SIRAWIT JIRAWANNAPORN, Ph.D.

Medical Scientist · Cancer Immunologist · Researcher

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PROFILE

Ph.D.-trained medical scientist with years of experience spanning molecular biology, immunology, cancer vaccine development, and infectious disease diagnostics. Proven track record of translating bench science into publication-ready findings, securing competitive fellowships, and leading multidisciplinary teams. Currently pioneering PLGA nanoparticle-based cancer vaccines and AI-driven antigen discovery at Siriraj Hospital, Mahidol University. Passionate about bridging cutting-edge immunology with clinical impact.

CORE COMPETENCIES

Immunology	Dendritic cell biology (MoDC, BMDC), T cell function assays, 2D & 3D tumour-killing assays, cytokine bead array (CBA), flow cytometry
Cancer Research	PLGA nanoparticle vaccine development, peptide-drug conjugate design (CDR peptides), Trop-2 / PD-L1 targeting
Diagnostics	CRISPR/Cas12a diagnostic tools, RPA-NALFIA, point-of-care device development, ELISA
Molecular Biology	PCR/qPCR/RT-qPCR, RNA in vitro transcription, gene expression, sequencing & cloning
Computational	AI-driven antigen discovery, NLP, molecular docking (GOLD, AutoDock Vina, ADCP), basic bioinformatics
Cell Culture	Human cell lines (MCF-7, MDA-MB-231, HCC70), PBMC isolation, animal experimentation (Balb/c mice)
Leadership	Research project management, medical student mentoring, science communication, pitching

RESEARCH EXPERIENCE

Mar 2024 – Present

Postdoctoral Researcher – Cancer Immunotherapy

Dept. of Immunology, Faculty of Medicine Siriraj Hospital, Mahidol University · Bangkok, Thailand

- Developing PLGA nanoparticle-encapsulated breast cancer vaccines using tumour-overexpressed antigens (nucleolin peptide).
- Assessing dendritic cell maturation via flow cytometry and cytokine profiling by CBA.
- Conducting 2D crystal violet and 3D tumour spheroid killing assays to quantify T cell cytotoxicity against TNBC cell lines.
- Leading AI-driven pipeline for potent antigen discovery in collaboration with multidisciplinary team.
- Mentoring medical students through full research cycle — experimental design, data analysis, and manuscript preparation.
- Conducting CDR peptide–receptor docking studies (Trop-2, PD-L1) using GOLD, AutoDock Vina, and ADCP.

Oct 2021 – Jun 2023

Postdoctoral Researcher – Infectious Disease

Diagnostics

Excellence Center for Critical Care Nephrology, King Chulalongkorn Memorial Hospital · Bangkok, Thailand

- Developed and validated RPA-CRISPR/Cas12a point-of-care diagnostic assay for rapid Leptospira detection (lipL32 target).
- Published two Q1 papers in PLoS Neglected Tropical Diseases within the 12-month postdoc fellowship period.
- Managed multi-site clinical sample collection and coordinated with international research collaborators.
- Supervised master's students and lab technicians on experimental methodology and data analysis.

EDUCATION

2017 – 2022

Doctor of Philosophy · *Medical Science (Cell Biology & Human Molecular Genetics)*
Chulalongkorn University

- *Thesis: Detection of Leptospires by RPA-NALFIA and CRISPR-Cas12a · 100th Anniversary Doctoral Scholarship*

2012 – 2015

Master of Science · *Medical Microbiology & Immunology*
Chulalongkorn University

- *Thesis: Differential Dendritic Cell Responses to Fungal Cell Wall Mannans*

2008 – 2012

Bachelor of Science · *Biology (Genetics)*
Kasetsart University

- *Research: Sequencing of doublesex gene in Bactrocera spp.*

PUBLICATIONS

1. Jirawannaporn S, et al. Rapid and sensitive point-of-care detection of Leptospira by RPA-CRISPR/Cas12a targeting lipL32. PLoS Negl Trop Dis. 2022;16(1):e0010112.
2. Jirawannaporn S, et al. The combination of RPA-CRISPR/Cas12a and Leptospira IgM RDT enhances the early detection of leptospirosis. PLoS Negl Trop Dis. 2023;17(8):e0011596.
3. Jirawannaporn S, et al. Detection of pathogenic Leptospira spp. by RPA-NALFIA targeting lipL32 gene. Chula Med J. 2023;67(2):153–159.
4. Limothai U, …Jirawannaporn S, et al. Seroprevalence of leptospirosis among blood donors in an endemic area. Sci Rep. 2023;13:12336.

Manuscripts in preparation / under review:

- PLGA Nanoparticle-Delivered Nucleolin Peptide Vaccine Promotes Potent T-Cell-Mediated Cytotoxicity Against Triple-Negative Breast Cancer. (Target: Biomaterials Advances)

h-index: 2 · 38 citations (ResearchGate)

AWARDS & PRESENTATIONS

2024 **Falling Walls Lab Thailand — Finalist** — "Breaking Wall of Vaccine Adjuvants"

2023 **Postdoc Fellowship — 2nd Century Fund (C2F)** — Chulalongkorn University

2022 **Oral Presentation — 12th International Leptospirosis Society Conference**

2021 **Award-winning Poster — MDCU Congress (THAI-LEPTO)** — Rapid POC Detection of Leptospirosis by RPA-CRISPR/Cas12a

2017 **100th Anniversary Doctoral Scholarship** — Chulalongkorn University

2021 **Research Funding — 90th Anniversary Scholarship (Ratchadaphiseksomphot)** — Chulalongkorn University

2006 **AFS Intercultural Programs Scholarship** — Exchange year, Latvia

TEACHING & MENTORSHIP

- Mentored medical students and lab technicians at Siriraj Hospital — research design, wet lab skills, and publication coaching.
- Coached a high school student (Tree Learning program) to an international publication as lead supervisor.
- Delivered laboratory orientation for NIST high school visitors to inspire future scientists.

REFERENCES

Prof. Nattachai Srisawat, M.D., Ph.D.
Dept. of Internal Medicine, Chulalongkorn University
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Assoc. Prof. Wilai Anomasiri, Ph.D.
Dept. of Biochemistry, Chulalongkorn University
awilaiano@gmail.com

Prof. Vilai Chentanez, M.D., Ph.D.
Dept. of Anatomy, Chulalongkorn University
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