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 DEPARTMENT OF MEDICINAL CHEMISTRY AND MOLECULAR PHARMACOLOGY  
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## Education

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2007 <b>Ph.D.</b>	<b>Vrije Universiteit, Amsterdam, The Netherlands,</b> <i>Department of Pharmacochemistry</i> Molecular pharmacology of human histamine H4 receptor	Thesis Advisor: Rob Leurs PhD
2002 <b>B.Sc/M.Sc</b>	<b>Leiden Universiteit, Leiden, The Netherlands</b> <i>Bio-pharmaceutical sciences</i> Isolation of acetylcholinesterase inhibitors from <i>Nerine Bowdenii</i>	Advisor: Robert Verpoorte PhD

## Professional positions

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09/2014-present	<b>Adjunct Assistant Professor</b> <i>Department of Pharmacology and Toxicology</i> Indiana University School of Medicine, Indianapolis, IN	
09/2013-present	<b>Assistant Professor</b> (tenure-track) <i>Department of Medicinal Chemistry and Molecular Pharmacology</i> Purdue University, West Lafayette, IN	
09/2011-09/2013	<b>Associate Research Scientist</b> <i>Ernest Gallo Clinic and Research Center, Department of Neurology</i> University of California, San Francisco, CA	
01/2011-08/2011	<b>Assistant Research Scientist</b> <i>Ernest Gallo Clinic and Research Center, Department of Neurology</i> University of California, San Francisco, CA	
01/2007-12/2010	<b>Postdoctoral Fellow</b> <i>Ernest Gallo Clinic and Research Center, Department of Neurology</i> University of California, San Francisco, CA	Mentor: Jennifer Whistler PhD
06/2006-12/2006	<b>Research Associate</b> <i>Biofocus DPI</i> A Gálapagos company, Leiden, The Netherlands	

## Awards and Honors

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2018	Purdue Seed for Success Award
2017	College of Pharmacy nominee for Purdue University Exceptional Early Career Teaching Award
2017	Travel award to attend the 2017 International Narcotics Research Conference
2017	PRF summer faculty Award
2017	MCMP research enhancement Award
2016	Purdue Research Foundation international travel Award
2015	NARSAD Young Investigator Award
2011	K99/R00 pathway to independence Award
2011	Travel award to attend the 2011 International Narcotics Research Conference
2009	Travel award to attend the 2009 International Narcotics Research Conference
2006	Second Prize in the Arthur C. Hancock Young Investigators Award at the 35 <sup>th</sup> European Histamine Research Society (EHRS) Symposium, Delphi, Greece
2006	Travel award to participate in 35 <sup>th</sup> EHRS Symposium, Delphi, Greece

2005 Poster prize at Leiden/Amsterdam Center for Drug Research Spring Symposium

2005 Poster prize at KNCV/NWO-CW Symposium

### Current Research Support

Purdue Institute for Drug Discovery (PI) 09/06/2018-08/31/2020

***β-arrestin 1 - a novel target for seizure disorders***

The goals of this proposal are to evaluate beta-arrestin 1 knockout mice as a novel model for epilepsy, to create a computational model of beta-arrestin1 biased conformation of the delta opioid receptor and to synthesize novel beta-arrestin1 biased delta opioid receptor agonists.

Total cost: \$150,000

National Institute on Alcohol Abuse and Alcoholism (R21AA026675) (MPI, Wendt Co-PI, 5%) 09/01/2018-08/31/2020

***The influence of alcohol on disseminated tumor cells dormancy***

The goal of this proposal is to investigate how alcohol use can influence systemic tumor dormancy following breast cancer metastasis

Total Costs: \$402,821 (A0 funded)

National Institute on Alcohol Abuse and Alcoholism (R21AA026949) (PI) 08/01/2018-07/31/2020

***Opioidergic alkaloids from *Mitragynia Speciosa* (kratom) as novel treatment for alcohol use disorder***

The goal of this proposal is to study the impact of kratom and kratom alkaloids on alcohol use and reward in mice.

Total Cost: \$421,475 (A0 funded)

National Institute on Drug Abuse (R03DA045897) (PI) 04/01/2018 – 03/31/2020

***Development of G-protein biased delta opioid receptor agonist for inflammatory pain***

The goal of this proposal is to synthesize novel G-protein biased delta opioid receptor agonist to treat inflammatory pain

Total cost: \$149,324 (A0 funded)

MCMP research enhancement grant (PI) 04/01/2018-03/31/2019

***Discovery of novel δ opioid chemotypes with G-protein bias for treatment of alcohol use disorder***

The primary objective of this proposal is to characterize and derivatize novel lead compounds in order to synthesize delta opioid receptor biased agonists for preclinical testing in animal models of alcohol use.

Total cost: \$10,000

National Institute on Alcohol Abuse and Alcoholism (R01AA025368) (PI) 09/10/2017 – 08/31/2022

***G-protein-, beta-arrestin- and ERK-signaling in alcohol use- and anxiety-disorders***

The primary objective of this grant is to study the role of ERK signaling induced by G-protein or beta-arrestin pathways in modulation of alcohol and anxiety behaviors.

Total cost: \$1,692,665

### Completed research support

Purdue Institute for Drug Discovery (PI) 02/01/2018 – 06/30/2018

***β-arrestin1 biased delta opioid receptor agonists for treatment of stroke and seizures***

The primary objective of this grant is to screen drug libraries to identify β-arrestin1 biased delta opioid agonists.

Total cost: \$15,000

Purdue Institute for Inflammation, Immunology and Infectious Diseases (PI) 09/01/2016 – 08/31/2017

***AC1 inhibitors for treatment of (opioid resistant inflammatory pain***

The primary objective of this grant is to test a small molecule selective inhibitor of adenylyl cyclase I for treatment of (opioid resistant) arthritic pain.

Total cost: \$9,800 (no cost extension till 06/2018)

NARSAD young investigator grant #23603 (PI) 07/15/2016 – 07/14/2018

***Development of novel designer G-protein coupled receptors to study the role of β-arrestin2 biased signal transduction in anxiety disorders.***

The primary objective is to develop  $\beta$ -arrestin 2 biased designer receptors (DREADDs) and locally express them in brain areas involved in anxiety-like behavior.

Total Cost: \$70,000

MCMP research enhancement grant (Co-I, Watts PI) 04/01/2017 – 03/31/2018

***Development of highly selective inhibitors of AC1 for the evaluation in a mouse model of chronic pain***

The primary objective of this proposal is to characterize novel AC1 selective inhibitors for in vitro and in vivo functionality.

Total cost: \$48,000 (\$12,000 to RvR, no cost extension till 06/2018)

Purdue Research Foundation Summer Faculty Grant (PI) 07/01/2017 – 09/30/2017

***Investigation of the role of beta-arrestin isoforms in drug-induced seizures.***

The objective of this grant is to compare drug-induced seizures between wild-type, beta-arrestin1 and beta-arrestin2 knockout mice.

Total cost: \$8,000

Ralph W. and Grace M. Showalter Research Trust (PI) 09/05/2014 – 08/31/2015

***New mechanism for modulating opioid receptor mediated analgesia***

The primary objective of this grant is to investigate the delta-mu opioid receptor heteromer interface and ways to manipulate the formation of these heteromers to study its function in pain disorders.

Total Cost: \$75,000

National Institute on Alcohol Abuse and Alcoholism (K99/R00AA020539) (PI) 08/01/2011 – 07/31/2016

***Development of a preclinical candidate for the treatment of alcoholism***

The primary objective of this grant is to validate a DOR-subtype as a new target for intervention in alcohol abuse and determine the properties of the most ideal DOR-subtype selective drug to develop it as a preclinical lead.

Total cost: \$930,000 (**A0 funded**)

Alcoholic Beverage Medical Research Foundation (ABMRF) (PI) 01/01/2011 – 12/31/2012

***Identification of delta opioid receptor subtypes as novel targets to treat alcoholism***

The major goal of this project is to determine whether targeting selective delta opioid receptor subtypes can simultaneously treat anxiety and prevent alcohol abuse.

Total cost: \$100,000

**Peer-reviewed publications**

1. <sup>1</sup>Gutridge AM, <sup>1</sup>Robins MT, <sup>1</sup>Cassell RJ, <sup>1</sup>Uprety R, Mores KL, Ko MJ, Pasternak G, Majumdar S, Van Rijn RM, Signal biased kratom opioids and synthetic kratom-like opioids as potential treatment for alcohol use disorder. [submitted to Biological Psychiatry](#)
2. <sup>1</sup>Mores KL, <sup>1</sup>Cummins B, Cassell RJ, Van Rijn RM, A review of the Therapeutic Potential of Recently Developed Biased Kappa Agonists. [Frontiers in Pharmacol, under review](#)
3. Robins MT, Blaine AT, Ha JE, Brewster A, Van Rijn RM, Repeated Use of the Psychoactive Substance Ethylphenidate Impacts Neurochemistry and Reward Learning in Adolescent Male and Female Mice. **Front Neurosci**, [minor revision](#)
4. <sup>1</sup>Ko MJ, <sup>1</sup>Mulia G, Van Rijn RM. Commonly used anesthesia/euthanasia methods for brain collection differentially impact MAPK activity in male and female C57BL/6 mice, **Front Cell Neurosci**, [minor revision](#)
5. <sup>1</sup>Ko MJ, <sup>1</sup>Ganzen L, Coskun E, Mukadam AA, Lueng YF, Van Rijn RM, Critical evaluation of TRPA1-mediated locomotive behavior in zebrafish as a screening tool for novel anti-nociceptive drug discovery. **Sci Rep** [accepted for publication](#)
6. <sup>1</sup>Cassell RJ, <sup>1</sup>Mores KL, Zervas BL, AHA Abdallah, Lill MA, Trader DJ, Van Rijn RM, Rubsicolins are naturally occurring G-protein-biased delta opioid receptor peptide, **Eur Neuropsychopharmacol**, [accepted for publication](#). BioRxiv 433805 [Preprint]. [https:// doi: https://doi.org/10.1101/433805](https://doi.org/10.1101/433805). 10/2/2018.
7. Mores KL, Cassell RJ, van Rijn RM, arrestin recruitment and biased signaling by G protein-coupled receptor heteromers. **Neuropharmacology** (Special issue on Brain Heteroreceptor complexes in Health and Disease), [accepted for publication, https://doi.org/10.1016/j.neuropharm.2018.11.010](https://doi.org/10.1016/j.neuropharm.2018.11.010)

8. Kaur J, Soto-Velasquez M, Ding Z, Van Rijn RM, Watts VJ, Flaherty DP, Optimization of a 1,3,4-oxadiazole series for inhibition of adenylyl cyclase 1 and 8 for the treatment of chronic pain, 2019, **Eur J Med Chem**, 162, 565-585
9. Robins MT, Chiang T, Mores, KL, Alongkronrusmee D, Van Rijn RM, Critical role for G<sub>i</sub>-protein activity in the dorsal striatum in the reduction of voluntary alcohol intake in C57Bl/6 mice, 2018, **Front. Psychiatry** (Special topics in opioid research), 9 (112): 1-14.
10. Robins MT, Chiang T, Berry JN, Ko MJ, Ha JE, Van Rijn RM, Behavioral characterization of  $\beta$ -arrestin 1 knockout mice in anxiety-like and alcohol behaviors, 2018, **Front. Behav. Neurosci.**, 12 (54): 1-11
11. Márquez-Gómez R, Robins MT, Gutiérrez-Rodelo C, Arias, JM, Olivares-Reyes JA, Van Rijn RM, Arias-Montaño JA, Functional histamine H<sub>3</sub> and adenosine A<sub>2A</sub> receptor heteromers in recombinant cells and rat striatum, 2018, **Pharmacol. Res.**, 129: 515-525, PMID: 29217157
12. Brust TF, Alongkronrusmee D, Soto-Velasquez M, Baldwin TA, Ye Z, Dai, M, Dessauer CW, Van Rijn RM, Watts VJ, Identification of a selective small molecule inhibitor of type 1 adenylyl cyclase activity with analgesic properties, 2017, **Science Signal**, 10 (467): eaah5381, PMID:28223412.  
<http://www.sciencemag.org/news/2017/02/new-class-painkillers-horizon>
13. Zeng L, Alongkronrusmee D, Van Rijn RM, An integrative perspective on diabetic, alcoholic and drug-induced neuropathic pain, 2017, **J Pain Res**, 10: 219-228 PMID:28176937, PMC5268333. **Noteworthy designation, highly accessed designation**, [https://www.dovepress.com/press\\_releases.php?content\\_id=3499](https://www.dovepress.com/press_releases.php?content_id=3499)
14. Alongkronrusmee D, Chiang T, Van Rijn RM, Involvement of delta opioid receptors in alcohol withdrawal-induced mechanical allodynia in male C57BL/6 mice. 2016, **Drug Alcohol Depend**, 167:190-198 PMID: 27567436
15. Yang S, Ben-Shalom R, Ahn M, Liptak AT, van Rijn RM, Whistler JL, Bender KJ, Beta-Arrestin-dependent dopaminergic regulation of calcium channel activity in the axon initial segment, 2016, **Cell Rep**, 16 (6), 1518-1526 PMID: 27452469, PMC5074334
16. Robins MT, Lu J, Van Rijn RM, Unique behavioral and neurochemical effects induced by repeated adolescent consumption of caffeine-mixed alcohol in C57BL/6 mice, 2016, **PLoS One**, 11(7):e0158189 PMID: 27380261, PMC4933367, **Top 1% of most downloaded articles of the year (out of 22,000)**
17. Robins MT, DeFriel JN, Van Rijn RM, adolescent intake of caffeinated energy drinks does not affect adult alcohol consumption in C57BL/6 and BALB/c mice, 2016, **Alcohol**, 54, 1-9, PMID:27565749
18. Chiang T, Sansuk K, Van Rijn RM,  $\beta$ -arrestin 2 dependence of delta opioid receptor agonists is correlated with alcohol intake., *Br. J Pharmacol*, 2016, 173, 332-343, PMID:26507558, PMC4940619
19. Van Rijn RM<sup>#</sup>, DeFriel JN, Whistler JL, Pharmacological traits of delta opioid receptors: pitfalls or opportunities, **Psychopharmacol**, 2013, 228(1), 1-18, <sup>#</sup>**corresponding author**, PMID:23649885, PMC3679311
20. Milan-Lobo L, Enquist JE, Van Rijn RM, Whistler JL, anti-analgesic effect of the mu/delta opioid receptor-heteromer revealed by ligand-biased antagonism, 2013, **PLoS One**, 8(3): e58362, PMID:23554887, PMC3598907
21. Van Rijn RM<sup>#</sup>, Harvey JH, Brissett DI, DeFriel JN, Whistler JL, Novel screening assay for the selective detection of G protein-coupled receptor heteromer signaling, 2013, **J Pharmacol Exp Ther**, 334(1):179-188, <sup>#</sup>**corresponding author**, PMID:23097213, PMC3533407, **Highlighted paper**
22. Van Rijn RM<sup>#</sup>, Brissett DI, Whistler JL, Distinctive modulation of ethanol place preference by delta opioid receptor selective agonists, **Drug Alcohol Depend**, 2012, 122(1-2):156-159 <sup>#</sup>**corresponding author**, PMID:22018601, PMC3279630
23. Brissett DI, Whistler JL, Van Rijn RM<sup>#</sup>, Contribution of mu and delta opioid receptors to the pharmacological profile of kappa opioid receptor subtypes, **Eur. J Pain**, 2012, 16 (3): 327-337. <sup>#</sup>**corresponding author**, PMID:22337177, PMC4086711
24. Van Rijn RM, Brissett DI, Whistler JL, Emergence of functional spinal delta-mu opioid receptors heteromers after chronic ethanol exposure, **Biol Psychiatry**, 2012, 71:232-238, PMID:21889123, PMC4086708
25. Van Rijn RM, Brissett DI, Whistler JL, Dual efficacy of delta opioid selective ligands for ethanol drinking and anxiety, **J Pharmacol Exp Ther**, 2010, 335 (1):133-139, PMID:20605909, PMC2957775
26. Van Rijn RM, Rhee IK, Verpoorte R, Isolation of acetylcholinesterase inhibitory alkaloids from *Nerine Bowdenii*, **Nat. Prod. Res**, 2010, 24 (3):222-225, PMID:20140801
27. Van Rijn RM, Whistler JL, Waldhoer M, Opioid receptor heteromer-specific trafficking and pharmacology, **Curr Opin Pharmacol**, 2010, 10:73-79, PMID:19846340, PMC2900797
28. Van Rijn RM, Whistler JL. The delta-1 opioid receptor is a heterodimer that opposes the actions of the delta-2 receptor on alcohol intake, **Biol. Psychiatry**, 2009, 66:777-784, PMID:19576572, PMC2757485

29. He L, Kim J, Ou C, McFadden W, van Rijn RM, Whistler JL, Methadone antinociception is dependent on peripheral opioid receptors, **J Pain**, 2009, 10 (4):369-379, PMID:19327642, PMC2952445
30. Van Rijn RM, Whistler JL, The only way is up: preventing opioid tolerance by promoting cell surface expression of MOR-DOR heterodimers? **Mol. Interv**, 2008, 8 (6): 277-280, PMID:19144899
31. Van Rijn RM, van Marle A, Chazot PL, Langemijer E, Qin Y, Shenton FC, Lim HD, Zuiderveld OP, Sansuk K, Dy M, Smit MJ, Tensen CP, Bakker RA, Leurs R, Cloning and characterization of dominant negative splice variants of the human histamine H<sub>4</sub> receptor, **Biochem J**, 2008, 414 (1):121-131, PMID:18452403
32. Van Rijn RM, Chazot PL, Shenton FC, Sansuk K, Bakker RA, Leurs R, Oligomerization of recombinant and endogenously expressed human histamine H<sub>4</sub> receptors, **Mol. Pharmacol.** 2006, 70(2):604-15, PMID: 16645125
33. Bakker RA, Lozada AF, van Marle A, Shenton FC, Drutel G, Karlstedt K, Hoffmann M, Lintunen M, Yamamoto Y, van Rijn RM, Chazot PL, Panula P, Leurs R, Discovery of naturally occurring splice variants of the rat histamine H<sub>3</sub> receptor that act as dominant negatives, **Mol. Pharmacol**, 2006, 69(4):1194-206, PMID:16415177
34. Lim, HD<sup>1</sup> and Van Rijn RM<sup>1</sup>, Ling P, Bakker RA, Thurmond RL, Leurs R., Evaluation of histamine H<sub>1</sub>-, H<sub>2</sub>-, and H<sub>3</sub>-receptor ligands at the human histamine H<sub>4</sub> receptor: identification of 4-methylhistamine as the first potent and selective H<sub>4</sub> receptor agonist. **J Pharmacol Exp Ther.** 2005, 4(3):1310-21. <sup>1</sup>**shared first author**, PMID:15947036 **>300 citations**
35. Terzioglu N, van Rijn RM, Bakker RA, De Esch IJ, Leurs R., Synthesis and structure-activity relationships of indole and benzimidazole piperazines as histamine H<sub>4</sub> receptor antagonists, **Bioorg Med Chem Lett.** 2004, 14(21):5251-6, PMID:15454206 **>100 citations**
36. Rhee IK, van Rijn RM, Verpoorte R., Qualitative determination of false-positive effects in the acetylcholinesterase assay using thin layer chromatography, **Phytochem Anal**, 2003, 14(3):127-31, PMID: 12793457 **>100 citations**

#### Peer-reviewed books and chapters published

1. Alongkronrusmee D, Watts VJ, Van Rijn RM, Bimolecular fluorescence complementation methodology to study G protein-coupled receptor dimerization in living cells. **Neuromethods: Receptor-Receptor Interactions in the CNS**, 140, Springer 2018, 205-221 PMID:
2. Alongkronrusmee D, Chiang T, Van Rijn RM, Role of delta opioid receptor pharmacology in alcohol behaviors, **Handbook of Experimental Pharmacology on Delta Opioid Receptor Pharmacology**, Springer, 2016, PMID 27316912, PMC5164984
3. Harvey JH, Van Rijn RM, Whistler JL, A FLIPR assay for evaluating agonists and antagonists of GPCR heterodimers, 2013, Humana Press, Springer, **Methods Mol Biol**, 995, Chemical Neurobiology: 43-54., PMID:23494371
4. Van Rijn RM, Molecular Pharmacology of the human histamine H<sub>4</sub> receptor, 2007, **graduate thesis**, Printpartners Ipskamp, ISBN: 978-90-9022405-3

#### Peer-reviewed continuing pharmacy education (CPE)

1. Anastasia AD, Selzer CC, Elantably H, van Rijn RM, Krause JE, Heroin Use Disorder: The evolving role of the pharmacist, Indiana Pharmacist Alliance – Continuing Pharmacy Education (CPE), 2016

#### **Complete list of published work:**

<http://www.ncbi.nlm.nih.gov/myncbi/browse/collection/44235481/?sort=date&direction=descending>

#### Patents

1. Van Rijn RM, Cushman MS, Lill M, Cassell RJ, Abdallah AHM, Elsayed MSA, **G-protein biased delta opioid receptor agonist for treatment of alcohol use disorders and co-morbid disorders**, No. 62/518,633, June 13, 2018 (PCT filed)
2. Watts VJ, van Rijn RM, Flaherty DP, Kaur J, **Novel adenylyl cyclase inhibitors for chronic pain and opioid dependence**, No. 62/527,059, June 30, 2018 (US patent filed)
3. Watts VJ, van Rijn RM, Flaherty DP, Kaur J, **Novel scaffold of adenylyl cyclase inhibitors for chronic pain and opioid dependence**, No. 62/533,686, July 18, 2018 (US patent filed)

#### Invited departmental talks

1. **University of Toledo**, Department of Medicinal and Biological Chemistry, “Discovery of naturally occurring opioids with unique pharmacology”, March, 2019
2. **University of California Davis**, Center for Neuroscience, “Identification of pathway-biased delta opioid receptor agonists for treatment of neurological disorders”, October 18th, 2018
3. **Oregon Health and Science University**, Department of Behavioral Neuroscience, “Cellular basis for opioid modulation of neuropsychiatric behavior”, September 17<sup>th</sup>, 2018
4. **University of Minnesota**, Department of Pharmacology, “Should the ‘2<sup>nd</sup> generation’ of opioids be completely G-protein biased for optimal efficacy?”, May 18<sup>th</sup>, 2018
5. **Indiana University School of Medicine**, Department of Pharmacology and Toxicology, “Self-administration of kratom to treat alcohol addiction – Why it may work”, March 6<sup>th</sup>, 2018
6. **National Health Research Institutes**, Center for Neuropsychiatric Research, Zhunan Township, Taiwan, “New ways to treat addiction – bias can be good”, December 14<sup>th</sup>, 2017
7. **Purdue University**, Brain and Spinal Cord Injury seminar series “Alcohol induced pain – role of aldehyde and TRPA1”, November 14<sup>th</sup>, 2017
8. **Leiden University**, Department of Medicinal Chemistry, “Study and development of signaling-biased delta opioid receptor agonists as potential treatment for neurological disorders”, September 1<sup>st</sup>, 2016
9. **Center for Research and Advanced Studies of the National Polytechnic Institute (CINVESTAV)**, Department of Physiology, Biophysics and Neuroscience, Mexico City, “Modulation of delta opioid receptor signal transduction pathways for the treatment of alcohol use disorders.”, June 23<sup>rd</sup>, 2016
10. **Indiana University School of Medicine**, Stark Neurosciences Research Institute, “Delta opioid receptors – better than mu for chronic pain conditions?”, January 14<sup>th</sup>, 2016
11. **Hoshi University**, Department of Pharmacology, Tokyo, “Delta receptor agonists – Different routes for treatment of neurological disorders”, July 27<sup>th</sup>, 2015
12. **Purdue University**, Department of Psychological Sciences, Behavioral Psychology Colloquia Series, “A preclinical evaluation of the risks of adolescent energy drink consumption” October 1<sup>st</sup>, 2014
13. **VU University Amsterdam**, AIMMS lecture, “G protein-coupled receptor mediated modulation of neurological behavior – It’s all Relative”, February 10<sup>th</sup>, 2014
14. **University of California Irvine**, Department of Anesthesiology and Perioperative Care, “Personalized pain medication by targeting opioid receptor subtypes”, March 7<sup>th</sup>, 2013
15. **Purdue University**, Department of Medicinal Chemistry and Molecular Pharmacology, “Drug development of biased delta opioid receptors ligands for treatment of neurological disorders” February 26<sup>th</sup>, 2013
16. **University of California Berkeley**, Department of Psychology, “My brain is not your brain – How different experiences impact opioid receptor pharmacology”, February 11<sup>th</sup>, 2013
17. **University of Colorado Boulder**, Institute of Behavioral Genetics, “Using transgenics to study opioid receptors in neurological disorders“, February 6<sup>th</sup>, 2013.
18. **Indiana University Purdue University Indianapolis**, Department of Biology, "Gaining translational opportunities from new insights into GPCR pharmacology", January 10<sup>th</sup>, 2013
19. **Boston University School of Medicine**, Department of Pharmacology and Experimental Therapeutics, “Biasing delta opioid receptor agonists to the treatment of alcohol and anxiety disorders”, April 12<sup>th</sup>, 2012
20. **University of South Carolina**, School of Medicine, Department of Pharmacology, Physiology and Neuroscience, “Biasing delta opioid receptor agonists to the treatment of alcohol and anxiety disorders”, February 27<sup>th</sup> 2012
21. **Temple University**, School of Pharmacy, Department of Pharmaceutical Sciences, “Delta opioid receptor subtypes as novel treatment for alcohol use disorder”, December 2<sup>nd</sup> 2011
22. **VU university Amsterdam**, Department of Chemistry and Pharmaceutical Sciences, “Delta opioid receptor subtypes as novel treatment for alcohol use disorder”, January 17, 2011

### Abstracts presented

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1. “The yellow brick road map to developing new alcohol use disorder treatments” **Greater Indiana Society for Neuroscience**, March 23rd, 2018 West Lafayette, USA, **Regional keynote speaker**
2. “The potential of delta opioid receptors as novel target for alcohol use disorders”, **International Narcotics Research Conference**, July9-14, 2017, Chicago, USA
3. “Strong beta-arrestin signaling may cause unwanted effects for drug treatments of alcohol use disorders”, **Alcoholism and Stress: A Framework for Future Treatment Strategies**, May 9-12, 2017, Volterra, Italy

4. "Intricate involvement of delta opioid receptors in alcohol withdrawal induced hyperalgesia", **World Congress on Alcohol and Alcoholism**, 2016, Berlin, Germany, part of symposium "*From Pleasure to Pain and Back Again: Alcohol and Nociception.*"
5. "Intricate involvement of delta opioid receptors in alcohol withdrawal induced hyperalgesia", **Research Society on Alcoholism meeting**, 2016, New Orleans, USA, part of symposium "*alcohol dependence and nociception: new insights into a painful subject.*"
6. "Emergence of Functional Spinal Delta Opioid Receptors after Chronic Ethanol Exposure" **Alcoholism and Stress: A Framework for Future Treatment Strategies**, 2011, Volterra, Italy
7. "Making a case for delta opioid receptor subtype selective drugs for the treatment of alcoholism", **Research Society on Alcoholism meeting**, 2010, San Antonio, USA
8. "Delta opioid receptors display opposing roles in ethanol intake", **Society for Neuroscience**, 2008, Washington DC, USA
9. "Characterization of morphine tolerance in transgenic R-MOR mice", **International Narcotics Research Conference**, 2007, Berlin, Germany
10. "Homo- and hetero-dimerization of the histamine H<sub>4</sub> receptor", **European Histamine Research Society**, 2006, Delphi, Greece
11. "Oligomerization of the human histamine H<sub>4</sub> receptor", **GPCR Day**, 2005, Weesp, The Netherlands

#### **Poster Abstracts presented (first author or # is presenter)**

1. Cassell RJ, Mores KL, Robins MT, Guttridge AM, Uprety R, Zerfas BL, Trader DJ, Majumdar S, Van Rijn RM, Plant-derived biased opioids show utility in the reduction of drinking behaviour in C57BL/6 mice, **British Pharmacology Society meeting**, December 18-20, 2018
2. Krause JE, Van Rijn RM, Hazbun TR, Connecting Pharmaceutical Sciences and Pharmacy Practice: Collaborations at Purdue University, **American Association of Colleges of Pharmacy meeting**, July 21-25, 2018
3. Cassell RJ, Uprety R, Guttridge AM, Robins MT, Mores KL, Majumdar S, Van Rijn RM, Preclinical characterization of Mitragyna Speciosa alkaloids for treatment of alcohol use disorder, **Research Society for Alcoholism**, June 16-20, 2018
4. Guttridge AM, Robins MT, Uprety R, Cassell RJ, Majumdar S, Van Rijn RM, Preclinical characterization of Mitragyna Speciosa alkaloids for treatment of alcohol use disorder, **International Narcotics Research Conference**, June 12-16, 2018
5. Ko MJ, Chiang T, Mukadam AA, Mulia GE, Weera MM, Chester JA, Van Rijn RM,  $\beta$ -arrestin-biased  $\delta$ -opioid receptor ( $\delta$ OR) signaling as a novel therapeutic target for anxiety disorders, **International Narcotics Research Conference**, June 12-16, 2018
6. Ko MJ, Chiang T, Weera MM, Chester JA, Van Rijn RM,  $\beta$ -arrestin-biased  $\delta$ -opioid receptor ( $\delta$ OR) signaling as a novel therapeutic target for anxiety disorders, **Brains & Behavior: Order & Disorder in the Nervous system – Cold Spring Harbor Laboratory Symposium**, May 30-June 4, 2018
7. Robins MT, Ko MJ<sup>#</sup>, Chiang T, Berry JN, Ha JE, Van Rijn RM, Behavioral characterization of  $\beta$ -arrestin-1 knockout mice in anxiety-like, seizure, and alcohol-drinking behavior, **Genes Brain and Behavior meeting**, May 17-21, 2018
8. Ko MJ, Ganzen LC, Lueng YF, Van Rijn RM, A pharmacological model of TRPA1-mediated nociception in zebrafish larvae for therapeutic discovery, **Experimental Biology** 2018
9. Mulia GE, Ko MJ, Mukadam AM, Chiang T, Van Rijn RM, In Vitro and Ex Vivo characterization of  $\beta$ -arrestin biased  $\delta$  opioid receptor signaling, **Greater Indiana Society for Neuroscience**, March 23<sup>rd</sup>, 2018
10. Robins MT, Ha JE, Brewster A, Van Rijn RM, Behavioral and neurochemical analysis of novel psychoactive substance ethylphenidate exposure in adolescent male and female mice, **Society for Neuroscience**, 2017
11. Ko MJ, Chiang T, Weera MM, Chester JA, Van Rijn RM,  $\beta$ -arrestin-biased signaling at  $\delta$ -opioid receptor ( $\delta$ OR) as a novel therapeutic target for anxiety disorders, **Society for Neuroscience** 2017
12. Alongkronrusmee D, Ghomi HT, Tang S, Lill MA, Van Rijn RM, Identification of a novel interaction site of the mu-delta opioid receptor heterodimers, **International Narcotics Research Conference**, 2017
13. Robins MT, Chiang T, Alongkronrusmee D, Ko MJ, Van Rijn RM, Critical role of Gi-protein signaling in the dorsal striatum in the reduction of voluntary alcohol intake in C57BL/6 mice, **International Narcotics Research Conference**, 2017
14. Cassell RJ, Robins MT, Mores KL, Uprety R, Majumdar S, Van Rijn RM, Characterization of opioid receptor subtypes and biased signaling as factors for modulation of alcohol use in mice, **International Narcotics Research Conference**, 2017

15. Robins MT, Alongkronrusmee D, Van Rijn RM, Critical role of Gi-protein signaling in the dorsal striatum in the reduction of voluntary alcohol intake in C57BL/6 mice, **Research Society on Alcoholism**, 2017
16. Soto-Velasquez M, Rana N, Alongkronrusmee D, Ejendal KFK, Kyei-Baffour K, van Rijn RM, Dai, M, Lill MA, Watts VJ, Structure Activity Relationship Studies for Selective Inhibitors of Type 1 and Type 8 Adenylyl Cyclase Isoforms, **Experimental Biology**, 2017
17. Cassel RJ, Mores KL, Van Rijn RM, Interspecies variations in signaling bias at the delta opioid receptor, **17<sup>th</sup> Annual Great Lakes GPCR Retreat**, 2016
18. Alongkronrusmee D, Ghomi HT, Tang S, Lill MA, van Rijn RM, investigate the mu-delta opioid receptor heteromer interface using a multipronged approach, **17<sup>th</sup> Annual Great Lakes GPCR Retreat**, 2016
19. Ko MJ, Van Rijn RM, Crosstalk between the delta-opioid receptors (DOR) and TRP channel subfamily A1 (TRPA1): A potential therapeutic target for chronic pain, **17<sup>th</sup> Annual Great Lakes GPCR Retreat**, 2016
20. Robins M, Brewster AL, van Rijn RM, Behavioral and neurochemical analysis of ethylphenidate exposure in adolescent male and female mice, **Federation of European Neuroscience Societies conference**, 2016
21. Marquez-Gomez R, Gutierrez-Rodelo C, Escamilla-Sanchez J, Olivares-Reyes RA, Robins MT, van Rijn RM, Arias-Montano JA, On the existence of a histamine H<sub>3</sub> adenosine A<sub>2A</sub> receptor heteromer, **European Histamine Research Society**, 2016
22. Alongkronrusmee D, Ghomi HT, Tang S, Lill MA, van Rijn RM, Multipronged approach to investigate the mu-delta opioid receptor heteromer interface, **Experimental Biology**, 2016
23. Robins MT, Chiang T, Alongkronrusmee D, Van Rijn RM, Activation of Gi signaling in the dorsal striatum is sufficient to reduce alcohol intake in mice, **Indianapolis Chapter of the Society for Neuroscience**, 2016
24. Alongkronrusmee D, Van Rijn RM, Involvement of Delta opioid receptors in alcohol withdrawal-induced mechanical pain, **Indianapolis Chapter of the Society for Neuroscience**, 2016
25. Chiang T, Sansuk K, Van Rijn RM, Efficacy of delta opioid receptor agonist induced  $\beta$ -Arrestin 2 recruitment positively correlates with alcohol intake in mice. **Society for Neuroscience**, 2015
26. Alongkronrusmee D, Van Rijn RM, Protective role of delta opioid receptors in alcohol withdrawal-induced hyperalgesia, **Society for Neuroscience**, 2015
27. Robins MT, Van Rijn RM, Chronic adolescent consumption of caffeine mixed alcohol significantly increases  $\Delta$ FosB expression in the nucleus accumbens, **Society for Neuroscience**, 2015
28. Robins MT, Van Rijn RM, Effect of adolescent caffeine and alcohol consumption on adult behavior and neuropharmacology in mice, **Research Society on Alcoholism**, 2015
29. Alongkronrusmee D, Van Rijn RM, Signal biased agonists of delta opioid receptors for alcohol withdrawal-induced hyperalgesia, **International Narcotics Research Conference**, 2015
30. Robins MT, Fritz B, Boehm II SL, Van Rijn RM, Effects of co-consumption of caffeine and alcohol on adolescent behavior and adult consumption. **Indianapolis chapter of the Society for Neuroscience**, 2014
31. Van Rijn RM, DeFriel JN, Lu J, Whistler JL, Relativity of biased agonism in models of depression, anxiety and ethanol consumption, **Society for Neuroscience**, 2013
32. Yang, S, van Rijn R.M, Whistler J.L., Bender K.J. Cellular mechanisms for dopaminergic modulation of axon initial segment calcium channels, **Society for Neuroscience**, 2013
33. Van Rijn RM, DeFriel JN, Whistler JL, Biased agonism of delta opioid receptors selective ligands in vivo, **Society for Neuroscience**, 2012
34. Van Rijn RM, Harvey J, Brissett DI, DeFriel JN, Whistler JL, Novel high throughput *in vitro* assay for screening heteromer selective ligands, **GPCR keystone**, 2012
35. Van Rijn RM, DeFriel JN, Whistler JL, Biased agonists of delta opioid receptor for the treatment of alcoholism and anxiety disorders, **Research Society on Alcoholism**, 2012
36. DeFriel JN, Whistler JL, Van Rijn RM, The effect of adolescent binge consumption of caffeinated energy drinks on adult alcohol consumption, **Research Society on Alcoholism**, 2012
37. Van Rijn RM, Brissett DI, Whistler JL, Pharmacological profile of delta and kappa opioid receptor subtypes in spinal cord, **International Narcotics Research Conference**, 2011
38. Van Rijn RM, He L, Brissett DI, Gupta A, Devi LA, Whistler JL, Emergence of functional spinal delta-mu opioid receptor heteromers after chronic ethanol exposure, **Research Society on Alcoholism**, 2011
39. Van Rijn RM, He L, Brissett DI, Whistler JL, Emergence of functional spinal delta opioid receptors after chronic ethanol exposure, **Conference on Alcoholism and stress – A framework for future treatment strategies**, 2011
40. Van Rijn RM, Brissett DI, Whistler JL, Making a case for delta opioid receptor subtype selective drugs for the treatment of alcoholism, **Research Society on Alcoholism**, 2010
41. Van Rijn RM, Whistler JL, The delta-1 opioid receptor is a heterodimer that opposes the actions of the delta-2 receptor on alcohol consumption, **International Narcotics Research Conference**, 2009



42. Van Rijn RM, Bartlett SE, Whistler JL, Delta opioid receptor subtypes display opposing effects on alcohol intake, **Society for Neuroscience**, 2008
43. Chazot PL, Shenton FC, Van Rijn RM, Bakker RA, Leurs R, Generation of the first anti-hH<sub>4</sub> receptor antibody: identification of the hH<sub>4</sub>R in human lymphocytes and brain, **European Histamine Research Society**, 2006
44. Chazot PL, Shenton FC, Van Rijn RM, Bakker RA, Leurs R, Biochemical and pharmacological evidence for homo- and hetero-oligomeric human H<sub>3</sub> receptor isoforms: Further evidence of dominant negative role for splice isoforms, **European Histamine Research Society**, 2006
45. Van Rijn RM, Chazot PL, Shenton FC, Van Marle A, Bakker RA, Leurs R, Oligomerization of the human histamine H<sub>4</sub> receptor, **European Histamine Research Society**, 2006
46. Van Rijn RM, Bakker RA, Leurs R, homo-oligomerization of the human histamine H<sub>4</sub> receptor, **European Histamine Research Society**, 2004
47. Van Rijn RM, Zuiderveld O, Kitbunnadaj R, Bakker RA, Leurs R, [125I]iodophenpropit as an iodinated histamine H<sub>4</sub>-receptor radioligand, **European Histamine Research Society**, 2003

## Professional service

### Grant review

1. *Ad hoc* member, Indiana Spinal Cord and Brain Injury Research Fund review panel, March 13<sup>th</sup>, 2015
2. Early career reviewer, Molecular Neuropharmacology and Signaling (MNPS) study section, June 23-24 2015
3. *Ad hoc* member, AACP new investigator award review, October 23<sup>rd</sup> 2015
4. *Ad hoc* member, Indiana Spinal Cord and Brain Injury Research Fund review panel, January 22<sup>nd</sup>, 2016
5. *Ad Hoc member*, Purdue Institute for Inflammation, Immunology and Infectious Diseases (PI4D) Research Incentive Program, May 9<sup>th</sup>, 2016
6. External reviewer, French National Research Agency Biomedical innovation program, May 9<sup>th</sup>, 2016
7. External reviewer, Czech Science Foundation, September 15<sup>th</sup>, 2016
8. *Ad hoc* member, Lilly-Stark research pre and post-doctoral fellowships review, November 22<sup>nd</sup>, 2016
9. *Ad hoc* member, Indiana CTSI core pilot funding program, June 20<sup>th</sup>, 2017
10. *Ad hoc* member, Molecular Neuropharmacology and Signaling (MNPS) study section, June 14-15, 2018
11. *Ad hoc* member, Molecular, Cellular, and Developmental Neuroscience, integrated review group for the Center for Scientific Review Anonymization Study, August 2018

### Ad hoc manuscript peer review

- Alcohol
- Alcoholism: Clinical and Experimental Research
- BBA Biomembranes
- BMC Clinical Pharmacology
- Biological Psychiatry CNI
- Cellular and Molecular Neurobiology
- Current Pharmaceutical Design
- Drug and Alcohol Dependence
- International Journal of Molecular Sciences
- J Basic and Clinical Physiology and Pharmacology
- Journal of Biological Chemistry
- Journal of Neuroscience
- Journal of Physiology and Pharmacology
- Neuropharmacology
- Neuroscience
- Neuroscience & Biobehavioral Reviews
- Pharmacology, Biochemistry and Behavior
- Pharmacological Reports
- Progress in Neuro-Psychopharmacology & Biological Psychiatry
- Psychopharmacology
- Social Neuroscience

### Professional memberships

- 2018 – Present *International Behavioral and Neural Genetics Society*
- 2016 – Present *Member of Purdue Institute for Inflammation, Immunology and Infectious Diseases*
- 2016 – Present *Member of Purdue Institute for Integrative Neuroscience Center*
- 2013 – Present *Member of Purdue Institute for Drug Discovery*
- 2013 – 2015 *American Association for Colleges of Pharmacy*
- 2011 – Present *American Society Pharmacology and Experimental Therapeutics*
- 2010 – Present *Society for Neuroscience*
- 2010 – Present *Research Society on Alcoholism*
- 2008 – Present *Dutch Neurofederation*
- 2007 – Present *International Narcotics Research Conference*

**Committees**

2018 – Present	<i>College of Pharmacy Professional Program Admissions Committee</i>
2017 – Present	<i>Purdue University Life Sciences (PULSe) executive committee</i>
2017 – Present	<i>Head of the Integrative Neuroscience PULSe training group</i>
2017 – 2018	<i>PULSe graduate student organization, faculty representative</i>
2017	<i>International Narcotics Research Conference, program committee, Chicago, IL</i>
2017	<i>MCMP neuroscience faculty search committee (successfully hired 2 candidates)</i>
2017	<i>Purdue Institute for Integrative Neuroscience Liaison committee</i>
2017	<i>MCMP website committee</i>
2015 – Present	<i>Purdue Animal Care and Use Committee</i>
2015 – Present	<i>MCMP Graduate Admission and Recruitment Committee</i>
2014 – Present	<i>MCMP Graduate Program Curriculum Committee</i>
2013	<i>Ernest Gallo Clinic and Research Center Annual retreat, organizing committee</i>

**Student dissertation committee**

2018 – Present	<i>Dissertation Committee Chair for Arryn Blaine (PULSe, PhD)</i>
2018 – Present	<i>Dissertation Committee Chair for Anna Gutridge (MCMP, PhD)</i>
2017 – 2018	<i>Dissertation Committee for Brandon Crockett (MCMP, MS)</i>
2017 – Present	<i>Dissertation Committee for Seth Herr (Pulse, PhD)</i>
2017 – Present	<i>Dissertation Committee for Ka Ng (Psych, PhD)</i>
2015 – Present	<i>Dissertation Committee Chair for Mee Jung Ko (PULSe, PhD)</i>
2015 – 2016	<i>Dissertation Committee for Shari Konst (MCMP, MS)</i>
2015 – Present	<i>Dissertation Committee Chair for Robert Cassell (MCMP, PhD)</i>
2015 – 2016	<i>Dissertation Committee for Ka Ng (Psych, MS)</i>
2014 – 2018	<i>Dissertation Committee for Ricardo Gomez (Cinvestav, PhD)</i>
2014 – Present	<i>Dissertation Committee for Qiuyu Rachel Wu (PULSe, PhD)</i>
2014 – Present	<i>Dissertation Committee for Matthew Arvin (MCMP, PhD)</i>
2013 – 2018	<i>Dissertation Committee for Trevor Doyle (MCMP, PhD)</i>
2013 – 2017	<i>Dissertation Committee Chair for Doungkamol Alongkronrusmee (MCMP, PhD)</i>
2013 – 2018	<i>Dissertation Committee Chair for Meridith Robins (MCMP, PhD)</i>
2013 – 2017	<i>Dissertation Committee for Marcus Weera (PULSe, PhD)</i>

**Student original proposal committee**

2019	<i>Original proposal committee for Jennifer Hensel (PULSe)</i>
2018	<i>Original proposal committee for Abraham Escobedo (Psych)</i>
2018	<i>Original proposal committee for Chad Hewitt (MCMP)</i>
2018	<i>Original proposal committee for Shiqi Tang (MCMP)</i>
2018	<i>Original proposal committee Chair for Seth Herr (PULSe)</i>
2017	<i>Original proposal committee for Priya Prakash (PULSe)</i>
2017	<i>Original proposal committee for Ka Ng (Psych)</i>
2017	<i>Original proposal committee Chair for Saranya Radhakrishnan (PULSe)</i>
2016	<i>Original proposal committee Chair for Qiuyu Rachel Wu (PULSe)</i>
2016	<i>Original proposal committee Chair for Matthew Arvin (MCMP)</i>
2016	<i>Original proposal committee Chair for Trevor Doyle (MCMP)</i>
2015	<i>Original proposal committee for Marcus Weera (PULSe)</i>
2014	<i>Original proposal committee for Monica Soto Velasquez (MCMP)</i>

**Additional service**

2018	<i>College of Pharmacy SURF program symposium Moderator</i>
2018	<i>Office of Interdisciplinary Graduate Program spring reception poster competition judge</i>
2018	<i>Greater Indiana SfN Meeting travel award committee</i>
2017	<i>College of Pharmacy SURF program symposium Moderator</i>
2017	<i>MCMP endowment award review committee</i>
2017	<i>Purdue Research Foundation student grant review committee</i>
2015	<i>Jenkins Knevel Award review committee</i>
2015	<i>Koo Paget Gibbs Travel award review committee</i>

2013 – Present

*Admissions interviews for PULSe graduate students*

2013 – Present

*Admissions interview for Pharmacy students***Teaching experience**

PU = Purdue University, IUSM = Indiana University School of Medicine, \* = co-course coordinator

**2018-2019**

<i>PHRM845 - Integrated Pharmacotherapy III, PU, *</i>	10 lecture hrs, 1 contact hr	Spring
<i>PHRM316 - Drug abuse/addiction education, PU, *</i>	3 lecture hrs, 17 contact hrs	Spring
<i>PSYCH696 – Seminar in Neuroscience, PU</i>	1 lecture hr, 1 contact hr (guest)	Spring
<i>MCMP690 - Journal club seminar</i>	10 contact hrs	Fall
<i>BIOL695 - Neurol and Neuropsych Dis Seminar, PU</i>	1 lecture hr, 2 contact hrs	Fall
<i>PHRM844 - Integrated Pharmacotherapy II, PU</i>	4 lecture hrs	Fall
<i>Med-X 730 - Renal and Respiratory, IUSM</i>	3 lecture hrs, 1 contact hr	Fall

**2017-2018**

<i>Med-X 660 - Neuroscience and behavior, IUSM</i>	4 lecture hrs, 2.5 contact hr	Spring
<i>MCMP544 - Drug Classes and Mechanisms, PU</i>	4 lecture hrs, 2 contact hrs	Spring
<i>PHRM825 - Integrated Pharmacotherapy I, PU</i>	2 lecture hrs	Spring
<i>PHRM845 - Integrated Pharmacotherapy III, PU, *</i>	10 lecture hrs, 1 contact hr	Spring
<i>PHRM316 - Drug abuse/addiction education, PU, *</i>	3 lecture hrs, 17 contact hrs	Spring
<i>PHRM844 - Integrated Pharmacotherapy II, PU</i>	4 lecture hrs	Fall
<i>Med-X 730 - Renal and Respiratory, IUSM</i>	3 lecture hrs, 1 contact hr	Fall

**2016-2017**

<i>Med-X 660 - Neuroscience and behavior, IUSM</i>	2.5 lecture hrs	Spring
<i>MCMP544 - Drug Classes and Mechanisms, PU</i>	4 lecture hrs, 2 contact hrs	Spring
<i>PHRM845 - Integrated Pharmacotherapy III, PU, *</i>	10 lecture hrs, 1 contact hr	Spring
<i>PHRM316 - Drug abuse/addiction education, PU, *</i>	3 lecture hrs, 17 contact hr	Spring
<i>Med-X 640 - Fundamentals of health and Disease, IUSM</i>	1.5 lecture hrs	Spring
<i>IUSM 611 - Basic Principles of Pharmacology &amp; Toxicology II</i>	4 lecture hrs	Spring
<i>IUSM610 - Basic Principles of Pharmacology &amp; Toxicology I</i>	3 lecture hrs,	Fall

**2015-2016**

<i>MCMP544 - Drug Classes and Mechanisms, PU</i>	4 lecture hrs, 2 contact hrs	Spring
<i>PHRM845 - Integrated Pharmacotherapy III, PU</i>	10 lecture hrs, 1 contact hr	Spring
<i>PHRM316 - Drug abuse/addiction education, PU</i>	3 lecture hrs, 17 contact hr	Spring
<i>HK231 - Substance Abuse and Health, PU</i>	1 lecture hr (guest)	Fall
<i>IUSM610 - Basic Principles of Pharmacology &amp; Toxicology I</i>	3 lecture hrs,	Fall

**2014-2015**

<i>MCMP544 - Drug Classes and Mechanisms, PU</i>	4 lecture hrs, 2 contact hrs	Spring
<i>PHRM845 - Integrated Pharmacotherapy III, PU</i>	10 lecture hrs, 1 contact hr	Spring
<i>PHRM316 - Drug abuse/addiction education, PU</i>	3 lecture hrs, 17 contact hr	Spring
<i>IUSM610 - Basic Principles of Pharmacology &amp; Toxicology I</i>	6 lecture hrs,	Fall

**2013-2014**

<i>MCMP544 - Drug Classes and Mechanisms, PU</i>	2 lecture hrs	Spring
<i>PHRM845 - Integrated Pharmacotherapy III, PU</i>	7 lecture hrs, 1 contact hr	Spring

**MCMP 696 (Seminar in Medicinal Chemistry and Molecular Pharmacology): Student seminar mentor**

2018	<i>Aswathy Chandran (PULSe)</i>
2016	<i>Matthew Arvin (MCMP)</i>
2015	<i>Elizaveta O'Neill (MCMP)</i>

**Mentoring.**

**Postdoctoral scientists****Kamonchanok Sansuk PhD**

10/1/2013 – 7/31/2014

Project: *Molecular and cellular characterization of delta opioid receptor pharmacology*

Current position: Licensed pharmacist and Yoga studio owner Ang Thong, Thailand

**Jennifer N. Berry PhD**

5/1/2016 – 8/1/2016

Project: *Characterization of  $\beta$ -arrestin1 knockout mice*

Current Position: Assistant professor, Department of Psychology, Butler University

**Research technician/Lab manager****Terrance Chiang**

9/1/2013 – 9/1/2016

Current position: Research Scientist, Department of Neurosurgery, Stanford University

1. College of Pharmacy 'Bravo award' (\$500)

**Arbaaz Mukadam**

9/17/2018 – present

**Graduate students:****Doungkamol Alongkronsrusmee MSc (MCMP program)**

1/1/2014 – 11/20/2017

Thesis: *Identification of novel therapeutic targets of chronic pain*

1. INRC travel grant 2015 (\$650)
2. PGSG travel grant 2016 (\$250)
3. ASPET molecular pharmacology division best poster presentation competition finalist, Experimental Biology, 2016 (\$200)
4. 2016 Jenkins/Knevel Excellence in Research award (\$750)
5. Chaney Graduate Student Travel award (\$1500)
6. 1<sup>st</sup> place Sigma Xi poster competition, February 14<sup>th</sup>, 2017 (\$200)
7. 3<sup>rd</sup> place in the Health and Disease poster session March 23<sup>rd</sup>, 2017 (\$100)
8. Bilsland Dissertation Fellowship, April 17<sup>th</sup>, 2017 (\$24,000)
9. Award of Excellence at Interdisciplinary Graduate Programs 2017 spring symposium
10. INRC travel grant 2017 (\$600)

**Meridith T. Robins (MCMP program)**

1/1/2014 – 03/05/2018

Thesis: *Behavioral pharmacology of alcohol and legal stimulants*

1. 1-year Charles C. Chappelle Purdue Graduate Fellowship 2013 (\$24,000)
2. Award of excellence at Interdisciplinary Graduate Programs 2015 spring symposium
3. 3<sup>rd</sup> place in Health and Disease: Science, Culture and policy graduate student poster competition (\$100)
4. Research Society on Alcoholism student Merit Award 2015 (\$230)
5. Award of excellence at Interdisciplinary Graduate Programs 2016 spring symposium
6. Travel award from the Purdue Institute for Integrative Neuroscience, August 15<sup>th</sup>, 2016 (\$500)
7. MCMP Endowment Graduate Award, August 17<sup>th</sup>, 2016 (\$12,000)
8. College of Pharmacy Logan Travel award, October 13<sup>th</sup>, 2016 (\$1,000)
9. Research Society on Alcoholism student Merit Award 2017 (\$250)
10. Koo, Paget, Gibbs travel award, May, 2017 (\$1500)
11. Bilsland Dissertation Fellowship, April 17<sup>th</sup>, 2017 (\$24,000)
12. RSA Enoch Gordis Graduate Research Recognition award, June 28<sup>th</sup>, 2017 (\$1000)
13. INRC travel grant 2017 (\$600)
14. Kienly Award for Excellence in Teaching 2017 (\$750)
15. Teaching Academy Graduate Teaching Award (\$500)

Subsequent position: Postdoctoral Scientist in the Ryabinin lab at Oregon Health and Sciences University

**Robert J. Cassell (MCMP program)**

1/1/2016 – present

Thesis: *Identification of novel signal-biased delta opioid receptor agonists for treatment of alcohol use disorders*

1. 2-year Frederick N Andrews Purdue Graduate fellowship 2015, (\$48,000)
2. Won 1<sup>st</sup> prize in Drug Discovery 3<sup>rd</sup> annual symposium poster competition, September 30<sup>th</sup>, 2016 (\$250).
3. INRC travel grant 2017 (\$600)
4. Research Society on Alcoholism student Merit Award 2018 (\$325)

5. Interviewed by WLFI about newly synthesized opioids for treating alcoholism and depression (9/20/18)
6. Selected for 2019 ASPET Washington Fellows program, includes travel award to 2019 EB meeting

**Mee Jung Ko Msc** (PULSe program) 6/1/2016 – present

Thesis: *Characterization of the role of biased signaling in neurological disorders*

1. Lynn Purdue Graduate fellowship 2015 (\$24,000)
2. PULSe Spring symposium, special recognition poster award, 2016 (\$50)
3. PIIN collaborative research award, February 15<sup>th</sup>, 2017 (\$2000)
4. Women in Science Program travel grant, April 14<sup>th</sup>, 2017 (\$500)
5. PGSG travel grant 2016 (\$500)
6. A.H. Ismail Interdisciplinary Program Doctoral Research Travel Award 2017 (\$1000)
7. PIIN travel grant 2018 (\$500)
8. Chaney Travel grant 2018 (\$1500)
9. ASPET travel grant 2018 (\$800)
10. IBANGS Young Investigator Travel Award 2018 (\$300)
11. Financial support from the Cold Spring Harbor Laboratory for summer conference 2018 (\$400)
12. INRC travel grant 2018 (\$950)

**Anna M. Gutridge** (MCMP program) 1/1/2018 – present

Thesis: *Characterization of ERK signaling in alcohol use and anxiety disorders.*

1. Ross Purdue Graduate fellowship 2017 (\$24,000)
2. INRC travel grant 2018 (\$950)
3. PIIN travel grant 2019 (\$500)

**Arryn T. Blaine** (PULSe program) 5/1/2018 – present

Thesis: *Benefits of beta-arrestin1 signaling in neuropsychiatric behavior*

1. Alliance for Graduate Education and the Professoriate (AGEP) program mentor

### Undergraduate students

**Angel Lin** (Health Science, Purdue University) 1/7/2019 – present

**Ben Cummins** (Chemistry, Purdue University) 9/1/2018 – present

1. Co-first author on 1 submitted manuscript

**Maria Shelley** (Pharmacy, Purdue University) 6/1/2018 – present

1. Dean's Undergraduate Research Fellowship 2018 (\$4000)

**Grace Mulia** (Pharmaceutical Sciences, Purdue University) 9/1/2017 – present

1. Dean's Undergraduate Research Fellowship 2018 (\$4000)
2. Co-first author on 1 submitted manuscript

**Arbaaz Mukadam** (Pharmaceutical Sciences, Purdue University) 1/1/2017 – 5/15/2018

1. BSPS research recognition award 2018
2. Co-author on 1 submitted manuscript

**Jiwon Ellen Ha** (Pre-Pharmacy program, Purdue University) 9/1/2016 – 12/31/2017

1. Dean's Undergraduate Research Fellowship 2017 (\$4000)
2. Co-author on 1 paper and on 1 submitted manuscript

Subsequent position: Brain science imaging internship at Sung Kyun Kwan University, Seoul

**Dahlia Alkharrat** (Pre-Pharmacy program, Purdue University) 2/1/2016 – 5/30/2016

Subsequent position: Undergraduate student - Purdue University

**Kendall Mores** (Pharmaceutical Science and Pharmacy, Purdue University) 8/31/2015 – present

1. Dean's Undergraduate Research Fellowship 2016 (\$4000)

2. Dean's Undergraduate Research Fellowship 2017 (\$4000)
3. OUR (Office of Undergraduate Research) scholar award 2018 (\$500)
4. Abstract selected for oral presentation at the OUR conference
5. 3<sup>rd</sup> prize best oral presentation at the OUR conference 2018 (\$250)
6. First-author on 2 paper, co-author on 1 paper
7. First-author on 1 manuscripts under review

**Katherine Simons** (Pharmaceutical Sciences and Biological Engineering, Purdue University) 6/1/2015 – 12/31/2015  
Subsequent position: Chemist at Mylan Pharmaceuticals

**Jiehee Suh** (Pre-Pharmacy program) 1/1/2015 – 12/31/2015  
Subsequent position: unknown

**Shiqi Tang** (Pharmaceutical Sciences, Purdue University) 7/1/2014 – 5/1/2016  
Subsequent position: PhD Student - Purdue University

1. Dean's Undergraduate Research Fellowship 2015 (\$4000)
2. Dr. Frank Brown Jr travel award (\$1000)
3. BSPS Research recognition award, 2016

**Daniela Brissett** (Molecular Cell Biology, UC Berkeley) 6/1/2009 – 05/31/2011  
Subsequent position: Medical student UCSF

1. Berkeley Biology Fellowship (\$1500)
2. Berkeley honors symposium poster prize (\$500)
3. Co-author on 4 papers, first author on 1 paper

**Julia DeFriel** (Molecular Cell Biology, UC Berkeley) 5/1/2011 – 05/31/2012  
Subsequent position: MS degree in Human Centered Design and Engineering at the University of Washington

1. Research Society on Alcoholism student Merit Award 2012
2. Co-author on 2 papers

**Julie Lu** (Molecular Cell Biology, UC Berkeley) 6/1/2012 – 05/31/2013  
Subsequent position: Research Scientist at Roche

1. Co-author on 1 paper

### Visiting scientists

**Ricardo Marquez-Gomez** (Graduate student, CINVESTAV, Mexico City) 9/1/2015 – 2/28/2016  
Project: *Heteromerization of histamine H3 and Adenosine A2a receptors*

1. Work published in Pharmacological Research
2. Received a Newton International Fellowship in 2018 to work as a postdoctoral scientists at Oxford University (Provided feedback on proposal, and served as letter writer)

**Eric Eisenmann** (PharmD student, Ohio Northern University) 5/1/2016 – 7/31/2016  
Project: *Molecular pharmacology of TRPA1 channels*

**Lily Zeng MD** (Medical Resident, Vanderbilt University School of Medicine) 7/1/2016 – 7/31/2016  
Project: *Literature review of neuropathic pain etiology*

1. Work published in J Pain Research

**Haoyue Cui** (Undergraduate student, Shenyang Pharmaceutical University) 1/14/2019 – 5/4/2019  
Project: *Creation of unique cellular assays to measure arrestin recruitment, utilizing BRET and CRISPr.*

### External mentorship

**Alexander French** (Tantama lab, Purdue University)

1. Ruth L. Kirschstein National Research Service Award (NRSA) Individual Postdoctoral Fellowship (served as co-mentor/collaborator, provided feedback on proposal and provided letter of support)

## **Academic outreach**

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- “The changing landscape of opioid use and abuse” – Purdue Alumni meeting, Continued education, Evansville IN, October 11<sup>th</sup>, 2018
- “Etiology, medical treatment and self-medication of chronic pain” – Pharmacy women for Purdue Spring symposium continued education, Purdue University, April 7<sup>th</sup>, 2017
- “Behavioral studies of opioids and psychostimulants” – Science for Purdue husbandry staff, May 20<sup>th</sup>, 2016
- “Prescription drug abuse” – Endodontic specialist Fishers, Indiana - continued education for dentists, April 28<sup>th</sup>, 2016
- “Recent developments in drug abuse” – Pharmacy women for Purdue Spring symposium continued education, Purdue University, April 15<sup>th</sup>, 2016
- “Prescription drug abuse – different path, same endpoint” – Purdue University, Lunch & Learn session, February 24<sup>th</sup>, 2016
- “Are teenagers opening a can of red bull or a can of worms? *Risks associated with mixing alcohol and energy drinks*” – College of Pharmacy, Purdue University, Science for administrative staff presentation, June 12<sup>th</sup>, 2015
- Five visits per year to Otterbein Middle school to teach students about drug addiction, 2015-present
- March 2014 – present: Maintain an updated website ([www.vanrijnlab.com](http://www.vanrijnlab.com)) highlighting the lab’s accomplishments and significance of research by providing a database of news articles related to substance abuse.
- April 2018 – present: Maintain an active presence on twitter (@van\_rijn\_lab) highlighting accomplishments, and discussing news related to science of drug use, pain and mood disorders and science in general.

## **Media appearances**

- Interviewed regarding our 2016 Plos One paper on caffeine-mixed alcohol.
  - BBC5 live, October 26<sup>th</sup>, 2016
  - KRLD newsradio 1080 (CBS radio), October 27<sup>th</sup>, 2016
  - Dallas, Bayern 2 - Bayerischer Rundfunk (German Public radio), October 31<sup>st</sup>, 2016
  - WPGG Atlantic City (With Dr. Robert Zlotnick PhD, CPS), November 8<sup>th</sup>, 2016
  - Talk AM640-toronto (Kelly Cutrara show), March 17<sup>th</sup>, 2017
  - W Radio Colombia (with Vicky Davila and Rafael Manzano), April 30<sup>th</sup>, 2018
- Interviewed on opioid drugs use for pain and opioid abuse.
  - WBAA (local NPR station, by Charlotte Tuggle), May 23<sup>rd</sup>, 2018
    - <http://wbaa.org/post/battle-two-fronts-indiana-docs-fight-chronic-pain-and-opioid-crisis#stream/0>
  - WLFI (local news station, by Micah Upshaw), September 20<sup>th</sup>, 2018
    - <http://www.wlfi.com/content/news/Purdue-creating-technology-to-treat-alcoholism-and-depression-493901071.html#.W6RGNNvzXHR.twitter>
    - Interview done by 4<sup>th</sup> year graduate student Robert Cassell.