrome. *Hum. Mol. Genet.* **2016**, *25*, 1990-2004.

70) Temple, K. J.; Duverney, M. T.; Young, S. E.; Wen, W.; Wu, W.; Maeng, J. G.; Blobaum, A. L.; Stauffer, S. R.; Hamm, H.; Lindsley, C. W. Development of a Series of (1-Benzyl-3-(6-methoxypyrimidin-3-yl)-5-(trifluoromethoxy)-1H-indol-2-yl)methanols as Selective Protease Activated Receptor 4 (PAR4) Antagonists with in Vivo Utility and Activity Against γ-Thrombin. *J. Med. Chem.*,**2016**, *59*, 7690-7695.

71) Panarese, J. D.; Cho, H. P.; Adams, J. J.; Nance, K. D.; Garcia-Barrantes, P. M.; Chang, S.; Morrison, R. D.; Blobaum, A. L.; Niswender, C. M.; Stauffer, S. R.; Conn, P. J.; Lindsley, C. W. Further optimization of the M1 PAM VU0453595: Discovery of novel heterobicyclic core motifs with improved CNS penetration. *Bioorg. Med. Chem. Lett.*,**2016**, *26*, 3822-3825.

72) Temple, K. J.; Duverney, M. T.; Maeng, J. G.; Blobaum, A. L.; Stauffer, S. R.; Hamm, H.; Lindsley, C. W. Identification of the minimum PAR4 inhibitor pharmacophore and optimization of a series of 2-methoxy-6-arylimidazo[2,1-*b*][1,3,4]thiadiazoles. *Bioorg. Med. Chem. Lett.*,**2016**, *26*, 5481-5486.

73) Duverney, M. T.; Temple, K. J.; Maeng, J. G.; Blobaum, A. L.; Stauffer, S. R.; Hamm, H.; Lindsley, C. W. Contributions of PAR1 and PAR4 to thrombin induced GPIIbIIIa activation in human platelets. *Mol. Pharm.,* **2017**, *91*, 39-47.

GRANTED US PATENTS

1) **US 7,354,942**. Issued April 8th, **2008**. Nantermet, P. G.; Rajapakse, H. A.; Selnick, H. G.; Stauffer, S. R.; Young, M. B. Benzylether and Benzylamino Beta-Secretase Inhibitors for the Treatment of Alzheimer's Disease.

2) **US 7,550,481**. Issued Jun. 23rd, **2009**. Barrow, J. C.; Coburn, C. A.; Nantermet, P. G.; Selnick, H. G.; Stachel, S. J.; Stanton, M. G.; Stauffer, S. R.; Linghang, Z.; Davis, J. R. Phenylamide and Pyridylamide Beta-Secretase Inhibitors for the Treatment of Alzheimer's Disease.

3) **US 7,820,674**. Issued Oct. 26th, **2010**. Coburn, C. A.; Nantermet, P. G.; Rajapakse, H. A.; Selnick, H. G.; Stauffer, S. R. Aminomethyl Beta-Secretase Inhibitors for the Treatment of Alzheimer's Disease.

4) **US 7,847,100**. Issued Dec. 7th, **2010**. Barrow, J. C.; McGaughey, G. B.; Nantermet, P. G.; Rajapakse, H. A.; Selnick, H. G.; Stauffer, S. R.; Coburn, C. A. 1,3,5-Substituted Phenyl Derivative Compounds Useful as Beta-Secretase Inhibitors for the Treatment of Alzheimer's Disease.

5) **US 7,968,571**. Issued Jun. 28th, **2011**. Barrow, J. C.; McGaughey, G. B.; Nantermet, P. G.; Rajapakse, H. A.; Selnick, H. G.; Stauffer, S. R.; Vacca, J. P.; Stachel, S. J.; Coburn, C. A.; Stanton, M. G. 2,4,6-Substituted Pyridyl Derivative Compounds Useful as Beta-Secretase Inhibitors for the Treatment of Alzheimer's Disease.

6) **US 8,114,887**. Issued Feb. 14th, **2012**. Barrow, J. C.; Coburn, C. A.; Egbertson, M. S.; McGaughey, G. B.; McWherter, M. A.; Neilson, L. A.; Rittle, K. E.; Selnick, H. G.; Stauffer, S. R.; Yang, Z.-Q.; Yang, W.; Lu, W.; Fahr, B. Spiropiperidine Compounds useful as Beta-Secretase Inhibitors for the Treatment of Alzheimer's Disease.

7) **US 8,143,405**. Issued Mar. 27th, **2012**. Stauffer, S. R. Piperidine and Pyrrolidine Beta-Secretase Inhibitors for the Treatment of Alzheimer's of Disease.

8) **US 8,211,904**. Issued Jul. 3rd, **2012**. Coburn, C. A.; Egbertson, M. S.; Graham, S. L.; McGaughey, G. B.; Stauffer, S. R.; Rajapakse, H. A.; Nantermet, P. G.; Stachel, S. J.; Yang, W.; Lu, W.; Fahr, B. Spiropiperidine Beta-Secretase Inhibitors for the Treatment of Alzheimer's Disease.

9) **US 8,293,759**. Issued Oct. 23rd, **2012**. Stauffer, S. R.; Hills, I. D.; Nomland, A. Spiropiperidine Beta-Secretase Inhibitors for the Treatment of Alzheimer's Disease.

10) **US 8,338,614**. Issued Dec. 25th, **2012**. McGaughey, G. B.; Nantermet, P. G.; Rajapakse, H. A.; Stauffer, S. R. Tertiary Carbinamines having Substituted Heterocycles which are Active as Beta-Secretase Inhibitors for the Treatment of Alzheimer's Disease.

11) **US 8,377,954**. Issued Feb. 19th, **2013**. Stauffer, S. R.; Graham, S. L. Bicyclic Spiropiperidine Beta-Secretase Inhibitors for the Treatment of Alzheimer's Disease.

12) **US 8,394,837**. Issued Mar. 12th, **2013**. Nantermet, P. G.; Rajapakse, H. A.; Selnick, H. G.; Barrow, J. C.; Stauffer, S. R.; Vacca, J. P.; Moore, J. P.; Stachel, S. J.; Stanton, M. G. 2,3,4,6-Substituted Pyridyl Derivative Compounds Useful as Beta-Secretase Inhibitors for the Treatment of Alzheimer's Disease.

13) **US 8,399,473**. Issued Mar. 19th, **2013**. Nantermet, P. G.; Holloway, M. K.; Moore, J. P.; Stauffer, S. R. Macrocyclic Spiropiperidine Beta-Secretase Inhibitors for the Treatment of Alzheimer's Disease.

14) **US 8,592,422**. Issued Nov. 26th, **2013**. Conn, P. J.; Lindsley, C. W.; Stauffer, S. R.; Bartolome-Nebreda, J. M.; Conde-Ceide, S.; Macdonald, G. J.; Tong, H. M.; Jones, C. K.; Alcazar-Vaca, M. J.; Andres-Gil, J. I.; Malosh, C. Bicyclic Triazole and Pyrazole Lactams as Allosteric Modulators of mGluR5 Receptors.

15) **US 8,703,946**. Issued Apr. 22nd, **2014**. Conn, P. J.; Lindsley, C. W.; Jones, C. K.; Stauffer, S. R.; Bartolome-Nebreda, J. M.; Macdonald, G. J.; Conde-Ceide, S.; Tong, H. M. Substituted Pyrazolo[1,5-A]pyrazine Compounds as Allosteric Modulators of mGluR5 Receptors.

16) **US, 8,710,074**. Issued Apr. 29th, **2014**. Conn, P. J.; Lindsley, C. W.; Stauffer, S. R.; Manka, J.; Jacobs, J.; Zhou, Y.; Bartolome-Nebreda, J. M.; Macdonald, G. J.; Conde-Ceide, S.; Dawson, E. S. Dihydronaphthyridinyl (organo) methanone analogs as positive allosteric mGluR5 modulators.

17) **US 8,853,237.** Issued Oct. 7th, **2014**. Conn, P. J.; Lindsley, C. W.; Stauffer, S. R.; Manka, J.; Jacobs, J.; Zhou, Y.; Bartolome-Nebreda, J. M.; Macdonald, G. J.; Conde-Ceide, S.; Jones, C. K. Naphthyridinone analogs as mGluR5 positive allosteric modulators.

18) **US 8,865,725**. Issued Oct. 21st, **2014**. Conn, P. J.; Lindsley, C. W.; Stauffer, S. R.; Bartolome-Nebreda, J. M.; Macdonald, G. J.; Conde-Ceide, S.; Jones, C. K.; Martin-Martin, M. L.; Tong, H. M. Substituted Imidazopyrimidine-5(6H)-ones as allosteric modulators of mGluR5 receptors.

19) **US 8,901,125**. Issued Dec. 2nd, **2014**. Conn, P. J.; Lindsley, C. W.; Stauffer, S. R.; Bartolome-Nebreda, J. M.; Conde-Ceide, S.; Macdonald, G. J.; Tong, H. M.; Pena-Pinon, M. A.; Alcazar-Vaca, M. J.; Andres-Gil, J. I. Substituted Bicyclic Alkoyx Pyrazole analogs as allosteric modulators of mGluR5 receptors.

20) **US 8,969,389**. Issued Mar. 3rd, **2015**. Conn, P. J.; Lindsley, C. W.; Stauffer, S. R.; Zhou, Y.; Manka, J.; Macdonald, G.; Bartolome-Nebreda, J. M. Substituted 6-Methylnicotinamides as mGluR5 positive allosteric modulators.

21) **US 9,029,366**. Issued May 12th, **2015**. Conn, P. J.; Lindsley, C. W.; Stauffer, S. R.; Bartolome-Nebreda, J. M.; Conde-Ceide, S.; Macdonald, G. J.; Tong, H. M.; Pena-Pinon, M. A.; Alcazar-Vaca, M. J.; Andres-Gil, J. I. Substituted Bicyclic Alkoyx Pyrazole analogs as allosteric modulators of mGluR5 receptors.

22) **US 9,090,632**. Issued Jul. 28th, **2015**. Conn, P. J.; Lindsley, C. W.; Stauffer, S. R.; Jones, C. K.; Bartolome-Nebreda, J. M.; Conde-Ceide, S.; Macdonald, G. J.; Alcazar-Vaca, M. J. Bicyclic Oxazole and Thiazole compounds and their use as allosteric modulators of mGluR5 receptors.

23) **US 9,238,647**. Issued Jan. 19th, **2016**. Burgey, C. S.; Deng, Z. J.; Nguyen, D.; Paone, D. V.; Potteiger, C. M.; Stauffer, S. R.; Segerdell, C.; Nomland, A.; Lim, J. T. P2X3 Receptor Antagonists for Treatment of Pain.

24) **US 9,255,103** Issued Feb. 9th, **2016**. Conn, P. J.; Lindsley, C. W.; Stauffer, S. R.; Bartolome-Nebreda, J. M.; Conde-Ceide, S.; Macdonald, G. J.; Han, M. T.; Jones, C. K. Substituted Pyrazolo[1,5-*a*]pyrazines as mGluR5 receptor modulators.

25) **US 9,572,794** Issued Feb. 21st, **2017**. Hamm, H. E.; Stauffer, S. R.; Lindsley, C. W.; Wen, W.; Young, S. E.; Duverney, M. T.; Temple, K. J. Substituted indoles as selective protease activated receptor 4 (PAR-4) antagonists.

PATENT PUBLICATIONS (US only and International PCT)

1) Katzenellenbogen, J. A.; Katzenellenbogen, B. S.; Fink, B. E.; Stauffer, S. R.; Mortensen, D. S.; Sattigeri, V. J.; Huang, Y. Preparation of non-steroidal estrogen receptor subtype-selective ligands. PCT Int. Appl. WO2000019994, **2000**, 134 pp.

2) Hartwig, J. F.; Stambuli, J.; Stauffer, S. R.. Preparation of sterically hindered phosphine ligands and their use as cocatalyst in Heck reaction. PCT Int. Appl. WO2002048160, **2002**, 39 pp.

3) Barrow, J. C.; Selnick, H. G.; Nanterment, P. G.; Rittle, K. E.; McMasters, D. R.; Stauffer, S. R.; Bolinger, S. Preparation of imidazolyl-substituted alkanoic acids and related five-membered nitrogen-aromatic derivatives as carboxypeptidase U inhibitors useful as anticoagulants. PCT Int. Appl. WO2003013526, **2003**, 137 pp.

4) Barrow, J. C.; Coburn, C. A.; Nantermet, P. G.; Selnick, H. G.; Stachel, S. J.; Stanton, M. G.; Stauffer, S. R.; Zhuang, L.; Davis, J. R. Preparation of phenylamides and pyridylamides as β-secretase inhibitors. PCT Int. Appl. WO2005065195, **2005**, 121 pp.

5) Nantermet, P. G.; Rajapakse, H. A.; Selnick, H. G.; Stauffer, S. R.; Young, M. B. Preparation of benzyl ethers, benzylamines, pyridylmethyl ethers, and pyridylmethylamines as β-secretase inhibitors for the treatment of Alzheimer's disease. PCT Int. Appl. WO2005051914, **2005**, 98 pp.

6) Barrow, J. C.; McGaughey, G. B.; Nantermet, P. G.; Rajapakse, H. A.; Selnick, H. G.; Stauffer, S. R.; Coburn, C. A. Preparation of 1,3,5-substituted phenyl derivatives containing five-membered heterocycles useful as β-secretase inhibitors for the treatment of Alzheimer's disease. PCT Int. Appl. WO2005103020, **2005**, 212 pp.

7) Barrow, J. C.; McGaughey, G. B.; Nantermet, P. G.; Rajapakse, H. A.; Selnick, H. G.; Stauffer, S. R.; Vacca, J. P.; Stachel, S. J.; Coburn, C. A.; Stanton, M. G. Preparation of amino oxadiazolyl pyridinyl sulfonamides as β-secretase inhibitors. PCT Int. Appl. WO2005103043, **2005**, 131 pp.

8) McGaughey, G. B.; Nantermet, P. G.; Rajapakse, H. A.; Stauffer, S. R. Preparation of tertiary carbinamines having substituted heterocycles, which are active as inhibitors of β-secretase, for the treatment of Alzheimer's disease. PCT Int. Appl. WO2006078577, **2006**, 63 pp.

9) Coburn, C. A.; Nantermet, P. G.; Rajapakse, H. A.; Selnick, H. G.; Stauffer, S. R. Preparation of 1,3,4-oxadiazolylmethyl piperazine-2,3-diones as β-secretase inhibitors for the treatment of Alzheimer's disease. PCT Int. Appl. WO2006078576, **2006**, 47 pp.

10) Nantermet, P. G.; Stanton, M. G.; Rajapakse, H. A.; Selnick, H. G.; Barrow, J. C.; Stauffer, S. R.; Vacca, J. P.; Moore, K. P.; Stachel, S. J. Preparation of 2,3,4,6-substituted pyridinyl derivatives as β-secretase inhibitors for treating Alzheimer's disease. PCT Int. Appl. WO2006057945, **2006**, 96 pp.

11) Barrow, J. C.; Coburn, C. A.; Egbertson, M. S.; McGaughey, G. B.; McWherter, M. A.; Neilson, L. A.; Selnick, H. G.; Stauffer, S. R.; Yang, Z-Q.; Yang, W.; Lu, W.; Fahr, B.; Rittle, K. E. Preparation of spiropiperidine compounds as β-secretase inhibitors for the treatment of Alzheimer's disease. PCT Int. Appl. WO2006044497, **2006**, 182 pp.

12) Coburn, C. A.; Egbertson, M. S.; Graham, S. L.; McGaughey, G. B.; Stauffer, S. R.; Rajapakse, H. A.; Nantermet, P. G.; Stachel, S. R.; Yang, W.; Lu, W.; Fahr, B. Preparation of triazaspirodecenones as β-secretase inhibitors for the treatment of Alzheimer's disease. PCT Int. Appl. WO2007011833, **2007**, 153 pp.

13) Coburn, C. A.; Egbertson, M. S.; Graham, S. L.; McGaughey, G. B.; Stauffer, S. R.; Yang, W.; Lu, W.; Fahr, B. Preparation of 1,3,8-triazaspiro[4.5]decane derivatives as β-secretase inhibitors for treatment of Alzheimer's disease. PCT Int. Appl. WO2007011810, **2007**, 65 pp.

14) Egbertson, M. S.; Stauffer, S. R.; Coburn, C. A.; Barrow, J. C.; Yang, W.; Lu, W.; Fahr, B.; Neilson, L.; Wai, J. M. Preparation of aryldiazaspiro[4.5]decanone derivatives for use as anti-Alzheimer's agents. PCT Int. Appl. WO2008030412, **2008**, 118 pp.

15) Stauffer, S. R. Piperidine and pyrrolidine beta-secretase inhibitors for the treatment of Alzheimer's disease. PCT Int. Appl. WO2008036316, **2008**, 78 pp.

16) Nantermet, P. G.; Holloway, M. K.; Moore, K. P.; Stauffer, S. R. Macrocyclic spiropiperidine beta-secretase inhibitors for the treatment of alzheimer's disease. PCT Int. Appl. WO2008045250, **2008**, 70 pp.

17) Stauffer, S. R.; Hills, I. D.; Nomland, A. Spiropiperidine β-secretase inhibitors for the treatment of Alzheimer's disease. PCT Int. Appl. WO2008054698, **2008**, 56 pp.

18) Stauffer, S. R.; Graham, S. L. Bicyclic spiropiperidine beta-secretase inhibitors for the treatment of Alzheimer's disease. PCT Int. Appl. WO2008085509, **2008**, 50 pp.

19) Burgey, C. S.; Deng, Z. J.; Nguyen, D. N.; Paone, D. V.; Potteiger, C. M.; Stauffer, S. R.; Segerdell, C.; Nomland, A.; Lim, J. J. $P2X_3$ receptor antagonists for treatment of pain. PCT Int. Appl. WO2010111058, **2010**, 112 pp.

20) Conn, P. J.; Lindsley, C. W.; Weaver, C. D.; Stauffer, S. R.; Williams, R.; Macdonald, G.; Bartolome-Nebreda, J. M.; Zhou, Y. Preparation of O-benzyl nicotinamide analogs as mGluR5 postive allosteric modulators. PCT Int. Appl. WO2011035324, **2011**, 174 pp.

21) Conn, P. J.; Lindsley, C. W.; Stauffer, S. R.; Zhou, Y.; Macdonald, G.; Bartolome-Nebreda, J. M. Substituted-6-methylnicotinamides as mGluR5 positive allosteric modulators. PCT Int. Appl. WO2011149963, **2011**, 174 pp.

22) Conn, P. J.; Lindsley, C. W.; Stauffer, S. R.; Jones, C. K.; Bartolome-Nebreda, J. M.; Conde-Ceide, S.; Macdonald, G. J.; Alcazar Vaca, M. J. Bicyclic oxazole and thiazole compounds as positive allosteric modulators of mGluR5 receptors and their preparation and use for the treatment of diseases. PCT Int. Appl. WO2012031024, **2012**, 192 pp.

23) Conn, P. J.; Lindsley, C. W.; Stauffer, S. R; Bartolome-Nebreda, J. M.; Conde-Ceide, S.; Macdonald, G. J.; Tong, H. M.; Jones, C. K.; Alcazar-Vaca, M. J.; Andres-Gil, J. I.; Malosh, C. Preparation of pyrazolopyrazinone derivatives and analogs for use as mGluR5 receptor positive allosteric modulators. PCT Int. Appl. WO2012083224, **2012**.

24) Conn, P. J.; Lindsley, C. W.; Stauffer, S. R; Jones, C. K.; Conde-Ceide, S.; Tong, H. M.; Bartolome-Nebreda, J. M.; Macdonald, G. J. Preparation of bicyclic pyrazole compounds as allosteric modulators of mGluR5 receptors for

treatment of psychiatric and neurological disorders and hyperproliferative disorders. PCT Int. Appl. WO2012078817, **2012**, 188 pp.

25) Conn, P. J.; Lindsley, C. W.; Stauffer, S. R; Manka, J.; Jacobs, J.; Zhou, Y.; Bartolome-Nebreda, J. M.; Macdonald, G. J.; Conde-Ceide, S.; Jones, C. K. Preparation of naphthyridinone analogs as mGluR5 positive allosteric modulators. PCT Int. Appl. WO2012092530, **2012**, 178 pp.

26) Conn, P. J.; Lindsley, C. W.; Stauffer, S. R; Bartolome-Nebreda, J. M.; Macdonald, G. J.; Conde-Ceide, S.; Jones, C. K.; Martin-Martin, M. L.; Tong, H. M. Substituted imadazopyrimidin-5(6H)-one derivatives as allosteric modulators of mGluR5 receptors. PCT Int. Appl. WO2012125732, **2012**.

27) Conn, P. J.; Lindsley, C. W.; Stauffer, S. R.; Zhou, S.; Bartolome-Nebreda, J. M.; Macdonald, G. J.; Gogliotti, R. D.; Turlington, M. Substituted 5-(prop-1-yn-1-yl)picolinamide analogs as allosteric modulators of metabotropic glutamate receptor subtype 5. PCT Int. Appl. WO2013049255, **2013**.

28) Conn, P. J.; Lindsley, C. W.; Stauffer, S. R.; Bartolome-Nebreda, J. M.; Macdonald, G. J.; Conde-Ceide, S.; Martin-Martin, M. L. Bicyclic oxazole lactams as allosteric modulators of mGluR5 receptors. PCT Int. Appl. WO2013130639, **2013**.

29) Lindsley, C. W.; Conn, P. J.; Stauffer, S. R.; Panarese, J. D. Substituted 1-benzylquinoxalin-2(1*H*)-one analogs as positive allosteric modulators of muscarinic acetylcholine receptor M1. PCT Int. Appl. WO2014179226, **2014**.

30) Lindsley, C. W.; Conn, P. J.; Stauffer, S. R.; Panarese, J. D. Quinazolinone and pyridopyrimidinone derivatives as positive allosteric modulators of muscarinic acetylcholine receptor M1 and their preparation and use for the treatment of neurological and psychiatric disorder. PCT Int. Appl. WO2014179237, **2014**.

31) Grembecka, J.; Cierpicki, T.; Upadhyay, S. K.; Stauffer, S. R.; Gogliotti, R. D.; Senter, T. J. Preparation of [(phenoxy)propyl]piperidine derivatives as menin-MLL inhibitors. PCT Int. Appl. WO2014200479, **2014**.

32) Lindsley, C. W.; Conn, P. J.; Stauffer, S. R.; Panarese, J. D. Preparation of benzyldihydrobenzooxazinecarboxamide derivatives for use as positive allosteric modulators of muscarinic acetylcholine receptor M1. PCT Int. Appl. WO2015080904, **2015**.

33) Hamm, H. E.; Stauffer, S. R.; Lindsley, C. W.; Duverney, M. T.; Temple, K. J. Substituted and fused 6-membered protease activated receptor 4 (PAR-4) antagonists. PCT Int. Appl. WO2017184520, **2017**.

INVITED TALKS

15) Fragment-based discovery of WDR5-MLL1 disruptors. CHI Sponsored 14th Annual Discovery on Target: Targeting Histone Methyltransferase and Demethylases. Boston, MA Sept. 20, **2016**.

14) Collaborative Drug Discovery and Probe Development in Academia. University of Alabama Chemistry Dept. (dept. seminar series) Tuscaloosa, AL, October 9, **2014**.

13) Catalysis driven medicinal chemistry and challenges in protease and allosteric GPCR space. 248th ACS National Meeting, San Francisco, CA August 13, **2014** (Abstract INOR-896, invited session in honor of John F. Hartwig's 50th Birthday).

12) Biotransformation of novel allosteric modulators of GPCRs: Challenges in efficacy modulation, receptor selectivity, and mechanism based adverse events. 246th ACS National Meeting, Indianapolis, IN September 9, **2013** (Abstract MEDI-160, "Emerging Trends in Drug Metabolism and Disposition: Concerns for the Medicinal Chemist").

11) Modern CNS Pharmacology: Perspectives and recommendations for FEMA program. Flavor and Extract Manufacturers Association GRAS™ Meeting, Washington, D.C. February 26, **2013**.

10) Fluorine substitution in allosteric modulator programs of cell surface receptors. 245rd ACS National Meeting, New Orleans, LA April 10, **2013** (Abstract MEDI-256, Fluorine in Medicinal Chemistry session).

9) CNS Drug Discovery in Academia: the Mission, the Model and Recent Successes. Society for Medicines Research (SMR) Meeting, Partnerships: Future Models for Drug Discovery. Lilly Manor House Conference Centre, Erl Wood Manor, Windlesham, Surry UK, June 20, **2013**.

8) Druggability considerations for GPCRs and Ion Channels. 6th Drug Discovery for Neurodegeneration Conference: An Intensive Course on Translating Research into Drugs. Alzheimer's Drug Discovery Foundation, New York, NY, February 14, **2012**.

7) Allosteric agonists and pure PAMs of mGlu5 within an acetylenic scaffold: adverse effect liability and search for 'molecular locks'. CHI Sponsored Inaugural Allosteric Modulators Discovery on Target Conference Boston, MA November 3, **2011**.

6) 'Molecular Switches' on Allosteric Ligands that Modulate Modes of Pharmacology. Instructor for Allosteric Modulators of GPCRs Short Course, CHI Sponsored Discovery on Target Conference, World Trade Center Boston, MA October 2-4, **2010**.

5) Novel Inhibitors of β-Site APP Cleaving Enzyme. Vanderbilt Institute for Chemical Biology (VICB seminar series), Nashville TN, February 13, **2008**.

4) Discovery of 2,6-isonicotinamide beta-secretase inhibitors bearing a primary amine as an aspartate ligand. 232nd ACS National Meeting, San Francisco, CA September 12, **2006**. Gamma and Beta Secretase Symposium (Abstract MEDI-291).

3) Rate Enhanced Pd-Catalyzed Reactions using a Polar Medium and Microwave-Assisted Organic Synthesis (MAOS). Microwaves for Organic Synthesis: New Techniques to Accelerate Chemical Reactions. Organized by Strategic Research Institute, Boston, MA November 15-16, **2004**.

2) Imidazole Acetic Acids as Potent Inhibitors of Thrombin Activatable Fibrinolysis Inhibitor (TAFI): Potential Anti-thrombotics via a New Mechanism. MRL Chemistry Council Merck Medicinal Chemistry Conference, La Sapinière Montreal, Canada June 15-19, **2002**.

1) Solid Phase Synthesis and Relative Binding Affinity Assessment of a Tetrasubstituted Pyrazole Library, Novel Ligands for the Estrogen Receptor. Society for Biomolecular Screening 6th Annual Conference: "Screening in the New Millennium" Vancouver, B.C. September 6-9, **2000**.

OTHER TALKS/SYMPOSIA

11) Discovery of novel subtype-selective M1 positive allosteric modulators. Alzheimer's Association International Conference 2013, Boston, MA, July 18, **2013**.

10) Identification of allosteric agonists of mGlu5: a mechanism for adverse effect liability and implications for potentiator scaffold selection and design. 243rd ACS National Meeting, San Diego, CA March 25, **2012** (Abstract MEDI-25).

9) Stauffer, S. R. et al. Identification and Optimization of $mGlu_5$ PAMs which activate receptor at allosteric sites outside the MPEP-site. 7th International Meeting on Metabotropic Glutamate Receptors. Taormina, Italy October 2-7, **2011** (invited poster).

8) Stauffer, S. R. et al. Identification of Potent and Systemically Active mGlu5 Potentiators with Distinct Structural and Pharmacological Profiles. Advancing Drug Discovery for Schizophrenia. New York Academy of Sciences, New York City March 9-12, **2011** (invited poster).

7) Stauffer, S. R. et al. Identification of Potent and Systemically Active N-aryl Piperazine mGluR5 Potentiators. Society for Neuroscience, San Diego, CA November 13-17, **2010** (invited poster).

6) Stauffer, S. R., et al. Novel Inhibitors of β-Site APP Cleaving Enzyme (BACE-1). 22nd Annual W. S. Johnson Symposium Stanford University, Palo Alto, CA October 12-13, **2007** (invited poster).

5) Stauffer, S. R., et al. Progression Towards Potent Multipartite Non-Peptidic Inhibitors for β-Secretase. Merck Basic Research Symposium, Proof of Concept: Targets to Tools. Scottsdale, AZ October 2-5, **2005** (invited poster).

4) Stauffer, S. R.; et al. Synthesis and evaluation of imidazole acetic acid inhibitors of thrombin-activatable fibrinolysis inhibitor. 225th ACS National Meeting, New Orleans, LA March 25, **2003**.

3) Stauffer, S. R.; Beare, N. A.; Hartwig, J. F. Fluorescence resonance energy transfer as a tool for uncovering reaction conditions: Arylation of ethyl cyanoacetate. 222nd ACS National Meeting, Chicago, IL August 26-30, **2001**.

2) Stauffer, S. R.; Katzenellenbogen, J. A. Development of Novel Ligands for the Estrogen Receptor with Unique Endocrine Profiles. 11th Annual Allerton Research Conference, University of Illinois, Urbana-Champaign November 8th, **1998**.

1) Stauffer, S. R.; Katzenellenbogen, J. A. Conformationally Biased *s-cis* Anilidoamides as Novel Ligands for the Estrogen Receptor. 216th National Meeting of the American Chemical Society, Boston, MA August 25, **1998**.