

# Stanford

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## Gentaro Ikeda

Postdoctoral Research Fellow, Cardiovascular Medicine

### Bio

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#### BIO

Dr. Ikeda is a physician-scientist who develops innovative diagnostic and therapeutic modalities for patients with cardiovascular disease. Based on his clinical experience as a cardiologist, he has become aware of major clinical shortcomings, specifically in the current pharmaceutical therapies for myocardial infarction (MI) and chronic heart failure (HF). Some evidence-based drug therapies, including  $\beta$ -blockers, ivabradine, and renin-angiotensin-aldosterone antagonists are difficult to apply to critical patients due to adverse side effects. Drugs that have shown efficacy in basic animal experiments have failed to show significant benefits in clinical trials. To address these problems, he moved to academia to conduct translational research. During his graduate training in the Egashira Lab, he focused on drug delivery systems (DDS) that target mitochondria in animal models of MI. He obtained advanced skills in molecular biology, mitochondrial bioenergetics, and animal surgery. He realized the importance of translational research and the great potential of DDS to overcome many clinical problems. He developed nanoparticle-mediated DDS containing cyclosporine for the treatment of patients with MI. He published a first-author paper and received academic awards for his novel science. Since becoming a postdoctoral fellow in the Yang Lab, he has continued to build upon his previous training in translational research. He is currently developing an innovative therapy, namely, extracellular vesicles-mediated mitochondrial transfer for mitochondria-related diseases such as heart failure and mitochondrial disease.

#### HONORS AND AWARDS

- Young Investigator Award Finalist, American College of Cardiology (2020)
- AHA Postdoctoral Fellowship, American Heart Association (2020-)
- Stanford Dean's Postdoctoral Fellowship, Stanford University (2019-2020)
- Japan Heart Foundation / Bayer Research Grant Abroad, Japan Heart Foundation (2017-2018)

#### PROFESSIONAL EDUCATION

- PhD, Kyushu University, Japan (2016)
- MD, Showa University, Japan (2007)

#### LINKS

- Yang Lab: <http://med.stanford.edu/cvmedicine/research/faculty-labs-link/yanlab.html>
- SPARK Stanford: <https://sparkmed.stanford.edu/>
- Office of Technology Licensing: [http://techfinder.stanford.edu/technologies/S19-110\\_next-generation-therapy-for-heart](http://techfinder.stanford.edu/technologies/S19-110_next-generation-therapy-for-heart)

### Publications

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#### PUBLICATIONS

- **Mitochondria-Rich Extracellular Vesicles From Autologous Stem Cell-Derived Cardiomyocytes Restore Energetics of Ischemic Myocardium.** *Journal of the American College of Cardiology*

Ikeda, G. n., Santoso, M. R., Tada, Y. n., Li, A. M., Vaskova, E. n., Jung, J. H., O'Brien, C. n., Egan, E. n., Ye, J. n., Yang, P. C.

2021; 77 (8): 1073–88

- **Nanoparticle-Mediated Simultaneous Targeting of Mitochondrial Injury and Inflammation Attenuates Myocardial Ischemia-Reperfusion Injury.** *Journal of the American Heart Association*  
Ikeda, G., Matoba, T., Ishikita, A., Nagaoka, K., Nakano, K., Koga, J. I., Tsutsui, H., Egashira, K.  
2021: e019521
- **miR-106a-363 cluster in extracellular vesicles promotes endogenous myocardial repair via Notch3 pathway in ischemic heart injury.** *Basic research in cardiology*  
Jung, J. H., Ikeda, G. n., Tada, Y. n., von Bornstädt, D. n., Santoso, M. R., Wahlquist, C. n., Rhee, S. n., Jeon, Y. J., Yu, A. C., O'brien, C. G., Red-Horse, K. n., Appel, E. A., Mercola, et al  
2021; 116 (1): 19
- **Simultaneous targeting of mitochondria and monocytes enhances neuroprotection against ischemia-reperfusion injury.** *Scientific reports*  
Okahara, A., Koga, J., Matoba, T., Fujiwara, M., Tokutome, M., Ikeda, G., Nakano, K., Tachibana, M., Ago, T., Kitazono, T., Tsutsui, H., Egashira, K.  
2020; 10 (1): 14435
- **Exosomes From Induced Pluripotent Stem Cell-Derived Cardiomyocytes Promote Autophagy for Myocardial Repair.** *Journal of the American Heart Association*  
Santoso, M. R., Ikeda, G., Tada, Y., Jung, J., Vaskova, E., Sierra, R. G., Gati, C., Goldstone, A. B., von Bornstaedt, D., Shukla, P., Wu, J. C., Wakatsuki, S., Woo, et al  
2020; 9 (6): e014345
- **Sacubitril/Valsartan Improves Cardiac Function and Decreases Myocardial Fibrosis Via Downregulation of Exosomal miR-181a in a Rodent Chronic Myocardial Infarction Model.** *Journal of the American Heart Association*  
Vaskova, E. n., Ikeda, G. n., Tada, Y. n., Wahlquist, C. n., Mercola, M. n., Yang, P. C.  
2020: e015640
- **Meta-analysis of short- and long-term efficacy of mononuclear cell transplantation in patients with myocardial infarction.** *American heart journal*  
Yang, D., O'Brien, C. G., Ikeda, G., Traverse, J. H., Taylor, D. A., Henry, T. D., Bolli, R., Yang, P. C.  
2019; 220: 155–75
- **Nanoparticle-Mediated Delivery of Pitavastatin to Monocytes/Macrophages Inhibits Left Ventricular Remodeling After Acute Myocardial Infarction by Inhibiting Monocyte-Mediated Inflammation** *INTERNATIONAL HEART JOURNAL*  
Mao, Y., Koga, J., Tokutome, M., Matoba, T., Ikeda, G., Nakano, K., Egashira, K.  
2017; 58 (4): 615–23
- **Nanoparticle-Mediated Delivery of Irbesartan Induces Cardioprotection from Myocardial Ischemia-Reperfusion Injury by Antagonizing Monocyte-Mediated Inflammation** *SCIENTIFIC REPORTS*  
Nakano, Y., Matoba, T., Tokutome, M., Funamoto, D., Katsuki, S., Ikeda, G., Nagaoka, K., Ishikita, A., Nakano, K., Koga, J., Sunagawa, K., Egashira, K.  
2016; 6: 29601
- **Nanoparticle-Mediated Delivery of Mitochondrial Division Inhibitor 1 to the Myocardium Protects the Heart From Ischemia-Reperfusion Injury Through Inhibition of Mitochondria Outer Membrane Permeabilization: A New Therapeutic Modality for Acute Myocardial Infarction** *JOURNAL OF THE AMERICAN HEART ASSOCIATION*  
Ishikita, A., Matoba, T., Ikeda, G., Koga, J., Mao, Y., Nakano, K., Takeuchi, O., Sadoshima, J., Egashira, K.  
2016; 5 (7)
- **Nanoparticle-Mediated Targeting of Cyclosporine A Enhances Cardioprotection Against Ischemia-Reperfusion Injury Through Inhibition of Mitochondrial Permeability Transition Pore Opening** *SCIENTIFIC REPORTS*  
Ikeda, G., Matoba, T., Nakano, Y., Nagaoka, K., Ishikita, A., Nakano, K., Funamoto, D., Sunagawa, K., Egashira, K.  
2016; 6: 20467
- **A New Therapeutic Modality for Acute Myocardial Infarction: Nanoparticle-Mediated Delivery of Pitavastatin Induces Cardioprotection from Ischemia-Reperfusion Injury via Activation of PI3K/Akt Pathway and Anti-Inflammation in a Rat Model** *PLOS ONE*  
Nagaoka, K., Matoba, T., Mao, Y., Nakano, Y., Ikeda, G., Egusa, S., Tokutome, M., Nagahama, R., Nakano, K., Sunagawa, K., Egashira, K.  
2015; 10 (7): e0132451