

花蓮慈濟醫院研究部

腦神經損傷與治療研究室

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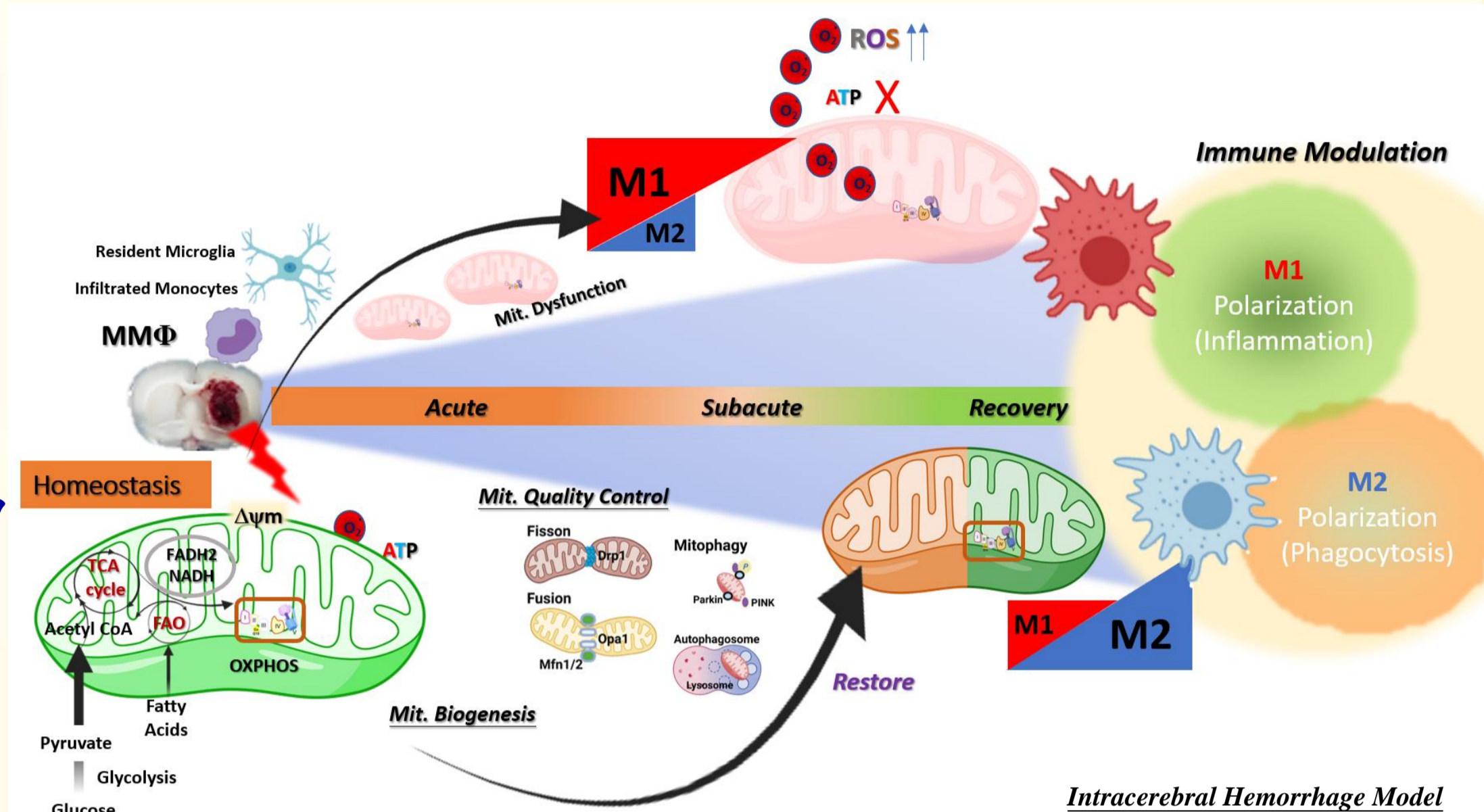
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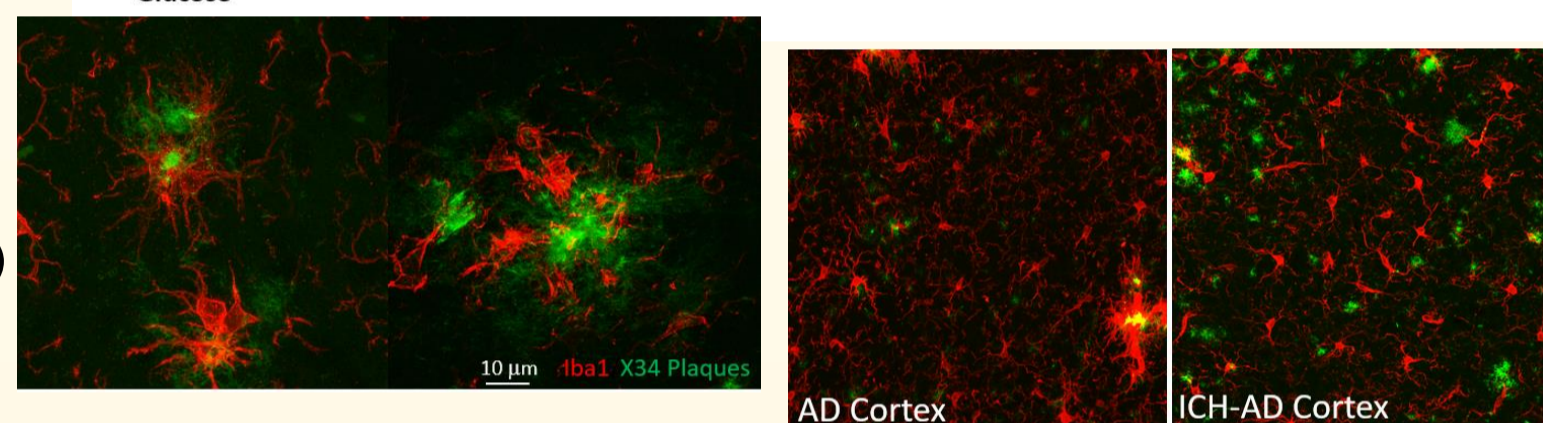
研究簡介

以腦損傷(腦缺血、腦溢血)為實驗研究平台探討神經損傷的致病機轉，進而研發新的治療方法(藥物&幹細胞)。著重探討藥物在腦損傷的過程中內質網壓力、粒線體能量代謝(重編)、及溶酶體損傷對微膠細胞/巨噬細胞免疫活化的調控。

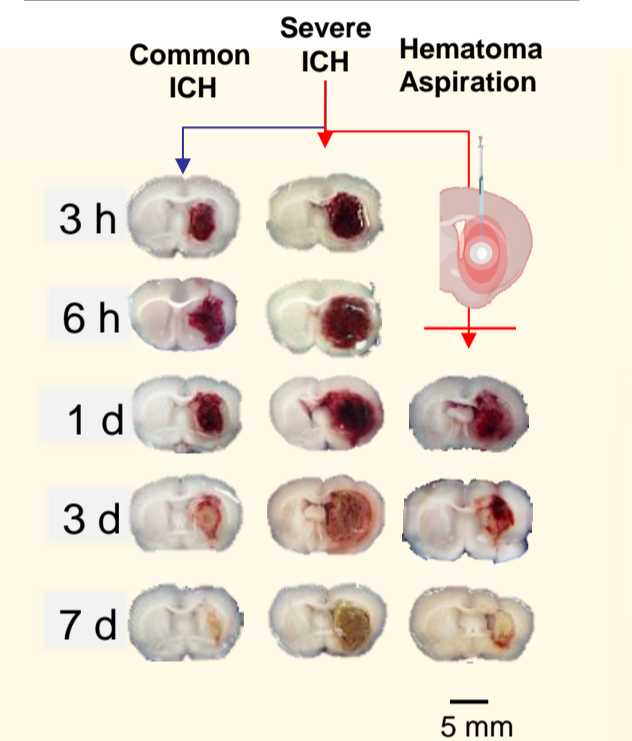


實驗研究平台與技術

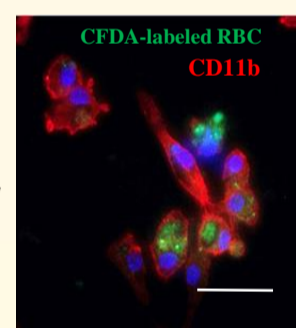
- 大、小鼠腦溢血誘發手術 (Collagenase Model & Blood Infusion Model)
- 退化性神經AD基因轉殖鼠 (*Human App* Knock-in Mouse Model)
- 神經功能性損傷及學習記憶行為評估平台 (e.g. mNSS, RotaRod, Swing Test, Patch Test, Barnes Maze & etc.)
- 神經生理分析平台 [Cerebral Blood Flow (Perfusion) Monitor, Intracranial Pressure Monitor, HPLC-Neurotransmitters etc.]
- 心血管功能及血液檢測平台 (Cardiovascular Parameters, CBC, Blood Gas & Serum Biochemistry Analyzer)
- 腦損傷評估平台 (Brain Edema, BBB Disruption, Hematoma Expansion, & Neuroinflammation)
- 神經幹細胞培養及分化 (Neural Stem Cells Proliferation & Differentiation)
- 離體紅血球吞噬實驗 (*In Vitro* Phagocytosis Assay)
- RNA Seq. & Single Cell RNA Seq.



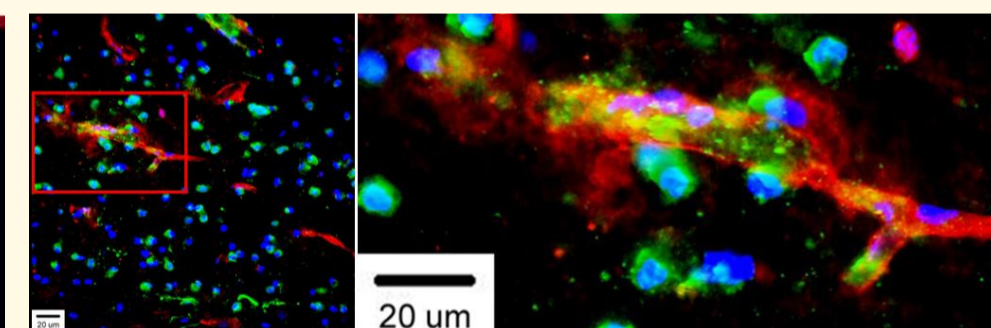
Intracerebral Hemorrhage Model



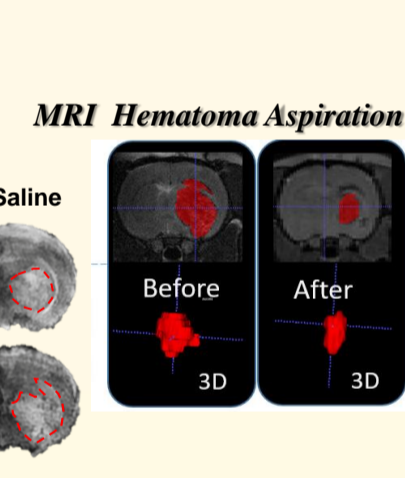
Microglia engulfed RBC



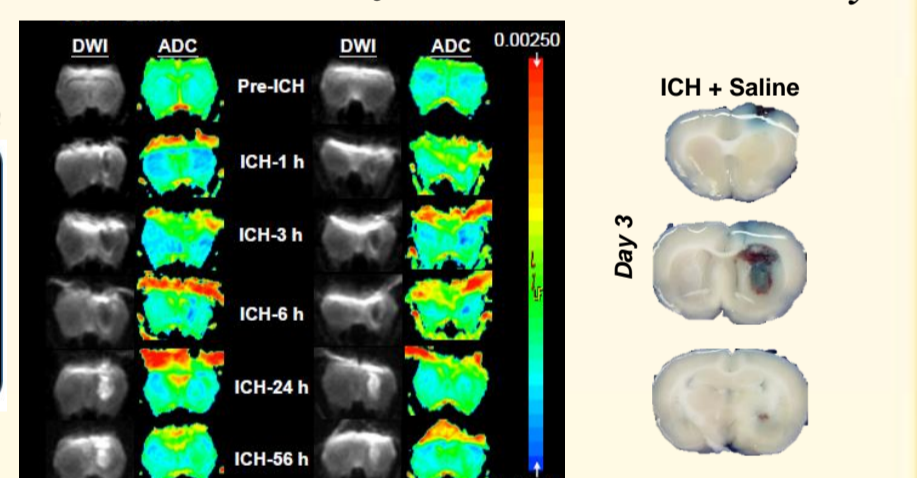
Immunohistochemical Staining



MRI: Cerebral Perfusion



BBB Permeability



計畫與經費來源(近5年)

經費科別	計畫編碼	計畫名稱(中文)	執行期限
院內計畫	TCRD112-072	大腦多巴胺神經滋養因子調控腦溢血神經免疫反應之粒線體能量代謝重編的療效	2023.01.01-2023.12.31
產學合作計畫		出血性腦中風大鼠模式模擬腦損傷的研究平台測試鼻嗅黏膜間質幹細胞(OEC)對腦溢血損傷的療效	2022.10.24-2023.07.23
院內計畫	TCRD111-042	大腦多巴胺神經滋養因子促進血腫塊清除對大鼠嚴重腦溢血合併血腫塊清除模式的療效	2022.01.01-2022.12.31
國科會	MOST 111-2314-B-303-029	以大鼠嚴重腦溢血-血腫塊清除模式探討尿皮質素增強粒線體功能和血腫塊清除作用的療效	2022.08.01-2023.07.31
研究部	TCRD111-042	大腦多巴胺神經滋養因子促進血腫塊清除對大鼠嚴重腦溢血合併血腫塊清除模式的療效	2022.01.01-2022.12.31
國科會	MOST 110-2314-B-303-018	以嚴重腦溢血合併血腫塊清除手術的大鼠動物模式，探討尿皮質素的抗氧化及抗發炎的療效	2021.08.01-2022.07.31
國科會	MOST 109-2320-B-303-002	sTREM2 & TREM2在腦溢血損傷的保護作用	2020.08.01-2021.12.31
研究部	TCRD109-44	蛋白酶體活性抑制作用對腦溢血損傷的療效-免疫調控及吞噬作用	2020.01.01-2020.12.31
國科會	MOST 108-2314-B-303-007	探討TREM2對腦溢血損傷後免疫調控及吞噬的作用	2019.08.01-2020.07.31
研究部	TCRD108-56	蛋白酶體活性抑制對大鼠腦溢血之神經保護作用	2019.01.01-2019.12.31

近5年期刊論文

1. Shaik Ismail Mohammed Thangameeran, Sheng-Tzung Tsai, **Hock-Kean Liew*** and Cheng-Yoong Pang* (2024 June). Examining Transcriptomic Alterations in Rat Models of Intracerebral Hemorrhage and Severe Intracerebral Hemorrhage. *Biomolecules* 2024, 14, 678. 本人為共同通訊作者。
2. Jenni E. Anttila, Olli S. Mattila, **Hock-Kean Liew***, Kert Mätlik, Eero Mervaala, Päivi Lindholm, Maria Lindahl, Perttu J. Lindsberg, Kuan-Yin Tseng* and Mikko Airavaara* (2024 June). MANF protein expression is upregulated in immune cells in the ischemic human brain and systemic recombinant MANF delivery in rat ischemic stroke model demonstrates anti-inflammatory effects. *Acta Neuropathologica Communications* (2024) 12:10.
3. Shaik Ismail Mohammed Thangameeran, Po-Kai Wang, **Hock-Kean Liew*** and Cheng-Yoong Pang*. Influence of Alcohol on Intracerebral Hemorrhage: From Oxidative Stress to Glial Cell Activation. *Life* 2024, 14, 311. 本人為共同通訊作者。
4. Kuan-Yin Tseng, Vassilis Stratoulis, Wei-Fen Hu, Jui-Sheng Wu, Vicki Wang, Yuan-Hao Chen, Anna Seelbach, Henri J. Huttunen, Natalia Kuleskaya, Cheng-Yoong Pang, Jian-Liang Chou, Maria Lindahl, Mart Saarma, Li-Chuan Huang, Mikko Airavaara* & **Hock-Kean Liew*** (2023, Feb). Augmenting hematoma scavenging capacity of innate immune cells by CDNF reduces brain injury and promotes functional recovery after intracerebral hemorrhage. *Cell Death & Disease*, (2023) 14:128. 本人為共同通訊作者。
5. Shaik Ismail Mohammed Thangameeran, Cheng-Yoong Pang, Chien-Hui Lee, Sheng-Tzung Tsai, Wei-Fen Hu, **Hock-Kean Liew*** (2023, Jan). Experimental animal models and evaluation techniques in intracerebral hemorrhage. *Tzu Chi Medical Journal* 35(1):0 1-10, Jan-Mar 2023. 本人為通訊作者。
6. Helike Löhelaid, Jenni E. Anttila, **Hock-Kean Liew***, Kuan-Yin Tseng, Jaakko Teppo, Vassilis Stratoulis and Mikko Airavaara* (2022, Jun). UPR Responsive Genes Manf and Xbp1 in Stroke. *Frontiers in Cellular Neuroscience*, 16:900725.
7. Peter Bor-Chian Lin, Po-Kai Wang, Cheng-Yoong Pang, Wei-Fen Hu, Andy Po-Yi Tsai, Adrian L. Oblak* and **Hock-Kean Liew*** (2021, Jun). Moderate Ethanol Pre-treatment Mitigates ICH-Induced Injury via ER Stress Modulation in Rats. *Frontiers in Molecular Neuroscience*, 14:682775, 1-14. 本人為共同通訊作者。
8. Shaik Ismail Mohammed Thangameeran, Sheng-Tzung Tsai, Hsiang-Yi Hung, Wei-Fen Hu, Cheng-Yoong Pang, Shin-Yuan Chen and **Hock-Kean Liew*** (2020, Mar). A Role for Endoplasmic Reticulum Stress in Intracerebral Hemorrhage. *Cells*, 9, 750. 本人為通訊作者。
9. Ker Woon Choy, Andy Po-Yi Tsai, Peter Bor-Chian Lin, Meng-Yu Wu, Chihyi Lee, Aspalilah Alias, Cheng-Yoong Pang* and **Hock-Kean Liew*** (2020, Jan). The Role of Urocortins in Intracerebral Hemorrhage. *Biomolecules*, 10, 96. 本人為共同通訊作者。
10. **Hock-Kean Liew***, Wei-Fen Hu, Peter Bor-Chian Lin, Po-Kai Wang, Andy Po-Yi Tsai, Cheng-Yoong Pang, Tsung-Ying Chen (2019, Oct). Over-Activated Proteasome Mediates Neuroinflammation on Acute Intracerebral Hemorrhage in Rats. *Cells*, 8(11), 1326. 本人為第一作者。
11. Sheng-Tzung Tsai*, **Hock-Kean Liew***, Hao-Ming Li, Shinn-Zong Lin, and Shin-Yuan Chen (2019, Jul). Harnessing Neurogenesis and Neuroplasticity with Stem Cell Treatment for Addictive Disorders. *Cell Transplantation*. 2019 Sep-Oct;28(9-10):1127-1131. 本人為共同第一作者。