

Curriculum Vitae
Eunah Han

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Education

- Aug. 2012** **B.Sc. in Life Science**, POSTECH, South Korea
Thesis: "AUG upstream A-rich region enhances translation initiation"
- Aug. 2014** **M.Sc. in Environmental Science**, POSTECH (Advisor: Prof. Chang-Keun, Kang)
Thesis: "Stable isotope analysis of a newly established macrofaunal food web 1.5 years after the *Hebei Spirit* oil spill"
- May. 2019** **M.Sc.* in Geosciences**, Princeton University, NJ, the U.S. (Advisor: Prof. Xinning Zhang)
*I entered as a Ph.D. student, but M.Sc. was automatically conferred when I passed a Ph.D. candidacy exam.
Project: "How does the active site of nitrogenase constrain the ¹⁵N isotope composition of N₂-fixer biomass?"
- Jun. 2019 –** **Ph.D. candidate in Geosciences**, Princeton University (Advisor, Prof. Zhang)
Thesis projects:
- "How does the active site of nitrogenase constrain the ¹⁵N isotope composition of N₂-fixer biomass?"
 - "Examining Hydrological Effects on Mo-independent Nitrogen Fixation by Epiphyte and Soil-associated Microbes in Temperate and Tropical Rainforests"

Employment & Professional Experience

- Sep. 2014 – Jun. 2017** **Researcher**, Long-Term Marine Ecosystem Research (LTMER) Center
Gwangju Institute of Science and Technology (GIST), South Korea
- Sep. 2016 - Mar. 2017** **Visiting faculty research assistant**
Chesapeake Biological Laboratory
University of Maryland Center for Environmental Science, MD, United States
Project: "Modeling the effects of salinity and temperature on growth of the eastern oyster *Crassostrea virginica* in the Choptank River System"
- Jul. 2018 - Aug. 2017** **Visiting graduate student**
The Geomicrobial Physiology Laboratory
University of Colorado, Boulder, CO, United States
Chemostat building and operation for a NASA Project entitled "What Controls the Nitrogen Isotope Fractionation of N₂ Fixation?"

Publications

1. **E. Han**, H. J. Park, L. Bergamino, K.-S. Choi, E. J. Choy, O. H. Yu, T. W. Lee, H.-S. Park, W. J. Shim, C.-K. Kang, 2015. Stable isotope analysis of a newly established macrofaunal food web 1.5 years after the Hebei Spirit oil spill. *Marine Pollution Bulletin*, 90, 167-180.
2. C.-K. Kang, Y. J. Lee, **E. Han**, H. J. Park, S. G. Yun, W. C. Lee, 2015. Effects of temperature and body size on the physiological energetics of the stalked sea squirt *Styela clava*. *Journal of Experimental Marine Biology and Ecology*, 462, 105-112.
3. H. J. Park, **E. Han**, W. C. Lee, J. H. Kwak, H. C. Kim, M. S. Park, C.-K. Kang, 2015. Trophic structure in a pilot system for the integrated multi-trophic aquaculture off the east coast of Korean peninsula as determined by stable isotopes. *Marine Pollution Bulletin*, 95, 207-214.
4. H. J. Park, I. Yeon, **E. Han**, Y. J. Lee, S. M. Hanchet, G. W. Baeck, Y. Kwon, S. G. Choi, D. W. Lee, C.-K. Kang, 2015. Diet study of Antarctic toothfish caught in the eastern Antarctic Sea based on stomach content, fatty acid, and stable isotope analyses. *CCAMLR Science*, 22, 29-44.
5. L. Bergamino, A. Martínez, **E. Han**, D. Lercari, O. Defeo, 2016. Trophic niche shift driven by phytoplankton in sandy beach ecosystems. *Estuarine, Coastal, and Shelf Science*, 180, 33-40.
6. H.J. Park, **E. Han**, Y. J. Lee, C.-K. Kang, 2016. Trophic structure of a temperate intertidal macrobenthic food web under opportunistic macroalgal blooms: a stable isotope approach. *Marine Pollution Bulletin*, 111, 86-94.
7. J. H. Kwak, **E. Han (joint first author)**, J. Hwang, C. I. Lee, Y. I. Kim, C.-K. Kang, 2017. Flux and stable C and N isotope composition of sinking particles in the Ulleung Basin of the East/Japan Sea. *Deep Sea Research Part II*, 143:62-72.
8. J. H. Kwak, **E. Han**, S. H. Lee, H. J. Park, K.-R. Kim, C.-K. Kang, 2017. A consistent structure of phytoplankton communities across the warm-cold regions of the water mass on a meridional transect in the East/Japan Sea. *Deep Sea Research Part II*, 143:36-44.
9. Y.-J. Lee, **E. Han**, M. J. Wilberg, W. C. Lee, C.-K. Kang, 2019. Physiological processes and gross energy budget of the submerged longline-cultured Pacific oyster. *Plos One*, 13: e0199752.
10. H. J. Park, Y. -J. Lee, **E. Han**, K. -S. Choi, E. J. Choy, J. H. Kwak, C.-K. Kang, 2019. Effect of the Hebei Spirit oil spill on the condition, reproduction, and energy storage cycle of the Manila Clam *Ruditapes philippinarum* on the West Coast of Korea. *Estuaries and Coasts*, 1-13.
11. Y. -J. Lee, M. J. Wilberg, **E. Han**, K. -S. Choi, W. C. Lee, C. -K. Kang, 2020. Growth of the longline-cultured sea squirt *Halocynthia roretzi* in a temperate bay of Korea: Biochemical composition and physiological energetics. *Aquaculture*, 516: 734526
12. **E. Han**, C.-K. Kang, R. Ji, C. I. Lee, M.J. Wilberg. Physiological benefits of rising temperature to temperate clams, *Gomphina veneriformis*, in preparation.
13. **E. Han**, M.J. Wilberg, K. T. Paynter, C.-K. Kang. Effects of salinity and temperature on growth of the eastern oyster *Crassostrea virginica* in the Choptank River System, in preparation.
14. **E. Han**, A. E. Maloney, S. Kopf, X. Zhang. Nitrogenase Structure-function constraints on nitrogen stable isotope fractionation during biological N₂ fixation, in preparation.

Presentations

- E. Han** et al., Intermediate-term effect of the Hebei Spirit oil spill on intertidal macrofaunal community revealed by C and N stable isotopes, 2013 Feb., *American Society of Limnology and Oceanography (ASLO) Aquatic Sciences Meeting*, New Orleans, LA, Oral presentation.
- E. Han** et al., Resilience of a coastal ecosystem to the Hebei Spirit oil spill, 2013 Jun., *Croucher Summer Course: Climate Change and Marine Ecosystem*, Hong Kong, Poster presentation.
- E. Han** et al., Quantification of microalgal biomass and its importance in benthic trophic network in the Gwangyang Bay system, 2013 Sep., *The 27th Annual Meeting of the Korean Society of Phycology*, Daejeon, Korea, Oral presentation.
- E. Han** et al., Longitudinal variation in benthic trophic network along a transect from estuary to offshore in the Gwangyang Bay system of Korea, 2013 Nov., *The 22nd biennial conference of the Coastal & Estuarine Research Federation (CERF)*, San Diego, CA, Oral presentation.
- E. Han** et al., Trophic importance of offshore diatoms to benthic food web in the Youngil Bay of (East/Japan Sea) Korea: Estimating phylum-specific $\delta^{13}\text{C}$ from natural phytoplankton assemblages, 2014 Oct., *The 2nd Asian Marine Biology Symposium*, Pusan, South Korea, Oral presentation.
- E. Han** et al., Stable isotope evidence challenges assumption of overwhelming allochthonous contribution to reflective sandy beach ecosystem, 2015 Nov., *The 23rd biennial conference of CERF*, Portland, OR, Oral presentation.
- E. Han**, R. Darnajoux, S. Kopf, X. Zhang, Active site constraints on nitrogen stable isotope fractionation by Mo-dependent nitrogenase, 2018 Apr., *The Northeast Geobiology Symposium*, Woods Hole, MA, Poster presentation.
- E. Han**, A. E. Maloney, R. Darnajoux, S. Kopf, X. Zhang, Active site constraints on nitrogen stable isotope fractionation by Mo-dependent nitrogenase, 2018 Aug., *Goldschmidt Conference*, Boston, MA, Poster presentation.
- E. Han**, A. E. Maloney, S. Kopf, X. Zhang, Alteration of the α -70 “gatekeeping” residue of the Mo-nitrogenase active site increases cellular scale nitrogen isotope fractionation during biological nitrogen fixation, 2018 Dec., *American Geophysical Union Fall Meeting*, Washington D.C., Poster presentation.
- E. Han**, A. E. Maloney, S. Kopf, X. Zhang, Sources of variations in ^{15}N fractionation during biological nitrogen fixation, 2019 May., *Geosciences Graduate Student Seminar*, Princeton, NJ, Oral presentation.
- E. Han**, A. E. Maloney, S. Kopf, X. Zhang, Nitrogenase structure-function constraints on nitrogen stable isotope fractionation during biological N_2 fixation, 2020 Jan., *2020 Gordon Research Conference & Symposium – Geobiology*, Galveston, TX, Poster presentation.
- D. Lee et al. (**E. Han** as a presenter), Longitudinal variation in gross biochemical composition and reproductive activity of Venus clam *Gomphina veneriformis* along the east coast of Korea, 2012 Nov., *The Annual Science Meeting of Fishery Sciences Association of Korea*, Pusan, South Korea, Oral presentation.
- D. Lee et al., Gross biochemical composition of Venus clam *Gomphina veneriformis* of the East/Japan Sea, 2012 Dec. *The 2nd Intl. Symposium on Asari Clam*, Pusan, South Korea, Poster presentation.
- C.-K. Kang et al., Seasonal shift of ecosystem structure around the Ulleung Basin of the East/Japan Sea, 2013 Sep. *2013 ICES Annual Science Conference*, Reykjavik, Iceland, Oral presentation.
- C.-K. Kang et al., Temperature-dependent physiological energetics of the sea squirt *Styela clava* in a temperate bay of Korea, 2015 Nov. *The 23rd biennial conference of CERF*, Poster presentation.

Awards, Merit-based Fellowships, and Honors

- Mar. 2008 - Aug. 2012** National Science & Engineering Scholarship, **Tuition waiver (USD 22,000)**
- Top 2,000 students (99th percentile) in 2008 Korean National SAT
- Summer 2009** Study Abroad Scholarship for Humanities (**USD 3,000**)
- <1L1B424 London's Musical Theatre> in University of Westminster, UK
- Fall 2009** **Dean's list**
- Aug. 2011** Bang Dosie World Heritage Explorers Grant (**USD 7,000**)
- Visited MBARI, SIO, and WHOI in the US
- Fall 2010** POSTECH Undergraduate Research Program (**USD 5,000**)
- "The function of NSAP1 in translation initiation"
- Winter 2010/2011** POSTECH Global Enterprises Visiting Trip to USA (**Whole travel expenses**)
- Visited the head office of Google, Microsoft, and Oracle in the US
- Fall 2012 - Spring 2014** POSTECH Master's Tuition/Stipend (**USD 20,000**)
- Nov. 11, 2015** Best Paper Presentation Award in Aquatic Ecology, **1st place (USD 1,000)**
- Republic of Korea Ministry of Environment
- "Trophic network along an estuarine-offshore transect of the Seomjin River estuary"
- Jul. 2016** Governmental Study Abroad Fellowship for a Ph.D. candidate (**USD 80,000**)
- Conferred by Republic of Korea Ministry of Education
- Support my Ph.D. study from 2017 Fall to 2019 Spring (2 years)
* I have declined this fellowship to receive Kwanjeong Fellowship
- Jun. 2017 – Jun. 2022** Kwanjeong Overseas Fellowship for a Ph.D. candidate (**USD 120,000**)
- Conferred by Kwangjeong Educational Foundation of South Korea
- Support my Ph.D. study from 2017 Fall to 2021 Spring (4 years)
- Jan. 2020** Princeton University Department of Geosciences Scholarly Travel Fund (**USD 1,500**)
- May. 2020 – Aug. 2021** Princeton Environmental Institute Mary and Randall Hack '69 Graduate Award for Water and the Environment (**USD 9,000**)
- Proposal title: Examining Hydrological Effects on Mo-independent Nitrogen Fixation by Epiphyte and Soil-associated Microbes in Temperate and Tropical Rainforests

Certificates and Training

- Jun. 17 – 21, 2013** Croucher Summer Course on Climate Change and Marine Ecosystems, Hong Kong University of Science & Technology, HongKong
- Feb. 19 - 21, 2014** Certificate: ArcGIS 1- Basic Training, Esri Korea, Seoul, South Korea
- Mar. 17 - 19, 2014** Gas Chromatography Operation Training, Young-in Science, Seoul, South Korea
- Aug. 2014** Certificate (Online): Performing Spatial Interpolation Using ArcGIS, Esri, CA, US

Apr. 30, 2015 Workshop: GOCI Satellite Data Processing System, KIOST, Ansan, Korea

May. 4 - 8, 2015 Training Course on Basic Oceanography, UNESCO-WESTPAC, Phuket, Thailand

Teaching Experiences

Aug. 2010 & Jan. 2011 The 3rd and the 4th Potential Camp for High School Students, Biology, Paid

Winter 2011 After-school Class of the Chung'gok Catholic Settlement House, Volunteer

Membership

- The American Association for the Advancement of Science (AAAS)
- The American Geophysical Union (AGU)
- The Geochemical Society (GS)
- The Association for the Sciences of Limnology and Oceanography (ASLO)
- The American Society for Microbiology (ASM)
- The Korean Society of Oceanography
- The Korean Society of Phycology