

Yu-Chieh David Chen, PhD

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EDUCATION

- Ph.D. in Neuroscience** 2013-2019
Lab of Dr. Anupama Dahanukar
University of California, Riverside
Thesis: *Pharyngeal Taste in Drosophila – From Periphery to Brain*
- M.S. in Molecular Cell Biology** 2010-2012
Lab of Dr. Chih-Tien Wang
National Taiwan University, Taiwan
Thesis: *The spatiotemporal expression patterns of synaptotagmin isoforms in the developing rat retina*
- B.S. in Life Sciences and Entomology (Double major)** 2006-2010
National Taiwan University, Taiwan

RESEARCH EXPERIENCE

- Postdoctoral Researcher, New York University** 2020-Current
Department of Biology
Advisor: Claude Desplan, PhD
- Identified cell adhesion molecules mediating synaptic partner matching during development in the *Drosophila* stochastic color vision circuits.
 - Generated comprehensive sets of cell-type-specific genetic tools targeting distinct fly optic lobe neurons from development to adult.
 - Established genetic crossing schemes for generating gene-specific split-GAL4 lines that are adaptable for all members in the fly community studying different tissues.
- This work resulted in two publications, including *PNAS* and *Star Protocols*. One other 1st-author manuscript is currently being prepared.
This work was funded through an NIH/NEI NRSA F32 Fellowship.
This work is currently supported through an NIH/NEI K99 Award.
- Graduate Student, University of California, Riverside** 2013-2019
Neuroscience Graduate Program
Advisor: Anupama Dahanukar, PhD
- Carried out a large-scale, systematic analysis of the molecular organization of pharyngeal taste neurons in adult *Drosophila* and established a detailed receptor-to-neuron map for all pharyngeal taste neurons.
 - Uncovered mechanisms of combinatorial taste coding in pharyngeal taste neurons that mediate feeding avoidance of aversive compounds and the functional role of individual classes of pharyngeal taste neurons in controlling food intake of appetitive tastants.
 - Identified *VT041723-GAL4* line that labels neurons receiving pharyngeal taste input and controlling regurgitation. This work acts as a starting point for dissecting the regurgitation circuits, and a better understanding of feeding neuronal circuits will provide a novel design for controlling insect pests.
- This work resulted in four 1st-author and one 2nd-author publications, including in *Cell Reports*, *Journal of Neuroscience*, *Nature Communications*, five commentaries, and two reviews.
This work was funded through an HHMI International Student Fellowship and a UCR Dissertation Year Program Fellowship.

PUBLICATIONS

Peer-Reviewed Publications

13. Y Carrier, LQ Rio, N Formicola, V de Sousa-Xavier, M Tabet, **YCD Chen**, AH Ali, M Wislez, L Orts, A Borst, and F Pinto-Teixeira. Biased cell adhesion organizes the *Drosophila* visual motion integration circuit. *bioRxiv*, December 12, 2023. doi: [10.1101/2023.12.11.571076](https://doi.org/10.1101/2023.12.11.571076). (accepted at **Developmental Cell**)
12. SA Li[#], HG Li[#], N Shoji, C Desplan, and **YCD Chen**^{*}. Protocol for replacing intronic MiMIC and CRIMIC lines with T2A-split-GAL4 lines in *Drosophila* using genetic crosses. *Star Protocols*, December 15, 2023; (4) 102706. doi: [10.1016/j.xpro.2023.102706](https://doi.org/10.1016/j.xpro.2023.102706). ^{*}Corresponding author
11. **YCD Chen**^{*}, YC Chen, R Rajesh, N Shoji, M Jacy, H Lacin, T Erclik, and C Desplan^{*}. Using single-cell RNA sequencing to generate predictive cell-type-specific split-GAL4 reagents throughout development. *PNAS*, July 31, 2023; 120(32): e2307451120. doi: [10.1073/pnas.2307451120](https://doi.org/10.1073/pnas.2307451120). ^{*}Co-corresponding authors
[PNAS Commentary highlighted by Liquan Luo's group (C. Lyu, Z. Li, L. Luo) - Toward building a library of cell type-specific drivers across developmental stages] -
10. **YCD Chen**, V Menon, RM Joseph and A Dahanukar. Control of sugar and amino acid feeding via pharyngeal taste neurons. *The Journal of Neuroscience*, July 7, 2021; 41(27): 5791-5808. doi: [10.1523/JNEUROSCI.1794-20.2021](https://doi.org/10.1523/JNEUROSCI.1794-20.2021).
9. BJ Choi, **YCD Chen**, and C Desplan. Building a circuit through correlated spontaneous neuronal activity in the developing vertebrate and invertebrate visual systems. *Genes & Development*, May 1, 2021; 35(9-10):677-691. doi: [10.1101/gad.348241.121](https://doi.org/10.1101/gad.348241.121).
8. **YCD Chen**, SJ Park, RM Joseph, WW Ja and A Dahanukar. Combinatorial pharyngeal taste coding for feeding avoidance in adult *Drosophila*. *Cell Reports*, October 22, 2019; 29(4): 961-973. doi: [10.1016/j.celrep.2019.09.036](https://doi.org/10.1016/j.celrep.2019.09.036). **[Journal Cover]**
7. **YCD Chen** and A Dahanukar. Recent advances in the genetic basis of taste detection in *Drosophila*. *Cellular and Molecular Life Sciences*, October 9, 2019; 77(6):1087-1101. doi: [10.1007/s00018-019-03320-0](https://doi.org/10.1007/s00018-019-03320-0).
6. **YCD Chen**, S Ahmad, K Amin and A Dahanukar. A subset of brain neurons control regurgitation in adult *Drosophila melanogaster*. *Journal of Experimental Biology*, October 1, 2019; ;222(Pt 19):jeb210724. doi: [10.1242/jeb.210724](https://doi.org/10.1242/jeb.210724).
5. **YCD Chen**, SJ Park, WW Ja and A Dahanukar. Using Pox-neuro (Poxn) mutants in *Drosophila* gustation research: a double-edged sword. *Frontiers in Cellular Neuroscience*, October 24, 2018; 12(382). doi: [10.3389/fncel.2018.00382](https://doi.org/10.3389/fncel.2018.00382).
4. **YCD Chen** and A Dahanukar. Molecular and cellular organization of taste neurons in adult *Drosophila* pharynx. *Cell Reports*, December 5, 2017; 21(10):2978-2991. doi: [10.1016/j.celrep.2017.11.041](https://doi.org/10.1016/j.celrep.2017.11.041)
3. EE LeDue, **YC Chen**, AY Jung, A Dahanukar and MD Gordon. Pharyngeal sense organs drive robust sugar consumption in *Drosophila*. *Nature Communications*, March 25, 2015; 6:6667. doi: [10.1038/ncomms7667](https://doi.org/10.1038/ncomms7667).
2. PC Huang, YT Hsiao, SY Kao, CF Chen, **YC Chen**, CW Chiang, CF Lee, JC Lu, Yijuang Chern and CT Wang. Adenosine A2A Receptor Up-regulates Retinal Wave Frequency via Starburst Amacrine Cells in the Developing Rat Retina. *PLoS ONE*, April 28, 2014; 9(4):e95090. doi: [10.1371/journal.pone.0095090](https://doi.org/10.1371/journal.pone.0095090).
1. CW Chiang, **YC Chen**, JC Lu, YT Hsiao, CW Chang, PC Huang, YT Chang, PY Chang and CT Wang. Synaptotagmin I Regulates Patterned Spontaneous Activity in the Developing Rat Retina via Calcium Binding to the C2AB Domains. *PLoS ONE*, October 16, 2012; 7(10): e47465. doi: [10.1371/journal.pone.0047465](https://doi.org/10.1371/journal.pone.0047465).

Peer-Reviewed Commentaries

5. V Menon^{*} and **YCD Chen**^{*}. Commentary: The Role of the Anion in Salt (NaCl) Detection by Mouse Taste Buds. *Frontiers in Cellular Neuroscience*, November 8, 2019; 13(502). doi: [10.3389/fncel.2019.00502](https://doi.org/10.3389/fncel.2019.00502). ^{*}equal contribution.

4. **YCD Chen** and A Dahanukar. DH44: Gut-brain amino acid sensors. *Cell Research*, October 11, 2018; 0:1–2. doi: [10.1038/s41422-018-0101-z](https://doi.org/10.1038/s41422-018-0101-z).
3. J Clark* and **YCD Chen***. Phosphorylation Switch of Orco Shapes the Sense of Smell in Insects. *The Journal of Neuroscience*, January 31, 2018; 38(5):1058-1060. doi: [10.1523/JNEUROSCI.3157-17.2017](https://doi.org/10.1523/JNEUROSCI.3157-17.2017). *equal contribution.
2. **YCD Chen**. Commentary: Retinal Waves Modulate an Intraretinal Circuit of Intrinsically Photosensitive Retinal Ganglion Cells. *Frontiers in Neural Circuits*, January 8, 2018; 11(113). doi: [10.3389/fncir.2017.00113](https://doi.org/10.3389/fncir.2017.00113).
1. **YCD Chen**. The interactions between bitter and sweet taste processing in *Drosophila*. *The Journal of Neuroscience*, July 1, 2015; 35(26):9542-9543. doi: [10.1523/JNEUROSCI.1552-15.2015](https://doi.org/10.1523/JNEUROSCI.1552-15.2015).

FUNDING

Current Support

NIH/NEI K99/R00 EY035757 2024-Current
 Title: Molecular control of stochastic color vision circuit assembly
 Amount: \$1,055,664

Completed Support

NIH/NEI F32 EY032750 2021-2024
 Title: Coordination and propagation of cell fate choice in neural circuit assembly
 Amount: \$212,868

NYU Inaugural Postdoctoral Research and Professional Development Support Grants 2023
 Amount: \$2,500

UCR Dissertation Year Program Fellowship 2018-2019
 Amount: \$7,200

HHMI International Student Research Fellowship 2016-2018
 I am one of the 20 fellows selected in 2016 among 344 students in 57 PhD-granting institutions.
 Amount: \$86,000

UCR Dissertation Research Grant 2018
 Amount: \$900

Sigma XI Grants-in-Aid of Research 2016
 Amount: \$700

HONORS AND AWARDS

Travel Award , Santa Cruz Developmental Biology Meeting	2024
Professional Development Scholarship , Skills for Health and Research Professionals (SHARP) Training, Columbia University	2024
Outstanding Teaching Award , College of Arts and Sciences, NYU	2024
Ernest Propes Endowed Graduate Fellowship , UCR	2019
Gill Symposium Travel Award (twice) , Indiana University Bloomington	2018, 2019
DeLill Nasser Award , Genetics Society of America	2019
Earle C. Anthony Travel Award (twice) , UCR	2017, 2019
AChemS Student Travel Award , Association for Chemoreception Sciences	2019
Yin Chin Scholarship , Yin Chin Foundation of USA	2018
International Scholarship , Phi Beta Kappa Alumni in Southern California	2018
James Merrill and Adeline Wallace Annual Prize , UCR	2018

Poster Excellence , Professor Jung-Yaw Lin Academic Education Foundation, Taiwan	2012
Phi Tau Phi Scholastic Honor Society Honorary Membership , Taiwan	2010
Dean's Award (valedictorian) , College of Life Sciences, NTU, Taiwan	2010
Study Scholarship (twice) , Department of Life Sciences, NTU, Taiwan	2009, 2010
Presidential Award (7 times) , College of Life Sciences, NTU, Taiwan	2007-2010

PRESENTATIONS

Invited Talks

Emerging Leaders in Neuroscience Seminar Series , Weill Cornell Medicine Feil Family Brain & Mind Research Institute, NY, USA	2025
University of Toronto Mississauga, Department of Biology , Mississauga, Canada	2025
Ethel Browne Harvey Postdoctoral Seminar Series , Society of Developmental Biology	2024
Louisiana State University, Department of Biological Sciences , Baton Rouge, LA, USA	2024
Brooklyn College, CUNY, Department of Biology , New York, NY, USA	2024
University of Florida Scripps, Department of Neuroscience , Jupiter, FL, USA	2024
Villanova University, Department of Biology , Villanova, PA, USA	2024
College of Staten Island, CUNY, Department of Biology , Staten Island, NY, USA	2024
Hunter College, CUNY, Department of Biology , New York, NY, USA	2024
Queens College, CUNY, Department of Biology , Flushing, NY, USA	2024
University of New Mexico Department of Biology , Albuquerque, NM, USA	2024
UIUC Rising Stars in Cell and Developmental Biology Symposium , Champaign, IL, USA	2024
The City College of New York Biology Spring Colloquium , New York, NY, USA	2024
University of Rochester Department of Biology E2G2 Seminar Series , Rochester, NY, USA	2023
West Chester University Department of Biology Seminar Series , Chester County, PA, USA	2023
UNLV School of Life Sciences Friday Seminar Series , Las Vegas, NV, USA	2023
Bucknell University Department of Biology Seminar Series , Lewisburg, PA, USA	2022
UCR Graduate Neuroscience Program Seminar Series , Riverside, CA, USA	2022

Conference Talks

Annual Boston Area Drosophila Meeting , UMass Chan Medical School, Worcester, MA, USA	2024
Asia Pacific Drosophila Neurobiology Conference , Tokyo, Japan	2024
Annual Boston Area Drosophila Meeting , Brandeis University, Massachusetts, MA, USA	2023
Annual Drosophila Research Conference , Chicago, IL, USA	2023
Gill Symposium Travel Fellowship Recipient Presentation , Bloomington, IN, USA	2019
Southern California Drosophila Conference , Irvine, CA, USA	2019
Annual Drosophila Research Conference , Dallas, TX, USA	2019
The Allied Genetics Conference , Orlando, FL, USA	2016
International symposium on olfaction and taste , Yokohama, Japan	2016

Posters

Santa Cruz Developmental Biology Meeting , Santa Cruz, CA, USA	2024
CSHL Neurobiology of <i>Drosophila</i> , Cold Spring Harbor, NY, USA	2023
CSHL Molecular Mechanisms of Neuronal Connectivity , Cold Spring Harbor, NY, USA	2022
CSHL Neurobiology of <i>Drosophila</i> , Cold Spring Harbor, NY, USA	2019
Gill Symposium: Sex Differences in the Brain , Bloomington, IN, USA	2019
ACChemS meeting , Bonita Springs, FL, USA	2019
Keystone Symposia- Mammalian Sensory Systems , Seattle, WA, USA	2019
Gill Symposium: Applying Cutting-Edge Technologies to Identifying Neuronal Circuits , Bloomington, IN, USA	2018

Janelia conference: Neuro-Evo: A Comparative Approach to Cracking Circuit Function II , Ashburn, VA, USA	2018
CSHL Neurobiology of <i>Drosophila</i> , Cold Spring Harbor, NY, USA	2017
European Drosophila Research Conference , London, UK	2017
Janelia conference: Cell Biology of Neurons and Circuits , Ashburn, VA, USA	2017
CSHL Neurobiology of <i>Drosophila</i> , Cold Spring Harbor, NY, USA	2015
Society for Neuroscience Annual Meeting , Washington DC, USA	2011

MENTORSHIP AND TEACHING

Mentorship in lab

Angelina Fordjour , undergraduate student, NYU - NYU Mitra Fellow - NSF BIO REU Travel Fellowship for 2024 TAGC Attendance - 2023 ABRCMS Student Full Travel Award	2023-2024
Renee Liang , undergraduate student, NYU	2023-2024
Elizabeth Abraham , undergraduate student, NYU - Valedictorian of Class 2024, College of Arts and Science, NYU - NSF Rising Scientist Award for 2024 TAGC Attendance (Spring 2024, \$1950) - The Best Poster Presentation at 2023 ABRCMS meeting - NYU Dean's Undergraduate Research Fund Conference Grant (Fall 2023) - NYU Dean's Undergraduate Research Fund Grant (Fall 2023)	2023-2024
Gustave Hongzhou Li , undergraduate student, NYU Shanghai - NYU Shanghai Excellence Award {Latin honors (Summa cum laude)} - NYU Shanghai Capstone Program Fund (Fall 2023, \$6216.3 CNY) - The Best Poster Presentation at 2023 ABRCMS meeting - NYU Shanghai Dean's Undergraduate Research Fund (Spring 2023) Next position: Doctoral student at Caltech Neurobiology	2023-2024
April Siqi Li , undergraduate student, NYU - GSA 2024 TAGC Travel Award (Spring 2024) - NYU Dean's Undergraduate Research Fund X2 (Spring 2023, Fall 2023) - NYU Dean's Undergraduate Research Fund Conference Grant (Fall 2023) Next position: Doctoral student at Icahn School of Medicine at Mount Sinai	2022-2024
Chelsea Griffin , SURP student, NYU - 2023 ABRCMS Student Full Travel Award	Summer 2022
Maisha Jacy , undergraduate student, NYU - NSF Rising Scientist Award for 2024 TAGC Attendance (Spring 2024, \$1950) - NYU Dean's Undergraduate Research Fund X2 (Fall 2022, Fall 2023) - NYU Dean's Undergraduate Research Fund Conference Grant X2 (Spring 2022, Fall 2023)	2021-2024
Nathalia Soji , undergraduate student, NYU -2023 NYU Albert Borgman Thesis Prize for the best honors thesis in Science -NYU Dean's Undergraduate Research Fund X2 (Fall 2021, Fall 2022) -NYU Dean's Undergraduate Research Fund Conference Grant (Spring 2022) -2022 West Coast Biological Sciences Undergraduate Research Conference Poster award Next position: Research Technician at Brigham and Women's Hospital of Harvard Medical School	2021-2023
Sameera Ahmad , undergraduate student, UC Riverside Next position: UC Berkeley School of Optometry	2016-2019
Kush Amin , undergraduate student, UC Riverside Next position: Gap year for applying to medical school	2016-2019
Erika Varady , undergraduate student, UC Riverside Next position: Doctoral student at UC Irvine	2014-2016

Publications involving Mentees ([Mentees are highlighted in blue](#))

- [SA Li](#)[#], [HG Li](#)[#], N Shoji, C Desplan, and [YCD Chen](#)^{*}. Protocol for replacing coding intronic MiMIC and CRIMIC lines with T2A-split-GAL4 lines in Drosophila using genetic crosses. *Star Protocols*. ^{*}Corresponding author [#] Co-first authors 2023
- [YCD Chen](#)^{*}, YC Chen, R Rajesh, [N Shoji](#), [M Jacy](#), H Lacin, T Erlik, and C Desplan^{*}. Using single-cell RNA sequencing to generate predictive cell-type-specific split-GAL4 reagents throughout development. *PNAS*. ^{*}Co-corresponding authors 2023
- [YCD Chen](#), [S Ahmad](#), [K Amin](#) and A Dahanukar. A subset of brain neurons control regurgitation in adult Drosophila melanogaster. *Journal of Experimental Biology*. 2019
- [S Ahmad](#), [K Amin](#), [YCD Chen](#), and A Dahanukar. A subset of brain neurons controls a sexually dimorphic proboscis holding behavior in adult Drosophila melanogaster. *UC Riverside Undergraduate Research Journal*. 2018

Teaching

- Guest Lecturer** (BIO4757/5757) 2024
Developmental Biology, East Tennessee State University
Delivered a zoom lecture on using Drosophila as a model for developmental biology
- Recitation Instructor (twice)** 2023, 2024
Bio-Core I (BIOL-GA 1001), NYU
Leading two recitation sections
- Course Coordinator (twice)** 2023, 2024
Gene Structure and Function I (BIOL-UA 32), NYU
Arrange course website, lecture recording, grading and student matters
- Recitation Instructor** 2022
Molecular Cell Biology II (BIOL-UA 22), NYU
Leading two recitation sections
- Guest Lecturer** 2022
Developmental Neurobiology, Bucknell University
Delivered a guest lecture on temporal/spatial patterning in Drosophila visual system
- Guest Lecturer** 2022
Sensing the Environment (CMDB/BIOL 281F), UCR
Delivered a zoom lecture on stochastic cell fate specification on insect visual system
- Graduate Teaching Assistant** 2019
Systems Neuroscience (CBNS 124), UCR
Leading discussion and delivering three guest lectures on insect olfactory and gustatory systems
- Graduate Teaching Assistant** 2018
Dynamic Genome (BIOL020), UCR

PROFESSIONAL TRAINING AND WORKSHOP

- PI's Business of Research Boot Camp**, Columbia University (virtual) 2024
- Selected participant**, Inclusive Leadership Workshop, University of Washington 2024
- Selected participant**, New England Future Faculty Workshop (virtual) 2023
- Selected participant**, NC State Building Future Faculty (BFF) Program, NCSU 2023
- Selected participant**, Science Forward: Towards Inclusive Excellence in Academia, Cold Spring Harbor Laboratory 2023
- 9 weeks Scientists Teaching Science Course**, New York Academy of Sciences 2023
- PI Crash Course**, Columbia University 2022, 2023
- Torrey Pines Leadership Development Program**, Sanford Burnham Prebys 2021-2022
- GENETICS Peer Review Training Program**, Genetics Society of America 2019
- 2 weeks ANGUS-Analyzing Sequencing Data**, Data Intensive Biology Summer Institute, UC Davis 2018

SERVICE AND OUTREACH

Selected Reverse Mentor , Federation of American Societies for Experimental Biology (FASEB), Leadership Engagement and Appreciation of Differences (LEAD)- A reverse mentoring program fostering a culture of sharing diverse perspectives to make impactful changes in the scientific community.	2024
Instructor , Brain & Spine Scholars program for 8 th -9 th grade students, NYU	2024
Judge (3 times) , Annual Biomedical Research Conference for Minority Students (ABRCMS)	2021, 2022, 2023
Mentor (twice) , Summer Undergraduate Research Program (SURP), NYU	2022, 2023
Instructor (3 times) , NOGN outreach for 10 th -12 th grade students, College & Career Lab, NYU	2022, 2023, 2024
Review Committee Member , CoNNeXins application, Colloquium at NYU for networking: Extramural for Invited Neuroscience Students	2022
Co-chair, Neurodevelopment Section , Annual Drosophila Research Conference	2022
Pre-grad mentor , Project SHORT (S tudents for H igher-Ed O pportunities and R epresentation in T raining)	2022-Current
Ad Hoc Reviewer <i>PNAS; Cell Reports; eLife; PLOS Genetics; eNeuro; Genetics; STAR Protocols; Insects; Insect Biochemistry and Molecular Biology; Journal of Neuroscience Methods</i>	2019-Current
Judge , Riverside County Science and Engineering Fair, Riverside	2018
Volunteer , 2 nd Annual Riverside Insect Fair, Riverside Metropolitan Museum	2016
Booth Demonstration Volunteer (3 times) , Brain Awareness Day, UCR	2015, 2018, 2019

REFERENCES

Dr. Claude Desplan (Postdoc advisor) Silver Professor, Department of Biology, New York University	cd38@nyu.edu (212) 998-8218
Dr. Chris Doe (Postdoc mentor) Professor, Institute of Neuroscience, HHMI, University of Oregon	cdoe@uoregon.edu (541) 346-4877
Dr. Anupama Dahanukar (PhD advisor) Professor, Department of Molecular, Cell and Systems Biology, UCR	dahanan@ucr.edu (951) 827-5742