TING QIU

(she/her)
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RESEARCH INTERESTS 🧠🔬

My research focus on using multimodal neuroimaging (structural/diffusion/functional MRI, amyloid-PET, tau-PET) to identify early biomarkers of Alzheimer's Disease and model its preclinical progression. Building on this, I aim to integrate emerging fluid biomarkers—including plasma proteomics and multi-omics data—with advanced analytics to improve early diagnosis, risk prediction, and personalized therapies. Additionally, I am interested in machine learning-driven fusion of multimodal datasets to advance translational research in neurodegenerative diseases and biomarker-guided clinical trials.

EDUCATION 🎓📚

2020-now	PhD in Neuroscience, McGill University Supervisor: Dr. Sylvia Villeneuve
2017-2020	M.Sc. in Bioengineering, University of Electronic Science and Technology of China Supervisor: Dr. Yuanchao Zhang

PUBLICATIONS 📰✍️

In preparation / Preprints / Under Review / Submitted

1. **Qiu T**, Liu ZQ, Gallego-Rudolf J, Edde M, Valcourt Caron A, Zhang Y, Soucy JP, Spreng RN, Pichet Binette A, Descoteaux M, Villeneuve S, for the PREVENT-AD Research Group. (2025) Tracking structural changes in preclinical and prodromal Alzheimer's disease: insights from amyloid-beta pathology. (*In preparation*)

2. Gallego Rudolf J, **Qiu T**, Javanray M, Wiesman A, St-Onge F, Fajardo-Valdez A, Baillet S, Villeneuve S, PREVENT-AD Research Group. (2025) Functional

and structural connectivity patterns predict longitudinal tau spreading in asymptomatic individuals expressing Aβ pathology. (*In preparation*)

3. Yakoub Y, **Qiu T**, Villeneuve S, Pichet Binette A, ADNI Foundation for the FNIH Biomarkers Consortium. (2025) *Head-to-head comparison of longitudinal plasma assays in relation to longitudinal amyloid pathology in Alzheimer's disease.* (*In preparation*)

4. Jin X, Wang X, Zheng D, Yuan P, Li J, **Qiu T**, Zhang H, Chen Y, Zhang J, Wu F, Liu Q, Grecucci A, Zhang Y, Wang J, Yi X, Palaniyappan L, Braden BB. (2025) Disrupted glucose metabolism covariance network in amyotrophic lateral sclerosis. (*Submitted to Neurology*).

Published / In Press

5. **Qiu T**, Liu ZQ, Rheault F, Legarreta JH, Caron AV, St-Onge F, et al. (2024) Structural white matter properties and cognitive resilience to tau pathology. *Alzheimer's & Dementia* https://doi.org/10.1002/alz.13776

6. Xiao D, Li J, Ren Z, Dai M, Jiang Y, **Qiu T**, Zhang H, Chen Y, Zhang Y, Zhang Y, Palaniyappan L, for the Frontotemporal Lobar Degeneration Neuroimaging Initiative. (2024) Association of cortical morphology, white matter hyperintensity, and glymphatic function in frontotemporal dementia variants. Alzheimer's & Dementia https://doi.org/10.1002/alz.14158

7. **Qiu T**, Zhang Y, Tang X, Liu X, Wang Y, Zhou C, Luo C, Zhang J. (2019) Precentral degeneration and cerebellar compensation in amyotrophic lateral sclerosis: a multimodal MRI analysis. Human Brain Mapping https://doi.org/10.1002/hbm.24609

8. Zhang Y, **Qiu T**, Yuan X, Zhang J, Wang Y, Zhang N, Zhou C, Luo C, Zhang J. (2019) Abnormal topological organization of structural covariance networks in amyotrophic lateral sclerosis. NeuroImage: Clinical https://doi.org/10.1016/j.nicl.2018.101619

9. Zhang Y, Yi X, Gao J, Li L, Liu L, **Qiu T**, Zhang J, Zhang Y, Liao W. (2019) Chemotherapy potentially facilitated the occurrence of radiation encephalopathy in patients with nasopharyngeal carcinoma following radiotherapy: a multimodal magnetic resonance imaging study. Frontiers in Oncology https://doi.org/10.3389/fonc.2019.00567

10. Zhang YM, Qu M, Yi X, Zhuo P, Tang J, Chen X, Zhou G, Hu P, **Qiu T**, Xing W, Mao Y, Chen B, Wu J, Zhang Y, Liao W. (2019) Sensorimotor and pain-related alterations of the gray matter and white matter in type 2 diabetic patients with peripheral neuropathy. Human Brain Mapping https://doi.org/10.1002/hbm.24834

CONFERENCE ABSTRACTS 🎤🌐

First-author

1. **Qiu T**, Liu Z-Q, Gallego Rudolf J, Edde M, Valcourt Caron A, Zhang Y, Soucy J-P, Spreng RN, Descoteaux M, Villeneuve S. (2025) *Unraveling the impact of amyloid-β and tau pathology on brain structure and cognitive function during preclinical and prodromal Alzheimer's disease.* Human Amyloid Imaging conference. San Juan, Puerto Rico (**oral**).

2. **Qiu T**, Liu Z-Q, Rheault F, Valcourt-Caron A, Legarreta JH, St-Onge F, Strikwerda-Brown C, Pichet Binette A, Spreng RN, Descoteaux M, Villeneuve S, for the PREVENT-AD Research Group. (2023) The role of white matter in cognitive resilience to pathology in individuals at risk of AD. 29th Annual Meeting of the Organization for Human Brain Mapping. Montreal, Canada.

3. **Qiu T**, Rheault F, Soucy J-P, Spreng RN, Pichet Binette A, Descoteaux M, Villeneuve S, for the PREVENT-AD Research Group. (2023) *Amyloid and tau pathology are associated with white matter properties in cognitively unimpaired older adults at risk of AD dementia.* Alzheimer's Association International Conference. Amsterdam, The Netherlands.

4. **Qiu T**, Zhen-Qi Liu, Cherie Strikwerda-Brown, Frédéric St-Onge, Alexa Pichet-Binette, Maxime Descoteaux, Sylvia Villeneuve. Diffusion MRI subnetwork efficiency is associated with cognitive resilience to AD pathology in cognitively unimpaired older adults at risk of AD dementia. AAIC 2022, 31st June – 4th August 2022 (San Diego, USA)

5. **Qiu T**, Zhen-Qi Liu, Cherie Strikwerda-Brown, Frédéric St-Onge, Alexa Pichet-Binette, Maxime Descoteaux, Sylvia Villeneuve. Diffusion MRI subnetwork properties are associated with cognitive resilience to AD pathology in cognitively unimpaired older adults at risk of AD dementia, QBIN-RBIQ Scientific Research Day, 2nd June 2022 (Sherbrooke, Canada)

6. **Qiu T**, et al., The role of structural network in cognitive resilience to AD pathology in preclinical AD. Neuropsychology Day, 16th May 2022 (Montreal, Canada).

7. **Qiu T**, et al., The role of structural network in cognitive resilience to AD pathology in preclinical AD. Neuropsychology Day, 16th May 2022 (Montreal, Canada).

8. **Qiu T**, et al., The role of structural network efficiency in cognitive resilience to AD pathology in cognitively unimpaired older adults at risk of AD dementia. Douglas Research Blitz, 25th Feb 2022(Montreal, Canada).

Contributed (selected)

9. Yakoub Y, **Qiu T**, Villeneuve S, Pichet Binette A, ADNI Foundation for the FNIH Biomarkers Consortium. (2025) Head-to-head comparison of longitudinal plasma assays in relation to longitudinal amyloid pathology in Alzheimer's disease. Human Amyloid Imaging conference. San Juan, Puerto Rico(**oral**).

10. Fajardo Valdez A, **Qiu T**, Gallego Rudolf J, Javanray M, Villeneuve S. (2025) *The impact of spatial smoothing on the accuracy of Centiloid thresholds.* Human Amyloid Imaging conference. San Juan, Puerto Rico.

11. Gallego Rudolf J, **Qiu T**, Javanray M, Wiesman A, St-Onge F, Fajardo-Valdez A, Baillet S, Villeneuve S, PREVENT-AD Research Group. (2025) *Functional and structural connectivity patterns predict longitudinal tau spreading in asymptomatic individuals expressing Aβ pathology.* Human Amyloid Imaging conference. San Juan, Puerto Rico.

12. Garrone A, Yakoub Y, Fajardo Valdez A, **Qiu T**, Metz A, Dadar M, Ourry V, Villeneuve S, for the PREVENT-AD Research Group. (2025) *Assessing the relationship between neuropsychiatric symptoms, amyloid and tau pathology, and white matter hyperintensity volume across sexes in preclinical Alzheimer's disease.* Human Amyloid Imaging conference. San Juan, Puerto Rico.

SCHOLARSHIPS & AWARDS 🏆🌟

2025 Travel award, *USD 600*, Human Amyloid Conference

2025 CSC scholarship, *CAD 26400*, China Scholarship Council

2024 CSC scholarship, *CAD 26400*, China Scholarship Council

2023 QBIN travel fellowship, *CAD 500*, Quebec Bio-Imaging Network

2023 CSC scholarship, *CAD 26400*, China Scholarship Council

2022 HBHL's Graduate Student Fellowship (PhD's), *CAD 15000*, Healthy Brains, Healthy Lives, McGill University

2022 CSC scholarship, *CAD 26400*, China Scholarship Council

2021 QBIN Recruitment Scholarship, *CAD 8000*, Quebec Bio-Imaging Network

2021 CSC scholarship, *CAD 26400*, China Scholarship Council

2020 Outstanding graduate in University of Electronic Science and Technology of China

2018 National Scholarship, CNY 20000, Ministry of Education of the People's Republic of China

2018 First Class Excellent Student Scholarship, CNY 10000, University of Electronic Science and Technology of China

2017 Third Class Excellent Student Scholarship, CNY 4000, University of Electronic Science and Technology of China

2015 Second prize in National English Competition for College Students

2014 National Encouragement Scholarship, CNY 5000, Ministry of Education of the People's Republic of China

2014 Second prize in National Industrial Automation Challenge of University Students of the Siemens Cup

2013 National Encouragement Scholarship, CNY 5000, Ministry of Education of the People's Republic of China

ACADEMIC ACTIVITIES

additional training

2024 IPN retreat- Symposium B: Multimodal neuroimaging biomarkers of Alzheimer's Disease (co-chairs)

2022 four-months research visit at the Sherbrook Connectivity Imaging Lab, University of Sherbrooke, supervised by Dr. Maxime Descoteaux

2022 Neuromatch Academy – 3 weeks training on Computational Neuroscience Course (coursework and projects certificate received)

2022 GSAN R Programming Workshops Series

2022 HBHL coding club

2021 MAIN EDUCATIONAL SESSION (Montreal, in person)

2021 IPN Summer School-Advanced analytics for neuroscience

2019 FSL Beijing Course -Five days' training about FMRIB Software Library

Invited talks

2024 IPN retreat- Symposium B: Multimodal neuroimaging biomarkers of Alzheimer's Disease
Title: Unraveling the impact of amyloid-β and tau pathology on brain structure and cognitive function during preclinical and prodromal Alzheimer's disease

2023 McGill-UESTC NEURO-BME RESEARCH DAY (1st edition)
Title: The Role of White Matter in Alzheimer's Disease: A focus on the preclinical stage

2023 HBHL Trainee Get-Together
Title: The Role of White Matter in Cognitive Resilience to AD pathology

Paper reviewed

1. When does Alzheimer's disease start? Robust estimates based on longitudinal Aβ-amyloid-PET in three large international cohorts. The Lancet Neurology (co-reviewed with Dr. Sylvia Villeneuve; 2024)

SKILLS ⚙️💻

Software Proficiency:
Python, R, MATLAB, Linux (basic command-line operations)

MEDIA 📰📡

2023 Fellow Features McGill University