

CURRICULUM VITAE AND BIOGRAPHY

MOON JUNG CHOI, Ph.D.

Research Associate (Initial academic appointment start date: Sep 1st, 2026 – Assistant Professor)

Division of Hematology and Oncology, Department of Medicine

Brown University Health and The Warren Alpert Medical School of Brown University

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EDUCATION

2015-2021 Integral M.S. & Ph.D. in Biomedical Laboratory Sciences, Yonsei University, South Korea
(Cell genetics lab, PI: Yong Serk Park)

2011-2015 B.S. in Biomedical Laboratory Sciences, Yonsei University, South Korea

ACADEMIC APPOINTMENTS

2026.09.01- Assistant Professor (Research) in medicine, Brown University, Providence, RI

2022-2026.08 Research associate in medicine, Brown University, Providence, RI

2021-2022 Postdoc Research, Korea Institute of Science and Technology (KIST), South Korea

03.2020-09.2020 Teaching Instructor, Dept. Health Science, Yonsei University, South Korea

HOSPITAL APPOINTMENTS

2026.09.01- Assistant Professor (Research) in Division of Hematology and Oncology, Brown University
Health, Providence, RI

2022-2026.08 Research Scientist in Division of Hematology and Oncology, Brown University Health,
Providence, RI

PROFESSIONAL LICENSES AND BOARD CERTIFICATION

03.24.2015 National Clinical Pathologist, South Korea

RESEARCH EXPERIENCES**1. Engineering Biocompatible and Targeted Nanoplatfoms for Gene and Drug Delivery**

My early research focused on constructing biocompatible nanoplatfoms capable of precise drug and gene delivery to solid tumors. During my Ph.D. at Yonsei University, I developed quantum dot–siRNA micelles, erythrocyte-membrane-derived nanoparticles, and EGFR-targeted lipid nanocarriers to enhance tumor selectivity and therapeutic index in colorectal and triple-negative breast cancers. These multifunctional systems achieved superior stability, endosomal escape, and diagnostic potential, enabling theranostic applications that merged imaging and therapy. I later expanded this work to gene-based modalities, optimizing lipid–polymer hybrid nanoparticles for mRNA and plasmid delivery to antigen-presenting cells, effectively linking nanomedicine with immunogene therapy. This foundation informs my long-term vision to design modular vectors that integrate tumor-specific delivery, immune activation, and biomaterial-driven control of gene expression.

Representative references:

a. Do Hyun Lee, Kangchan Choi, Ji Won Lee, Min Woo Kim, Yong Serk Park, and **Moon Jung Choi (correspondence)**, Anti-EGFR Aptamer-Conjugated erythrocyte membrane-derived nanoparticles for Targeted Doxorubicin delivery, *Molecular Pharmaceutics*, **2026**

b. **Moon Jung Choi**, Seong Jae Kang, Yeon Kyung Lee, Kang Chan Choi, Do Hyun Lee, Hwa Yeon Jeong, Min Woo Kim, Keun Sik Kim, Yong Serk Park, Novel Lipid Nanocomplex Co-Carrying Bcl2 siRNA and Quantum Dots for EGF Receptor-Targeted Anti-Cancer Theranosis, *International Journal of Molecular Sciences*, **2024**

c. **MJ Choi**, YK Lee, KC Choi, DH Lee, HY Jeong, SJ Kang, MW Kim, YM You, CS Im, TS Lee and YS Park, Tumor-Targeted Erythrocyte Membrane Nanoparticles for Theranostics of Triple-Negative Breast Cancer, *Pharmaceutics*, **2023**

2. Immuno-Virotherapy Platforms for Glioblastoma

My postdoctoral research at Brown University centers on overcoming the immunosuppressive glioblastoma microenvironment by combining oncolytic virotherapy, CAR-engineered immune cells, and myeloid-engager strategies. I developed an oncolytic adenovirus encoding a bispecific T-cell engager (Ad-BiTE) targeting CD3 and IL13R α 2, which enhances intratumoral T-cell infiltration and cytotoxicity when paired with EGFR/EGFRvIII-CAR-T cells. This dual therapy achieved robust tumor eradication and established a model for multimodal immune activation within GBM.

To extend immune control beyond T cells, I designed a Dectin-1 $\times$ IL13R α 2 Bispecific Myeloid Engager (BiME) and its lipid-conjugated derivative (Lipid-BiME) to reprogram tumor-associated macrophages from M2 to M1 phenotype. This innate-immune arm bridges macrophage activation with effector T-cell recruitment, complementing adaptive immunotherapies. Together, these platforms define an integrated immunoengineering framework that unites viral vectors, immune engagers, and cell therapies to overcome GBM resistance.

Collectively, my research integrates biomaterial engineering, viro-immunotherapy, and stem-cell biology to develop translational platforms for treating aggressive solid tumors such as GBM. By engineering immune-responsive vectors that simultaneously remodel innate and adaptive arms of the tumor ecosystem, I aim to establish a next-generation immunotherapy paradigm that bridges laboratory innovation with clinical applicability.

My long-term objective as an independent investigator is to build a multidisciplinary program that unites viral and cellular immunotherapy, biocompatible gene delivery, and stem-cell-based disease modeling—advancing precision medicine for both cancer and immune-related pathologies.

a. **Moon Jung Choi**, Eui Young So, Bedia Akosman, Young Eun Lee, Alexander G Raufi, Paul Bertone, Anthony M Reginato, Clark C Chen, Sean E Lawler, Eric T Wong, Olin D Liang, Enabling CAR-T Cell Immunotherapy in Glioblastoma by Modifying Tumor Microenvironment via Oncolytic Adenovirus Encoding Bispecific T Cell Engager, *Molecular Therapy Oncology*, **2026**

b. Philippa Vaughn-Beaucaire, **Moon Jung Choi**, Olin Liang, and Sean E. Lawler, Intracranial CAR-T cell delivery in glioblastoma patients, *Trends in Cancer*, **2024**

c. Jong Hyeon Yoon, Han-Na Yoon, Hyun Ju Kang, Hyejin Yoo, **Moon Jung Choi**, Joo-Yoon Chung, Minkoo Seo, Minsung Kim, Si On Lim, Yong Jun Kim, Jin-Ku Lee, Mihue Jang, Empowering pancreatic tumor homing with augmented anti-tumor potency of CXCR2-tethered CAR-NK cells, *Molecular Therapy Oncology*, **2024**

3. Stem Cell Engineering for Disease Modeling and Regenerative Immunotherapy

To complement my oncology research, I have established stem-cell-based disease modeling systems using patient-derived cells. I optimized protocols to reprogram lymphoblastoid cell lines (LCLs) from pulmonary arterial hypertension (PAH) patients and healthy donors into induced pluripotent stem cells (iPSCs), followed by endothelial differentiation. This enables mechanistic investigation of vascular dysfunction and personalized evaluation of therapeutic interventions. The methodology, currently under journal correction, provides a scalable workflow for studying endothelial-immune crosstalk and could serve as a regenerative platform for vascular and tumor immunology. In the future, I aim to merge this iPSC system with immuno-engager designs to create immune-competent organoid and vascular models that recapitulate human tumor microenvironments.

a. Eui Young So*, **Moon Jung Choi* (co-first author)**, Young Eun Lee, Bedia Akosman, Euy-Myoung Jeong, Anthony M. Reginato, and Olin D. Liang*, Myeloid Specific Ablation of SHIP1 Boosts ex vivo Expansion and Regulatory Function of Myeloid-Derived Suppressor Cells in Inflammatory Arthritis, *AJP-CP (American journal of physiology – cell physiology)*, In revision, **2026**

b. Bedia Akosman, **Moon Jung Choi**, Yamini Sharma, Mandy Pereira, Young Eun Lee, Eui Young So, Allyson, Sherman Roe, Navneet Singh, Anthony M. Reginato, Corey E. Ventetuolo, Martin R. Wilkins, Lan Zhao, Christopher J. Rhodes, James R. Klinger, and Olin D. Liang, Impaired SOX17 Expression Causes Endothelial Dysfunction and Pulmonary Arterial Hypertension by Insufficient Suppression of RUNX1 (Preprint on BioRxiv, 2026, doi: <https://doi.org/10.64898/2026.05.14.725187>)

ABSTRACTS

1. Combinational therapy of CAR-T/Oncolytic adenovirus for Glioblastoma (GBM), **Moon Jung Choi**¹, Eui Young So, Euy-Myoung Jeong, Bedia Akosman and Olin Liang, 2024 Brown Legorreta cancer center Retreat (Brown University, Rhode Island) - **Best Poster Award 1st place**
2. CAR-T Cells targeting Heterogeneity of Glioblastoma (GBM), **Moon Jung Choi**¹, Eui Young So, Euy-Myoung Jeong, Bedia Akosman and Olin Liang, 2023 Basic Mechanisms to Clinical Trials in Brain Tumors GRC (2023 Gordon Research Conference-Clinical trials in Glioblastoma, Bryant University, Rhode Island)
3. Development of biocompatible nanoparticles using erythrocyte membranes for triple negative breast cancer therapy, **Moon Jung Choi**¹, Hwa Yeon Jeong, Seong Jae Kang, Min Woo Kim, In Ho Jeong, Young Myoung You, Chan Su Im and Yong Serk Park, Controlled Release Society (CRS) 2017 (USA)

GRANTS AND AWARDS

GRANTS

1. Brown Physicians, Inc.

Multimodal OV-TriNKE & CAR-NK Cell Immunotherapy for Glioblastoma

Grant: Academic Assessment Research Award 10/01/2025 to 03/31/2027

PI: Olin Liang, Ph.D.

Total: **\$50,000**

Role: Research Associate

The goal of this project is to investigate novel immunotherapy to treat glioblastoma.

2. Brown Physicians, Inc.

The Role of Cellular Senescence in the Pathogenesis and Treatment of Rheumatoid Arthritis

Grant: Academic Assessment Research Award 10/01/2023 to 03/31/2025

PI: Olin Liang, Ph.D.

Total: **\$50,000**

Role: Research Associate

The goal of this award is to provide salary support to the PI for the preparation of grant applications to investigate the role of cellular senescence in the pathogenesis and treatment of rheumatoid arthritis.

3. Brown Physicians, Inc.

Improving Immunotherapy in Glioblastoma by Modifying Tumor Microenvironment

Grant: Academic Assessment Research Award 10/01/2023 to 03/31/2025

PI: Paul Bertone, Ph.D.

Total: **\$50,000**

Role: Research Associate

The goal of this project is to investigate novel immunotherapy to treat glioblastoma.

4. Brown Physicians, Inc.

Viro-immunotherapy Combining Oncolytic Adenoviruses Encoding Bi-specific T Cell Engagers and CAR T Cells to Treat Glioblastoma

Grant: Academic Assessment Research Award

10/01/2022 to 03/31/2024

PI: Olin Liang, Ph.D.

Total: **\$50,000**

Role: Research Associate

The goal of this project is to investigate novel immunotherapy to treat glioblastoma.

AWARDS

1. 2025 NEBS Annual Conference Award

- Innovative Viroimmunotherapy Approaches Combining Armed Oncolytic Adenovirus and CAR-T to treat Glioblastoma, 2025 NEBS Annual Conference (Boston, USA), 'NEBS-LigaChem Award'

2. 2025 KASBP-KHIDI fellowship Award

- Enabling CAR-T Cell Immunotherapy in Glioblastoma by Modifying Tumor Microenvironment via Oncolytic Adenovirus Encoding Bispecific T Cell Engager

3. 2024 Legorreta Cancer Center Retreat. Poster Award

- Combinational therapy of CAR-T/Oncolytic adenovirus for Glioblastoma (GBM), **Moon Jung Choi¹**, Eui Young So, Euy-Myoung Jeong, Bedia Akosman and Olin Liang, **Best Poster Award 1st**

UNIVERSITY TEACHING, ADVISING and MENTORING ROLES

- **Teaching assistance**

1. Cell Biology: Yonsei University/ Dept. of Biomedical Laboratory Sciences 2016-2020 (Every 1st semester, spring semester)
2. Cell physiology: Yonsei University/ Dept. of Biomedical Laboratory Sciences 2016-2020 (Every 2nd semester, fall semester)
3. Cell genetics: Yonsei University/ Dept. of Biomedical Laboratory Sciences, 2016, 2018, and 2020 (Every 1st semester, fall semester)

- **Teaching**

1. Basic Biomedical Laboratory Science, Division of Health Sciences, Yonsei University, 2019 (2ND semester, fall semester)

- **Mentoring Program**

1. Brown Summer Research Early Identification Program (SR-EIP), Summer semester, 2025

- Mentee: Andres Luna (Washington University)

- Role: co-mentor

References

1. **Yong Serk Park**, Professor (Ph.D. supervisor)
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2. **Olin Liang**, Associate Professor of Medicine
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3. **Gyu-Un Bae**, Professor of College of Pharmacy, Sookmyung Women's University
Room#408, Cheongpa-ro 47-gil 100, Yongsan-gu, Seoul, Korea, 04310
E-mail: gbae@sookmyung.ac.kr, Tel. 02-2077-7629
4. **Sean E Lawler**, Associate Professor of Pathology and Laboratory Medicine
Brown University, Providence, RI, 107 Ship Street, 02912
E-mail: sean_lawler@brown.edu
5. **Eric T Wong, MD, MA, FANA, FAAN**, Professor of Neurology, Medicine, Neurosurgery & Radiation Oncology,
The Warren Alpert Medical School of Brown University, Director, Medical Neuro-Oncology
Rhode Island Hospital, George 315, 593 Eddy Street, Providence, RI 02903
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