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## Trevor M. Lewis, PhD

School of Medical Sciences

UNSW Sydney (The University of New South Wales)

Web: [https://www.researchgate.net/profile/Trevor\\_Lewis2](https://www.researchgate.net/profile/Trevor_Lewis2)

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### ACADEMIC QUALIFICATIONS

- 1994 PhD (Physiology), The University of Adelaide
- 1988 Certificate in Science Communication, Australian National University
- 1987 BSc (Hons I) (Physiology), The University of Adelaide

### AWARDS

- 2019 Faculty of Medicine Educator of the Year
- 2019 Faculty of Medicine Award for Teaching Excellence
- 2018 School of Medical Sciences Award for outstanding contributions to the student experience.
- 2015 UNSW Vice Chancellor's Award for Teaching Excellence - Outstanding Contributions to Student Learning

### APPOINTMENTS

- Jul 2012 – ongoing Senior Lecturer, School of Medical Sciences, UNSW Australia.
- Mar 2005 – Jul 2012 Lecturer, School of Medical Sciences, UNSW Australia.
- May 2003 – Mar 2005 Senior Research Associate, School of Medical Sciences, UNSW Australia.
- Jul 1997 – May 2003 Senior Research Associate, Garvan Institute of Medical Research.
- Feb 1994 – Jul 1997 Postdoctoral researcher fellow, University College London.

### TEACHING

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#### TEACHING INNOVATION

##### *Adaptive learning modules*

Developed and delivered on-time three adaptive learning modules on the Smart Sparrow platform around a thyroid gland physiology practical class. A pre-lab module prepares the students for the class. A histology module provides easy access to annotated digital histology sections for interpretation and analysis during the class. A post-lab self-assessment module is a formative activity, allowing students to confirm their understanding and correct any misunderstandings. These modules have been shared nationally on the BEST Network. I also developed pre- and post-lab modules for other classes, including a sciatic nerve compound action potential practical, using alternative platforms (for example, the 'lesson' tool in Moodle).

##### *Student ePortfolios to track teamwork skills*

We adapted a teamwork rubric from the Association of American Colleges and Universities (AACU) and

implemented this across ten courses in the medical sciences program where teamwork projects were an assessment task. Students self-assessed their teamwork skills before and after each project. Students also recorded their development of skills and evidence for their achievement of the teamwork graduate capability in an electronic portfolio over the duration of their study program.

### *Blended learning*

Development and incorporation of online resources to provide effective and timely feedback on student understanding and progress. These are a combination of formative tasks that allow students to confirm their understanding by working through scenarios at their own pace, and low-stakes summative tasks that provide immediate adaptive feedback on weekly topics. The feedback to students helps them keep on track with the course work and the analytics that it provides me as an educator helps identify those students that are at risk of failing or topics where there are misconceptions that need to be addressed.

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## CURRENT UNDERGRADUATE TEACHING

### MFAC Beginnings, Growth and Development A (undergraduate medicine curriculum; 260 students)

Convener of the course and chair of the design and implementation group (DIG) for the course. Responsible for the administration and coordination of 40 academic, clinical and guest lecturers across eight disciplines; training and organisation of a team of 10-12 facilitators for scenario group learning sessions; coordinating the assessment tasks and delegating the marking; annual content review with the DIG; and reporting to the Phase 1 medicine committee. I also teach in the course as a scenario group facilitator and principal teacher for endocrinology.

### NEUR3121 Molecular and Cellular Neuroscience ( science and medical science; 80 students)

Convener of the course, responsible for the administration of the course, maintaining course content on the learning management system (Moodle), preparing all assessment tasks and coordinating the team of seven lecturers that contribute to the course. I deliver lectures on ligand-gated ion channels, synaptic plasticity, and synaptic integration. I am the principal teacher for the course practical classes.

### PHSL2101 / 2121 / 2501 Physiology 1A

(science, optometry, exercise physiology, medical science and biomedical engineering; 800 students)

Principal teacher for excitable membranes, skeletal muscle and sensory physiology practical classes (class size approximately 100 students).

### PHSL2201 / 2221 / 2502 Physiology 1B

(science, optometry, exercise physiology, medical science and biomedical engineering; 500 students)

Principal teacher for delivering lectures on endocrinology and reproduction. Principle teacher for thyroid physiology practical class.

### PHAR3102 Molecular Pharmacology (science and medical science; 80 students)

Principal teacher for lectures on structure and function of ion channels, with emphasis on the mechanism of action of common classes of drugs on ion channels..

### Undergraduate medicine program

Facilitation of small tutorial groups (14 students) for scenario based learning.

*Foundations:* Introductory lecture on endocrinology.

*Beginnings Growth and Development:*

- principal teacher for lectures on endocrinology

- practical class on thyroid physiology
- discipline tutorials on endocrinology

#### *Aging and Endings:*

- principal teacher for practical class on skeletal muscle physiology

Pre-med course for Aboriginal and Torres Strait Islander students.

## SCHOLARSHIP OF LEARNING AND TEACHING

### FORMATIVE AND SUMMATIVE PEER REVIEW OF TEACHING

2017-present. Nominated by Associate Dean Education (Faculty of Medicine) as a reviewer for the university-wide summative review of teaching program introduced by the Pro Vice Chancellor Education.

2017-present. Invited to be a reviewer for the formative peer review of teaching program, Faculty of Medicine.

### TEACHING GRANT SUPPORT

2015-2016, UNSW Learning and Teaching Innovation Grant (\$25,000)

Aligning Assessment to Track Development of Graduate Capabilities, Professional Skills and Life-Long Learning in the Biomedical Sciences

Chief Investigators: AProf P. Polly, Dr R. Vickery, Dr T. Thai, AProf J-L. Yang, AProf T. Fath, Dr C. Herbert, Dr N. Jones, **Dr T. M. Lewis**, AProf N. Pather, Dr S. Schibeci and Prof J. Cox

2013-2014, Biomedical Education Skills and Training (BEST) Network Partner Project Grant (\$10,000)

Project title: Thyroid gland physiology virtual laboratory

Chief Investigator: **Dr T. M. Lewis**

### PUBLICATIONS

Polly P., Thai T., Yang J.L., Luo A., Herbert C., Jones N., **Lewis T.**, Vickery R., Richardson A., Schibeci S. (2018). The teacher-student journey: Program-wide teamwork skills development and evaluation in the medical sciences. *International Journal of Assessment and Evaluation* 24(4),1-24.

Polly P., Vickery R., Thai T., Yang J-L., Fath T., Herbert C., Jones N., **Lewis T.**, Pather N., Schibeci S. and Cox J. (2016). ePortfolios, Assessment and Professional Skills in the Medical Sciences at UNSW Australia. In J.L. Rowley (Ed), *ePortfolios in Australian Universities - Research Findings and Emerging Practices in Enhanced Student Learning*. Springer.

### CONFERENCE PRESENTATIONS

**Lewis T.M.** (2017). Feedback for success. *UNSW Learning and Teaching Forum*.

Britton F.C., **Lewis T.M.**, Mobbs S. and Parker R.L. (2016). Inspiring student learning through the introduction of The Reading Game. *Proceedings of the Australian Physiological Society* 47: 25P.

**Lewis T.M.** (2016). Online adaptive tutorials that support learning in data interpretation and scientific reasoning. *Proceedings of the Australian Physiological Society* 47: 30P.

Britton F.C., **Lewis T.M.**, Mobbs S. and Parker R.L. (2016). Inspiring UNSW medicine student learning through the use of The Reading Game. *UNSW Learning and Teaching Forum*.

**Lewis, T.M.** (2015) Online adaptive tutorials that support learning in data interpretation and scientific reasoning. *UNSW Learning and Teaching Forum*.

## ADMINISTRATIVE RESPONSIBILITIES

- 2016-present School of Medical Sciences Honours Committee.
- 2016-present Faculty of Medicine Phase 1 Medicine Curriculum Committee.
- 2012-2018 Talented Students Program; co-ordinator for School of Medical Sciences.
- 2009-2014 Faculty of Medicine laboratory safety task force, for compliance and inspection.
- Jun-Dec 2007 Acting Chairperson of the School of Medical Sciences Occupational Health and Safety committee.
- 2006-2011 Deputy Chairperson of the School of Medical Sciences Occupational Health and Safety committee.
- 2005-2011 Representative for Physiology and Pharmacology on the School of Medical Sciences Occupational Health and Safety committee.

## MEMBERSHIP OF LEARNED SOCIETIES

- 1990-present The Australian Physiological Society
- 1990-present The Australian Society for Medical Research
- 2008-present The Australian Society for Biophysics
- 2008-present Society for Neuroscience, USA
- 1994-1997 Affiliate of the Physiological Society, UK

## CONTRIBUTIONS TO THE DISCIPLINE OF PHYSIOLOGY

- 2017-2018 Local Organising Committee for the Australian Physiological Society annual scientific meeting, Sydney (25-28 Nov 2018).
- 2014 Australian Physiological Society and Physiological Society of Japan symposium: Frontiers of molecular mechanisms of ligand recognition and activation of receptor channels. Joint chair and organiser with Prof Yoshihiro Kubo, Australian Physiological Society annual scientific meeting, Brisbane (30 Nov – 3 Dec).
- 2012 Local Organising Committee for joint scientific meeting of the Australian Physiological Society, the Australian Society for Biophysics and the New Zealand Physiological Society (2-5 Dec).
- 2008-2010 Local Organising Committee and Programming Committee for joint scientific meeting of the Australian Physiological Society and Australian Neuroscience Society to celebrate the 50<sup>th</sup> anniversary of the Australian Physiological Society (31 Jan-3 Feb 2010).
- 2004-2007 Associate Editor, the Australian Physiological Society.
- Oct 2007 Programming committee for the Australian Physiological Society annual scientific meeting, Newcastle (2-5 Dec).

- Aug 2005      Programming committee for the Australian Physiological and Pharmacological Society annual meeting, Canberra (27-30 Sep).
- Aug 2003      Programming committee for the Australian Physiological and Pharmacological Society annual meeting, Sydney (29 Sep – 1 Oct).
- 1999-2001    Convenor, Organising Committee. Structure and Function of Ion Channels, international satellite symposium of the 34<sup>th</sup> IUPS Congress, Leura, Fairmont Resort (2-5 Sep 2001).

## RESEARCH

My research focus is on the molecular function of ligand-gated ion channels. I use a combination of homology modelling, site-directed mutagenesis, recombinant expression, fluorescent labelling and patch-clamp electrophysiology to investigate the function of ligand-gated ion channels. I employ a combination of whole-cell and single channel recordings to explore the links between the structure and kinetic function of the channels. This has allowed me to identify key regions of ligand-gated ion channels that are involved in the process of ligand binding, signal transduction leading to channel opening, and the biophysics of ion permeation through the channel pore.

## RESEARCH GRANT SUPPORT

2012-2014, NHMRC Project Grant no 1023202 (\$299,175)

Project Title: "The contribution of subunit interfaces to receptor activation in ligand gated ion channels."

Chief Investigators: Dr. T. M. Lewis, EProf. P. H. Barry

2007-2009, NHMRC Project Grant no. 455310 (\$529,750)

Project Title: "Mechanism of signal transduction and receptor activation in ligand gated ion channel receptors." Chief Investigators: Prof. P. R. Schofield, Dr. T. M. Lewis, EProf. P. H. Barry, Dr. J. Clements

2003-2005, NHMRC Project Grant no. 222830 (\$313,000)

Project Title: "Structure-function studies of ion permeation and selectivity in recombinant glycine receptor channels." Chief Investigator: Prof. P. H. Barry Dr. A. J. Moorhouse and Dr. T. M. Lewis

2004-2006, NHMRC Project Grant no. 276403 (\$488,250)

Project Title: "Molecular determinants of inhibitory synaptic function studied using mutant and transgenic mice." Chief Investigator: Prof. Peter R Schofield. Associate Investigators: Dr. Trevor Lewis, Dr. Bob Callister, Prof. Hans Weiher, Prof. Pankaj Sah

2003-2005, NHMRC Project Grant no. 230806 (\$435,000)

Project Title: "Mechanism of signal transduction and receptor activation in ligand gated ion channel receptors." Chief Investigator: Prof. Peter R Schofield. Associate Investigators: Prof. Peter Barry, Dr. Trevor Lewis, Dr. Mark Rees, Prof. Michael Owen

## POSTGRADUATE TRAINING

I have successfully supervised or co-supervised six PhD students to completion. Dr Dennis Chung is a postdoctoral research fellow at the National Institute for Physiological Sciences, Okazaki, Japan; Dr Tom Dupree is a data manipulation scientist; Dr Nathan Absalom is a postdoctoral researcher at the University of Sydney; Dr Jayanthi Maniam is a research fellow at The University of New South Wales; Dr Branwen Morgan is a science communicator; Dr Behnaz Vafa is a Senior Clinical Research Consultant with INC Research. I have also supervised 8 honours students, with five achieving a class I honours.

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## POSTGRADUATE STUDENTS

Tom Dupree, PhD, 2019

Faculty of Medicine, The University of New South Wales

Thesis title: "Application of computer-aided methods for the design of novel inhibitors of topoisomerases, enzymes responsible for relaxation of DNA helices"

Supervisor: AProf Renate Griffiths, Co-supervisor: Dr Trevor M. Lewis

Dennis Cheung, PhD, 2018

Faculty of Medicine, The University of New South Wales

Thesis title: "Novel approaches for enhancing GABAergic signalling as a strategy for treating epileptic seizures"

Supervisor: Dr Andrew J. Moorhouse and Dr Trevor M. Lewis

Louise Walton, BSc (Hons I), 2014

Faculty of Science, The University of New South Wales

Thesis title: "Molecular mechanisms of glycine receptor activation"

Supervisor: Dr Trevor M. Lewis and Dr Andrew J. Moorhouse

Dennis Cheung, BSc (Hons I) and University Medal, 2013

Faculty of Science, The University of New South Wales

Thesis title: "Impact of manipulating KCC2 function on seizure activity in vivo and in vitro"

Supervisor: Dr Andrew J. Moorhouse and Dr Trevor M. Lewis

Denise Tam, BSc (Hons I), 2013

Faculty of Science, The University of New South Wales

Thesis title: "Subunit interface interactions involved in the signal transduction of the glycine receptor"

Supervisor: Dr Trevor M. Lewis and Dr Andrew J. Moorhouse

Ronald Mak, BSc (Hons IIA), 2010

Faculty of Science, The University of New South Wales

Thesis title: "Predicted salt-bridge in the M2-M3 linker of the glycine receptor"

Supervisor: Dr Trevor M. Lewis and Dr Andrew J. Moorhouse

Jayanthi Maniam, PhD, 2010

Faculty of Medicine, The University of New South Wales

Thesis title: "Stress and glucocorticoid receptors"

Supervisor: Prof Margaret Morris, Co-supervisor: Dr Trevor M. Lewis

James Yeung, BSc (Med) (Hons IIA) 2008

Faculty of Medicine, The University of New South Wales

Thesis title: "Modulating effects of artemin on peripheral nociceptors"

Supervisor: Dr Perigrine Osbourne, Co-supervisor: Dr Trevor M. Lewis

Mary Peng, BSc (Hons I) 2006

Faculty of Science, The University of New South Wales

Thesis title: "Identifying the upper boundary of the selectivity filter in the human glycine receptor"

Supervisor: Dr Trevor M. Lewis, Co-supervisor: EProf. Peter H. Barry.

Presently working with the Australian Taxation Office.

Silas Sugiharto, BSc (Hons I) 2004

Faculty of Medicine, The University of New South Wales

Thesis title: "Ion selectivity in the recombinant glycine receptor"

First class honours.

Supervisor: Prof. Peter H. Barry, Co-Supervisors: Dr. Trevor M. Lewis and Dr. Andrew Moorhouse.

Presently working as a research assistant in our laboratory.

Nathan Absalom, PhD, 2004

Faculty of Medicine, The University of New South Wales

Thesis title: "The structure and function of the glycine receptor"

Supervisor: Prof. Peter R. Schofield, Co-Supervisor: Dr. Trevor M. Lewis

Awarded a Wellcome Trust Training Fellowship for postdoctoral training at Oxford University (2004) and currently postdoctoral researcher at the University of Sydney.

Branwen Morgan, PhD, 2002

Faculty of Medicine, The University of New South Wales

Thesis title: "Mutations in the glycine receptor and their effects on synaptic neurotransmission"

Supervisor: Prof. Peter R. Schofield, Co-Supervisors: Dr. Herbert Herzog and Dr. Trevor M. Lewis.

Presently working in science communication.

Nathan Absalom, BSc (Hons I), 1999

Faculty of Science, The University of New South Wales

Thesis title: "Structure and function of the glycine receptor M2 domain"

Supervisor: Prof. Peter R Schofield, Co-Supervisor: Dr. Trevor M. Lewis

Behnaz Vafa, PhD, 1998

Faculty of Medicine, The University of New South Wales

Thesis title: "The inhibitory glycine receptor. An investigation of receptor structure and function"

Supervisor: Prof. Peter R Schofield, Co-Supervisors: Dr. Joseph W. Lynch and Dr. Trevor M. Lewis.

Presently working in the pharmaceutical industry.

## MEMBERSHIP OF LEARNED SOCIETIES

1990-present The Australian Physiological Society

1990-present The Australian Society for Medical Research

2008-present The Australian Society for Biophysics

2008-present Society for Neuroscience, USA

2004-2007 Associate Editor of the Australian Physiological Society

1994-1997 Affiliate of the Physiological Society, UK

## PUBLICATIONS AND ANALYTICS

Analytics are available at:

Google Scholar: <https://scholar.google.com/citations?user=ySuOSxoAAAAJ&hl=en>

Researcher ID: <http://www.researcherid.com/rid/A-2939-2011>

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## REFEREED JOURNAL ARTICLES

1. **Lewis, T.M.**, A.F. Dulhunty, P.R. Junankar, and C. Stanhope (1992). The ultrastructure of sarcoballs on the surface of skinned amphibian skeletal muscle fibres. *Journal of Muscle Research and Cell Motility* 13, 640-653.
2. **Lewis, T.M.**, Roberts, M.L. and Bretag, A.H. (1994). Immunolabelling for VDAC, the mitochondrial voltage-dependent anion channel, on sarcoplasmic reticulum from amphibian skeletal muscle. *Neuroscience Letters* 181, 83-86.
3. Sivilotti, L.G., McNeil, D.K., **Lewis, T.M.**, Nasar, M.A., Schoepfer, R. and Colquhoun, D. (1996). Recombinant nicotinic receptors, expressed in *Xenopus* oocytes, do not resemble rat sympathetic ganglion receptors in single channel behaviour. *Journal of Physiology* 500, 123-138.
4. **Lewis, T.M.**, Harkness, P.C., Sivilotti, L.G., Colquhoun, D. and Millar, N.S. (1997). The ion channel properties of a rat recombinant neuronal nicotinic receptor are dependent on the host cell type. *Journal of Physiology* 505, 299-306.
5. **Lewis, T.M.**, Sivilotti, L.G., Colquhoun, D., Gardiner, R.M., Schoepfer, R. and Rees, M. (1998). Properties of human glycine receptors containing the hyperekplexia mutation  $\alpha 1(K276E)$ , expressed in *Xenopus* oocytes. *Journal of Physiology* 507, 25-40.
6. Vafa, B., **Lewis, T.M.**, Cunningham, A.M., Jacques, P., Lynch, J.W. and Schofield, P.R. (1999). Identification of a new ligand binding domain in the  $\alpha 1$  subunit of the inhibitory glycine receptor. *Journal of Neurochemistry* 73, 2158-2166.
7. Rees, M.I., **Lewis, T.M.**, Vafa, B., Corry, P., Jungbluth, H., Muntoni, F., Stephenson, J.B.P., Kerr, M., Ferry, C., Snell, R., Schofield, P.R. and Owen, M.J. (2001). Compound heterozygosity and nonsense mutations in the  $\alpha 1$ -subunit of the inhibitory glycine receptor in probands with hyperekplexia. *Human Genetics* 109, 267-270.
8. Rees, M.I., **Lewis, T.M.**, Kwok, J.B.J., Mortier, G.R., Govaert, P., Snell, R.G., Schofield, P.R. and Owen, M.J. (2002). Hyperekplexia associated with compound heterozygote mutations in the  $\beta$ -subunit of the human inhibitory glycine receptor (GLRB). *Human Molecular Genetics* 11, 853-860.
9. **Lewis, T.M.**, Schofield, P.R. and McClellan, A.M.L. (2003). Kinetic determinants of agonist action at the recombinant human glycine receptor. *Journal of Physiology* 549, 361-374.
10. Absalom, N.L., **Lewis, T.M.**, Kaplan, W., Pierce, K.D. and Schofield, P.R. (2003). Role of charged residues in coupling ligand binding and channel activation in the extracellular domain of the glycine receptor. *Journal of Biological Chemistry* 278 (50), 50151-50157.
11. Morris, R., Morgan, B.S., **Lewis, T.M.**, Pierce, K.D., Pisano, A. and Schofield, P.R. (2004). In vivo somatic delivery of plasmid DNA and retrograde transport to obtain cell-specific gene expression in the central nervous system. *Journal of Neurochemistry* 90, 1445-1452.
12. Qu, W., Moorhouse, A.J., **Lewis, T.M.**, Pierce, K.D. and Barry, P.H. (2005). Mutation of the pore glutamate affects both cytoplasmic and external dequalinium block in the rat olfactory CNGA2 channel. *European Biophysics Journal with Biophysics Letters* 34, 442-453.
13. Qu, W., Moorhouse, A.J., Chandra, M., Pierce, K.D., **Lewis, T.M.**, Barry, P.H. (2006). A single P-loop glutamate point mutation to either lysine or arginine switches the cation-anion selectivity of the CNGA2 channel. *Journal of General Physiology* 127(4): 375-389.
14. Sugiharto S., **Lewis T.M.**, Moorhouse A.J., Schofield P.R. and Barry P.H. (2008). Anion-cation permeability correlates with hydrated counterion size in glycine receptor channels. *Biophysical Journal* 95(10), 4698-4715.
15. Carland J.E., Cooper M.A., Sugiharto S., Jeong H-J., **Lewis T.M.**, Barry P.H., Peters J.A., Lambert J.J. and Moorhouse A.J. (2009). Characterization of the effects of charged residues in the intracellular loop on ion permeation in  $\alpha 1$  glycine receptor channels. *Journal of Biological Chemistry* 284: 2023-2030.

16. Barry P.H., Sugiharto S., **Lewis T.M.** and Moorhouse A.J. (2010). Further analysis of counterion permeation through anion-selective glycine receptor channels. *Channels* 4(3), 142-149. (ISSN: 1933-6950)
17. Sugiharto S., Carland J.E., **Lewis T.M.**, Moorhouse A.J. and Barry P.H. (2010). External divalent cations increase anion-cation permeability ratio in glycine receptor channels. *Pflügers Archiv - European Journal of Physiology* 460(1), 131-142.
18. Cederholm J.M.E., Absalom N.L., Sugiharto S., Griffith R., Schofield P.R. and **Lewis T.M.** (2010). Conformational changes in extracellular loop 2 associated with signal transduction in the glycine receptor. *Journal of Neurochemistry* 115, 1245-1255.
19. Huang S.H., **Lewis T.M.**, Lummis S.C.R., Thompson A.J., Chebib M., Johnston G.A.R. & Duke R.K. (2012). Mixed antagonistic effects of the ginkgolides at recombinant human  $\rho 1$  GABAC receptors. *Neuropharmacology* 63, 1127-1139.
20. Absalom N.L., Quek G., **Lewis T.M.**, Qudah T., von Arenstorff I., Ambrus J.I., Harpsoe K., Karim N., Balle T., McLeod M.D. and Chebib M. (2013). Covalent trapping of methyllycaconitine at the  $\alpha 4$ - $\alpha 4$  interface of the  $\alpha 4\beta 2$  nicotinic acetylcholine receptor: antagonist binding site and mode of receptor inhibition revealed. *Journal of Biological Chemistry* 288, 26521-26532.
21. Barry P.H., **Lewis T.M.** and Moorhouse A.J. (2013). An optimised 3 M KCl salt-bridge technique used to measure and validate theoretical liquid junction potential values in patch-clamping and electrophysiology. *European Biophysics Journal* 42, 631-646.
22. Carland J.E., Yamamoto I., Hanrahan J.R., Abdel-Halim H., **Lewis T.M.**, Absalom N. and Chebib M. (2015). A hydrophobic area of the GABA  $\rho 1$  receptor containing phenylalanine 124 influences both receptor activation and deactivation. *J. Mol. Neurosci.* 55, 305-313.
23. Indurthi D.C., **Lewis T.M.**, Ahring P.K., Balle T., Chebib M. and Absalom N.L. (2016). Ligand binding at the  $\alpha 4$ - $\alpha 4$  agonist-binding site of the  $\alpha 4\beta 2$  nAChR triggers receptor activation through a pre-activated conformational state. *PLoS ONE* 11, e0161154. DOI: 10.1371/journal.pone.0161154
24. Duncan T., Lowe A., Sidhu K., Sachdev P., **Lewis T.**, Lin R.C.Y., Sytnyk V. and Valenzuela M. (2017). Replicable Expansion and Differentiation of Neural Precursors from Adult Canine Skin. *Stem Cell Reports* 9, 557-570.
25. Polly P., Thai T., Yang J.L., Luo A., Herbert C., Jones N., **Lewis T.**, Vickery R., Richardson A., Schibeci S. (2018). The teacher-student journey: Program-wide teamwork skills development and evaluation in the medical sciences. *International Journal of Assessment and Evaluation* 24(4),1-24.
26. Indurthi D.C., Qudah T., Liao V.W., Ahring P.K., **Lewis T.M.**, Balle T., Chebib M. and Absalom N.L. (2019). Revisiting autosomal dominant nocturnal frontal lobe epilepsy (ADNFLE) mutations in the nicotinic acetylcholine receptor reveal an increase in efficacy regardless of stoichiometry. *Pharmacological Research* 139, 215-227.

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## REVIEWS

27. Absalom, N.L., **Lewis, T.M.** and Schofield, P.R. (2004). Mechanisms of channel gating of the ligand-gated ion channel superfamily inferred from protein structure. *Experimental Physiology* 89, 145-153.
28. Absalom, N.L., Schofield, P.R. and **Lewis, T.M.** (2009). Pore structure of the Cys-loop ligand-gated ion channels. *Neurochemical Research* 34, 1805-1815.

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## REFEREED CONFERENCE PAPERS

29. Cederholm, J.M.E., Schofield, P.R. and **Lewis, T.M.** (2009). Gating mechanisms in Cys-loop receptors. *European Biophysics Journal with Biophysics Letters* 39(1), 37-49.

30. **Lewis, T.M.** and Schofield, P.R. (1999). Structure-function relationships of the human glycine receptor: insights from hyperekplexia mutations. *Annals New York Academy of Sciences* 868, 681-684.

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## BOOK CHAPTERS

31. Moorhouse A.J., **Lewis T.M.** and Barry P.H. (2015). Analyzing Ion Permeation in Channels and Pumps Using Patch-Clamp Recording. In *Pumps, Channels, and Transporters*, pp. 51-88. John Wiley & Sons, Inc.
32. Polly P., Vickery R., Thai T., Yang J-L., Fath T., Herbert C., Jones N., **Lewis T.**, Pather N., Schibeci S. and Cox J. (2016). ePortfolios, Assessment and Professional Skills in the Medical Sciences at UNSW Australia. In J.L. Rowley (Ed), *ePortfolios in Australian Universities - Research Findings and Emerging Practices in Enhanced Student Learning*. Springer.

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## TECHNICAL REPORTS

33. Figl, T., **Lewis, T.M.** and Barry, P.H. (2003) Liquid junction potential corrections. *Axobits* 39, 6-10. (Subsequently also published as an Axon Instruments Application Note, 2004).

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## CONFERENCE PAPERS OR ABSTRACTS (LAST FIVE YEARS ONLY)

1. Chebib M., Absalom N.L., Quek G., Indurthi D., **Lewis T.M.**, Qudah T., von Arenstorff I., Halliday J.I., Ambrus J.I., Harpsøe K., Karim N., Balle T., McLeod M.D. (2013). An additional binding site for methyllycaconitine (MLA) and analogs occurs at the  $\alpha 4$ - $\alpha 4$  interface of the  $(\alpha 4)_3(\beta 2)_2$  nAChR. *Satellite Meeting of the Society for Neuroscience on Nicotinic Acetylcholine Receptors as Therapeutic Targets - Emerging Frontiers in Basic Research and Clinical Science, San Diego. Biochemical Pharmacology* 86(8) Special Issue: 1225.
2. Windley M. J., Drwal M. and **Lewis T.M.** (2013). A novel startle disease mutation of the glycine receptor  $\alpha 1$  subunit disrupts channel function. *Society for Neuroscience Annual Meeting, San Diego* 613.07 / E9.
3. Tam D., Windley M.J., Drwal M., Moorhouse A.J., Barry P.H. and **Lewis T.M.** (2013) Subunit interface interactions involved in the signal transduction of the glycine receptor. *37<sup>th</sup> Annual Meeting of the Australian Society for Biophysics*, P21.
4. Barry P.H., **Lewis T.M.** and Moorhouse A.J. (2013). Experimental and theoretical validation of calculated liquid junction potentials in monovalent ion solutions and effects of divalent ions. *37<sup>th</sup> Annual Meeting of the Australian Society for Biophysics*, P57.
5. Chebib M., Absalom N.L., Quek G., Indurthi D., **Lewis T.M.**, Qudah T., von Arenstorff I., Halliday J.I., Ambrus J.I., Harpsøe K., Karim N., Balle T. and McLeod M.D. (2013). An additional binding site for methyllycaconitine (MLA) and analogs occurs at the  $\alpha 4$ - $\alpha 4$  interface of the  $(\alpha 4)_3(\beta 2)_2$  nAChR. *Biochemical Pharmacology* 86, 1225 (poster abstract from: Nicotinic Acetylcholine Receptors as Therapeutic Targets: Emerging Frontiers in Basic Research and Clinical Science, *Satellite to the 2013 Meeting of the Society for Neuroscience*, San Diego, CA, 6-8 November.)
6. Windley M.J., Drwal M. and **Lewis T.M.** (2014). A novel startle disease mutation reveals the significance of W170 in glycine receptor function. *Gordon Research Conference. Ion Channels: The Molecular Basis of Excitability and Disease*. Mt Holyoke College, MA, 6 – 11 July.
7. **Lewis T.M.** (2014). Signal transduction at the subunit interfaces of the human glycine receptor. *Proceedings of the Australian Physiological Society* 45: 111P.
8. Absalom N., Indurthi D.C., **Lewis T.M.**, Balle T., Ahring P. and Chebib M. (2015). Flipping the nAChR open. *Gage Conference on Ion Channels and Transporters*
9. Britton F.C., Lewis T.M., Mobbs S. and Parker R.L. (2016). Inspiring student learning through the introduction of The Reading Game. *Proceedings of the Australian Physiological Society* 47: 25P.

10. **Lewis T.M.** (2016). Online adaptive tutorials that support learning in data interpretation and scientific reasoning. *Proceedings of the Australian Physiological Society* 47: 30P.
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