

TRUNG-DUC NGUYEN

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EDUCATION

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|-----------------|--|
| 8/2017 – 8/2023 | M.Phil. and Ph.D. in Life Science <ul style="list-style-type: none">• The Hong Kong University of Science and Technology (HKUST)• Advisor: Associate Professor Tuan Anh Nguyen |
| 8/2012 – 8/2016 | B.S. in Biology, Talented Program <ul style="list-style-type: none">• Vietnam National University - Hanoi, Vietnam (VNU)• Highest Distinction |

RESEARCH EXPERIENCE

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| 11/2023 – present | Postdoctoral Fellow, HKUST
Advisor: Professor Ting Xie |
| 9/2019 – 8/2023 | Ph.D. Research, HKUST
Thesis: Noncanonical Cleavage Mechanism of the Animal Microprocessor <ul style="list-style-type: none">• Analysed the conservation of primary microRNA (miRNA) structures in animals• Designed and conducted massively parallel assays for Microprocessor cleavage on 262,000 primary miRNA variants• Analysed sequencing results from massively parallel assays and developed computational methods to identify DROSHA-recognition sites |
| 8/2017 – 8/2019 | M.Phil. Research, HKUST
Thesis: The Seed Region Regulates Primary MicroRNA Processing by Human Microprocessor <ul style="list-style-type: none">• Expressed, purified, and characterized recombinant proteins• Cloned small RNAs for sequencing and analysed sequencing results• Analysed sequencing results from massively parallel assays to identify RNA structural elements regulating Microprocessor cleavage |

HONORS AND AWARDS

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| 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 |
| 2015 | Summer Internship Award, Korea Advanced Institute of Science and Technology, Korea |
| 2014 | Student with 5 Merits Title from Vietnam's Student Association |
| 2012 – 2016 | Excellent Student Scholarship, VNU |

PUBLICATIONS

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

1. Le, C.T., **Nguyen, T.D.**, and Nguyen, T.A. (2024) “Two-motif model illuminates DICER cleavage preferences”, *Nucleic Acid Research*, 1-18. [\[link\]](#)
- 2#. 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. [\[link\]](#)
3. 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. [\[link\]](#)
- 4#. 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*). [\[link\]](#)
- 5#. **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. [\[link\]](#)
6. 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. [\[link\]](#)
7. 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. [\[link\]](#)
8. 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. [\[link\]](#)
9. 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. [\[link\]](#)
- 10#. 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. [\[link\]](#)
11. 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. [\[link\]](#)
12. 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. [\[link\]](#)
13. 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. [\[link\]](#)

PATENT

Nguyen, T.A., Nguyen, T.L., **Nguyen, T.D.**, Bao, S., and Li, S. “Method for controlling microRNA expression”. Patent number WO2021023114A1

PRESENTATIONS

9/2023	Talk at the 6 th Rencontre de Quy Nhon: International Biology Conference, Vietnam
6/2023	Poster at 28 th 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, <i>in vitro</i> transcription, <i>in vitro</i> RNA cleavage assay, RNA cloning and sequencing, high-throughput biochemistry assay, quantitative PCR for miRNAs, primary miRNAs, and mRNAs
Bioinformatics	Analysis of sequencing results from massive parallel assays, RNA-seq, small RNA-seq, single-cell RNA-seq, RNA sequence and structural features
Programming	Python, R, Bash script
Creative design	Illustrator

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

ACTIVITIES

9/2023	Ambassador of School of Science, HKUST Introduced scholarship offered by HKUST to Vietnamese high school students
8/2017	Undergraduate Summer Research, University of Tsukuba, Japan
7/2015	Undergraduate Summer Research, Korea Advanced Institute of Science and Technology, Korea

REFERENCES

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