# Kejun "Albert" Ying

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*Studying aging at the intersection of biology and AI*

## Education

**Harvard University** Cambridge, MA
*Ph.D., Biological Science in Public Health* 2019 – Expected 2024

- Advisor: Dr. Vadim Gladyshev
- Dissertation Advisory Committee: Dr. Brendan Manning, Dr. David Sinclair, Dr. Shamil Sunyaev
- Focused on understanding the mechanism of aging through multi-omic modeling & causal inference

**Harvard University** Cambridge, MA
*M.S., Computational Science Engineering* 2022 – Expected 2024

- Secondary field during Ph.D. study

**University of California, Berkeley** Berkeley, CA
*Visiting Student, Integrative Biology* 2017 – 2018

**Sun Yat-Sen University** Guangzhou, China
*B.S., Life Science* 2015 – 2019

- Thesis: Screening for the Interactome of hTERC based on Molecular Fluorescence Complementation System in Living Cells
- Yat-Sen Honor School Program (Top 0.5%)
- National college admissions exam (Top 0.6%)

## Grants

**Using causal aging biomarkers and protein design to develop novel anti-aging interventions** NIH/NIA
F99/K00, *Transition to Aging Research for Predoctoral Students* 2024 – 2028

- Award Document Number: FAG088431A (PI)
- Received a *perfect* Impact Score of **10**

## Publications

Moqri, M., Herzog, C., Poganik, J. R., **Ying, K.,** Justice, J. N., Belsky, D. W., Higgins-Chen, A. T., Chen, B. H., Cohen, A. A., Fuellen, G., Hägg, S., Marioni, R. E., Widschwendter, M., Fortney, K., Fedichev, P. O., Zhavoronkov, A., Barzilai, N., Lasky-Su, J., Kiel, D. P., ... Ferrucci, L. (2024). Validation of biomarkers of aging. **Nature Medicine**, 1–13. https://doi.org/10.1038/s41591-023-02784-9

Griffin, P. T., Kane, A. E., Trapp, A., Li, J., Arnold, M., Poganik, J. R., Conway, R. J., McNamara, M. S., Meer, M. V., Hoffman, N., Amorim, J. A., Tian, X., MacArthur, M. R., Mitchell, S. J., Mueller, A. L., Carmody, C., Vera, D. L., Kerepesi, C., **Ying, K.,** ... Sinclair, D. A. (2024). TIME-seq reduces time and cost of DNA methylation measurement for epigenetic clock construction. **Nature Aging**, 1–14. https://doi.org/10.1038/s43587-023-00555-2

**Ying, K.,** Liu, H., Tarkhov, A. E., Sadler, M. C., Lu, A. T., Moqri, M., Horvath, S., Kutalik, Z., Shen, X., & Gladyshev, V. N. (2024). Causality-enriched epigenetic age uncouples damage and adaptation. **Nature Aging (Featured on the February Cover)**, 1–16. https://doi.org/10.1038/s43587-023-00557-0

**Ying, K.,** Paulson, S., Perez-Guevara, M., Emamifar, M., Martinez, M. C., Kwon, D., Poganik, J. R., Moqri, M., & Gladyshev, V. N. (2023). *Biolearn, an open-source library for biomarkers of aging*. **bioRxiv**. https://doi.org/10.1101/2023.12.02.569722

Liberman, N., Rothi, M. H., Gerashchenko, M. V., Zorbas, C., Boulias, K., MacWhinnie, F. G., **Ying, A. K.,** Flood Taylor, A., Al Haddad, J., Shibuya, H., Roach, L., Dong, A., Dellacona, S., Lafontaine, D. L. J., Gladyshev, V. N., & Greer, E. L. (2023). 18S rRNA methyltransferases DIMT1 and BUD23 drive intergenerational hormesis. **Molecular Cell**, *83*(18), 3268–3282.e7. https://doi.org/10.1016/j.molcel.2023.08.014

Bitto, A., Grillo, A. S., Ito, T. K., Stanaway, I. B., Nguyen, B. M. G., **Ying, K.,** Tung, H., Smith, K., Tran, N., Velikanje, G., Urfer, S. R., Snyder, J. M., Barton, J., Sharma, A., Kayser, E.-B., Wang, L., Smith, D. L., Thompson, J. W., DuBois, L., … Kaeberlein, M. (2023). Acarbose suppresses symptoms of mitochondrial disease in a mouse model of Leigh syndrome. **Nature Metabolism**, *5*(6), 955–967. https://doi.org/10.1038/s42255-023-00815-w

**Ying, K.,** Tyshkovskiy, A., Trapp, A., Liu, H., Moqri, M., Kerepesi, C., & Gladyshev, V. N. (2023). *ClockBase : A comprehensive platform for biological age profiling in human and mouse*. **bioRxiv**. https://doi.org/10.1101/2023.02.28.530532

Tarkhov, A. E., Lindstrom-Vautrin, T., Zhang, S., **Ying, K.,** Moqri, M., Zhang, B., & Gladyshev, V. N. (2022). *Nature of epigenetic aging from a single-cell perspective*. **bioRxiv**. https://doi.org/10.1101/2022.09.26.509592

Emmrich, S., Trapp, A., Tolibzoda Zakusilo, F., Straight, M. E., **Ying, A. K.,** Tyshkovskiy, A., Mariotti, M., Gray, S., Zhang, Z., Drage, M. G., Takasugi, M., Klusmann, J.-H., Gladyshev, V. N., Seluanov, A., & Gorbunova, V. (2022). Characterization of naked mole-rat hematopoiesis reveals unique stem and progenitor cell patterns and neotenic traits. **The EMBO Journal**, *41*(15), e109694. https://doi.org/10.15252/embj.2021109694

Zhang, B., Tarkhov, A. E., Ratzan, W., **Ying, K.,** Moqri, M., Poganik, J. R., Barre, B., Trapp, A., Zoller, J. A., Haghani, A., Horvath, S., Peshkin, L., & Gladyshev, V. N. (2022). *Epigenetic profiling and incidence of disrupted development point to gastrulation as aging ground zero in Xenopus laevis*. **bioRxiv**. https://doi.org/10.1101/2022.08.02.502559

Yang, Z., Macdonald-Dunlop, E., Chen, J., Zhai, R., Li, T., Richmond, A., Klarić, L., Pirastu, N., Ning, Z., Zheng, C., Wang, Y., Huang, T., He, Y., Guo, H., **Ying, K.,** Gustafsson, S., Prins, B., Ramisch, A., Dermitzakis, E. T., … Shen, X. (2022). Genetic Landscape of the ACE2 Coronavirus Receptor. **Circulation**, *145*(18), 1398–1411. https://doi.org/10.1161/CIRCULATIONAHA.121.057888

**Ying, K.,** Zhai, R., Pyrkov, T. V., Shindyapina, A. V., Mariotti, M., Fedichev, P. O., Shen, X., & Gladyshev, V. N. (2021). Genetic and phenotypic analysis of the causal relationship between aging and COVID-19. **Communications Medicine**, *1*(1), 35. https://doi.org/10.1038/s43856-021-00033-z

Li, T., Ning, Z., Yang, Z., Zhai, R., Zheng, C., Xu, W., Wang, Y., **Ying, K.,** Chen, Y., & Shen, X. (2021). Total genetic contribution assessment across the human genome. **Nature Communications**, *12*(1), 2845. https://doi.org/10.1038/s41467-021-23124-w

Castro, J. P., Shindyapina, A. V., Barbieri, A., **Ying, K.,** Strelkova, O. S., Paulo, J. A., Tyshkovskiy, A., Meinl, R., Kerepesi, C., Petrashen, A. P., Mariotti, M., Meer, M., Hu, Y., Karamyshev, A., Losyev, G., Indzhykulian, A. A., Gygi, S. P., Sedivy, J. M., Manis, J. P., & Gladyshev, V. N. (2021). *Integrative analyses uncover mechanisms by which aging drives B cell lymphoma*. **bioRxiv**. https://doi.org/10.1101/2021.02.23.432500

Bitto, A., Tung, H., **Ying, K.,** Smith, D. L., Kayser, E.-B., Morgan, P. G., Sedensky, M. M., & Kaeberlein, M. (2019). AGING AND MITOCHONDRIAL DISEASE: SHARED MECHANISMS AND THERAPIES? **Innovation in Aging**, *3*(Supplement_1), S395–S395. https://doi.org/10.1093/geroni/igz038.1459

Zhu, J., Xu, M., Liu, Y., Zhuang, L., **Ying, K.,** Liu, F., Liu, D., Ma, W., & Songyang, Z. (2019). Phosphorylation of PLIN3 by AMPK promotes dispersion of lipid droplets during starvation. **Protein & Cell**, *10*(5), 382–387. https://doi.org/10.1007/s13238-018-0593-9

## Patents

V. N. Gladyshev, **K. Ying**, Mapping CpG sites to quantify aging traits (2024). *WO2024039905A2*

## Presentations

### Oral Presentations

**4th TimePie Longevity Forum** — Shanghai, China
*Causal Aging Biomarker as a Tool for Unbiased Anti-Aging Therapy Screening* — 2023

**Global Congress on Aesthetic and Anti-Aging (GCAA2023)** — Singapore
*Causal Aging Biomarker as a Tool for Unbiased Anti-Aging Therapy Screening* — 2023

**10th Aging Research and Drug Discovery conference (ARDD2023)** — Copenhagen, Denmark
*Causal Epigenetic Age Uncouples Damage and Adaptation* — 2023

**AGE 2023 51st Annual Meeting** — Oklahoma City, OK
*Causal Epigenetic Age Uncouples Damage and Adaptation* — 2023

**Broad Institute MPG Retreat** — Cambridge, MA
*Causal Epigenetic Age Uncouples Damage and Adaptation* — 2023

**Harvard GRIP Presentations** — Boston, MA
*Causal Epigenetic Age Uncouples Damage and Adaptation* — 2022

**Targeting Metabesity 2022**, 'Honorable Mention' — Virtual Conference
*Causal Epigenetic Age Uncouples Damage and Adaptation* — 2022

**GSA 2021 Annual Scientific Meeting** — Virtual Conference
*Genetic and phenotypic evidence for causal relationships between aging and COVID-19* — 2021

### Poster Presentations

**Biomarker of Aging Symposium** — Novato, CA
*Causal Aging Biomarker as a Tool for Unbiased Anti-Aging Therapy Screening* — 2023

**Gordon Research Conference, Systems Aging** — Maine, MA
*Causal Epigenetic Age Uncouples Damage and Adaptation* — 2022

### Invited Talks

**Chinese University of Hong Kong**, hosted by Dr. Xin Wang — Hong Kong, China
*Causal Aging Biomarker as a Tool for Systemic Anti-Aging Therapy Screening* — 2023

**Peking University**, hosted by Dr. Jingdong Han — Beijing, China
*Causal Aging Biomarker and ClockBase* — 2023

**Everything Epigenetics**, podcast hosted by Hannah Went — Online Podcast
*Causal Epigenetic Age Uncouples Damage and Adaptation* — 2023

**Chinese Academy of Sciences**, hosted by Dr. Xuming Zhou — Beijing, China
*Causal Epigenetic Age Uncouples Damage and Adaptation* — 2022

**Foresight Institute**, hosted by Allison Duettmann — Online Seminar
*Genetic Variation, Aging & Relationship to COVID-19 | Joris Deelen, Albert Ying* — 2020

## Research Experience

**Harvard Medical School** — Boston, MA
*Graduate Researcher, Vadim Gladyshev's Lab* — 2020 – Present

**Boston Children's Hospital** — Boston, MA
*Rotation Student, Eric Greer's Lab* — 2020

**Harvard Medical School** — Boston, MA
*Rotation Student, David Sinclair's Lab* — 2019

**Harvard T. H. Chan School of Public Health** — Boston, MA
*Rotation Student, Brendan Manning's Lab* — 2019

**Sun Yat-Sen University** — Guangzhou, China
*Undergraduate Researcher, Zhou Songyang's Lab* — 2018 – 2019

**University of Edinburgh** — Edinburgh, UK
*Undergraduate Researcher, Xia Shen's Lab* — 2018

**University of Washington** — Seattle, WA
*Undergraduate Researcher, Matt Kaeberlein's Lab* — 2018

**Buck Institute for Research on Aging** — Novato, CA
*Undergraduate Researcher, Judith Campisi's Lab* — 2018

**University of California, Berkeley** — Berkeley, CA
*Undergraduate Researcher, Danica Chen's Lab* — 2017

**Sun Yat-Sen University** — Guangzhou, China
*Undergraduate Researcher, Yikang Rong's Lab* — 2015 – 2017

## Honors

**Best Poster Award**, Inaugural Biomarker of Aging Symposium — 2023

**Student Spotlight**, Harvard Chan School of Public Health — 2023

**Best Poster Award**, Gordon Research Conference, Systems Aging — 2022

**Hackathon Winner**, Longevity Hackathon, VitaDAO — 2021

**Yan-Sen Honor School Program**, Sun Yat-Sen University — 2016 – 2019

**Yan-Sen Scholarship**, Sun Yat-Sen University — 2016 – 2019

## Professional Experience

### Service & Leadership

**President**, Harvard Interdisciplinary Discussion on Disease and Health 2024 – Present

**Advisory Committee Member**, Massachusetts Community Health & Healthy Aging Funds 2024 – Present

**Organizing Committee Member**, Biomarker of Aging Symposium 2023

### Teaching & Mentoring

**Mentor**, Yuanpei Young Scholars Program 2023 – 2024

**Instructor**, Harvard Public Health Symposium For Young Generation 2023

### Journals Reviewed

*Nature Aging*, *Nature Communications*, *BMC Nephrology*, *Lipids in Health and Disease*, *Clinical Proteomics*, *Evidence-Based Complementary and Alternative Medicine*, *Scientific Report*

## References

**Dr. Vadim Gladyshev**, Dissertation Advisor vgladyshev@bwh.harvard.edu
Professor of Medicine, Harvard Medical School

**Dr. Steve Horvath**, Collaborator shorvath@mednet.ucla.edu
Professor of Human Genetics, UCLA

**Dr. David Sinclair**, Dissertation Advisory Committee david_sinclair@hms.harvard.edu
Professor of Genetics, Harvard Medical School

**Dr. Matt Kaeberlein**, Advisor kaeber@uw.edu
Professor of Pathology, University of Washington