

# Ashley M. Ingiosi

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## Current Position

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2022 – present    **Assistant Professor**, The Ohio State University, Department of Neuroscience, NIH BRAIN Initiative K99/R00

## Education

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2008 – 2015    **Ph.D.**, Neuroscience, University of Michigan  
2002 – 2006    **B.S.**, Biopsychology & Cognitive Science, University of Michigan  
2002 – 2006    **B.S.**, General Biology, University of Michigan

## Research Interests

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My research interests include studying how neurons and glia interact to mediate neural physiology and behavior with specific interests and expertise in sleep, neuroinflammation, and autism spectrum disorder. I use a multifaceted approach that includes *in vivo* calcium imaging (miniscope and two-photon microscopy), electrophysiology, optogenetics, and molecular techniques. In this way, I can study glia and glial-neuronal interactions at the molecular, cellular, and circuit levels while also monitoring physiology and behavior in rodent models.

## Research Experience

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2015 – 2022    **Postdoctoral Research Fellow**, Washington State University – Spokane, Department of Translational Medicine and Physiology

- **Mentor:** Marcos Frank, Ph.D.
- Investigated the role of astroglial calcium signaling in sleep regulation and function using a combination of *in vivo* calcium imaging methodologies and electroencephalography
- Identified a mouse model of autism spectrum disorder exhibiting clinically relevant sleep impairments using electroencephalography, circadian techniques, and RNA-seq in collaboration with Dr. Lucia Peixoto

2009 – 2014    **Doctoral Research**, University of Michigan, Department of Anesthesiology

- **Mentor:** Mark Opp, Ph.D., University of Washington\*
- Determined contributions of neurons and astrocytes to sleep and neuroinflammation using transgenic mice I engineered to express interleukin-1 receptor 1 only in the central nervous system and selectively on neurons or on astrocytes

\* Laboratory moved to University of Washington after advancing to candidacy in 2010

2006 – 2008    **Research Lab Technician Intermediate**, University of Michigan

- **Supervisor:** Mark Opp, Ph.D.

- Investigated the impact of immune challenge on sleep-wake behavior and neurocircuitry using sepsis and influenza models
- 2006      **Undergraduate Research Assistant**, University of Michigan
- **Advisor:** Mark Opp, Ph.D.
  - Developed and optimized immunohistochemical and stereological protocols to study immune responses in brain

### *Fellowships & Grants*

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- 2021      NIH, **BRAIN Initiative, K99/R00**, Pathway to Independence Award, National Institute of Neurological Disorders and Stroke, K99 NS119293
- 2017      NIH, National Institute on Drug Abuse, R03 DA042480  
PI: Christopher Hayworth, Ph.D.; Co-I: Marcos Frank, Ph.D.  
Role: **Primary Author** and Key Personnel
- 2016      NIH, **Ruth L. Kirschstein National Research Service Award, F32**, National Institute of Neurological Disorders and Stroke, F32 NS100335
- 2014      **Rackham Conference Travel Grant**, University of Michigan
- 2013      **Rackham International Travel Grant**, University of Michigan
- 2012      **Rackham Graduate Student Research Grant**, University of Michigan
- 2011      **Rackham Conference Travel Grant**, University of Michigan

### *Honors & Awards*

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- 2021      **Scholarship**, Howard Hughes Medical Institute for The Jackson Laboratory Impacts of Sleep and Circadian Biology on Alzheimer's Disease and Aging workshop
- 2021      **Scholarship**, Sleep Research Society Foundation for the American Academy of Sleep Medicine Foundation Young Investigators Research Forum
- 2019      **Young or New Investigator Award**, World Sleep Society
- 2019      **Best Poster Presentation**, Washington State University Biomedical Sciences Symposium
- 2019      **Excellence in Presentation**, Inland Northwest Research Symposium
- 2019      **Best Poster Presentation**, Washington State University Sleep and Performance Research Center
- 2018      **Trainee Professional Development Award**, Society for Neuroscience
- 2016      **Top 10 Abstracts**, Gordon Research Conference on Sleep Regulation and Function
- 2014      **3<sup>rd</sup> Place for Excellence in Research**, University of Washington Department of Anesthesiology & Pain Medicine Academic Evening
- 2014      **Merit Award**, Gordon Research Conference on Sleep Regulation and Function
- 2013      **Trainee Scholar Award**, PsychoNeuroImmunology Research Society
- 2011      **First Time Attendee Travel Award**, Sleep Research Society

- 2011 **Best in Category**, University of Washington Department of Anesthesiology & Pain Medicine Academic Evening
- 2002 – 2006 **University Honors**, 4 semesters at University of Michigan
- 2002 **Regents' Scholarship**, University of Michigan

### *Publications*

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† authors contributed equally

^ co-corresponding authors

**Ingiosi AM**, Frank MG (2022) Noradrenergic signaling in astrocytes influences mammalian sleep homeostasis. *Clocks Sleep*: 4:332-345.

*Featured cover article*

**Ingiosi AM**<sup>^</sup>, Frank MG<sup>^</sup> (2022) Goodnight, astrocyte: waking up to astroglial mechanisms in sleep. *FEBS J*. <https://doi.org/10.1111/febs.16424>. *In press. Invited contribution.*

Cable J, Schernhammer E, Hanlon EC, Vetter C, Cedernaes J, Makarem N, Dashti HS, Shechter A, Depner C, **Ingiosi AM**, Blume C, Tan X, Gottlieb E, Benedict C, Van Cauter E, St-Onge MP (2021) Sleep and circadian rhythms: pillars of health - a Keystone Symposia report. *Ann N Y Acad Sci*.1506:18-34.

**Ingiosi AM**, Hayworth CR, Harvey DO, Singletary KG, Rempe MJ, Wisor JP, Frank MG (2020) A role for astroglial calcium in mammalian sleep and sleep regulation. *Curr Biol*. 30:4373-4383.e7. [preprint: <https://doi.org/10.1101/72893>]

*See also media mentions under Media Coverage.*

**Ingiosi AM**<sup>†</sup>, Schoch H<sup>†</sup>, Wintler T, Singletary KG, Righelli D, Roser LG, Medina E, Risso D, Frank MG, Peixoto L (2019) Shank3 modulates sleep and expression of circadian transcription factors. *eLife*. 8:e42819. [preprint doi: <https://doi.org/10.1101/465799>]

*Editors' Choice*: Osterweil, EK (2019) SHANK3 puts autism to sleep. *Sci Transl Med*. 11:eaax1714.

*See also media mentions under Media Coverage.*

**Ingiosi AM**, Opp MR (2016) Sleep and immunomodulatory responses to systemic lipopolysaccharide in mice selectively expressing interleukin-1 receptor 1 on neurons or astrocytes. *Glia*. 64:780-791.

**Ingiosi AM**, Raymond Jr. RM, Pavlova MN, Opp MR (2015) Selective contributions of neuronal and astroglial interleukin-1 receptor 1 to the regulation of sleep. *Brain Behav Immun*. 48:244-257.

**Ingiosi AM**, Opp MR, Krueger JM (2013) Sleep and immune function: glial contributions and consequences of aging. *Curr Opin Neurobiol*. 23:806-811. *Invited contribution.*

Baracchi F, **Ingiosi AM**, Raymond Jr. RM, Opp MR (2011) Sepsis-induced alterations in sleep of rats. *Am J Physiol Regul Integr Comp Physiol*. 301:R1467-R1478.

### *Preprint*

**Ingiosi AM**, Hayworth CR, Frank MG (2023) Activation of basal forebrain astrocytes induces wakefulness without compensatory changes in sleep drive. *BioRxiv*. doi: <https://doi.org/10.1101/2023.01.09.523360>.

## *Mentorship*

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2021 – 2022	Sabrina Koh, Washington State University, Neuroscience graduate student
2018 – 2022	Elizabeth Medina, Washington State University, Neuroscience graduate student
2018 – 2019	<b>Mentor</b> , Association for Women in Science Mentoring Circle Program, Washington State University
2018	Steven Van Cott, Washington State University, research assistant
2016 – 2018	Taylor Wintler, Gonzaga University, Biology undergraduate
2015 – 2022	Priyanka Bushana, Washington State University, Neuroscience graduate student
2015 – 2016	Nikolai Zaperro, Washington State University, research assistant/lab manager
2013	Marieke Hoekstra, University of Groningen, Netherlands master's student
2012 – 2013	Kelley Jordan, University of Washington, Biology undergraduate
2009 – 2010	Christopher Angelakos, University of Michigan, Neuroscience undergraduate
2008	Ali Titz, University of Michigan, summer research intern

## *Teaching Experience*

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2022	Invited Lecturer, Twinkle, twinkle little star: Uncovering a role for astrocytes in sleep through calcium imaging. Psy 425: Advanced Neuroscience and Behavior, Grand Valley State University
2021	Expert in the Field Guest Discussant, Neuroscience Capstone Course Sleep & Circadian Rhythms, University of St. Thomas
2020	Invited Lecturer, Shining a light on glial contributions to sleep and sleep regulation. Biology Department Seminar, California State University, Long Beach
2018 – 2019	Teaching Assistant, Evidence-Based Medicine, Washington State University Elson S. Floyd College of Medicine
2009 – 2010	Neuroanatomist, created plastinated human brain teaching models for the University of Michigan Medical School
2009	Teaching Assistant, Introduction to Psychopathology, University of Michigan

## *Professional Leadership & Service*

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2021 – present	<b>Member</b> , Sleep Research Society Communication Committee's Social Media Subcommittee
2021 – present	<b>Reviewer</b> , Journal of Neuroscience
2021 – present	<b>Reviewer</b> , British Journal of Pharmacology
2020 – present	<b>Reviewer</b> , Journal of Neuroscience Research
2019	<b>Invited Speaker</b> , Washington State University Graduate Research Student Association Biosketch Workshop

- 2018 – present **Co-Founder & Coordinator**, Washington State University-Spokane Career Advancement for Postdocs
- 2018 – present **Review Editor**, Frontiers in Neuroscience, Sleep and Circadian Rhythms
- 2018 – 2019 **Co-Organizer**, Washington State University Elson S. Floyd College of Medicine Training in the Responsible Conduct of Research
- 2018 **Invited Speaker**, Regional Approaches to Women’s Leadership in STEMM Conference
- 2017 **Invited Speaker**, Washington State University Graduate Research Student Association Biosketch Workshop
- 2016 – present **Reviewer**, journal SLEEP
- 2016 - 2017 **Steering Committee**, 2017 joint Sleep Research Society and Canadian Sleep Society satellite meeting
- 2010 **Host**, University of Michigan Program in Biomedical Sciences recruiting weekend
- 2010 **Co-Organizer**, University of Michigan Neuroscience Direct recruiting weekend
- 2008 – 2010 **Administrator**, University of Michigan Neuroscience Graduate Student Organization

### *Outreach Activities*

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- 2019 **Invited Speaker**, March for Science Spokane
- 2019 **Invited Panelist**, Whitworth University STEM Panel for summer research program
- 2018 **Discussion Leader**, Autism Awareness for local elementary school
- 2012 **Organizer**, STEM day for high school Science Reporters Club
- 2011 **Co-Organizer**, University of Washington Brain Awareness Week
- 2010 – 2014 **Moderator**, The Brain Question
- 2010 – 2012 **Volunteer**, University of Washington Neurobiology and Behavior Community Outreach
- 2008 – 2010 **Co-President**, BrainsRule!
- 2008 – 2009 **Presenter**, NeuroKids

### *Professional Development*

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- 2020 Symposium to Support Graduate Students and Postdocs as Teachers, Professional Development Initiative, Washington State University
- 2020 PROMISE Summer Success Institute, University of Maryland, Baltimore County
- 2019 Mitigating Implicit Bias: Tools for the Neuroscientist, Society for Neuroscience
- 2018 Certificate, Python Data Structures, University of Michigan (via coursera.org)

2018	Certificate, Inspiring and Motivating Individuals, University of Michigan (via coursera.org)
2016	Turning Bias into Opportunity, Association for Women in Science, Washington State University

### *Memberships in Professional Societies*

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2019 – present	World Sleep Society
2011 – 2015	PsychoNeuroImmunology Research Society
2007 – present	Sleep Research Society
2007 – present	Society for Neuroscience

### *Oral Presentations*

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\* invited talks

† competitive extramural postdoctoral seminars

#### **International**

\* Sleeping under the stars: astrocyte contributions to sleep. Researcher Sleep and the Brain series, London, United Kingdom, 2022. *See Media Coverage for associated podcast.*

\* A role for astroglial calcium activity in mammalian sleep and sleep homeostasis. Gordon Research Seminar on Sleep Regulation and Function, Lucca (Barga), Italy, 2020. *Canceled due to COVID-19.*

\* A role for astroglial calcium activity in sleep and sleep homeostasis. World Sleep, Vancouver, Canada, 2019.

\* Selective contributions of neuronal and astroglial interleukin-1 receptor 1 to behavioral immune responses. PsychoNeuroImmunology Research Society Scientific Meeting, Stockholm, Sweden, 2013.

#### **National**

\* Sleeping under the stars: astrocyte contributions to sleep. William C. Dement Sleep and Chronobiology Summer Research Apprenticeship Retreat Colloquium, Providence, RI, 2021.

† Of sleep and stars: defining a role for astrocytes in sleep and sleep homeostasis. Carney Institute's Brain Science External Postdoc (BrainExPo) Seminar Series, Brown University, Providence, RI, 2021.

\* Defining a role for astrocytes in mammalian sleep and sleep regulation. Department of Neuroscience seminar, University of Virginia, Charlottesville, VA, 2021.

† Twinkle, twinkle little star: defining a role for astrocytes in sleep and sleep homeostasis. Seminars at Yale Neuroscience: Advanced Postdoc Extramural Series (SYNAPSES), Yale University, New Haven, CT, 2021.

\* Defining a role for astrocytes in mammalian sleep and sleep regulation. Department of Neuroscience seminar, University of Connecticut, Farmington, CT, 2021.

\* Defining a role for astrocytes in mammalian sleep and sleep regulation. Department of Biological Sciences, Oakland University, Rochester, MI, 2021.

- \* Star light, star bright: considerations for imaging astrocyte dynamics. Inscopix INSPIRE Webinar Series, Palo Alto, CA, 2021.
  - \* Defining a role for astrocytes in mammalian sleep and sleep regulation. Neuroscience and Pharmacology seminar, University of Iowa, Iowa City, IA, 2021.
  - \* Of sleep and stars: defining a role for astrocytes in sleep and sleep homeostasis. Keystone eSymposia on Sleep & Circadian Rhythms: Pillars of Health, Virtual, 2021.
  - \* Defining a role for astrocytes in mammalian sleep and sleep regulation. Department of Pharmacology and Physiology, Oklahoma State University, Tulsa, OK, 2021.
  - \* Defining a role for astrocytes in mammalian sleep and sleep regulation. Department of Neuroscience seminar, Ohio State University, Columbus, OH, 2021.
  - \* Defining a role for astrocytes in mammalian sleep and sleep regulation. Department of Neuroscience seminar, University of New Mexico, Albuquerque, NM, 2021.
  - \* Twinkle, twinkle little star: defining a role for astrocytes in sleep and sleep regulation. Behavioral Sleep Medicine Seminar Series, University of Arizona, Tucson, AZ, 2020.
  - \* Twinkle, twinkle little star: defining a role for astrocytes in sleep and sleep regulation. Providence Sleep Research Interest Group seminar series, Brown University, Providence, RI, 2020.
  - \* Defining a role for astrocytes in mammalian sleep and sleep regulation. Department of Neuroscience and Regenerative Medicine Seminar, Medical College of Georgia at Augusta University, Augusta, GA, 2020
  - \* Defining a role for astrocytes in mammalian sleep. Seminars in Neuroscience, West Virginia University, Morgantown, WV, 2020.
  - \* Of sleep and stars. Mary A. Carskadon Sleep & Circadian Rhythms Summer Research Fellowship Retreat, Boulder, CO, 2019.
  - \* Astroglial contributions to sleep homeostasis. Neuroscience 2018, Sleep and Circadian Neurobiology Data Blitz, San Diego, CA, 2018.
  - \* Astroglial contributions to sleep homeostasis. Gordon Research Conference on Sleep Regulation and Function, Galveston, TX, 2018.
  - \* Differential sleep responses to immune challenge in mice with the Tnf 55 kD receptor expressed selectively on neurons or astrocytes. SLEEP, Club Hypnos Data Blitz, Denver, CO, 2016.
- Year in review. Lake Arrowhead Annual Sleep Training Workshop, Lake Arrowhead, CA, 2015.
- Debate: Based on the widely accepted idea that sleep is by the brain and for the brain, changes in other sites or systems cannot be used as an indicator of sleep or sleep loss in a predictable and measurable way. Lake Arrowhead Annual Sleep Training Workshop, Lake Arrowhead, CA, 2013.
- Searching for Aurora. Lake Arrowhead Annual Sleep Training Workshop, Lake Arrowhead, CA, 2013.
- Biomarkers will reflect the extent of immune challenge in a novel mouse model of narcolepsy. Lake Arrowhead Annual Sleep Training Workshop, Lake Arrowhead, CA, 2012.
- Intracerebral communication during sleep is constrained because slow and spindle oscillations often occur out-of-phase in different brain regions. Debate at Lake Arrowhead Annual Sleep Training Workshop, Lake Arrowhead, CA, 2012.

Desynchronized central and peripheral circadian clocks as a risk factor for diabetes. Lake Arrowhead Annual Sleep Training Workshop, Lake Arrowhead, CA, 2011.

Circadian biology of arthritis. Lake Arrowhead Annual Sleep Training Workshop, Lake Arrowhead, CA, 2010.

Role of melanin concentrating hormone signaling in the dorsal raphe: effects on sleep and feeding. Lake Arrowhead Annual Sleep Training Workshop, Lake Arrowhead, CA, 2009.

## **Local**

\* Goodnight astrocyte: Defining a role for non-neuronal cells in sleep and sleep homeostasis. Washington State University Medical Research and Materiel Command Mini-Symposium, Spokane, WA, 2021.

\* Twinkle, twinkle little star (cell), How I wonder what you are (doing during sleep). March for Science, Spokane, WA, 2019.

Twinkle, twinkle little star (cell), How I wonder what you are (doing during sleep). Washington State University Sleep and Performance Research Center Retreat, Coeur d'Alene, ID, 2019.

Astroglial contributions to sleep homeostasis. Washington State University Sleep and Performance Research Center Retreat, Coeur d'Alene, ID, 2017.

Abnormal sleep-wake behavior in Shank3 mouse model of autism. Washington State University Sleep and Performance Research Center Retreat, Coeur d'Alene, ID, 2017.

\* Contributions of neuronal and astroglial interleukin-1 receptor 1 to sleep and immune responses. University of Washington Academic Evening, Seattle, WA, 2014.

Deconstructing neuronal and glial contributions to inflammatory immune responses. 12th Annual Fink Memorial Research Conference, Seattle, WA, 2012.

Deconstructing neuronal and glial contributions to inflammatory immune responses. Rosario Beach Marine Laboratory Seminar, Seattle, WA, 2012.

Deconstructing neuronal and glial contributions to inflammatory immune responses. University of Michigan Neuroscience Graduate Program Seminar Series, Ann Arbor, MI, 2012.

Neuronal-glia interactions in the regulation of sickness behavior. University of Washington Sleep Rounds, Seattle, WA, 2011.

\* Novel mouse models for the investigation of neuronal-glia immune interactions. Harborview Medical Center Neuroscience Seminar, Seattle, WA, 2011.

Neuronal-glia interactions in the regulation of sickness behavior. University of Michigan Molecular & Integrative Physiology Seminar, Ann Arbor, MI, 2010.

## *Conference Presentations: Talks & Posters*

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**Ingiosi AM**, Hayworth CR, Frank MG. Basal forebrain astrocytes promote sustained wakefulness through G<sub>q</sub>-protein-coupled pathways. Poster at Neuroscience, Chicago, IL, 2021.

**Ingiosi AM**, Hayworth CR, Frank MG. Basal forebrain astrocytes promote sustained wakefulness through G<sub>q</sub>-protein-coupled pathways. Poster at The Jackson Laboratory Impacts of Sleep and Circadian Biology on Alzheimer's Disease and Aging workshop, Bar Harbor, ME, 2021.



- Ingiosi AM**, Hayworth CR, Harvey DO, Singletary KG, Rempe MJ, Wisor JP, Frank MG. A role for astroglial calcium activity in mammalian sleep and sleep homeostasis. Oral & poster presentation at Gordon Research Conference and Seminar on Sleep Regulation and Function, Lucca (Barga), Italy, 2020. *Canceled due to COVID-19*.
- Ingiosi AM**, Hayworth CR, Harvey DO, Wisor JP, Frank MG. A role for astroglial calcium activity in sleep and sleep homeostasis. Oral & poster presentation at World Sleep, Vancouver, Canada, 2019.
- Schoch H, **Ingiosi AM**, Wintler T, Singletary KG, Medina E, Frank MG, Peixoto L. Developmental trajectory of sleep disturbances in a Shank3 mouse model of autism. Poster at World Sleep, Vancouver, Canada, 2019.
- Ingiosi AM**, Hayworth CR, Harvey DO, Singletary KG, Rempe MJ, Wisor JP, Frank MG. Astroglial contributions to sleep and sleep homeostasis. Poster at Biomedical Sciences Symposium, Spokane, WA, 2019.
- Ingiosi AM**, Hayworth CR, Harvey DO, Wisor JP, Frank MG. Astroglial contributions to sleep and sleep homeostasis. Poster at Inland Northwest Research Symposium, Spokane, WA, 2019.
- Ingiosi AM**, Wintler T, Schoch H, Singletary KG, Righelli D, Roser LG, Risso D, Frank MG, Peixoto L. Shank3 modulates sleep and expression of circadian transcription factors. Poster presented by Wintler T at International Society for Autism Research Meeting, Montreal, Canada, 2019.
- Schoch H, **Ingiosi AM**, Wintler T, Singletary KG, Medina E, Frank MG, Peixoto L. Developmental trajectory of sleep disturbances in a Shank3 mouse model. Poster at International Society for Autism Research Meeting, Montreal, Canada, 2019.
- Ingiosi AM**, Hayworth CR, Harvey DO, Wisor JP, Frank MG. Astroglial contributions to sleep and sleep homeostasis. Poster at Gordon Research Conference and Seminar on Glial Biology, Ventura, CA, 2019.
- Ingiosi AM**, Hayworth CR, Harvey DO, Wisor JP, Frank MG. Astroglial contributions to sleep homeostasis. **Dynamic poster** & poster at Neuroscience, San Diego, CA, 2018.
- Ingiosi AM**, Davis CJ, Dunbrasky D, Pavlova MN, Krueger JM, Opp MR. Differential sleep responses to immune challenge in mice with the Tnf 55 kD receptor expressed selectively on neurons or astrocytes. Poster & oral presentation at SLEEP, Denver, CO, 2016.
- Ingiosi AM**, Davis CJ, Dunbrasky D, Pavlova MN, Krueger JM, Opp MR. Differential sleep responses to immune challenge in mice with the Tnf 55 kD receptor expressed selectively on neurons or astrocytes. Poster at Gordon Research Conference and Seminar on Sleep Regulation and Function, Galveston, TX, 2016.
- Ingiosi AM**, Opp MR. Contributions of neuronal and astroglial interleukin-1 receptor 1 to sleep and immune responses. Poster and oral presentation at University of Washington Academic Evening, Seattle, WA, 2014.
- Ingiosi AM**, Opp MR. Selective contributions of neuronal and astroglial interleukin-1 receptor 1 to sleep and central immune responses. Poster at Gordon Research Conference on Sleep Regulation and Function, Galveston, TX, 2014.
- Ingiosi AM**, Opp MR. Selective contributions of neuronal and astroglial interleukin-1 receptor 1 to immunomodulation and behavioral immune responses. Poster at Lake Arrowhead Annual Sleep Training Workshop, Lake Arrowhead, CA, 2013.

**Ingiosi AM**, Opp MR. Selective contributions of neuronal and astroglial interleukin-1 receptor 1 to behavioral immune responses. Oral presentation at PsychoNeuroImmunology Research Society Scientific Meeting, Stockholm, Sweden, 2013.

**Ingiosi AM**, Opp MR. Selective contributions of neuronal and astroglial interleukin-1 receptor 1 to behavioral immune responses. Poster at University of Washington Academic Evening, Seattle, WA, 2013.

**Ingiosi AM**, Pavlova MN, Raymond Jr. RM, Opp MR. Deconstructing neuronal and glial contributions to inflammatory immune responses. Poster at Neuroscience, New Orleans, LA, 2012.

**Ingiosi AM**, Pavlova MN, Raymond Jr. RM, Opp MR. Deconstructing neuronal and glial contributions to inflammatory immune responses. Poster at Lake Arrowhead Annual Sleep Training Workshop, Lake Arrowhead, CA, 2012.

**Ingiosi AM**, Pavlova MN, Raymond Jr. RM, Opp MR. Novel mouse models for the investigation of neuronal-glia immune interactions. Poster at PsychoNeuroImmunology Research Society Scientific Meeting, San Diego, CA, 2012.

**Ingiosi AM**, Pavlova MN, Raymond Jr. RM, Opp MR. Deconstructing neuronal and glial contributions to inflammatory immune responses. Poster at University of Washington Academic Evening, Seattle, WA, 2012.

**Ingiosi AM**, Pavlova MN, Raymond Jr. RM, Opp MR. Novel mouse models for the investigation of neuronal-glia immune interactions. Poster at Neuroscience, Chicago, IL, 2011.

**Talsma AM**, Baracchi F, Raymond Jr. RM, Opp MR. IL-1 receptor 1 and TNF receptor 1 mediate LPS-induced alterations in sleep. Poster at University of Washington Academic Evening, Seattle, WA, 2011.

**Talsma AM**, Sutton BC, Titiz AS, Opp MR. Pre-clinical studies of the effects of hypnotics on immune response to influenza infection. Poster at Lake Arrowhead Annual Sleep Training Workshop, Lake Arrowhead, CA, 2009.

**Talsma AM**, Raymond Jr. RM, Opp MR. Sepsis-induced alterations in sleep: role of cholinergic and GABAergic systems. Poster at Neuroscience, Washington, DC, 2008.

**Talsma AM**, Waugh S, Priestley J, Raymond Jr. RM, Opp MR. Cytokine-induced alterations in rapid eye movement sleep: role of cholinergic and GABAergic brainstem systems. Poster at Lake Arrowhead Annual Sleep Training Workshop, Lake Arrowhead, CA, 2007.

### *Media Coverage*

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[“Research highlight: Dr. Ashley Ingiosi”](#) 27 July 2022. Bruker.

[“Sleeping under the stars: astrocyte contributions to sleep”](#) 21 June 2022. Researcher Sleep and the Brain Series podcast, episode 2.

[“Cracking autism’s sleep conundrum”](#) 25 February 2022. Spectrum.

[“Episode 13: Meet a sleep scientist + why sleep feels short”](#) 17 December 2021. Ask Dr. Universe podcast.

[“Ask Dr. Universe: Why does sleep feel so short?”](#) 3 October 2021. The Spokesman-Review.

[“#893 - Ashley Ingiosi \(Neuroscientist & Sleep\)”](#) 8 August 2021. Out Of the Blank podcast.

[“The twinkling stars of the brain”](#) 12 November 2020. Water Cooler Neuroscience podcast.

[“Amid pandemic, U.S. faculty job openings plummet”](#) 6 October 2020. Science.

[“Why do brains need sleep? These ‘twinkling’ star-shaped cells may help us find out”](#) 29 September 2020. Popular Science.

[“Coffee Break with Dr. Ashley Ingiosi”](#) 29 September 2020. Inscopix Blog.

[“Science column: How we sleep”](#) 24 September 2020. CBC Radio: All in a Day.

[“Astrocytes, not just neurons, play a role in sleep”](#) 24 September 2020. The Scientist.

[“Star-shaped brain cells may hold the key to why, how we sleep”](#) 24 September 2020. WSU Insider.

[“How much sleep you need each night and warning signs that you're not getting enough, according to neuroscientists”](#) 9 July 2020. Insider.

[“Sleep struggles in autistic people may have genetic basis”](#) 3 May 2019. Spectrum.

[“Understanding insomnia in autism spectrum disorder”](#) 29 April 2019. eLife Digest.

[“WSU study links gene to sleep problems in autism”](#) 29 April 2019. WSU Insider.