

**RICHARD M. VAN RIJN, PH.D.**

PRINCIPAL SCIENTIST OF DISEASE BIOLOGY, ADJUNCT ASSOCIATE PROFESSOR

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2007 <b>Ph.D.</b>	<b>Vrije Universiteit, Amsterdam, The Netherlands,</b> <i>Department of Pharmacochimistry</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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09/07/2021-present	<b>Principal Scientist Disease Biology</b> Septerna Inc., South San Francisco, CA
09/2021 – present	<b>Adjunct Associate Professor</b> <i>Department of Medicinal Chemistry and Molecular Pharmacology</i> Purdue University, West Lafayette, IN
07/19 – 09/06/2021	<b>Consultant</b> Septerna Inc., South San Francisco, CA
09/2019 – 09/2021	<b>Adjunct Associate Professor</b> <i>Department of Pharmacology and Toxicology</i> Indiana University School of Medicine, Indianapolis, IN
10/01/20 – 1/28/21	<b>Consultant</b> Carmot Therapeutics, Emeryville, CA
01/2020 – 06/2020	<b>Visiting Professor</b> (sabbatical) <i>Department of Pharmaceutical Chemistry (Shoichet Lab)</i> University of California San Francisco
08/2019 – 09/2021	<b>Associate Professor</b> (tenure) <i>Department of Medicinal Chemistry and Molecular Pharmacology</i> Purdue University, West Lafayette, IN
09/2014 – 08/2019	<b>Adjunct Assistant Professor</b> <i>Department of Pharmacology and Toxicology</i> Indiana University School of Medicine, Indianapolis, IN
09/2013 - 07/2019	<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

Prepared 07/13/2022

01/2011 - 08/2011

**Assistant Research Scientist**

*Ernest Gallo Clinic and Research Center, Department of Neurology*  
University of California, San Francisco, CA

01/2007 - 12/2010

**Postdoctoral Fellow**

*Ernest Gallo Clinic and Research Center, Department of Neurology*  
University of California, San Francisco, CA

Mentor: Jennifer Whistler PhD

06/2006 - 12/2006

**Research Associate***Biofocus DPI*

A Gálapagos company, Leiden, The Netherlands

**Professional Development**

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2020	Pfizer 3D Drug Discovery and Development Workshop, Virtual, 11/10 <sup>th</sup>
2009	UCSF Scientific Leadership and Management, San Francisco, 6/29-30 <sup>th</sup>
2005	Leiden/Amsterdam Center of Drug Research Signal Transduction Course, Leiden, 1/10-11 <sup>th</sup>
2004	13 <sup>th</sup> School of Medicinal Chemistry, Noordwijkerhout, 10/26-29 <sup>th</sup>
2003	6 <sup>th</sup> ULLA consortium Summerschool, Paris, 7/8-17 <sup>th</sup>
2003	Leiden/Amsterdam Center of Drug Research Introductory Course on Drug Research, 9/30 <sup>th</sup>

**Awards and Honors**

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2021	International Narcotics Research Conference Young Investigator Award
2018	College of Pharmacy nominee for Purdue University Exceptional Early Career Teaching Award
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	Purdue Research Foundation 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**

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NIH/NIAAA (1R41AA030226)

04/01/2022 – 03/31/2023

***Novel Bifunctional Small Molecule for the Treatment of Alcohol Use Disorder***

The goal of this proposal is to assess the utility of a bifunctional delta opioid agonist/mu opioid antagonist for decreasing alcohol use in mice with limited adverse effects.

Total cost: \$ 300,847 (\$180,000 to RVR) (**A0 impact score 26**)

Role: Co-I (10% effort), Contact PI Dr. Ebrahim Versi (Dina Pharma)

NIH/NINDS (R01NS119917)

12/01/2020 – 11/30/2025

***Pharmacological validation of adenylyl cyclase 1 as drug target for chronic pain.***

The goal of this proposal is to develop novel AC1 inhibitors for treating chronic pain

Total cost: \$ 1,879,359 (submitted February 19<sup>th</sup>, 2020, **A0 funded**)

Role: Co-I (7%), Contact PI Dr. Flaherty

NIH/NIAAA (R01AA025368)

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

Role: PI

**Fundable applications not pursued due to leaving Purdue**

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NIH/NIAAA (R01AA030123)

04/01/2022 – 03/31/2027

***G-biased delta opioid receptor signaling and alcohol use disorder***

The goal of this proposal is to develop high G-protein-biased delta opioid agonists through computational and synthetic approaches that have clinically relevant PK properties for treatment of AUD.

Total cost: \$ 2,526,513 (**A0 impact score 49, percentile 21%, DDNS study section, considered for funding**)

Role: PI

National Institute on Drug Abuse (R01DA53266)

04/01/2021 – 03/31/2026

***Pathway-Biased Opioid Peptidomimetics for Pain***

The goal of this proposal is to synthesize brain penetrable, metabolically stable Leu-enkephalin analogs to treat chronic pain.

Total cost: \$3,220,045 (**A1 impact score 51, percentile 20%, DDNS study section**)

Role: MPI (10%), Contact PI Dr. Altman

NIH/NIAAA (R21AA029774)

09/01/2021 – 08/31/2023

***Creation of a unique opioid library to screen for distinct pharmacological profiles***

The goal of this proposal is to create a novel and unique chemical library of opioid ligands and pharmacologically characterize them for their ability to interact with mu-delta heteromers and recruit beta-arrestin. We also propose to assess any heteromer-selective or G-protein-biased opioid in vivo for its ability to modulate alcohol consumption.

Total cost: \$ 421,475 (**A0 impact score 25, AA-4 study section, considered for funding**)

Role: PI

**Completed research support**

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NIH/NCATS Aspire Reduction to Practice Challenge Prize (Stage 2)

10/1/2021-4/1/2022

***Accelerating Molecular Innovation in Pain through a Human-Guided, AI-Driven, and Automated Open Drug Discovery Platform***

Total cost: \$ 150,000 (\$20,000 to Dr. van Rijn)

Role: Co-I (with Drs. Richardson, Robertson and Chopra)

NIH/NCATS Aspire Reduction to Practice Challenge Prize (Stage 1)

4/23/2021-9/29/2021

***Accelerating Molecular Innovation in Pain through a Human-Guided, AI-Driven, and Automated Open Drug Discovery Platform***

Total cost: \$ 120,000 (\$30,000 per co-I)

Role: Co-I (with Drs. Richardson, Robertson and Chopra)

Purdue Animal and Behavior Core incentive award

03/1/2021

***Impact of  $\beta$ -arrestin 2 and G protein signaling on the potentiation of ethanol-induced muscle incoordination by the kappa opioid receptor***

The goal of this proposal is to assess modulation of (alcohol-induced) ataxia by kappa opioid agonists in a rotarod model.

Total cost: \$1,100

Role: Co-PI (with postdoc Alexander French)

Prepared 07/13/2022

NIH (R25)

06/01/2021 – 05/31/2026

**Purdue Postbaccalaureate Research Education Program (PREP) for Translational Biomedical Sciences**

The goal of this proposal is to prepare recent college graduates for entry into competitive PhD, DVM-PhD, or MD-PhD programs.

Total Cost: \$1,400,000

Role: Faculty Research Mentor (as listed in funded proposal), Contact PIs Dr. HogenEsch and Mendrysa

NIH/NIAAA (R21AA026675)

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**) – no cost extension

Role: MPI (5%), Contact-PI Dr. Wendt

NIH/NIAAA (R21AA026949)

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**)

Role: PI

NIH/NIDA (R03DA045897)

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**)

Role: PI

MCMP research enhancement grant

04/01/2018 – 03/31/2019

**Discovery of novel  $\delta$  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

Role: PI

Purdue Institute for Drug Discovery

09/06/2018 – 08/31/2019

 **$\beta$ -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: \$75,000

Role: PI

Purdue Institute for Drug Discovery

02/01/2018 – 06/30/2018

 **$\beta$ -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  $\beta$ -arrestin1 biased delta opioid agonists.

Total cost: \$15,000

Role: PI

Purdue Institute for Inflammation, Immunology and Infectious Diseases

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 until 06/2018)

Prepared 07/13/2022

Role: PI

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  $\beta$ -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

Role: PI

MCMP research enhancement grant 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)

Role: Co-I, Contact PI Dr. Watts

Purdue Research Foundation Summer Faculty Grant 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

Role: PI

Ralph W. and Grace M. Showalter Research Trust 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

Role: PI

NIH/NIAAA (K99/R00AA020539) 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 ideal DOR-subtype selective drug to develop it as a preclinical lead.

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

Role: PI

Alcoholic Beverage Medical Research Foundation (ABMRF) 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

Role: PI

#### **Peer-reviewed publications** (<sup>1</sup> indicates shared co-author, <sup>#</sup> indicated shared corresponding author)

1. Blaine AT, van Rijn RM, neuropharmacology and circuitry of delta opioid agonist-induced seizures, **Neuropharmacology** special issue "Opioid-induced changes in addiction and pain circuits", [under review](#)
2. Blaine AT, Miao, Y, Yuan J, Palant S, Liu R, Zhang ZY, Van Rijn RM, Exploration of beta-arrestin isoform signaling pathways in delta opioid receptor agonist-induced convulsions, **Front Pharmacol.** [In press](#)

3. Meqbil YJ, van Rijn RM, challenges and opportunities for in silico drug discovery at delta opioid receptor. **Pharmaceuticals**, 2022, 15(7), 873 special issue "In Silico Approaches in Drug Design, PMID: 35890173, PMCID: PMC9324648, <https://doi.org/10.3390/ph15070873>
4. Van Rijn RM, Spetea M, Opioids and Their Receptors: Present and Emerging Concepts in Opioid Drug Discovery II (*editorial*), **Molecules**, 2022, 27 (10),3140, PMID: 35630616, PMCID: PMC9143373, <https://doi.org/10.3390/molecules27103140>
5. French AR, Gutridge AM, Royer QH, Yuan J, van Rijn RM, Sex- and  $\beta$ -arrestin-dependent effects of kappa opioid receptor mediated ethanol consumption in C57BL/6 mice, **Pharmacology Biochemistry and Behavior**, 2022, 216: 173377, PMID35364122: PMCID: PMC9064988, DOI: 10.1016/j.pbb.2022.173377,
6. French AR, Van Rijn RM, An updated assessment of the translational promise of G-protein-biased kappa opioid receptor agonists to treat pain and other indications without debilitating adverse effects, **Pharmacol Res** (invited review for *IUPHAR themed issue - Biased G Protein Receptor Signalling*), 2022, 177, PMID: 35101565, PMCID: PMC8923989, DOI: 10.1016/j.phrs.2022.106091.
7. Meqbil YJ, Su H, Cassell RJ, Gutridge AM, Mores KL, Cummins BR, Chen L, Van Rijn RM, Discovery of a unique delta opioid receptor agonist chemotype with potential negative allosteric modulation capabilities, **Molecules**, 2021, 26 (23), 7236, PMID: 34885825, PMCID: PMC8659279, doi: 10.3390/molecules26237236
8. Sharma KK<sup>1</sup>, Cassell RJ<sup>1</sup>, Meqbil YJ<sup>1</sup>, Su H, Blaine AT, Cummins BR, Mores KL, Johnson D, Van Rijn RM<sup>#</sup>, Altman RA<sup>#</sup>, Modulating  $\beta$ -Arrestin-2 Recruitment at the  $\delta$  and  $\mu$  Opioid Receptors, **RCS Med Chem**, 2021, 12, 1958-67, PMID: 34825191, PMCID: PMC8597420, DOI: 10.1039/d1md00025j
9. Gutridge, AM, Chakraborty S, Varga BR, Rhoda ES, French AR, Blaine AT, Royer QH, Cui H, Yuan J, Cassell RJ, Szabó M, Majumdar S, van Rijn RM, Evaluation of kratom opioid derivatives as potential treatment option for alcohol use disorder, **Frontiers in Pharmacology** (*Special issue The Pharmacology of Kratom and Its Alkaloids*), 2021, 12: 764885, PMID: 34803709, PMCID: [PMC8596301](https://doi.org/10.3389/fphar.2021.764885), <https://doi.org/10.3389/fphar.2021.764885>
10. Chakraborty S, Diberto J, Faouzi A, Bernhard SM, Gutridge AM, Ramsey S, Zhou Y, Provasi D, Nuthikattu N, Jilakia R, Nelson M, Asher W, Eans SO, Wilson LL, Chintala S, Filizola M, van Rijn RM, Margolis EB, Roth B, Javitch J, McLaughlin JP, Che T, Majumdar S, A novel mitragynine analog displays low efficacy mu opioid agonism at Gi/o subtypes and antinociception with attenuated adverse effects, **J Med Chem**, 2021, 64(18):13873-13892, PMID: 34505767, PMCID: [PMC8530377](https://doi.org/10.1021/acs.jmedchem.1c01273), DOI: [10.1021/acs.jmedchem.1c01273](https://doi.org/10.1021/acs.jmedchem.1c01273)
11. Ko MJ, Chiang T, Mukadam AM, Mulia, GE, Gutridge AM, Lin A, Chester JA, Van Rijn RM,  $\beta$ -arrestin-dependent ERK signaling reduces anxiety-like and conditioned fear-related behaviors in mice, **Science Signaling**, 2021, 14 (694): eaba0245, PMID: 34344831, PMCID: PMC8497002, DOI: [10.1126/scisignal.aba0245](https://doi.org/10.1126/scisignal.aba0245), **Cover article**
12. Sharifi F, Meqbil YJ, Otte A, Gutridge AM, Blaine AT, Van Rijn RM, Park K, Engineering Quick- and Long-acting Naloxone Delivery Systems for Treating Opioid Overdose, **Pharm Res**, 2021, 38:1221–1234, PMID: 34114163, PMCID: [PMC8192039](https://doi.org/10.1007/s11095-021-03069-x), <https://doi.org/10.1007/s11095-021-03069-x>,
13. Ganzen L, Ko MJ, Zhang M, Xie R, Chen Y, Zhang L, James R, Mumm J, Van Rijn RM, Zhong W, Pang CP, Zhang M, Tsujikawa M, Leung YF, Drug Screening with Zebrafish Visual Behavior Identifies Carvedilol as a Potential Treatment for Retinitis Pigmentosa, **Scientific Reports**, 2021, 11, 11432, PMID: 34075074, [PMC8169685](https://doi.org/10.1038/s41598-021-89482-z), DOI: [10.1038/s41598-021-89482-z](https://doi.org/10.1038/s41598-021-89482-z)
14. Creed SM<sup>1</sup>, Gutridge AM<sup>1</sup>, Argade MD, Hennessy MR, Brent Friesen JJB, Pauli GF, van Rijn RM<sup>#</sup>, Riley AP<sup>#</sup>, Isolation and Pharmacological Characterization of six Opioidergic *Picralima nitida* Alkaloids, **J Natural products**, 2021, 84(1):71-80, PMID: 33326237, [PMC7932029](https://doi.org/10.1021/acs.jnatprod.0c01036), doi: 10.1021/acs.jnatprod.0c01036
15. Bertels Z, Witkowski W, Asif S, Siegersma K, Van Rijn RM, Pradhan AA, A non-convulsant delta-opioid receptor agonist, KNT-127, reduces cortical spreading depression and nitroglycerin-induced allodynia, **Headache**, 2021, 61(1): 170-178, PMID: 33326598, [PMC8082730](https://doi.org/10.1111/head.14019), doi: 10.1111/head.14019
16. Ding Z, Knipp GT, Van Rijn RM, Chester JA, Watts VJ, The CUL3/neddylaton inhibitor MLN4924 reduces inflammatory pain allodynia and ethanol-induced locomotor sensitization in mice, **Behavioural Brain Research**, 2021, 399, 113051, PMID: 33279641, [PMC7855618](https://doi.org/10.1016/j.bbr.2020.113051) doi: 10.1016/j.bbr.2020.113051
17. <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, G protein-biased kratom-alkaloids and synthetic carfentanil-amide opioids as potential treatments

- for alcohol use disorder. **Br J Pharmacol**, 2020, 177(7): 1497-1513, PMID: 31705528, PMC7060366 DOI:10.1111/bph.14913. **Editor's Choice**
18. <sup>1</sup>Cassell RJ, <sup>1</sup>Sharma KK, Su H, Cummins BR, Cui H, Mores KL, Blaine AT, Altman RA<sup>#</sup>, Van Rijn RM<sup>#</sup>, The Meta-Position of Phe<sup>4</sup> in Leu-Enkephalin Regulates Potency, Selectivity, Functional Activity, and Bias at the Delta and Mu Opioid Receptors, **Molecules** (*Special issue Opioids and Their Receptors: Present and Emerging Concepts in Opioid Drug Discovery*), 2019, 24 (4542): 1-15, PMID: 31842282, PMC6943441, <https://doi.org/10.3390/molecules24244542>
  19. Cai B, Kim D, Akhand S, Sun Y, Cassell RJ, Alpsyoy A, Dykhuizen EC, Van Rijn RM, Wendt MK, Krusemark CJ, Selection of DNA-encoded Libraries to Protein Targets Within and On Living Cells. **J Am Chem Soc**, 2019, 141: 17057-17061, PMID: 31613623, PMC7057806 <https://doi.org/10.1021/jacs.9b08085>. **Highlighted "DEls in cells", Trends Pharmacol Sci, 2020, <https://doi.org/10.1016/j.tips.2020.01.007>**
  20. 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*), 2019, 152: 15-21, PMID: 30419245, PMC6509026 <https://doi.org/10.1016/j.neuropharm.2018.11.010>
  21. <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. **Front Pharmacol**, 2019, 10 (407): 1-14, PMID: 31057409, PMC6478756, <https://doi.org/10.3389/fphar.2019.00407>
  22. <sup>1</sup>Ko MJ, <sup>1</sup>Mulia GE, 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**, 2019, 13 (96):1-10, PMID:30983972, PMC6447702, [doi.org/10.3389/fncel.2019.00096](https://doi.org/10.3389/fncel.2019.00096)
  23. <sup>1</sup>Cassell RJ, <sup>1</sup>Mores KL, Zervas BL, AHA Abdallah, Lill MA, Trader DJ, Van Rijn RM, Rubscolins are naturally occurring G-protein-biased delta opioid receptor peptide, **Eur Neuropsychopharmacol**, 2019, 29(3):450-456, PMID:30591345, PMC6421079, doi: 10.1016/j.euroneuro.2018.12.013.
  24. 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**, 2019, 13 (124): 1-14 PMID: 30837836, PMC6389692, DOI:10.3389/fnins.2019.00124
  25. <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**, 2019, 9 (2430): 1-11, PMID: 30787340, PMC6382835, DOI:10.1038/s41598-019-38852-9
  26. 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, **Eur J Med Chem**, 2019, 162, 565-585, PMID: 30472604, PMC6310635, DOI:10.1016/j.ejmech.2018.11.036
  27. 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, PMID:29686629, PMC5900748, DOI:10.3389/fpsy.2018.00112
  28. 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 PMID:29615880, PMC5869203, DOI:10.3389/fnbeh.2018.00054
  29. Márquez-Gómez R, Robins MT, Gutiérrez-Rodelo C, Arias, JM, Olivares-Reyes JA, Van Rijn RM, Arias-Montaña JA, Functional histamine H<sub>3</sub> and adenosine A<sub>2A</sub> receptor heteromers in recombinant cells and rat striatum, **Pharmacol Res**. 2018, 129: 515-525, PMID: 29217157, PMC6429923, doi: 10.1016/j.phrs.2017.11.036
  30. 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, **Science Signal**, 2017, 10 (467): eaah5381, PMID:28223412, PMC5734633, doi: 10.1126/scisignal.aah5381 <http://www.sciencemag.org/news/2017/02/new-class-painkillers-horizon>
  31. Zeng L, Alongkronrusmee D, Van Rijn RM, An integrative perspective on diabetic, alcoholic and drug-induced neuropathic pain, **J Pain Res**, 2017, 10: 219-228 PMID:28176937, PMC5268333, DOI:10.2147/JPR.S125987. **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), Altmetric score = 443**

32. Alongkronrusmee D, Chiang T, Van Rijn RM, Involvement of delta opioid receptors in alcohol withdrawal-induced mechanical allodynia in male C57BL/6 mice. **Drug Alcohol Depend**, 2016, 167:190-198 PMID: 27567436, PMC5325684, DOI:10.1016/j.drugalcdep.2016.08.017
33. 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, **Cell Rep**, 2016, 16 (6), 1518-1526 PMID: 27452469, PMC5074334, DOI:10.1016/j.celrep.2016.06.098
34. 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, **PLoS One**, 2016, 11(7):e0158189 PMID: 27380261, PMC4933367, DOI:10.1371/journal.pone.0158189 **Top 1% of most downloaded articles of the year (out of 22,000), Almetric score = 498**
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#### 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, [https://doi.org/10.1007/978-1-4939-8576-0\\_13](https://doi.org/10.1007/978-1-4939-8576-0_13)
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#### 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:

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#### Patents awarded

1. Watts VJ, van Rijn RM, Flaherty DP, Kaur J, **Adenylyl cyclase inhibitors for chronic pain and opioid dependence**, US patent 10,457,653, issued October 29<sup>th</sup>, 2019, application no. 16/564271
2. Watts VJ, van Rijn RM, Flaherty DP, Kaur J, **Scaffold of adenylyl cyclase inhibitors for chronic pain and opioid dependence**, US patent 10,662,176, issued May 26<sup>th</sup>, 2020, application no. 16/038236
3. Van Rijn RM, Cushman MS, Lill M, Cassell RJ, Abdallah AHM, El-Sayed MSA, **Delta opioid receptor agonists**, US patent 10,954,224 B2, issued March 23<sup>rd</sup>, 2021, application no. 62/518,633
4. Fields HL, Whistler JL, Mitchell JM, Margolis EB, Van Rijn RM, **Methods and compositions using selective delta opioid receptor-1 agonists, delta opioid receptor-2 antagonists, and/or mu opioid receptor antagonists for treatment of substance-related disorders**, WO2010036401A1, April 1<sup>st</sup>, 2010

#### (Provisional) patents filed

Prepared 07/13/2022

1. Majumdar S, Van Rijn RM, Chakraborty S, Varga B, Gutridge AM, Sames D, **Kratom opioid derivatives for the treatment of alcohol use disorder**, provisional application no. 63/251,978, filed October 4<sup>th</sup>, 2021
2. Van Rijn RM, French AM, **Assay for Real-time simultaneous recruitment of arrestin isoforms to G protein-coupled receptors**, provisional application no. 63/170,057, filed April 2<sup>nd</sup>, 2021
3. Flaherty DP, Watts VJ, van Rijn RM, Scott JA, **Pyrazolyl pyrimidinone compounds and uses thereof**. Provisional application no. 17/063,747, filed October 6<sup>th</sup>, 2019

### Invited departmental talks

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1. **St. Louis University**, Department of Pharmacology and Physiology, Spring 2022, *declined invitation for in person seminar*
2. **Olivet Nazarene University**, Department of Chemistry and Geoscience, "Identification of Natural and Synthetic Opioids to Treat Neurological Disorders". March 23<sup>rd</sup>, 2021
3. **University of Illinois Chicago**, Department of Medicinal Chemistry and Pharmacognosy, "Identification of natural and synthetic opioids to treat neurological disorders", October 23<sup>rd</sup>, 2019
4. **Purdue University**, Department of Biochemistry, "Novel developments in opioid receptor pharmacology: Being biased isn't necessarily bad", September 3<sup>rd</sup>, 2019
5. **University of Illinois Chicago**, Department of Psychiatry, "Better living through biased signaling", April 25<sup>th</sup>, 2019
6. **University of Toledo**, Department of Medicinal and Biological Chemistry, "Discovery of naturally occurring opioids with unique pharmacology", March 14<sup>th</sup>, 2019
7. **University of California Davis**, Center for Neuroscience, "Identification of pathway-biased delta opioid receptor agonists for treatment of neurological disorders", October 18<sup>th</sup>, 2018
8. **Oregon Health and Science University**, Department of Behavioral Neuroscience, "Cellular basis for opioid modulation of neuropsychiatric behavior", September 17<sup>th</sup>, 2018
9. **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
10. **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
11. **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
12. **Purdue University**, Brain and Spinal Cord Injury seminar series "Alcohol induced pain – role of aldehyde and TRPA1", November 14<sup>th</sup>, 2017
13. **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
14. **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
15. **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
16. **Hoshi University**, Department of Pharmacology, Tokyo, "Delta receptor agonists – Different routes for treatment of neurological disorders", July 27<sup>th</sup>, 2015
17. **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
18. **VU University Amsterdam**, AIMMS lecture, "G protein-coupled receptor mediated modulation of neurological behavior – It's all Relative", February 10<sup>th</sup>, 2014
19. **University of California Irvine**, Department of Anesthesiology and Perioperative Care, "Personalized pain medication by targeting opioid receptor subtypes", March 7<sup>th</sup>, 2013
20. **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
21. **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
22. **University of Colorado Boulder**, Institute of Behavioral Genetics, "Using transgenics to study opioid receptors in neurological disorders", February 6<sup>th</sup>, 2013.

Prepared 07/13/2022

23. **Indiana University Purdue University Indianapolis**, Department of Biology, "Gaining translational opportunities from new insights into GPCR pharmacology", January 10<sup>th</sup>, 2013
24. **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
25. **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
26. **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
27. **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. "Towards a Target Candidate Profile for a G-protein-biased delta opioid agonist for the treatment of alcohol use disorder", **International Narcotics Research Conference**, July 4-8, 2022, Sevilla, Spain (given remote) **YIA award symposium**
2. "Synthesis of differentially-biased delta opioid peptides to probe the receptor's 'biased' binding pocket.", **International Narcotics Research Conference**, July 7-11, 2019, New York, USA
3. "The yellow brick road map to developing new alcohol use disorder treatments" **Greater Indiana Society for Neuroscience**, March 23<sup>rd</sup>, 2018 West Lafayette, USA, **Institutional keynote speaker**
4. "The potential of delta opioid receptors as novel target for alcohol use disorders", **International Narcotics Research Conference**, July 9-14, 2017, Chicago, USA
5. "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, <https://doi.org/10.1016/j.alcohol.2017.02.195>
6. "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.*"
7. "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.*" <https://doi.org/10.1111/acer.13085>
8. "Emergence of Functional Spinal Delta Opioid Receptors after Chronic Ethanol Exposure" **Alcoholism and Stress: A Framework for Future Treatment Strategies**, 2011, Volterra, Italy
9. "Making a case for delta opioid receptor subtype selective drugs for the treatment of alcoholism", **Research Society on Alcoholism meeting**, 2010, San Antonio, USA
10. "Delta opioid receptors display opposing roles in ethanol intake", **Society for Neuroscience**, 2008, Washington DC, USA
11. "Characterization of morphine tolerance in transgenic R-MOR mice", **International Narcotics Research Conference**, 2007, Berlin, Germany
12. "Homo- and hetero-dimerization of the histamine H<sub>4</sub> receptor", **European Histamine Research Society**, 2006, Delphi, Greece
13. "Oligomerization of the human histamine H<sub>4</sub> receptor", **GPCR Day**, 2005, Weesp, The Netherlands

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

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1. Hennessy MR, Gutridge AM, French AT, [Van Rijn RM](#), Riley AM, Synthesis and Evaluation of Akuamma Alkaloid Analogues for Alternative Pain Therapies, **ACS**, August 21-25<sup>th</sup>, 2022
2. Hennessy MR, Gutridge AM, French AT, [Van Rijn RM](#), Riley AM, Synthesis and Evaluation of Akuamma Alkaloid Analogues for Alternative Pain Therapies, **MIKIW Medicinal Chemistry Conference**, 2021, April 29-May 1, 2022
3. Creed SM, Gutridge AM, Brent Friesen J, Pauli GF, [Van Rijn RM](#), Whistler JL, Riley AP Late-Stage Derivatization of Akuammicine for Probing Kappa Opioid Receptor Activity, **MIKIW Medicinal Chemistry Conference**, 2021, April 29-May 1, 2022

4. Gutridge AM, Chakraborty S, Varga B, Rhoda ES, French AR, Blaine AT, Royer QH, Yuan J, Cui H, Cassell RJ, Majumdar S, Van Rijn RM, Kratom analogs modulate alcohol consumption in mice with reduced side effects, **International Narcotics Research Conference**, July 12-14, 2021
5. Charkaborty S, Diberto J, Daibani AE, Gutridge AM, Wilson LL, Filizola M, van Rijn RM, Margolis EB, Roth B, McLaughlin JP, Sames D, Javitch J, Che T, Majumdar S, Semi-Synthetic diversification of mitragynine template leading to partial agonists with safer analgesic profiles. **International Narcotics Research Conference**, July 12-14, 2021
6. French AR, Meqbil YJ, Van Rijn RM, Real-time assay for simultaneous recruitment of arrestin isoforms to delta opioid receptor, **International Narcotics Research Conference**, July 12-14, 2021
7. Blaine AT, Palant S, Van Rijn RM, Role of  $\beta$ -arrestin Isoforms in Delta Opioid Receptor Agonist- Induced Seizures, **International Narcotics Research Conference**, July 12-14, 2021
8. Meqbil YJ, Su H, Cassell RJ, Gutridge AM, Cummins BR, Chen L, Van Rijn RM, Pharmacological and Computational Characterization of a Novel  $\delta$ OR Selective Chemotype Devoid of a Protonated Nitrogen, **International Narcotics Research Conference**, July 12-14, 2021
9. Creed SM, Gutridge AM, Hennessy MR, Argade MD, Pauli GF, Brent Friesen J, Van Rijn RM, Riley AP, A Structure-Activity Relationship Study of Akuammicine – An Alkaloid from *Picralima nitida*, **ACS**, August 22-26, 2021
10. Hennessy MR, Gutridge AM, Creed SM, Argade MD, van Rijn RM, Riley AP Synthesis of Novel Akuammicine Derivatives to Investigate the Structure-Activity Relationship at the Opioid Receptors, **MIKIW Medicinal Chemistry Conference**, 2021, April 24-25, 2021
11. French AR, Gutridge AM, Royer QH, Yuan J, van Rijn RM, Pharmacological Evaluation of How Beta-arrestin 2 signaling at the kappa opioid receptor impacts alcohol consumption in male and female mice, **Research Society on Alcoholism**, June 19-23, 2021
12. Gutridge AM, Chakraborty S, Varga B, Rhoda ES, Royer QH, Cui H, Yuan J, Robins MT, Cassell RJ, Mores KL, Majumdar S, Van Rijn RM, Pharmacological investigation of Kratom Alkaloids Analogs in modulating alcohol consumption in mice, **Research Society on Alcoholism**, June 19-23, 2021
13. Hennessy MR, Gutridge AM, Creed SM, Argade MD, van Rijn RM, Riley AP, Probing the Structure-Activity Relationship of Opioidergic Indole Alkaloids Isolated from *Akuamma* Seeds, **ACS**, 2021, April 5-16, 2021
14. Blaine AT, Palant S, Yuan J, Van Rijn RM, Role of beta-arrestin Isoforms in Delta Opioid Receptor Agonist-Induced Seizures, **Experimental Biology**, April 27-30, 2021
15. Meqbil Y, Su H, Cassell RJ, Gutridge AM, Cummins BR, Chen L, Van Rijn RM, Identification of a Novel  $\delta$ OR Selective Agonist Chemotype, Notably Devoid of a Basic Nitrogen- **Experimental Biology**, April 27-30, 2021
16. Gutridge AM, Chakraborty S, Varga B, Rhoda ES, Royer QH, Cui H, Yuan J, Robins MT, Cassell RJ, Mores KL, Majumdar S, Van Rijn RM, Pharmacological Characterization of Synthetic Kratom Alkaloids for Improved Alcohol Use Disorder Therapeutics, **Experimental Biology**, April 27-30, 2021
17. French AR, Gutridge AM, Royer QH, Yuan J, van Rijn RM, Relating alcohol consumption behavior to ligand bias at the kappa opioid receptor, **Society for Neuroscience Global Connectome**, January 11-13, 2021
18. Blaine AT, Palant S, Van Rijn RM, beta-arrestin recruitment is correlated with Delta Opioid Receptor Agonist-Induced Seizure Severity, **Society for Neuroscience Global Connectome**, January 11-13, 2021
19. French AR, Royer QH, Gutridge AM, Van Rijn RM, Effects of biased agonism at the kappa opioid receptor on alcohol consumption in mice, **International Narcotics Research Conference**, July 22-24, 2020 (Zoom talk)
20. Blaine AT, Liu R, Van Rijn RM, Investigating the Cellular and Behavioral Effects of  $\delta$ -Opioid Receptor Mediated  $\beta$ -arrestin 1 Signaling, **International Narcotics Research Conference**, July 22-24, 2020 (Zoom talk)
21. Gutridge AM, Hennessy MR, Argade MD, Rhoda ES, Royer QH, Riley AP, Van Rijn RM, Pharmacological Characterization of Natural and Synthetic *Akuamma* Alkaloids for Pain Therapeutics, **International Narcotics Research Conference**, July 22-24, 2020 (Zoom talk)
22. Ko MJ, Chiang T, Mukadam A, Mulia G, Chester J, Van Rijn RM,  $\beta$ -arrestin-dependent opioid signaling positively contributes to reduced conditioned fear and anxiety-like behavior **Society for Neuroscience**, October 19-23, 2019
23. Ko MJ, Chiang T, Mukadam A, Mulia G, Chester J, Van Rijn RM. Molecular mechanisms of G protein-coupled receptor signaling in the modulation of anxiety and conditioned fear **International Brain Research Organization**, September 21-25, 2019, <https://doi.org/10.1016/j.ibror.2019.07.1517>

24. Bertels Z, Siegersma K, Tipton A, Baca S, Van Rijn RM, Pradhan AA, Differential effects of mu and delta opioid receptor agonists in models of chronic migraine-associated pain and aura, **International Headache Congress**, September 5-8, 2019, <https://doi.org/10.1177/0333102419859835>
25. Bertels Z, Siegersma K, Tipton A, Baca S, Van Rijn RM, Pradhan AA, Differential effects of mu and delta opioid receptor agonists in models of migraine, **International Narcotics Research Conference**, July 7-11, 2019
26. Cassell RJ, Zervas BL, Cummins BR, Cui H, Mores, KL, Trader DJ, Van Rijn RM, Structural analysis of the G protein-biased delta opioid peptide rubiscolin to probe the receptor's 'biased' binding pocket, **International Narcotics Research Conference**, July 7-11, 2019
27. Cassell RJ, Zervas BL, Cummins BR, Trader DJ, Van Rijn RM, Identification of a critical amino acid position in delta opioid receptor peptides that confers G protein bias, **Experimental Biology**, April 6-9, 2019, [https://www.fasebj.org/doi/10.1096/fasebj.2019.33.1\\_supplement.lb79](https://www.fasebj.org/doi/10.1096/fasebj.2019.33.1_supplement.lb79)
28. Gutridge AM, Robins MT, Cassell RJ, Uprety R, Mores KL, Ko MJ, Pasternak G, Majumdar S, Van Rijn RM, Therapeutic potential of G-protein biased kratom-derived and synthetic carfentanil-amide opioids for alcohol use disorder, **Experimental Biology**, April 6-9, 2019, [https://www.fasebj.org/doi/10.1096/fasebj.2019.33.1\\_supplement.498.3](https://www.fasebj.org/doi/10.1096/fasebj.2019.33.1_supplement.498.3)
29. Cassell RJ, Mores KL, Robins MT, Gutridge AM, Uprety R, Zervas 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, <https://doi.org/10.1111/bph.14681>
30. 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
31. Cassell RJ, Uprety R, Gutridge 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, <https://doi.org/10.1111/acer.13747>
32. Gutridge 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
33. 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
34. 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
35. Robins MT, Ko MJ, 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
36. Ko MJ, Ganzen LC, Lueng YF, Van Rijn RM, A pharmacological model of TRPA1-mediated nociception in zebrafish larvae for therapeutic discovery, **Experimental Biology**, April 21-25, 2018, [https://www.fasebj.org/doi/10.1096/fasebj.2018.32.1\\_supplement.684.3](https://www.fasebj.org/doi/10.1096/fasebj.2018.32.1_supplement.684.3)
37. 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
38. 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
39. 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
40. 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
41. 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
42. 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

43. 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**, June 24-28, 2017, <https://doi.org/10.1111/acer.13391>
44. 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**, April 22-26, 2017, [https://www.fasebj.org/doi/10.1096/fasebj.31.1\\_supplement.666.9](https://www.fasebj.org/doi/10.1096/fasebj.31.1_supplement.666.9)
45. 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
46. 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
47. 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
48. 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
49. 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
50. Alongkronrusmee D, Ghomi HT, Tang S, Lill MA, van Rijn RM, Multipronged approach to investigate the mu-delta opioid receptor heteromer interface, **Experimental Biology**, April 2-6, 2016, [https://www.fasebj.org/doi/10.1096/fasebj.30.1\\_supplement.931.6](https://www.fasebj.org/doi/10.1096/fasebj.30.1_supplement.931.6)
51. 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
52. Alongkronrusmee D, Van Rijn RM, Involvement of Delta opioid receptors in alcohol withdrawal-induced mechanical pain, **Indianapolis Chapter of the Society for Neuroscience**, 2016
53. 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
54. Alongkronrusmee D, Van Rijn RM, Protective role of delta opioid receptors in alcohol withdrawal-induced hyperalgesia, **Society for Neuroscience**, 2015
55. 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
56. Robins MT, Van Rijn RM, Effect of adolescent caffeine and alcohol consumption on adult behavior and neuropharmacology in mice, **Research Society on Alcoholism**, 2015
57. Alongkronrusmee D, Van Rijn RM, Signal biased agonists of delta opioid receptors for alcohol withdrawal-induced hyperalgesia, **International Narcotics Research Conference**, 2015
58. 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
59. 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
60. 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
61. Van Rijn RM, DeFriel JN, Whistler JL, Biased agonism of delta opioid receptors selective ligands in vivo, **Society for Neuroscience**, 2012
62. 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
63. 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**, June 23-27, 2012, <https://doi.org/10.1111/j.1530-0277.2012.01803.x>
64. 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**, June 23-27, 2012, <https://doi.org/10.1111/j.1530-0277.2012.01803.x>
65. Van Rijn RM, Brissett DI, Whistler JL, Pharmacological profile of delta and kappa opioid receptor subtypes in spinal cord, **International Narcotics Research Conference**, 2011

66. 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**, June 25-29, 2011, <https://doi.org/10.1111/j.1530-0277.2011.01497.x>
67. 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
68. 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**, June 26-30, 2010, <https://doi.org/10.1111/j.1530-0277.2010.01210.x>
69. 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
70. Van Rijn RM, Bartlett SE, Whistler JL, Delta opioid receptor subtypes display opposing effects on alcohol intake, **Society for Neuroscience**, 2008
71. 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
72. 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
73. 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
74. Van Rijn RM, Bakker RA, Leurs R, homo-oligomerization of the human histamine H<sub>4</sub> receptor, **European Histamine Research Society**, 2004
75. 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. External reviewer, Czech Science Foundation, June 2022
2. *Ad hoc* member Drug Discovery for Aging, Neuropsychiatric and Neurologic Disorders ETTN(14) study section, June 22-23, 2021
3. External reviewer, University of Minnesota's Medical Discovery Team on Addiction Pilot Grant Program, June 1<sup>st</sup>, 2021
4. *Ad hoc* reviewer, Indiana CTSI core pilot funding program, May 20<sup>th</sup>, 2021
5. External reviewer, Poland National Science Center, March 26<sup>th</sup>, 2021
6. *Ad hoc* reviewer, Indiana CTSI core pilot funding program, December 11<sup>th</sup>, 2020
7. External reviewer, Czech Science Foundation, August 2020
8. External reviewer, University of Minnesota's Medical Discovery Team on Addiction Pilot Grant Program, July 1<sup>st</sup>, 2020
9. *Ad hoc* member, Molecular Neuropharmacology and Signaling (MNPS) study section, June 4-5, 2020
10. External reviewer, Health Research Council of New Zealand, 2020 annual funding round, February 18<sup>th</sup>, 2020
11. External reviewer, UK Research and Innovation Biotechnology and Biological Sciences Research Council, February 5<sup>th</sup>, 2020
12. *Ad hoc* member, NIDA, R61/R33 Innovation Phase Application review, January 21<sup>st</sup>, 2020
13. *Ad hoc* reviewer, Indiana CTSI Collaboration in Translational Research funding program, September 20<sup>th</sup>, 2019
14. *Ad hoc* review of a proposal for the Army Broad Agency Announcement of the Congressionally Directed Medical Research Program, April 15<sup>th</sup>, 2019
15. *Ad hoc* review of Therapeutic Development Branch at NCATS program on opioid abuse and addiction and pain proposal (part of NIH HEAL), April 3<sup>rd</sup>, 2019
16. External reviewer, Pilot study proposals for Institute for Clinical and Translational Science at the University of California Irvine, March 1<sup>st</sup>, 2019
17. *Ad hoc* member, Molecular, Cellular, and Developmental Neuroscience, integrated review group for the Center for Scientific Review Anonymization Study, August 2018
18. *Ad hoc* member, Molecular Neuropharmacology and Signaling (MNPS) study section, June 14-15, 2018

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19. *Ad hoc* reviewer, Indiana CTSI core pilot funding program, June 20<sup>th</sup>, 2017
20. *Ad hoc* reviewer, Lilly-Stark research pre- and post-doctoral fellowships review, November 22<sup>nd</sup>, 2016
21. External reviewer, Czech Science Foundation, September 15<sup>th</sup>, 2016
22. External reviewer, French National Research Agency Biomedical innovation program, May 9<sup>th</sup>, 2016
23. *Ad Hoc* reviewer, Purdue Institute for Inflammation, Immunology and Infectious Diseases (PI4D) Research Incentive Program, May 9<sup>th</sup>, 2016
24. *Ad hoc* reviewer, Indiana Spinal Cord and Brain Injury Research Fund review panel, January 22<sup>nd</sup>, 2016
25. *Ad hoc* reviewer, AACP new investigator award review panel, October 23<sup>rd</sup>, 2015
26. Early career reviewer, Molecular Neuropharmacology and Signaling (MNPS) study section, June 23-24, 2015
27. *Ad hoc* reviewer, Indiana Spinal Cord and Brain Injury Research Fund review panel, March 13<sup>th</sup>, 2015

**Ad hoc manuscript peer review** (<https://publons.com/researcher/1405087/richard-m-van-rijn/>)

- Addiction Biology
- Alcohol
- Alcoholism: Clinical and Experimental Research
- American Association for Pharmaceutical Scientists (AAPS) Journal
- American Journal of Drug and Alcohol Abuse
- Analytical Chemistry
- Archives of Pharmacal Research
- BBA Biomembranes
- BMC Clinical Pharmacology
- Biochemistry
- Biochemical Society Transactions
- Biological Psychiatry CNNI
- Biological Psychiatry GOS
- British Journal of Pharmacology
- Cellular and Molecular Neurobiology
- Cellular Physiology and Biochemistry
- Cellular Signaling
- CNS drugs
- Computational and Structural Biotechnology Journal
- Current Pharmaceutical Design
- Drug and Alcohol Dependence
- FACETS
- Frontiers in Cellular Neuroscience
- International Journal of Molecular Sciences
- International Journal of Neuropsychopharmacology
- iScience
- J Basic and Clinical Physiology and Pharmacology
- Journal of Biological Chemistry
- Journal of Medicinal Chemistry
- Journal of Neuroscience
- Journal of Pain Research
- J Pharmacology & Experimental Therapeutics
- Journal of Physiology and Pharmacology
- MicroPublication Biology
- Molecular Psychiatry
- Neuropharmacology
- Neuroscience
- Neuroscience & Biobehavioral Reviews
- Pharmacology, Biochemistry and Behavior
- Pharmacological Reports
- Plos One
- Progress in Neuro-Psychopharmacology & Biological Psychiatry
- Psychopharmacology
- Social Neuroscience

**Editorial positions**

2021 – Present *Editorial board member of Advances in Drug and Alcohol Research*  
 2019 – 2020 *Editorial board of Scientific Reports*

**Professional memberships**

2020 *American Chemical Society*  
 2019 – 2022 *Member of the Purdue University Cancer Center*  
 2018 – 2019 *International Behavioral and Neural Genetics Society*  
 2016 – 2021 *Member of the Purdue Institute for Inflammation, Immunology and Infectious Diseases*  
 2016 – 2022 *Member of the Purdue Institute for Integrative Neuroscience Center*  
 2013 – 2022 *Member of the Purdue Institute for Drug Discovery*  
 2013 – 2015 *American Association for Colleges of Pharmacy*  
 2011 – Present *American Society Pharmacology and Experimental Therapeutics*  
 2010 – 2021 *Society for Neuroscience*



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2010 – 2021 *Research Society on Alcoholism*  
 2008 – Present *Dutch Neurofederation*  
 2007 – Present *International Narcotics Research Conference*

**Standing Committees**

2021 *College of Pharmacy Graduate Awards Committee*  
 2020 – 2021 *IU Bicentennial “Beyond Boundaries” Conference Program Committee Member*  
 2020 – 2021 *IU Bicentennial “Beyond Boundaries” Poster Session Subcommittee Member*  
 2020 *MCMP Courtesy Appointment Policy committee*  
 2019 *MCMP chemistry faculty search (successfully recruited Dr. Ryan Altman)*  
 2019 – 2021 *College of Pharmacy Academic Standards and Readmissions committee*  
 2019 – 2022 *Greater Indiana Society for Neuroscience program committee (President in 2020)*  
 2018 – 2019 *College of Pharmacy Professional Program Admissions Committee*  
 2017 – 2021 *Purdue University Life Sciences (PULSe) executive committee*  
 2017 – 2021 *Head of the Integrative Neuroscience PULSe training group*  
 2017 – 2018 *PULSe graduate student organization, faculty representative*  
 2017 *International Narcotics Research Conference, program committee, Chicago, IL*  
 2017 *MCMP neuroscience faculty search committee (successfully hired Drs. Trader and Yang)*  
 2017 *Purdue Institute for Integrative Neuroscience Liaison committee*  
 2017 *MCMP website committee*  
 2015 – 2021 *Purdue Animal Care and Use Committee*  
 2015 – 2021 *MCMP Graduate Admission and Recruitment Committee*  
 2014 – 2021 *MCMP Graduate Program Curriculum Committee*  
 2013 *Ernest Gallo Clinic and Research Center Annual retreat, organizing committee*

**Student dissertation committee**

2021 *Dissertation Committee for Stephanie Gonzalez (MCMP, PhD)*  
 2020 – 2021 *Dissertation Committee for Sabiha Chowdhury (MCMP, PhD)*  
 2019 – 2022 *Dissertation Committee Chair for Yazan Meqbil (MCMP, PhD)*  
 2019 – 2021 *Dissertation Committee for Maria Olivero-Acosta (MCMP, PhD)*  
 2017 – 2022 *Dissertation Committee Chair for Arryn Blaine (PULSe, PhD)*  
 2017 – 2021 *Dissertation Committee Chair for Anna Gutridge (MCMP, PhD)*  
 2017 – 2018 *Dissertation Committee for Brandon Crockett (MCMP, MS)*  
 2017 – 2021 *Dissertation Committee for Seth Herr (Pulse, PhD)*  
 2017 – 2020 *Dissertation Committee for Ka Ng (Psych, PhD)*  
 2015 – 2020 *Dissertation Committee Chair for Mee Jung Ko (PULSe, PhD)*  
 2015 – 2016 *Dissertation Committee for Shari Konst (MCMP, MS)*  
 2015 – 2020 *Dissertation Committee Chair for Robert Cassell (MCMP, PhD)*  
 2015 – 2016 *Dissertation Committee for Ka Ng (Psych, MS)*  
 2014 – 2018 *Dissertation Committee for Ricardo Gomez (Cinvestav, PhD)*  
 2014 – 2019 *Dissertation Committee for Qiuyu Rachel Wu (PULSe, PhD)*  
 2014 – 2019 *Dissertation Committee for Matthew Arvin (MCMP, PhD)*  
 2013 – 2018 *Dissertation Committee for Trevor Doyle (MCMP, PhD)*  
 2013 – 2017 *Dissertation Committee Chair for Doungkamol Alongkronrusmee (MCMP, PhD)*  
 2013 – 2018 *Dissertation Committee Chair for Meridith Robins (MCMP, PhD)*  
 2013 – 2017 *Dissertation Committee for Marcus Weera (PULSe, PhD)*

**Student original proposal committee**

2021 *Original proposal committee for Sabiha Chowdhury (MCMP)*  
 2021 *Original proposal committee for Andrew Intelli (MCMP)*  
 2021 *Original proposal committee Chair for Xueqi Tang (PULSe)*  
 2020 *Original proposal committee for Ruoxuan Sun (MCMP)*

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

**Ad hoc service**

2021/7-9 *Consultant for Third Rock Ventures (189 hrs)*  
 2021/6/18 *Consultant for a 1 Focal Fact Limited client (0.5 hr)*  
 2021 *Consultant for 3 Guidepoint clients (2 hr)*  
 2021 *IU Bicentennial "Beyond Boundaries" Poster Session Moderator*  
 2021 *IU Bicentennial "Beyond Boundaries" Outstanding Interdisciplinary Poster Award Committee*  
 2021 *Greater Indiana Society for Neuroscience Poster Session Moderator*  
 2021 *Greater Indiana Society for Neuroscience Outstanding Undergraduate Poster award Committee*  
 2021 *Greater Indiana Society for Neuroscience Annual Meeting Organizer (April 9<sup>th</sup>, 145 registrants)*  
 2021 *MCMP Endowment Award Review Committee*  
 2021 *Co-editor Molecules Special issue "Opioids and Their Receptors: Present and Emerging Concepts in Opioid Drug Discovery II"*  
 2020/10-12 *Consultant for Carmot Therapeutics (62 hrs)*  
 2020/6/19 *Consultant for the Tippecanoe County Public Defender's Office (0.5 hr)*  
 2019 – 2021 *Advisory Committee member of NAPRALERT (<https://www.napralert.org/>)*  
 2019 *Office of Interdisciplinary Graduate Program spring reception poster competition judge*  
 2019 *Purdue Office of Undergraduate Research conference judge*  
 2019 *Greater Indiana SfN Meeting travel award committee*  
 2019 *Purdue Health and Science poster judge*  
 2018 *College of Pharmacy SURF program symposium Moderator*  
 2018 *Office of Interdisciplinary Graduate Program spring reception poster competition judge*  
 2018 *Greater Indiana SfN Meeting travel award committee*  
 2017 *College of Pharmacy SURF program symposium Moderator*  
 2017 *MCMP endowment award review committee*  
 2017 *Purdue Research Foundation student grant review committee*  
 2015 *Jenkins Knevel Award review committee*  
 2015 *Koo Paget Gibbs Travel award review committee*  
 2013 – 2021 *Admissions interviews for PULSe graduate students*  
 2013 – 2021 *Admissions interview for Pharmacy students*

**Teaching experience**

PHRM316: Co-course coordinator: 3yr average course rating (4.9/5), teacher rating (4.8/5)  
 PHRM845: Co-course coordinator: 3yr average course rating (4.4/5), teacher rating (4.4/5)

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

**2021-2022**

Prepared 07/13/2022

*BIOL695 - Neurol and Neuropsych Dis Seminar, PU*

1 lecture hr, 2 contact hrs

Fall

**2020-2021***Med-X 660 - Neuroscience and behavior, IUSM*

5 lecture hrs

Spring

*PHRM845 - Integrated Pharmacotherapy III, PU, \**

9 lecture hrs, 1 contact hr

Spring

*PHRM316 - Drug abuse/addiction education, PU, \**

5 lecture hrs, 17 contact hrs

Spring

*MCMP690 - Journal club seminar*

10 contact hrs

Fall

*Med-X 730 - Renal and Respiratory, IUSM*

3 lecture hrs

Fall

**2019-2020***PHRM845 - Integrated Pharmacotherapy III, PU, \**

10 lecture hrs, 1 contact hr

Spring

*PHRM316 - Drug abuse/addiction education, PU, \**

3 lecture hrs, 17 contact hrs

Spring

*HSCI201 – Principles of public health, PU*

1.5 lecture hr (guest)

Spring

*BIOL695 - Neurol and Neuropsych Dis Seminar, PU*

1 lecture hr, 2 contact hrs

Fall

*PHRM844 - Integrated Pharmacotherapy II, PU*

4 lecture hrs

Fall

*Med-X 730 - Renal and Respiratory, IUSM*

2 lecture hrs

Fall

**2018-2019***HSCI201 – Principles of public health, PU*

1.5 lecture hr (guest)

Spring

*Med-X 660 - Neuroscience and behavior, IUSM*

4.5 lecture hrs, 2.5 contact hr

Spring

*PHRM845 - Integrated Pharmacotherapy III, PU, \**

10 lecture hrs, 1 contact hr

Spring

*PHRM316 - Drug abuse/addiction education, PU, \**

3 lecture hrs, 17 contact hrs

Spring

*PSYCH696 – Seminar in Neuroscience, PU*

1 lecture hr, 1 contact hr (guest)

Spring

*MCMP690 - Journal club seminar*

10 contact hrs

Fall

*BIOL695 - Neurol and Neuropsych Dis Seminar, PU*

1 lecture hr, 2 contact hrs

Fall

*PHRM844 - Integrated Pharmacotherapy II, PU*

4 lecture hrs

Fall

*Med-X 730 - Renal and Respiratory, IUSM*

3 lecture hrs, 1 contact hr

Fall

**2017-2018***Med-X 660 - Neuroscience and behavior, IUSM*

4 lecture hrs, 2.5 contact hr

Spring

*MCMP544 - Drug Classes and Mechanisms, PU*

4 lecture hrs, 2 contact hrs

Spring

*PHRM825 - Integrated Pharmacotherapy I, PU*

2 lecture hrs

Spring

*PHRM845 - Integrated Pharmacotherapy III, PU, \**

10 lecture hrs, 1 contact hr

Spring

*PHRM316 - Drug abuse/addiction education, PU, \**

3 lecture hrs, 17 contact hrs

Spring

*PHRM844 - Integrated Pharmacotherapy II, PU*

4 lecture hrs

Fall

*Med-X 730 - Renal and Respiratory, IUSM*

3 lecture hrs, 1 contact hr

Fall

**2016-2017***Med-X 660 - Neuroscience and behavior, IUSM*

2.5 lecture hrs

Spring

*MCMP544 - Drug Classes and Mechanisms, PU*

4 lecture hrs, 2 contact hrs

Spring

*PHRM845 - Integrated Pharmacotherapy III, PU, \**

10 lecture hrs, 1 contact hr

Spring

*PHRM316 - Drug abuse/addiction education, PU, \**

3 lecture hrs, 17 contact hr

Spring

*Med-X 640 - Fundamentals of health and Disease, IUSM*

1.5 lecture hrs

Spring

*IUSM 611 - Basic Principles of Pharmacology & Toxicology II*

4 lecture hrs

Spring

*IUSM610 - Basic Principles of Pharmacology & Toxicology I*

3 lecture hrs,

Fall

**2015-2016***MCMP544 - Drug Classes and Mechanisms, PU*

4 lecture hrs, 2 contact hrs

Spring

*PHRM845 - Integrated Pharmacotherapy III, PU*

10 lecture hrs, 1 contact hr

Spring

*PHRM316 - Drug abuse/addiction education, PU*

3 lecture hrs, 17 contact hr

Spring

*HK231 - Substance Abuse and Health, PU*

1 lecture hr (guest)

Fall

*IUSM610 - Basic Principles of Pharmacology & Toxicology I*

3 lecture hrs,

Fall

**2014-2015**

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

**2013-2014**

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

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

2018	Aswathy Chandran (PULSe)
2016	Matthew Arvin (MCMP)
2015	Elizaveta O'Neill (MCMP)

**Mentoring.****Postdoctoral scientists (3)**

**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

**Alexander French, PhD** 6/27/2019 – 12/31/2021

Project: *Engineering optogenetic tools for studying neuropeptide activity*

- BRAIN initiative Ruth L. Kirchstein National Research Service award F32 fellowship
  - 09/01/2017 - 08/31/2020 (Dr. Mathew Tantama was supervisor till June 2019)
- Purdue Animal Behavior Core incentive award (\$1100)

**Research technician/Lab manager (3)**

**Terrance Chiang (Lab manager/research scientist)** 9/1/2013 – 9/1/2016

Project: *Modulation of alcohol behavior by delta opioid drugs*  
Current position: Research Scientist, Department of Neurosurgery, Stanford University

- College of Pharmacy 'Bravo award' (\$500)

**Arbaaz Mukadam (Research technician)** 9/17/2018 – 05/31/2019

Project: *Dissecting role of  $\beta$ -arrestin isoforms on ERK signaling*  
Current position: Graduate student, Department of Psychological Sciences, Purdue University

**Jinling Yuan (Lab/animal colony manager)** 9/9/2019 – 8/23/2021

**Graduate students (7):**

**Doungkamol Alongkronrusmee MSc** (MCMP program) 1/1/2014 – 11/20/2017

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

- INRC travel grant 2015 (\$650)
- PGSG travel grant 2016 (\$250)
- ASPET molecular pharmacology division best poster presentation competition finalist, Experimental Biology, 2016 (\$200)
- 2016 Jenkins/Knevel Excellence in Research award (\$750)

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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 competition 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)
11. Selected to participate in 2017 Purdue Applied Management Principles “mini-MBA” program

Subsequent position: non-clinical project manager at Siam Bioscience in Bangkok

**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 poster competition, March 2015 (\$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, then Medical Writer at Cooks Research Inc.

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

1/1/2016 – 5/12/2020

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. 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 WLFJ 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 and visit to Washington DC (\$1500)
7. College of Pharmacy Travel award, February 27<sup>th</sup>, 2019 (\$1,000)
8. COVID-19 impact Scholarship 2020 (\$1000)

**Mee Jung Ko Msc** (PULSe program)

6/1/2016 – 09/15/2020

Thesis: *Cellular Mechanisms of G protein-coupled receptor signaling in the modulation of anxiety, fear and pain*

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)

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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)
13. College of Pharmacy Travel award, February 27<sup>th</sup>, 2019 (\$1,000)
14. 1<sup>st</sup> place in the Health and Disease poster competition February 28<sup>th</sup>, 2019 (\$400)
15. IBRO travel award 2019 (\$2000)
16. PULSe Outstanding Graduate Student in Teaching Award 2019 (\$300)
17. Financial support for Ion Channels in synaptic and Neural circuit physiology Cold Spring Harbor Laboratory course (\$1500)
18. Purdue Research Foundation research grant 2019 (\$20,320)
19. Purdue Graduate Student Government Profession Grant (\$400)
20. PULSe support to attend CHSL course (\$1500)
21. PIIN travel grant 2019 (\$750)
22. Linda and Jack Gill Graduate Student Award 2020 "Honorable Mention"

Subsequent position: Postdoctoral Scientist in Kaufer lab at University of California Berkeley

**Anna M. Gutridge** (MCMP program)

1/1/2018 – 12/31/2021

Thesis: *Evaluation of naturally occurring opioids and synthetic derivatives for therapeutic application in alcohol abuse and pain.*

1. Ross Purdue Graduate fellowship 2017 (\$24,000)
2. INRC travel grant 2018 (\$950)
3. PIIN travel grant 2019 (\$500)
4. ASPET travel grant 2019 (\$800)
5. College of Pharmacy travel grant 2020 (\$1,000)
6. 1<sup>st</sup> prize, Purdue Health and Disease poster competition 2020 (\$400)
7. Selected to participate in 2020 Purdue Applied Management Principles "mini-MBA" program
8. College of Pharmacy training grant 2020 (\$250)
9. American Foundation for Pharmaceutical Education Pre-Doctoral Research Fellowship in Pharmaceutical Sciences 2020 (\$10,000)
10. Purdue Graduate Student Government Professional Training Grant (\$750)
11. 2020 Chaney Graduate Research Award (\$2000)

Subsequent position: Senior Scientist at Proctor and Gamble

**Arryn T. Blaine** (PULSe program)

5/1/2018 – 7/31/2022

Thesis: *Cellular and behavioral characterization of delta opioid receptor mediated beta-arrestin signaling*

1. College of Pharmacy travel grant 2020 (\$1000)
2. Alliance for Graduate Education and the Professoriate (AGEP) fellowship 2020 (\$1500)
3. PULSe graduate student poster award winner 2021
4. Alliance for Graduate Education and the Professoriate (AGEP) fellowship 2021 (\$2500)
5. ASPET Dolores C. Shockley Poster Award winner 2021 (\$300)
6. Office of Interdisciplinary Graduate Program Bilsland Dissertation Award 2021 (\$15000)
7. Asian American and Asian Resource and Cultural Center (AAARCC) Graduating Graduate Student Award 2022

**Yazan J. Meqbil** (MCMP program)

1/1/2020 - present

Thesis: *Cellular and computational analysis of biased signaling at the delta opioid receptor*

1. Accepted into the computational chemistry PLUMED masterclass (Spring 2021)
2. Accepted into the Computational Interdisciplinary Graduate Program (2021)

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3. 2021 ASPET poster selected to be highlighted during the experimental Biology GPCR Colloquium
4. Accepted into the National Science Foundation (NSF) artificial Intelligence and Fundamental interactions (AIFI) Phd Summer school (2022)

### **Undergraduate students supervised at Purdue University (18)**

<b>Laura Nicole Payne</b> (Pharmaceutical Sciences, Purdue University)	1/4/2021 – 12/1/2021
<b>Sophia Palant</b> (Pre-Pharmacy, Purdue University)	9/1/2020 – 8/31/2021
1. Co-author on 1 article	
<b>Elizabeth S. Rhoda</b> (Pre-Pharmacy, Purdue University)	9/1/2019 – 12/1/2021
2. Honor thesis on kratom derivatives project	
3. Co-author on 1 article	
<b>Rebecca June Liu</b> (Brain and Behavioral Sciences, Purdue University)	8/01/2019 – 8/31/2021
1. Co-author on 1 article	
<b>Quinten Hawk Royer</b> (Public Health, Purdue University)	9/1/2019 – 12/15/2020
2. Co-author on 2 articles	
<b>Bryce D. Colon</b> (Beering Scholar, Purdue University)	9/1/2019 – 5/1/2020
1. Honors student, solely attended labmeetings	
<b>Hongyu Su</b> (Pharmaceutical Sciences, Purdue University)	5/20/2019 – 5/1/2020
Subsequent position: PhD student University of Michigan	
3. Dean's Undergraduate Research Fellowship 2019 (\$4000)	
4. BSPS Research recognition award 2020	
5. Co-author on 2 articles	
<b>Angel Lin</b> (Health Sciences/Pre-med, Purdue University)	10/1/2018 – 5/1/2020
Subsequent position: Podiatry medical student Western University of Health Sciences	
1. OUR (Office of Undergraduate Research) scholar award 2019 (\$1000)	
2. Abstract selected for oral presentation at the 2019 OUR Fall conference	
3. 2 <sup>nd</sup> prize oral presentation 2020 virtual OUR spring conference (\$400)	
4. Co-author on 1 article	
<b>Benjamin R. Cummins</b> (Chemistry, Purdue University)	9/1/2018 – 5/3/2019
Subsequent position: Quality assurance lab technician – CraftMark, then PhD student LSUHSC.	
1. Co-first author on 1 article, co-author on 3 articles	
<b>Maria Shelley</b> (Pharmacy, Purdue University)	6/1/2018 – 5/3/2019
Subsequent position: Third year PharmD student	
6. Dean's Undergraduate Research Fellowship 2018 (\$4000)	
<b>Grace E. Mulia</b> (Pharmaceutical Sciences, Purdue University)	9/1/2017 – 5/3/2019
Subsequent position: PhD Student - Purdue University	
1. Dean's Undergraduate Research Fellowship 2018 (\$4000)	
2. Co-first author on 1 article and co-author on 1 article	
<b>Arbaaz A. Mukadam</b> (Pharmaceutical Sciences, Purdue University)	1/1/2017 – 5/15/2018
Subsequent positions: Labtechnician and PhD Student - Purdue University	
1. BSPS research recognition award 2018	
2. Co-author on 2 articles	

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<b>Jiwon Ellen Ha</b> (Pre-Pharmacy program, Purdue University)	9/1/2016 – 12/31/2017
Subsequent position: Brain science imaging internship at Sung Kyun Kwan University, Seoul	
<ol style="list-style-type: none"> <li>1. Dean's Undergraduate Research Fellowship 2017 (\$4000)</li> <li>2. Co-author on 2 articles</li> </ol>	
<b>Dahlia Alkharrat</b> (Pre-Pharmacy program, Purdue University)	2/1/2016 – 5/30/2016
Subsequent position: BA in economics at Purdue University	
<b>Kendall L. Mores</b> (Pharmaceutical Science and Pharmacy, Purdue University)	8/31/2015 – 5/3/2019
Subsequent position: Northwestern Memorial Hospital Pharmacy residency	
<ol style="list-style-type: none"> <li>5. Dean's Undergraduate Research Fellowship 2016 (\$4000)</li> <li>6. Dean's Undergraduate Research Fellowship 2017 (\$4000)</li> <li>7. OUR (Office of Undergraduate Research) scholar award 2018 (\$500)</li> <li>8. Abstract selected for oral presentation at the 2018 OUR conference</li> <li>9. 3<sup>rd</sup> prize best oral presentation at the 2018 OUR conference (\$250)</li> <li>10. BPS Research recognition award 2020</li> <li>11. BPS Academic Achievement Award 2020</li> <li>12. PharmD Academic Achievement Award 2020</li> <li>13. First-author on 3 articles, co-author on 5 articles</li> </ol>	
<b>Katherine Simons</b> (Pharmaceutical Sciences and Biological Engineering, Purdue University)	6/1/2015 – 12/31/2015
Subsequent position: Chemist at Mylan Pharmaceuticals	
<b>Jiehee Suh</b> (Pre-Pharmacy program)	1/1/2015 – 12/31/2015
Subsequent position: unknown	
<b>Shiqi Tang</b> (Pharmaceutical Sciences, Purdue University)	7/1/2014 – 5/1/2016
Subsequent position: PhD Student - Purdue University	
<ol style="list-style-type: none"> <li>1. Dean's Undergraduate Research Fellowship 2015 (\$4000)</li> <li>2. Dr. Frank Brown Jr travel award (\$1000)</li> <li>3. BPS Research recognition award, 2016</li> </ol>	
<b><u>Undergraduate students supervised at UCSF (3)</u></b>	
<b>Julie Lu</b> (Molecular Cell Biology, UC Berkeley)	6/1/2012 – 05/31/2013
Subsequent position: Research Scientist at Roche	
<ol style="list-style-type: none"> <li>1. Co-author on 1 article</li> </ol>	
<b>Julia N. DeFriel</b> (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	
<ol style="list-style-type: none"> <li>1. Research Society on Alcoholism student Merit Award 2012 (\$350)</li> <li>2. Co-author on 3 articles</li> </ol>	
<b>Daniela I. Brissett</b> (Molecular Cell Biology, UC Berkeley)	6/1/2009 – 05/31/2011
Subsequent position: Medical student UCSF	
<ol style="list-style-type: none"> <li>1. Berkeley Biology Fellowship (\$1500)</li> <li>2. Berkeley honors symposium poster prize (\$500)</li> <li>3. First author on 1 article, co-author on 4 articles,</li> </ol>	
<b><u>Undergraduate students supervised at VU University Amsterdam (6)</u></b>	
<b>Jan Simon Boerma</b> (Pharmaceutical Sciences, VU University, Amsterdam)	
Subsequent position: Graduate student Molecular Toxicology - VU University, Amsterdam	
<b>Petra de Kruijff</b> (Pharmaceutical Sciences, VU University, Amsterdam)	



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Subsequent position: Graduate student Molecular Pharmacology - VU University, Amsterdam

**Angelique Ramlal** (Molecular Biology, Hogeschool Leiden)

Subsequent position: Graduate student Physiological Chemistry – TU Dresden

**Barbara Stam** (Medical Natural Sciences, VU University, Amsterdam)

Subsequent position: Graduate student Biomedical/Medical engineering & Optics – University of Amsterdam

**Mirabella Poncz** (Pharmaceutical Sciences, VU University, Amsterdam)

Subsequent position: Country start up specialist - PRA international

**Kristina Simonyan** (Pharmaceutical Sciences, VU University, Amsterdam)

Subsequent position: unknown

### Visiting scientists (4)

**Madeline Hennessy** (University of Illinois Chicago, graduate student) 12/6/2021-12/10/2021

Project: Pharmacological evaluation of akuammine and akuammicine analogs at MOR and KOR

**Haoyue Cui** (Shenyang Pharmaceutical University exchange student) 1/15/2019 – 5/8/2019

Project: Modulation and measurement of beta-arrestin signaling in vitro

1. Co-author on 2 article

Subsequent position: Graduate student at Shanghai Tech University

**Ricardo Marquez-Gomez** (Graduate student, CINVESTAV, Mexico City) 9/1/2015 – 2/28/2016

Project: *Heteromerization of histamine H3 and Adenosine A2a receptors*

1. First author on 1 article
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*

Subsequent position: Graduate student at the Ohio State University

**Lily Zeng MD** (Medical Resident, Vanderbilt University School of Medicine) 7/1/2016 – 7/31/2016

Project: *Literature review of neuropathic pain etiology*

1. 1 author in J Pain Research

### Rotating graduate students (20)

**2020:** Stephanie Gonzalez, Tiffany Dwyer

**2019:** Sabiha Chowdhury, Yazan Meqbil, Adam Buric

**2018:**

**2017:** Anna Gutridge, Arryn Blaine, Walter Saide

**2016:**

**2015:** MeeJung Ko, Robert Cassell, Saranya Radakrishnan, Priya Prakash

**2014:** Jacob Owens, Shari Konst, Lama Al-Abdi, Quiyu Rachel Wu

**2013:** Trevor Doyle, Doungkamol Alongkronrusmee, Meridith Robins, Katherine Scott

### Academic outreach

- “The changing landscape of opioid use and abuse” – Purdue Alumni meeting, Continuing education, Evansville IN, October 11<sup>th</sup>, 2018
- “Etiology, medical treatment and self-medication of chronic pain” – Pharmacy women for Purdue Spring symposium continuing education, Purdue University, April 7<sup>th</sup>, 2017

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- “Behavioral studies of opioids and psychostimulants” – Science for Purdue husbandry staff, May 20<sup>th</sup>, 2016
- “Prescription drug abuse” – Endodontic specialist Fishers, Indiana - continuing education for dentists, April 28<sup>th</sup>, 2016
- “Recent developments in drug abuse” – Pharmacy women for Purdue Spring symposium continuing 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: Maintaining 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**

- Purdue Press releases
  - October 25<sup>th</sup>, 2016 [https://www.purdueexponent.org/campus/article\\_c64394b4-9aca-11e6-ae6c-8ffa420523ed.html](https://www.purdueexponent.org/campus/article_c64394b4-9aca-11e6-ae6c-8ffa420523ed.html)
  - March 14<sup>th</sup>, 2017 <https://www.purdue.edu/newsroom/releases/2017/Q1/specialized-compound-could-lead-to-chronic-pain-relief-without-the-use-of-opioids.html>
  - September 20<sup>th</sup>, 2018 <https://purduefoundry.com/default/news-single/there-is-hope-technology-may-help-curb-alcoholism-depression>
  - October 4<sup>th</sup>, 2018 <https://www.purdue.edu/newsroom/releases/2018/Q3/nonaddictive-drug-compound-could-replace-opioids-for-chronic-pain-sufferers.html>
  - January 3<sup>rd</sup>, 2019 <https://www.purdue.edu/newsroom/releases/2019/Q1/new-medications-offer-improved-treatment-for-alcohol-use-disorders,-chronic-pain,-mood-disorders.html>
  - July 9<sup>th</sup>, 2019 <https://www.purdue.edu/newsroom/releases/2019/Q3/the-power-of-the-brain-to-fight-opioid-addiction,-treat-chronic-pain.html>
  - November 13<sup>th</sup>, 2019, <https://www.purdue.edu/newsroom/releases/2019/Q4/opioid-based-plant-might-not-be-best-solution-for-those-seeking-to-curb-habitual-alcohol-use.html>
  - August 11<sup>th</sup>, 2021, <https://www.purdue.edu/newsroom/releases/2021/Q3/some-opiates-help-mitigate-fear,-anxiety,-manage-pain.html>
  - March 3<sup>rd</sup>, 2022, <https://www.purdue.edu/newsroom/releases/2022/Q1/new-plant-based-compounds-have-been-created-to-treat-alcohol-use-disorder.html>
- 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 in relation to pain and substance 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 performed by 4<sup>th</sup> year graduate student Robert Cassell.
- WBAA (local NPR station, by Stan Jastrzebski ), November 13<sup>th</sup>, 2019
  - <https://www.wbaa.org/post/purdue-pharmacy-research-opioid-containing-plant-better-heroin-still-addictive#stream/0>
  - Interviewed by IUnesnet, March 30<sup>th</sup>, 2021