TRUNG DUC NGUYEN

Clear Water Bay, Hong Kong • tdnguyen@connect.ust.hk • (852) 5334 5859

EDUCATION

8/2017 – 8/2023 **M.Phil. and Ph.D. in Life Science**

- The Hong Kong University of Science and Technology (HKUST)
- GPA: 4.1/4.3

8/2012 – 8/2016 **B.S. in Biology, Talented Program**

- Vietnam National University - Hanoi, Vietnam (VNU)
- GPA: 3.63/4.0 (Highest Distinction, Top 10 students out of 679 graduated in 2016)

RESEARCH EXPERIENCE

11/2023 – 12/2024 **Postdoctoral Fellow**, HKUST

Advisor: Professor Ting Xie

- Analysed single-cell and single-nuclei RNA-seq to investigate the mechanisms underlying glaucoma

9/2019 – 8/2023 **Ph.D. Research**, HKUST

Advisor: Associate Professor Tuan Anh Nguyen

Thesis: Noncanonical Cleavage Mechanism of the Animal Microprocessor

- Analysed the conservation of primary microRNA structures in different animals to identify conserved RNA elements
- Designed and conducted *in vitro* high-throughput cleavage assays for Microprocessor and 262,000 primary microRNA (pri-miRNA) variants
- Analysed sequencing results from *in vitro* high-throughput cleavage assays and developed computational methods to identify DROSHA-recognition sites

8/2017 – 8/2019 **M.Phil. Research**, HKUST

Advisor: Associate Professor Tuan Anh Nguyen

Thesis: The Seed Region Regulates Primary MicroRNA Processing by Human Microprocessor

- Expressed, purified, and characterized recombinant proteins
- Cloned small RNAs for sequencing and analysed small RNA sequencing results
- Analysed sequencing results from *in vitro* high-throughput cleavage assays to identify RNA structural elements regulating Microprocessor cleavage

8/2017 **Undergraduate Summer Research,** University of Tsukuba, Japan

Advisor: Professor Sumiko Sugaya

- Performed qPCR and HPLC to investigate the function of UFGT protein in anthocyanin biosynthesis in Kyoho grapes during coloration

7/2015 **Undergraduate Summer Research,** Korea Advanced Institute of Science and Technology, Korea

Advisor: Professor Kang Changwon

- Performed qPCR and Western blot to investigate the function of ANKRD9 protein in gastric cancer

HONORS AND AWARDS

2019 – 2023	Hong Kong PhD Fellowship, Hong Kong Government (~ US$40,000/year for 4 years)
2021, 2022, 2023	RedBird Academic and Research Excellence Awards, HKUST
2019, 2023	Travel Grand Award, HKUST
2019	Excellence Research Award, HKUST
2017 – 2019	Postgraduate Studentship Award for International Research Students, HKUST
2016	Certificate of Merit from Rector of VNU for excellent academic performance
2016	The Second Prize of "The Research Competition for Undergraduate Students", VNU
2015	Outstanding Young Faces Award, VNU
2014	Student with 5 Merits Title from Vietnam's Student Association
2012 – 2016	Excellent Student Scholarship, VNU

PUBLICATIONS

[* Co-first author, # Five most significant publications, DOI's hyperlinked]

1#. Le, T.N.Y.*, **Nguyen, T.D.*,** Yu, Y.***,** Wutao X., Xuemei C., and Nguyen, T.A. (2025) "Key RNA Elements Influencing DCL1 Cleavage in Plant miRNA Biogenesis", ***Nature Plants***, (in press).

2. Le, C.T., **Nguyen, T.D.,** and Nguyen, T.A. (2024) "Two-motif model illuminates DICER cleavage preferences", ***Nucleic Acid Research***, 1-18. [DOI: 10.1093/nar/gkad1186].

3#. Nguyen, T.L.*, **Nguyen, T.D.***, Ngo, M.K.*, Le, T.N.Y., and Nguyen, T.A. (2023) "Noncanonical processing by animal Microprocessor", ***Molecular Cell***, (83): 1810-1826. [DOI: 10.1016/j.molcel.2023.05.004].

4. Le, M.N.*, **Nguyen, T.D.***, and Nguyen, T.A. (2023) "SRSF7 and SRSF3 depend on RNA sequencing motifs and secondary structures to regulate Microprocessor", ***Life Science Alliance***, (6): 1–14. [DOI: 10.26508/lsa.202201779].

5#. Nguyen, T.L.*, **Nguyen, T.D.***, Ngo, M.K., and Nguyen, T.A. (2023) "Dissection of the *Caenorhabditis elegans* Microprocessor". ***Nucleic Acids Research***, (1): 13–14 *(Selected as NAR breakthrough article)*. [DOI: 10.1093/nar/gkac1170].

6#. **Nguyen, T.D.***, Trinh, T.A.*, Bao, S.*, and Nguyen, T.A. (2022) "Secondary structure RNA elements control the cleavage activity of DICER", ***Nature Communications***, 13(1): 1–16. [DOI: 10.1038/s41467-022-29822-3].

7. Nguyen, T.L., **Nguyen, T.D.**, and Nguyen, T.A. (2021) "The conserved single-cleavage mechanism of animal DROSHA enzymes", ***Communications Biology***, 4(1): 1–12. [DOI: 10.1038/s42003-021-02860-1].

8. Li, S.*, Le, T.N.Y.*, **Nguyen, T.D.***, Trinh, T.A., and Nguyen, T.A. (2021) "Bulges control pri-miRNA processing in a position and strand-dependent manner", ***RNA biology***, 1–11. [DOI: 10.1080/15476286.2020.1868139].

9. Le, C.T., Nguyen, T.L., **Nguyen, T.D.**, and Nguyen, T.A. (2020) "Human disease-associated single nucleotide polymorphism changes the orientation of DROSHA on pri-mir-146a", ***RNA***, 26(12): 1777–1786. [DOI: 10.1261/rna.077487.120].

10. Dang, T.L., Le, C.T., Le, M.N., **Nguyen, T.D.**, Nguyen, T.L., Bao, S., Li, S., and Nguyen, T.A. (2020) "Select amino acids in DGCR8 are essential for the UGU-pri-miRNA interaction and processing", ***Communications Biology***, 3(1): 1–11. [DOI: 10.1038/s42003-020-1071-5].

11#. Li, S.*, **Nguyen, T.D.***, Nguyen, T.L., and Nguyen, T.A. (2020) "Mismatched and wobble base pairs govern primary microRNA processing by human Microprocessor", ***Nature Communications***, 11(1): 1–17. [DOI: 10.1038/s41467-020-15674-2].

12. Nguyen, T.L., **Nguyen, T.D.**, Bao, S., Li, S., and Nguyen, T.A. (2020) "The internal loops in the lower stem of primary microRNA transcripts facilitate single cleavage of human Microprocessor", ***Nucleic Acids Research***, 48(5): 2579–2593. [DOI: 10.1093/nar/gkaa018].

13. Nguyen, M.H., **Nguyen, T.D.**, Nguyen, T.L., and Nguyen, T.A. (2018) "Orientation of human Microprocessor on primary microRNAs", ***Biochemistry***, 58(4): 189–198. [DOI: 10.1021/acs.biochem.8b00944].

14. Kim, K.*, **Nguyen, T.D.***, Li, S., and Nguyen, T.A. (2018) "SRSF3 recruits DROSHA to the basal junction of primary microRNAs", ***RNA***, 24(7): 892–898. [DOI: 10.1261/rna.065862.118].

PATENT

Nguyen, T.A., Nguyen, T.L., **Nguyen, T.D.**, Bao, S., Li, S., "Method for controlling microRNA expression". Patent application PCT/CN2020/106239

PRESENTATIONS

9/2023	Talk at the 6th Rencontre de Quy Nhon: International Biology Conference, Vietnam
6/2023	Poster at 28th Annual Meeting of the RNA Society, Singapore
6/2021	Poster at Hong Kong Inter-University Postgraduate Symposium, Hong Kong
4/2019	Poster at Keystone Symposia: Small Regulatory RNAs, Korea

SKILLS

Biochemistry	Human cell culture, protein expression and purification, molecular cloning and mutagenesis, *in vitro* transcription, *in vitro* RNA cleavage assay, RNA cloning, high-throughput biochemistry assay, quantitative PCR (miRNA and mRNA analysis), Illumina library generation and sequencing
Bioinformatics	Sequencing analysis from high-throughput biochemistry assays, RNA-seq, small RNA-seq, single-cell RNA-seq, Ribo-seq, CLIP-seq, RNA sequence and structural features, protein structure alignment (Pymol)
Programming	Python, R, Bash script
Others	Creative design (Illustrator, Canva), Website management (Wordpress), Video editing (Filmora)

TEACHING AND MENTORING EXPERIENCES

Fall 2018 – 2020	Teaching Assistant, LIFS2720 Introductory Biochemical Laboratory, HKUST Taught gel filtration chromatography experiment to 90 students and graded exams
Spring 2019	Mentor to two undergraduates under the Research Opportunities Program and one undergraduate for a final-year project
Summer 2019	Mentor to one undergraduate visiting student from Hanoi University of Pharmacy
Spring 2024	Mentor to six undergraduates under the Research Opportunities Program

SERVICES

9/2023	Ambassador of School of Science, HKUST Introduced undergraduate programs and scholarship opportunities offered by HKUST to Vietnamese high school students
4/2019	Volunteer of Life Science Postgraduate Student Seminar, HKUST

REFERENCES

Dr. Tuan Anh Nguyen
Associate Professor
Division of Life Science, HKUST
Address: Office 5513, Academic Building, HKUST,
Clear Water Bay, Kowloon, Hong Kong
Tel: (852) 3469 2679
Email: tuananh@ust.hk

Dr. Jiguang Wang
Padma Harilela Associate Professor of Life Science
Department of Chemical and Biological Engineering,
Division of Life Science, HKUST
Address: Office 5577, Academic Building, HKUST,
Clear Water Bay, Kowloon, Hong Kong
Tel: (852) 3469 2672
Email: jgwang@ust.hk

Dr. Chun Kit Kwok
Associate Professor in Department of Chemistry,
City University of Hong Kong
Address: Office B6608, Yeung Kin Man Building,
City University of Hong Kong,
Kowloon Tong, Kowloon, Hong Kong
Tel: (852) 3442 6858
Email: ckkwok42@gapps.cityu.edu.hk