John, Man-Tak CHU Curriculum Vitae

Personal Information

Name: John, Man-Tak CHU
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Education

2007-2011	PhD	Department of Biology, Hong Kong Baptist University
2004-2007	BSc (hon)	Department of Biology, Hong Kong Baptist University

Work position

2025 – Present	**Assistant Professor, Faculty of Medicine, Macau University of Science and Technology**
2021 – 2025	**Research Officer, Department of Anaesthesiology, The University of Hong Kong**
2018 – 2021	**Assistant Research Officer, Department of Anaesthesiology, The University of Hong Kong**
2015 – 2018	**Postdoctoral Fellow, School of Biomedical Sciences, The University of Hong Kong**
2014 – 2015	**Postdoctoral Fellow, Department of Anaesthesiology, The University of Hong Kong**
2011 – 2014	**Postdoctoral Fellow, School of Chinese Medicine, Hong Kong Baptist University**

Publications

1. Y. Zhang, J. Li, X. Wang, Z. Zhang, S. Long, Edward C. Li, Y. Liu, **John M.T. Chu**, Raymond C.C. Chang, Gordon T.C. Wong and Y. Zhang (2025)

Modulation of Glutamate Release by Dexmedetomidine Preserves Dendritic Spines and Alleviates Cognitive Impairment in a Murine Model of Perioperative Neurocognitive Disorder. *Neuroscience Bulletin*. https://doi.org/10.1007/s12264-025-01518-w

2. Y. Chen, **John M.T. Chu**, J. Liu, Y. Duan, Z Liang, X. Zou, M. Wei, W. Xin, T. Xu, Gordon T.C. Wong and X. Feng (2025) Double negative T cells promote surgery-induced neuroinflammation, microglial engulfment and cognitive dysfunction via the IL-17/CEBP β/C3 pathway in adult mice. *Brain, Behavior and Immunity*. 123: 965-81. https://doi.org/10.1016/j.bbi.2024.10.029
3. Michael S.L. Lai, M.H. Sørensen, K. Lee, **John M.T. Chu** and Raymond C.C. Chang (2024) 3D Mapping of Direct VTA-CA2 Circuit with Potential Involvement in Parkinson's Disease Degeneration. *Neurobiology of Disease*. https://doi.org/10.1016/j.nbd.2024.106723
4. **John M.T. Chu**, Suki P.W. Chiu, J. Wang, Raymond C.C. Chang and Gordon T.C. Wong (2024) Adiponectin deficiency is a critical factor contributing to cognitive dysfunction in obese mice after sevoflurane exposure. *Molecular Medicine*. 30:177. https://doi.org/10.1186/s10020-024-00954-0
5. Y. Chen, **John M.T. Chu**, Raymond C.C. Chang and Gordon T.C. Wong (2024). Complement C3 From Astrocytes Plays Significant Roles in Sustained Activation of Microglia and Cognitive Dysfunctions Triggered by Systemic Inflammation After Laparotomy in Adult Male Mice. *Journal of Neuroimmune Pharmacology.* 19, 8. https://doi.org/10.1007/s11481-024-10107-z
6. J. Wang, Raymond C.C. Chang, **John M.T. Chu *** and Gordon T.C. Wong * (2024). Is adiponectin deficiency a critical factor for sevoflurane induced neurocognitive dysfunction? *Medical Hypotheses*. https://doi.org/10.1016/j.mehy.2023.111241. (* Co-corresponding author)
7. Y. Chen, J Joo, **John M.T. Chu**, Raymond C.C. Chang and Gordon T.C. Wong (2023). Downregulation of the glucose transporter GLUT 1 in the cerebral microvasculature contributes to postoperative neurocognitive disorders in aged mice. *Journal of Neuroinflammation*. 20:237. https://doi.org/10.1186/s12974-023-02905-8
8. Y. Liu, **John M.T. Chu**, R. You, Y. Zhang, Raymond C.C. Chang and Gordon T.C. Wong (2022). Prehabilitative resistance exercise reduces neuroinflammation and improves mitochondrial health in aged mice with perioperative neurocognitive disorders. *Journal of Neuroinflammation*. 19:150. https://doi.org/10.1186/s12974-022-02483-1
9. C. Huang *, **John M.T. Chu *,** Y. Liu, Vivian S.W. Kwong, Raymond C.C. Chang and Gordon T.C. Wong (2022) Sevoflurane induces neurotoxicity in the

animal model with Alzheimer's disease neuropathology via modulating glutamate transporter and neuronal apoptosis. *International Journal of Molecular Sciences*. 23, 6250. https://doi.org/10.3390/ ijms23116250 (*Authors share equal contributions)

10. Y. Zhang, **John M.T. Chu** and Gordon T.C. Wong (2022) Cerebral glutamate regulation and receptor changes in perioperative neuroinflammation and cognitive dysfunction. *Biomolecules*. 12, 597. https://doi.org/10.3390/biom12040597
11. **John M.T. Chu**, A. Abulimiti, Brian S.H. Wong, G. Zhao, S. Xiong, M. Zhao, Y. Wang, Y. Chen, Adora J. Wang, Y. Zhang, Raymond C.C. Chang, H. Yu and Gordon T.C. Wong (2022) Sigesbeckia orientalis L. derived active fraction ameliorated perioperative neurocognitive disorder through alleviating hippocampal neuroinflammation. *Frontiers in Pharmacology*. doi: 10.3389/fphar.2022.846631
12. Y. Chen, **John M.T. Chu**, Raymond C.C. Chang and Gordon T.C. Wong (2022) The complement system in the central nervous system: from neurodevelopment to neurodegeneration. *Biomolecules*. 12, 337. doi: https://10.3390/biom12020337
13. W. Xiong, S. Xiong, Q. Chen, K.G. Linghhu, G. Zhao, **John. M.T. Chu**, Gordon T.C. Wong, J. Li, Y. Hu, Y. Wang and H. Yu (2021) Brij-functionalized chitosan nanocarrier system enhances the intestinal permeability of P-glycoprotein substrate-like drugs, *Carbohydrate Polymer*. 266: 118112
14. Y. Liu, **John M.T. Chu**, Y. Tim, Y. Zhang, Y. Chen, Raymond, C.C. Chang and Gordon T.C. Wong (2020) Short-term resistance exercise inhibits neuroinflammation and attenuates neuropathological changes in 3xTg Alzheimer's disease mice. *Journal of Neuroinflammation*. 17, 4
15. C. Huang, Olivia T.W. Ng, **John M.T. Chu,** Michael G. Irwin, X. Hu, S. Zhu, Raymond C.C. Chang and Gordon T.C. Wong (2019) Differential effects of propofol and dexmedetomidine on neuroinflammation induced by systemic endotoxin lipopolysaccharides in adult Mice. *Neuroscience Letters*. 707, 134309
16. Y. Liu, Y. Tim, **John M.T. Chu**, Y. Chen, S. Dunnett, Y.S. Ho, Gordon T.C. Wong and Raymond C.C. Chang (2019) The beneficial effects of physical exercise in the brain and related pathophysiological mechanisms in neurodegenerative diseases. *Laboratory Investigation*. 99, 943-957
17. **John M.T. Chu**, W. Xiong, K.G. Linghu, Y. Liu, Y. Zhang, G.D. Zhao, M.G. Irwin, Gordon T.C. Wong and H. Yu (2018) Siegesbeckia Orientalis L. extract attenuates postoperative cognitive dysfunction, systemic inflammation, and neuroinflammation. *Experimental Neurobiology*. 27(6):564-573

18. W. Xiong, G.D. Zhao, X. Yin, K.G. Linghu, **John M.T. Chu**, Gordon T.C. Wong, H. Li, H. Yu and Y.T. Wang (2018) Brij-grafted-chitosan copolymers with function of P-glycoprotein modulation: Synthesis, characterization and in vitro investigations. *Carbohydrate Polymers*. 204: 89-96
19. C. Huang, **John M.T. Chu**, Y. Liu, Raymond C.C. Chang and Gordon T.C. Wong (2018) Varenicline reduces DNA damage, tau mislocalization and post surgical cognitive impairment in aged mice. *Neuropharmacology*. 143: 217-227
20. T. Zhang, H. Yue, L. Hao, H. Chen, M. Shao, X. Fu, **John M.T Chu**, G. Huang, B. Liu and Y. Zhou (2017) Differential gene expression profile of Buyanghuanwu decoction in rats with ventricular remodeling post-myocardial infarction. *Journal of Traditional Chinese Medicine*. 37(3): 341-354
21. **John M.T. Chu**, K.M. Lee, Daniella P.K. Wong, Gordon T.C. Wong and Kevin K.M. Yue (2016) Methylglyoxal-induced neuroinflammatory response in in vitro astrocytic cultures and hippocampus of experimental animals. *Metabolic Brain Disease*. 31(5): 1055-1064.
22. **John M.T. Chu**, K.M. Lee, Daniella P.K. Wong, Ricky N.S. Wong, Ken K.L. Yung, Christopher H.K. Cheng and Kevin K.M. Yue (2014) Ginsenosides attenuate methylglyoxal-induced impairment of insulin signaling and subsequent apoptosis in primary astrocytes. *Neuropharmacology*. 85: 215-223
23. Gabriel H.H. Chan, Betty Y.K. Law, **John M.T. Chu**, Kevin K.M. Yue, Z.H. Jiang, C.W. Lau, Y. Huang, S.W. Chan, Patrick Y.K. Yue and Ricky N.S. Wong (2013) Ginseng extracts restore high-glucose induced vascular dysfunctions by altering triglyceride metabolism and downregulation of atherosclerosis-related genes. *Evidence-Based Complementary and Alternative Medicine*, https://doi:10.1155/2013/797310
24. Daniella P.K. Wong *, **John M.T. Chu ***, Victor K.L. Hung, Dicky K.M. Lee, Christopher H.K. Cheng, Ken K.L. Yung and Kevin K.M. Yue (2013) Modulation of endoplasmic reticulum chaperone GRP78 by high glucose in hippocampus of streptozotocin-induced diabetic mice and C6 astrocytic cells. *Neurochemistry International*. 63: 551-560 (*Authors share equal contributions)
25. **John M.T. Chu**, Y.S. Chan, L.W. Chen and Ken K.L. Yung (2012) Neurokinin receptor 3 peptide exacerbated 6-OHDA induced dopaminergic degeneration in rats through JNK pathway. *Journal of Neurochemistry*. 123: 417-427
26. **John M.T. Chu**, L.W. Chen, Y.S. Chan and Ken K.L. Yung (2011) Neuroprotective effects of neurokinin receptor one in dopaminergic neurons are mediated through Akt/PKB cell signaling pathway. *Neuropharmacology*. 61(8): 1389-1398

Grant Track Record

2018-2022 **Investigating the use of a naturally occurring anti-inflammatory herbal, Siegesbeckia Herba in minimising postoperative cognitive dysfunction**
Funding Source: Health and Medical Research Fund (HKD 1,179,656; Role: Co-Investigator)

2015-2017 **Advancement for developing drug against Lewy Body Dementia by establishing a pre-clinical experimental model**
Funding Source: HKU Seed Funding for Applied Research (HKD 100,000; Role: Co-Investigator)

Successful Experience in External Grant Application

2023 Elucidating the role of IL-1β/IL-1R dependent Th17 cells differentiation in the pathogenesis of perioperative neurocognitive disorder
(Funding Source: General Research Fund, University Grants Committee, HKSAR government; Reference number: 17100523; HKD 1,020,000)

2022 Elucidating the role of IL17/CEBP dependent astrocytic C3 upregulation in perioperative neurocognitive disorder
(Funding Source: General Research Fund, University Grants Committee, HKSAR government; Reference number: 17100622; HKD 1,180,218)

2020 Investigating the role of adiponectin in sevoflurane induced cognitive dysfunction in an obese animal model
(Funding Source: General Research Fund, University Grants Committee, HKSAR government; Reference number: 17101020; HKD 996,205)

2018 Investigating the use of a naturally occurring anti-inflammatory herbal, Siegesbeckia Herba in minimising postoperative cognitive dysfunction
(Funding Source: Health and Medical Research Fund, Department of Health, HKSAR government; Reference number: 16171711; HKD 1,179,656)

Research Interest

Neurocognitive disorders; Neuroinflammation, Neuroimmune responses; Systemic inflammation in diabetes and obesity; Neuroprotective effects of Chinese medicine and exercise

Working Experiences

Assistant Professor in Faculty of Medicine, Macau University of Science and Technology (Jun 2025 – present)

- **Applying external research grants (Scientific Research and Innovation Funding Scheme, Macao Special Administrative Region)**
- **Teaching in Bachelor of Medicine and Bachelor of Surgery (MBBS)**

Research Officer in Department of Anaesthesiology, The University of Hong Kong (Oct 2018 – Jun 2025)

- **Secured external research grants (General Research Fund, Health and Medical Research Fund) with 4 successful applications**
- **Supervised research projects for undergraduates and postgraduates, leading to the completion of 2 PhD and 1 MPhil theses**
- **With more than 17 publications**
- **Managed laboratory operations as departmental service**
- **Teaching in problem-based learning classes for undergraduates**

Postdoctoral Fellow in Hong Kong Baptist University and The University of Hong Kong (Sep 2011 – Sep 2018)

- **Assisted in applying external research grants (General Research Fund, Health and Medical Research Fund)**
- **Supervised research projects for undergraduates and postgraduates, leading to the completion of 1 PhD, 1 MPhil and 2 undergraduate theses**
- **With 7 publications**
- **Teaching in problem based learning classes for undergraduates**

Professional services

Journal editor:

Guest editor in the journal *Biomedicines*

Journal reviewer:
Manuscript review upon requested by journals including *BMC Medicine, Cells, Cellular and Molecular Neurobiology, Journal of Alzheimer's Disease, Molecular Neurobiology and Science Advances*

Internal and External Collaboration Units

1. School of Biomedical Sciences, The University of Hong Kong
2. Department of Medicine, The University of Hong Kong
3. School of Chinese Medicine, Hong Kong Baptist University
4. State Key Laboratory of Quality Research in Chinese Medicine, Institute of Chinese Medical Sciences, The University of Macau
5. First Affiliated Hospital, Sun Yat-Sen University
6. Department of Neurology, Kyoto University
7. Seoul St. Mary's Hospital, College of Medicine, The Catholic University of Korea