

## [Introduction of Research Techniques in Neuroscience] for Fall Semester, 2025

Code	
Credits:	2 credits
Organizers:	Ya-Hui Chou (周雅惠) and Yun-Ru Chen (陳韻如)
Reference:	Carter M. and Shieh J. (2015) Guide to Research Techniques in Neuroscience. Elsevier. 2 Edition
Time:	<b>10:00-12:00, Friday, Sep. 2025- December, 2025</b>
Place:	<b>C101 Room of Interdisciplinary Building</b>
Aim	Daunting and versatile techniques have been developed and employed in neuroscience researches to explore how nerve systems work and, in some cases, get pathogenesis. The prerequisite of working on neuroscience researches then is to understand how these methodologies work. This lecture introduces the concept, theory and applications of current neuroscience techniques used, ranging from basic to advanced, to address questions covering genes, molecules, cellular pathologies, brain functions and animal behaviors.
Evaluation	Exams (midterm & final exams), questions from each lecturer

No.	Date	Topic	Lectured by
1.	9/5	(1) Introduction (2) Animal Behavior (zebrafish)	(1) <u>Ya-Hui Chou 周雅惠 (AS)</u> / <u>Yun-Ru Chen 陳韻如 (AS)</u> (2) <u>Kuo Hua Huang 黃國華(AS)</u>
2.	9/12	Animal Behavior (mouse, non-human primate)	<u>Wen-Kai You 游文愷 (NDMC)</u>
3.	9/19	Whole Brain Imaging	<u>Ming-Long Wu 吳明龍 (NCKU)</u>
4.	9/26	Animal Behavior (fly)	<u>Ya-Hui Chou 周雅惠 (AS)</u>
5.	10/3	Stereotaxic Surgeries and <i>in vivo</i> Techniques	<u>Yu-Wei Wu 吳玉威(AS)</u>
6.	10/17	Visualizing Nervous System Structure & Function	<u>Pei-Lin Cheng 鄭珮琳 (AS)</u>
7.	10/24	Mid-term	
8.	10/31	Microscopy Instrumentation and Microscopy in Neuroscience	<u>Jin Wu Tsai 蔡金吾 (NYCU)</u>
9.	11/7	Electrophysiology: Ion Channels (I)	<u>Chien-Yuen Pan 潘建源(NTU)</u>
10.	11/14	Electrophysiology: Ion Channels (II)	<u>Ching-Lung Hsu 徐經倫(AS)</u>
11.	11/21	Manipulating Endogenous Genes & Gene Delivery Strategies	<u>Yi-Shuian Huang 黃怡萱(AS)</u>
12.	11/28	Transgenic mice	<u>Ching-Yen Tsai 蔡青宴(AS)</u>
13.	12/5	Neural Stem Cell and Cell Culture Techniques	<u>Hung-Chih Kuo 郭紘志 (AS)</u>
14.	12/12	Biochemical assays and neurodegenerative diseases	<u>Yun-Ru Chen 陳韻如 (AS)</u>
15.	12/19	Final exam	

Total 15 lectures.