

Sungsik Kong

Department of Evolution, Ecology and Organismal Biology
The Ohio State University
400 Aronoff Laboratory
<http://sungsik-kong.github.io/>
sungsik.kong@gmail.com



Education

2018–Present	Ph.D.	Evolution, Ecology, and Organismal Biology (EEOB) Presidential Fellowship Awardee Advisor: Dr. Laura Kubatko	The Ohio State University
2013–2015	M.Sc.	Ecology and Evolutionary Biology (EEB) Advisor: Dr. Robert Murphy	University of Toronto
2006–2012	B.Sc.	Ecology and Evolutionary Biology and Zoology Advisors: Drs. Deborah McLennan and Robert Murphy	University of Toronto

Publications

Manuscripts in Progress

7. **Kong S**, Swofford DL, and Kubatko LS. (In Preparation) Inference of phylogenetic networks from sequence data using composite likelihood.
6. **Kong S**, Sánchez-Pacheco SJ, and Murphy RW. (In Preparation) Topological incongruence between median-joining networks and Bayesian inference phylogenies.
5. Peng J, **Kong S** and Kubatko LS. (In Preparation) A likelihood ratio test for hybridization under the multispecies coalescent.
4. Fonseca EM, Camurugi F, Magalhães FM, **Kong S**, Colli GR, Werneck FP, and Carstens BC. (In Preparation) Geographic distance, rivers, and historical climate explain genetic structure and differentiation in a widely distributed lizard in South America.
3. Nguyen HQ, Ho P-T, **Kong S**, Bae Y, Pham TH, and Jang Y. (In Review) Mitochondrial phylogenomics suggests *Hyalessa fuscata* not a synonym of *Hyalessa maculaticollis* (Hemiptera: Cicadidae).
2. Fu M, **Kong S**, Lamichhaney S, Eimes JA, and Waldman B. (In Review) Adaptation of amphibian major histocompatibility genes to an emerging infectious disease.
1. Glon H, Häussermann V, Brewin P, Brickle P, **Kong S**, Smith M, and Daly M. (In Review) There and back again: The unexpected journeys of *Metridium* de Blainville, 1824 between the old oceans and throughout the modern world.

Peer-reviewed Journal Articles

‡Co-correspondence; †Equal contribution

14. **Kong S** (2022) Digest: Frequent hybridization in *Darevskia* rarely leads to the evolution of asexuality. *Evolution* doi: 10.1111/evo.14587
13. Nguyen HQ, Kim E, Bae Y, Chae S, Ji S, Heo J, **Kong S**, Nguyen TK, Pham TH, and Jang Y. (2022) An effective method for accurate life-stage delimitation of cicadas. *Journal of Asia-Pacific Entomology* 101952 doi: 10.1016/j.aspen.2022.101952
 - Featured in Donga Science magazine (Korean), 2022 Issue 15, pp. 16–23
12. **Kong S**[†], Pons JC[†], Kubatko LS, and Wicke K. (2022) Classes of phylogenetic networks and their mathematical and biological significance. *Journal of Mathematical Biology* 84:47 doi: 10.1007/s00285-022-01746-y
11. Glon MG, Broe MB, Crandall KA, Daly M, **Kong S**, Thoma RF, and Freudenstein JV. (2022) Anchored hybrid enrichment resolves the *Lacunicambarus* (Decapoda: Cambaridae) phylogeny. *Journal of Crustacean Biology* 42:1 ruab073 doi: 10.1093/jcbiol/ruab073
10. **Kong S** and Kubatko LS. (2021) Comparative performance of popular methods for hybrid detection using genomic data. *Systematic Biology* 70:5 891–907 doi: 10.1093/sysbio/syaa092
9. Sánchez-Pacheco SJ[‡], **Kong S**[‡], Pulido-Santacruz P, Murphy RW, and Kubatko L. (2020) Median-joining network analysis of SARS-CoV-2 genomes is neither phylogenetic nor evolutionary. *Proc. Natl. Acad. Sci. U.S.A* 117:23 12518–12519 doi: 10.1073/pnas.2007062117
 - In the 98th percentile of all research outputs tracked by Altmetric (as of August 2022)
 - Scoring higher Altmetric Attention Score than 97% of all research outputs of similar age
8. Kim M, Nguyen HQ, Yi Y, Ahn J, Kim YE, Jang S, Kim S, **Kong S**, and Borzée A. (2020) Policy recommendation on whaling, trade and watching of cetaceans in the Republic of Korea. *Biodiversity Journal* 11: 255–258 doi: <https://doi.org/10.31396/Biodiv.Jour.2020.11.1.255.258>
7. Weiringa JG, Boot MR, Dantas-Queiroz MV, Duckett D, Fonseca EM, Glon H, Hamilton N, **Kong S**, Lanna FM, Mattingly KZ, Parsons DJ, Smith ML, Stone BW, Thompson C, Zuo L, and Carstens BC. (2020) Does habitat stability structure intraspecific genetic diversity? It's complicated. . . *Frontiers in Biogeography* e45377 doi:10.21425/F5FBG45377
6. Borzée A, Purevdorj Z, Kim YI, **Kong S**, Choe M, Yi Y, Kim K, Kim A, and Jang Y. (2020) Breeding preferences in the Treefrogs *Dryophytes japonicus* (Hylidae) in Mongolia, the northern limit of their range. *Journal of Natural History* 53: 2685–2698 doi:10.1080/00222933.2019.1704458
5. Groffen J, **Kong S**, Jang Y, and Borzée A. (2019) The invasive American bullfrog (*Lithobates catesbeianus*) in the Republic of Korea: history and recommendation for population control. *Management of Biological Invasions* 10:3 517–535 doi: 10.3391/mbi.2019.10.3.08
4. Bae Y, **Kong S**, Yi Y, Jang Y, and Borzée A. (2019) Additional new type of threat to *Hynobius* salamander eggs: predation by loaches (*Misgurnus* sp.) in agricultural wetlands. *Animal Biology* 69:4 451–461 doi: 10.1163/15707563-20191070
3. Borzée A, **Kong S**, Didinger C, Nguyen HQ, and Jang Y. (2018) A ring-species or a ring of species? Phylogenetic relationship between two treefrog species around the Yellow Sea: *Dryophytes suweonensis* and *D. immaculatus*. *The Herpetological Journal* 28: 160–170

2. Kim K, **Kong S**, Kim YI, Borzée A, Bae Y, and Jang Y. (2018) Japanese hard ticks (*Ixodes nipponensis*) parasitizing on the endangered leopard cat (*Prionailurus bengalensis euptilura*) in the Republic of Korea. *Animal Systematics, Evolution and Diversity* 34:1 23–26 doi: 10.5635/ASED.2018.34.1.032
1. **Kong S**[†], Sánchez-Pacheco S[†], and Murphy RW. (2016) On the use of Median-Joining Networks in evolutionary biology. *Cladistics* 32: 691–699 doi: 10.1111/cla.12147

Policy Recommendations

1. Borzée A, Nguyen HQ, Ahn J, Kim M, Kim S, Jang S, **Kong S**, Kim YE, and Yi Y. (2017) Policy recommendation on the negative impact of infrastructure development on the population of endangered Long-Tailed Goral in Oseck-Kkeutchong. *Society for Conservation Biology Korean Chapter*

Other Writings for a Popular Audience

2. **Kong S** (2019) The giving tree: how the branching pattern of a tree is used in evolutionary biology. Available on <http://eeobcourseblogwolfestudents.blogspot.com/2019/11/the-giving-tree-how-branching-pattern.html>
1. **Kong S** and Fonseca EM. (2019) So far and yet so similar: Convergent evolution in helicopter damselflies. Available on <https://sungsko.github.io/posts/2019/01/blog-post-1/>

Presentations

Invited Talks

- | | |
|------|--|
| 2022 | Kong S “Towards the network of life”, Matthew Hahn lab, Indiana University, Bloomington, IN., USA |
| 2022 | Kong S “Towards the network of life”, Siavash Mirarab and Vineet Bafna lab, University of California San Diego, CA., USA, virtual |
| 2022 | Kong S , Swofford D, and Kubatko L. “Inference of phylogenetic networks from sequence data using composite likelihood”, Society of Systematic Biologists (SSB) Ernst Mayr award competition finalist, Evolution meeting, Cleveland, OH., USA |
| 2022 | Kong S , Swofford D, and Kubatko L. “Inferring phylogenetic networks using composite likelihood directly from sequence data”, Department of Biological Sciences, Louisiana State University, Baton Rouge, LA., USA |
| 2022 | Kong S “How to collaborate as an EEOB graduate student”, EEOB Recruitment Speed Talk, The Ohio State University, OH., USA, virtual |
| 2021 | Kong S and Kubatko L. “Comparative performance of popular methods for hybrid detection using genomic data” Annual Conference of the Korean Association of Biological Sciences, Ewha Womans University, South Korea, virtual (Selected among participants) |
| 2021 | Kong S and Kubatko L. “Comparative performance of popular methods for hybrid detection using genomic data” Workshop in Mathematical and Computational Biology, virtual (Selected among 206 participants) |
| 2021 | Kong S “How my gap year changed my perspectives” Misericordia University, PA., USA, virtual |
| 2021 | Kong S “High performance computing environment at the Ohio State University” EEOB Recruitment Speed Talk, The Ohio State University, OH., USA, virtual |
| 2019 | Kong S “Phylogenetic networks and behavioral evolution of Primates” The Stone Laboratory, Gibraltar Island, OH., USA |

- 2016 **Kong S** and Murphy RW. “On the use of Median-Joining network” Ewha Womans University Eco-science/Eco-creative Graduate Seminar, Seoul, South Korea
- 2013 **Kong S** and McLennan DA. “The evolution of infanticide and male takeover in primates in a macro-evolutionary framework” Laboratory of Behavior and Ecology Weekly Seminar, Ewha Womans’ University, Seoul, South Korea

Regular Talks

- 2021 **Kong S** and Kubatko L. “Comparative performance of popular methods for hybrid detection using genomic data” Evolution Meeting, virtual
- 2021 **Kong S** and Kubatko L. “Comparative performance of popular methods for hybrid detection using genomic data” EEOB Annual Darwin Series, The Ohio State University, OH., USA, virtual
- 2020 **Kong S** “Which tool to use to detect hybridization?” Evolution & Ecology (E&E) Club, The Ohio State University, OH., USA
- 2020 **Kong S** and Kubatko L. “Comparison and evaluation on the accuracy of popular hybrid detection methods using simulated data” SSB Standalone Meeting, Gainesville, FL., USA
- 2019 **Kong S** “The giving tree: how the branching pattern of a tree is used in evolutionary biology” E&E Club, The Ohio State University, OH., USA
- 2017 **Kong S** “Illustrating hybridization” Animal Communication Symposium, Ewha Womans University, Seoul, South Korea

Posters

- 2022 [Best poster award winner] **Kong S**, Swofford D, and Kubatko L. “Inference of phylogenetic networks from sequence data using composite likelihood” Intelligent Systems for Molecular Biology (ISMB), the International Society for Computational Biology (ISCB), Madison, WI., USA
- 2019 **Kong S** and Murphy RW. “Performance and accuracy of Median-Joining Networks and comparisons with Bayesian phylogenies” Evolution Meeting, Providence, RI., USA
- 2019 **Kong S** “My first year of Ph.D. experience at The Ohio State University” EEOB Recruitment Weekend, The Ohio State University, OH., USA
- 2017 **Kong S** and Murphy RW. “Performance and accuracy of Median-Joining Networks and comparisons with Bayesian phylogenies” Annual Conference of the Korean Association of Biological Sciences, Yong-In, South Korea
- 2014 **Kong S**, Lathrop A, and Murphy RW. “Matrilineal relationships of green pitvipers with the description of a new species of the genus *Trimeresurus* (Squamata: Viperidae: Crotalinae) from the central highlands of Vietnam” Korean-American Scientists and Engineers Association Young Generation Technical and Leadership Conference, Houston, TX., USA
- 2012 **Kong S** and McLennan DA. “The evolution of infanticide and male takeover in primates in a macro-evolutionary framework” University of Toronto EEB Undergraduate Research Fair, Toronto, ON., Canada

Contributed Presentations (Selected)

[†]Presenter

- 2022 **Kong S**, Pons JC, Kubatko L, and Wicke K[†]. “Lost in the jungle of phylogenetic network classes? An overview of popular constraints on phylogenetic network topologies and why they are useful”, Symposium Talk, Evolution 2022, Cleveland, OH., USA
- 2021 Kubatko L[†], Peng J, and **Kong S**. “A composite likelihood approach to inferring phylogenetic networks from genomic data” Poster, Joint Statistical Meetings, virtual
- 2021 Peng J[†], **Kong S**, and Kubatko L. “A likelihood ratio test for hybridization under the multispecies coalescent” Faux-live talk, Evolution Meeting, virtual
- 2018 Kim YI[†], **Kong S**, Ha J, Borzée A, and Jang Y. “Thermal tolerance variations in anuran larvae along a latitudinal gradient” Talk, Ecological Society of American Annual meeting, New Orleans, LA., USA
- 2012 Davies E[†], Eckenwalder J and He W. “Trees of the temperate broadleaf forest biome” Canadian urban forest conference, London, Ontario, Canada, Poster preparation
- 2012 Davies E[†]. “Native vs. Non native trees” Biodiversity & Human Health Credit Valley Conservation Stewardship Forum, Powerpoint preparation

Additional Academic Experiences

Academic Service

- 2019–Present **Journal reviewer for:** *Systematic Biology*; *Genome Biology and Evolution*; *Frontiers of Biogeography*; *Infection, Genetics and Evolution*; *PeerJ*
- 2015–Present **Society Memberships:** Society of Systematic Biologists; Society for Study of Evolution (SSE); International Society for Computational Biology (ISCB)
- 2020–2021 **Graduate Studies Committee** Department of EEOB, The Ohio State University, OH., USA
- 2019–2020 **Admissions Committee** Department of EEOB, The Ohio State University, OH., USA
- 2016–2017 **Communication Officer** Society for Conservation Biology (SCB), Korean Chapter

Work Experience

- 2022 **Visiting Scholar** University of Wisconsin (PI: Claudia Solís-Lemus), Madison, WI., USA
- 2022 **Visiting Scholar** Louisiana State University (PI: Dr. Jeremy Brown), Baton Rouge, LA., USA
- 2018–2021 **Graduate Associate** The Ohio State University, OH., USA
- 2016–2017 **Researcher** Ewha Womans University, Division of Eco-science, Seoul, South Korea
- 2013–2015 **Graduate Associate** University of Toronto, ON., Canada
- 2013 **Researcher** Ewha Womans University, Division of Eco-science, Seoul, South Korea
- 2011–2013 **Biodiversity Technician** Faculty of Forestry, University of Toronto, ON., Canada
- 2012 **Student Researcher** Centre for Biodiversity and Conservation Biology, Royal Ontario Museum, Toronto, ON., Canada
- 2011–2012 **Student Researcher** McLennan Laboratory, University of Toronto, Toronto, ON., Canada
- 2011 **Work-Study Student** Faculty of Forestry, University of Toronto, ON., Canada

Fieldwork Experience

2017	Field expeditions to South Korea, Mongolia, and China (Resulted in publications #4, 5, and 6)
2016	Field expeditions to Indonesia, Laos, and South Korea (Resulted in publication #2)
2011–2013	Fieldwork in Greater Toronto Area (GTA), Urban Biodiversity and Forestry Laboratory, University of Toronto, Canada
2010	Fieldwork in GTA, Cities Centre, University of Toronto, Canada

Undergraduate Students Advising

2020 Summer	Shelby Jansens and Kimberly Wiles, co-advised with Dr. Laura Kubatko, Mathematical Biosciences Institute Research Experiences for Undergraduates program. “Detecting shifts in the evolutionary process in SARS-CoV-2 genomes”
2014–2015	Tulio Soares and Ellen Southam, co-advised with Dr. Pedro Bernardo, University of Toronto and Royal Ontario Museum
2014 Summer	Shreeram Senthivasan, co-advised with Drs. Pedro Bernardo, Santiago Sánchez-Pacheco, and Robert Murphy, University of Toronto and Royal Ontario Museum

Conference/Workshop Participation

Bolds state particular role in the event; participant if unstated.

2022	Technical Moderator ISMB, ISCB, Madison, WI., USA
2022	Evolution Meeting, Cleveland, OH., USA
2022	Symposium Organizer (co-organized with Md Rejuan Haque) Towards the network of life: Phylogenetic networks as a tool to understand complex evolutionary histories, Evolution Meeting, Cleveland, OH., USA
2022	Workshop in Mathematical and Computational Biology, virtual
2021	Annual Conference of the Korean Association of Biological Sciences, Ewha Womans University, South Korea, virtual
2021	iEvoBio, Evolution Meeting, virtual
2021	Chair/Moderator in multiple Faux-Live Sessions, Evolution Meeting, virtual
2021	Workshop in Mathematical and Computational Biology, virtual
2021	SMRT Leiden 2021 – Young Investigator Virtual Conference, hosted by Pacific Biosciences and Leiden University Medical Center, virtual
2021	Preparing Future Faculty Zoom Workshop, Workshop #1: From Graduate School to Full Professor: The Road Less Traveled, The Ohio State University, virtual
2021	Virtual Asilomar 2021, American Society of Naturalists, virtual
2020	Future of Systematics Workshop, SSB Meeting, funded by NSF, hosted by Dr. Emily Sessa, University of Florida, Gainesville, FL., USA
2020	SSB Standalone Meeting, Gainesville, FL., USA
2019	Evolution Meeting, Providence, RI., USA
2019	Midwest Phylogenetics Workshop, Itasca Biological Station, funded by NSF, hosted by Dr. Emma Goldberg, University of Minnesota, MN., USA
2017	Annual Conference of the Korean Association of Biological Sciences, Yong-In, South Korea
2017	SCB Asia Section Workshop on Conservation policy, funded by SCB, Bangkok, Thailand
2016	World Congress of Herpetology, Hangzhou and Tonglu, China
2015	Phylogenomics Symposium and Software School, funded by NSF, hosted by Dr. Tandy Warnow, University of Illinois at Urbana-Champaign and University of Michigan, Ann Arbor, MI., USA
2015	SSB Standalone Meeting, University of Michigan, Ann Arbor, MI., USA

Diversity and Inclusion Activities

2022	International Mixer, Evolution Meeting, Cleveland, OH., USA
2021	Moderator International Mixer, Evolution Meeting, virtual
2021	Moderator Decolonizing Evolution Workshop, Evolution Meeting, virtual
2021	Transformative Justice within Academia: A radical institutional reflection, The Centre for Criminology and Sociolegal Studies Graduate Student Conference, University of Toronto, virtual
2020	Moderator Strategies for Responding to Harassment and Bullying: Improving Workplace Climate, Evolution Community Resources for Early Career Researchers 2020 (ECR ²), virtual
2020	Moderator Fireside ECR Chat, ECR ² , virtual

Outreach

2022	Awardee Graduate School Awards Ceremony, The Ohio State University, Columbus, OH., USA
2021–2022	Mentor Woodsworth Mentorship Program, University of Toronto, Canada [☞]Mentee: Alanna Kong, University of Toronto (2021-2022)
2020–2022	Mentor Graduate Student Mentorship Initiative Mentor, Científico Latino [☞]Mentee: Devansh Pandey (2021-2022)
2019–2021	Mentor Department of EEOB Graduate Mentoring, The Ohio State University, OH., USA [☞]Mentee: McKenna Molnar, The Ohio State University (2020-2021)
2020	Invited Panelist EEOB 8894: EEOB Graduate Seminar, The Ohio State University, virtual
2020	Invited Guest Translational Data Analytics Institute Kickoff Event, College of Arts and Sciences, The Ohio State University, Columbus, OH., USA
2019	Volunteer Museum of Biological Diversity's Open House, The Ohio State University, OH., USA
2016	Volunteer Biologist Kuang Si Butterfly Park, Ban Thapene, Luang Prabang District, Laos

Skills

Programming	UNIX, R, Python, Julia, HTML, JavaScript
Typesetting	L ^A T _E X and Overleaf, R Markdown, Jupyter Notebook
OS	Mac OS X, Microsoft Windows
Others	Geneious Prime, Adobe Illustrator, Microsoft Offices, iWorks, iMovie
Languages	English (Fluent), Korean (Native), Japanese (Intermediate)

Grants and Awards

All in US Dollars unless stated. †Canadian Dollar; ‡Approximately converted from South Korean Won

2022	EvolCompGen Best Poster Award, ISMB, ISCB	\$100
2022	EEOB Graduate Development Grant, The Ohio State University	Funded
2022	EEOB Graduate Evolution & Ecology Student Organization (GEES) Career Development Grant, The Ohio State University	\$200
2022	Council of Graduate Students (CGS) Career Development Grant, The Ohio State University	\$350
2022	The Presidential Fellowship, The Ohio State University	\$36,500
2021	SSB Ad Hoc Funds	\$3,000
2021	EEOB Darwin Talk Society Membership Grant, The Ohio State University	\$70

2021	EEOB Graduate Development Grant, The Ohio State University	Funded
2020	SSE Graduate Research Excellence Grant – R.C. Lewontin Award competition	\$1,800
2020	Funding for participation in Future of Systematics Workshop, SSB Standalone Meeting (NSF)	\$500
2019	Funding for participation in Midwest Phylogenetics Workshop (NSF)	Funded
2019	EEOB Graduate Development Grant, The Ohio State University	Funded
2017	Major contribution to successful grant application to National Research Foundation of Korea (2-2017-0410-001-1) PI: Dr. Yikweon Jang, Ewha Womans University, Seoul, South Korea	‡\$500,000
2013–2015	University of Toronto Graduate Fellowship	Funded
2014	E.M. Walker Graduate Award in Biodiversity, University of Toronto	†\$2,615
2010–2012	University of Toronto Undergraduate Bursaries	†≈\$3,000

Teaching Experiences

Teaching Assistantship

The Ohio State University

2021 Fall	<i>EEOB 3310</i> Evolution
2021 Summer	<i>EEOB 2520</i> Human Physiology
2021 Spring	<i>EEOB 3310</i> Evolution
2020 Fall	<i>EEOB 3310</i> Evolution
2020 Summer	<i>EEOB 3310</i> Evolution
2020 Spring	<i>EEOB 3310</i> Evolution
2019 Fall	<i>EEOB 3310</i> Evolution
2019 Summer	<i>EEOB 1930</i> Introduction to Biological Studies–Aquatic Biology
2019 Spring	<i>EEOB 3310</i> Evolution
2018 Fall	<i>BIOL 1113</i> Energy Transformation and Development

University of Toronto

2015 Summer	<i>BIO 120</i> Adaptation and Biodiversity
2015 Spring	<i>BIO 220</i> From Genomics to Ecosystems in a Changing World
2014 Fall	<i>EEB 362</i> Macroevolution
2014 Summer	<i>BIO 120</i> Adaptation and Biodiversity
2014 Spring	<i>EEB 386</i> Avian Biology
2013 Fall	<i>BIO 120</i> Adaptation and Biodiversity

Miscellaneous

2016 Spring	Daruma Eco-Farm, Bang Phra, Si Racha District, Chon Buri, Thailand
2009 Summer	Cheong-Shim International English Camp, Ga-Pyeong, South Korea

References

1. Prof. Dr. Laura S. Kubatko
Department of Statistics,
Department of Evolution, Ecology, and Organismal Biology
The Ohio State University,
219 Cockins Hall,
Columbus, OH., 43210, USA
lkubatko@stat.osu.edu
+1 614-247-8846
2. Prof. Dr. Bryan Carstens
Department of Evolution, Ecology, and Organismal Biology
And Tetrapod Division, Museum of Biological Diversity
The Ohio State University,
318 W. 12th Avenue,
Columbus, OH., 43210, USA
carstens.12@osu.edu
+1 614-292-6587
3. Prof. Dr. Jeremy M. Brown
Department of Biological Sciences
Louisiana State University
A243 Life Science Annex,
Baton Rouge, LA., 70803, USA
jembrown@lsu.edu
+1 225-578-1745
4. Prof. Dr. Robert W. Murphy
Sr. Curator, Herpetology
Centre for Biodiversity and Conservation Biology
Department of Natural History-Royal Ontario Museum
And Professor of Ecology and Evolutionary Biology
University of Toronto
100 Queen's Park
Toronto, ON., M3S 2C6, Canada
bob.murphy@utoronto.ca
+1 416-586-8099
5. Prof. Dr. Deborah A. McLennan
Department of Ecology and Evolutionary Biology
University of Toronto,
25 Harbord St.
Toronto, ON., M5S 3G5, Canada
deborah.mclennan@utoronto.ca
+1 416-978-8538