

Kelsey T. Stilson
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Education

- 2016 – Present** PhD, Ross Functional Biomechanics Lab and Hatsopoulous Neuromechanics Lab, Department of Organismal Biology and Anatomy, University of Chicago
- 2013 – 2005** MS Geology, Bell Paleontology Lab, The Jackson School of Geosciences, The University of Texas at Austin
- 1999 – 2005** BS Geology, Hopkins and Davis Paleontology Labs, Department of Earth Sciences, The University of Oregon

Skills & Knowledge

- Biomechanics
- Extracellular Electrophysiology
- Statistical analysis (Matlab, R)
- Electronic Design
- Computed Tomography (CT) scanning
- X-Ray Reconstruction of Moving Morphology (XROMM)
- Human Anatomy & Dissection
- Vertebrate Anatomy
- Phylogenetics
- Paleontology
- Immunohistochemistry
- Histology
- Classroom teaching experience
- Extensive student mentoring experience
- Coding: R, Arduino, Matlab

Awards & Honors

- 2019-2020** Harold and Annette Dubner Scholar (\$29,942.00/yr)
- Winter 2019** American Microscopical Society Best Student Poster (\$150.00)
- Winter 2018** UC Hinds Research Fund (\$2,246.00)
- 2017 - 2018** Integrative Neuromechanics GAANN scholar (\$74,136.00)
- 2013 - 2014** Duchin Endowed Presidential Scholarship (\$3,000.00)
- 2008 - 2013** UO Clark Honors Scholarship (\$7,500.00)
- 2008 - 2010** The University of Oregon Dean's Scholarship

Positions

- 2015– Present** PhD Candidate, University of Chicago.
Project Title: Form and function of periodontal ligament innervation in *Didelphis virginiana*, with implications for early mammalian evolution
- Summer 2019** Teaching Assistant for Gross Anatomy at the UC Pritzker School of Medicine
- Spring 2019** Teaching Assistant for ‘Biomechanics: Life Through Time’.
- Winter 2019** Teaching Assistant for Schwab Rehabilitation Hospital Anatomy Review in the UC Anatomy Teaching Lab (Dec 6th, 13th, and 20th)
- 2014 – 2015** Summer Research Assistant at The Nonvertebrate Paleontology Lab, University of Texas at Austin. Worked in Specify, high definition scanning, programming, and Google Glass.
- 2013 – 2015** Masters Student, The University of Texas at Austin
Project title: A Critical Analysis of Skull Osteology in Australian Agamidae with Implications for the Fossil Record
- 2013 – 2015** Graduate Teaching Assistant, The University of Texas at Austin. One course per term for three terms. 70 students per course. Three hours of credit per course. I led three labs and test reviews for each course.
- 2009 – 2013** Research Assistant, Hopkins-Davis Lab, University of Oregon.
Projects: collecting mammalian nocturnality and locomotor data, numbering and identifying of elements in the Shuttler Formation Fauna, molding and casting, and cataloging fossils collected in the 2011 field season.
- 2013** Clark Honors College Introductory Program Leader, The University of Oregon. 30 students. One hour of credit. I developed my own theme and curriculum. The class introduced research science as a career, we toured labs, and also discussed the history and biological origins of the meme.

Publications

Michael C. Granatosky, Caleb M. Bryce, Jandy Hanna, Aidan Fitzsimons, Myra F. Laird, **Kelsey Stilson**, Christine E. Wall, and Callum F. Ross. 2018. Inter-stride variability triggers gait transitions in mammals and birds. *Proceedings B*.

Qian, K., dos Anjos, L. A., Balasubramanian, K., **Stilson, K.**, Balcer, C., Hatsopoulos, N. G., & Kamper, D. G. (2017, July). Using monkey hand exoskeleton to explore finger passive joint movement response in primary motor cortex. In *Engineering in Medicine and Biology Society (EMBC), 2017 39th Annual International Conference of the IEEE* (pp. 3624-3627). IEEE.

Stilson, K.T., Bell, C.J., and Mead, J. 2017. Patterns of Variation in the Cranial Osteology of Three Species of Endemic Australian Lizards (Ctenophorus: Squamata: Agamidae): Implications for the Fossil Record and Morphological Analyses made with Limited Sample Sizes. *Journal of Herpetology*.

Stilson, Kelsey T., Samantha SB Hopkins, and Edward Byrd Davis. "Osteopathology in rhinocerotidae from 50 million years to the present." *PloS one* 11.2 (2016): e0146221.

Davis, E.B., Brakora, K., and **Stilson, K.T.** 2014. The evolution, development, and functional role of horns in cattle. pp.72-82. In: *The Evolution of Wild Cattle*, Meletti, M. and Burton, J. eds. Cambridge University Press.

Fossils at UT: A Coloring Book. **Stilson, K. T.** 2015. I drew and co-wrote a 12 page coloring book for science outreach through the Jackson School of Geosciences. The book was printed this year and has begun distribution.

Manuscripts in Preparation

Stilson, K. T., Luo, Z., Li, P., Olson, S., and Ross C. Hemimandible Mastication in *Didelphis virginiana*: the relative importance of pitch, yaw, and roll. In prep. Target Submission: June 2020

Stilson, K. T., Ross, C., Luo, Z., and D. Reed. Periodontal ligament innervation and osteological correlates in *Didelphis virginiana*. Target Submission: October 2020

Stilson, K.T., Davis, E.B., and Hopkins, S.S.B. A new resampling method for normalizing size-based taphonomic bias across fossil assemblages. In prep. Target Submission: Dec 2020.

Maisano, J., **Stilson, K.T.**, Bell, C.J., and Mead, J. 2018. Morphological data for *Cryptagama aurita* Yields New insights into the endemic Australian agamid lizard radiation. In prep. Target Submission: Jan 2021.

Seminars & Presentations

Stilson, K. T., Ross, C., Luo, Z., and D. Reed. Immunohistochemical Insights into distribution and osteological correlates of periodontal ligament innervation in *Didelphis virginiana*. (October 9-12). Society of Vertebrate Paleontology Annual Meeting. Brisbane, Australia. [talk]

Schultz, J. A., **Stilson, K. T.**, Granatosky, M. C., Laird, M. F., Luo, Z., and Ross, C. F. New Insights into feeding performance of the Virginia Opossum (*Didelphis virginiana*) and implications for the evolution of Mammaliaform mastication. (October 9-12). Society of Vertebrate Paleontology Annual Meeting. Brisbane, Australia. [talk]

Stilson, K.T. Striking a Nerve: Developing an Electrophysiology System from the Ground Up. (April 28, 2019). Committee on Evolutionary Biology Research Symposium. [talk]

Stilson, K.T. Why is the Opossum so Awesome? (April 16, 2019). The University of Chicago PaleoClub. [talk]

Stilson, K.T., Callum F. Ross, and David Reed. (January 3-7, 2019). Periodontal ligament innervation in *Didelphis virginiana* allows for the study of neuronal function and evolution at the Eutherian-Metatherian split. Annual meeting of the Society for Integrative and Comparative Biology. [poster]

Stilson, K. T., Schultz, J., Granatosky, M., Ross, C., and Zhe-Xi Luo. (November 18, 2018) The Awesome Opossum: Reigniting Research with *Didelphis virginiana*. General Membership Meeting for the Chicago Branch of the American Association for Laboratory Animal Science. November 13, 2018. [talk]

Granatosky, M. C., Laird, M. F., Hannah, J. B., **Stilson, K. T.**, Schultz, J. A., Wall, C. E., and C. F. Ross. (January 3-7, 2018). Stride Variability Underlies Gait Transitions in Tetrapods. Annual meeting of the Society for Integrative and Comparative Biology. [Talk]

Stilson, K.T. Mastication Fascination in *Didelphis virginiana*.

- Second Annual Great Lakes Student Paleoconference, November 9-11, 2018. [talk]
- Committee on Evolutionary Biology Research Symposium. April 29, 2018. [talk]
- Great Lakes Student Paleoconference, (November 10-12, 2017). [talk]

Qian, K., Luiz Antonio dos Anjos, Jr., Karthikeyan Balasubramanian, **Kelsey Stilson**, Carrie Balcer, Nicholas G. Hatsopoulos and Derek G. Kamper (July 11 to 15th 2017). Using monkey hand exoskeleton to explore finger passive joint movement response in primary motor cortex.

39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society. [talk]

Stilson, K. T., Tietjen, K., and Coates, J. (October 2016). New Chondrocranium from *Tanaodus weisi* adds to Petalodont Diversity. The Society of Vertebrate Paleontology meeting. [talk]

Stilson, K.T., Maisano, J., Mead, J., and Bell, C. J. (October 2015). A Morphologic Phylogeny of Endemic Australian Agamidae, comparison with genetic data and implications for fossil taxa. Society of Vertebrate Paleontology. [poster]

Stilson, K.T., Maisano, J., Mead, J., and Bell, C. Morphological Data for *Cryptagama Aurita* Yield New Insights into the Endemic Australian Agamid Lizard Radiation.

- Presented (poster) at the Society of Vertebrate Paleontology meeting November 2014. [poster]
- Presented (poster) at the Jackson School of Geosciences Annual Research Symposium 2015. [poster]

Molineux, A., **Stilson, K.**, & Geigerman, F. M. (2014, October). The Role of Whole Drawer Imaging in Invertebrate Paleontology Collections. In *2014 GSA Annual Meeting in Vancouver, British Columbia*. [talk].

Stilson, K.T., Davis, E.B., and Hopkins, S.S.B. (February 2014). A new resampling method for normalizing size-based taphonomic bias across fossil assemblages. North American Paleontology conference [talk].

Stilson, K.T., Davis, E.B., and Hopkins, S.S.B. 50 Million Years of Severe Osteopathology in Rhinocerotidae.

- Presented at the University of Chicago Paleoclub November 9th, 2016. [talk]
- Presented at the Paleontological Society of Austin October 21st, 2014. [talk]
- Presented at the Jackson School Third Annual Research Symposim January 25th, 2014. [talk]
- Presented at the Society for Integrative and Comparative Biology meeting January 2014. [talk]
- Presented at the University of Texas at Austin Paleontology Thursday Lunch November 21st 2013. [talk]
- Presented at the Society of Vertebrate Paleontology meeting October-November 2013. [poster]

Professional Service

Co-Chair- University of Chicago Art and Science Committee (2017-Present)
Yearly Spring Art Show highlighting the art of science and research. Art is being submitted by undergraduate and graduate level researchers. Date of shows: May 12, 2017;

Health Liaison- University of Chicago Darwin Cluster Health Liaison
I attend meetings with the student health and counseling services and relay information to the graduate student population.

Co-Chair- University of Chicago Dean's Council Co-Chair (Fall 2018-2020)

Member- Society of Vertebrate Paleontology Student and Post-Doctoral Committee (2019-Present)

2019: Raised \$1023.53 AUD for the SVP Student Travel Grant.

Co-Chair- Society of Vertebrate Paleontology Student and Post-Doctoral Committee (Summer 2014-2018)

2018: Raised \$7,600 dollars for the SVP Student Travel Grant

2017: Raised \$2,400 dollars for the SVP Student Travel Grant

2016: Raised \$7,300 dollars for the Stephen Cohen Student Fund, completing the grant, which is now self-sustaining.

2015: Raised \$5,300 dollars towards the Stephen Cohen Student Fund. We were able to present the inaugural recipient for the award this year.

2014: Raised \$2,000 for the Stephen Cohen Student Fund, a 2:1 matching grant.

Mentoring & Outreach

Mentoring

University of Chicago Ross Lab (2018-Present)

- **Steven Lane** – We developed a Lane High School senior project: '*Procambarus Clarkii* as a model for neurological testing'. I taught Steven electrophysiological techniques as well as data analysis and problem solving. Steven continues to work with me on developing an extracellular suction electrode system.
- **Tanvi Bagal, David Bradford, and Yiyue (Isabella) Wang**, high school students, learned how to digitize opossum XROMM data and the subsequent analyses in Maya. They are also learning how to analyze neural data and the principles of electronics through the Arduino platform.

University of Chicago/Field Museum of Natural History (2017)

- **Amy Chang**, Naperville North High School Senior. Amy worked on studying the evolution of the modern mammalian tongue apparatus. She is funded via the Field

Museum Women-in-Science Summer Internship program, and supervised by Dr. Ken Angielczyk, Robert Burroughs, and myself.

- **Kathryn Jin**, Naperville North High School Senior. Kathryn is worked on cranial and tooth morphology of mammals, specifically *Didelphis virginiana*. She is supervised by Robert Burroughs and myself.
- **Emma Wise**, Macalester College Biology Undergraduate. Emma worked on studying the evolution of the moder mammalian tongue apparatus. She is funded via the Field Museum Women-in-Science Summer Internship program, and supervised by Dr. Ken Angielczyk, Robert Burroughs, and myself.
- **Ann Cebulski**, Northwestern University Journalism Undergraduate. Annie worked on elevational gradients and how they effect the biogeographic distributions of extant turtles. She is funded under a summer internship program via Northwestern University. She is working with Robert Burroughs and myself.
- **Emily Shen**, The University of Chicago Undergraduate. Emily worked on analyzing the kinematics of *D. virginiana* mastication using X-Ray Reconstruction of Moving Morphology (XROMM) data. She is supervised by myself.

Outreach

Middle School Science Olympiad Tournament at the University of Chicago (February 23rd, 2019). Writer, proctor and grader from the Anatomy test.

High School Science Olympiad Tournament at the University of Chicago (January 12th, 2019). Writer, roctor and grader from the Anatomy test.

Sheep Heart Dissection, April 7th, 2018. Led sheep heart dissections with two groups of Science Olympiad high school and middle school students.

Brains!, December 15th, 2016. Teaching Assistant - Workshops for middle school students. Led 7th grade students from a local Chicago Public School through 3 hands-on experiments in neuroscience.

UT Regional Science Olympiad Tournament, March 28th, 2015. Fellow graduate student Joshua Lively and I hosted the 'Fossil' section of the Science Olympiad for both middle and high school divisions. Our test focused on specimen-based identification and interpretation. We also suggested updates to the official study sheets for paleontology.

Elementary School Presentation, Febuary 26th, 2015. I and fellow graduate student Rachel Wallace brought casts of dinosaurs, reptiles, and mammals (including a life-size hippo cast) to Williams Elementary to present to groups of 2nd and 5th graders.

Darwin Day Austin, February 9th, 2015. The UT Paleontology graduate students hosted a table in the common area of the Pickle Research Campus as part of an outreach event.

NPL presentation at Paleontological Society, January 20th, 2015. I and four other employees of the UT Non-Vertebrate Paleontology Laboratory presented NPL cutting edge work in curation and management of fossils, including a hands-on demonstration of Google Glass.

Fossil Fest ‘Ask a Paleontologist’ Table, November 15th, 2014. Fossil Fest is an annual public event run by the Paleontological Society of Austin. We fielded questions and presented Pleistocene specimens from the UT Vertebrate Paleontology Laboratory.

Elementary Career Fair Table, May 30th, 2014. I hosted the Paleontology section along with graduate student Felicia Kulp at St.Elmo’s 5th grade career fair. We presented with the Jackson School of Geosciences and brought hands-on specimens, such as trilobites, an alligator skull, a cast of a sabertooth cat, and a life-size cast of a hippo.

UT Regional Science Olympiad Tournament, March 29th, 2014. Fellow graduate student Joshua Lively and I were moderators for the Paleontology section of the Science Olympiad for both the middle school and high school divisions. We also designed the test and provided all the fossil specimens used.

Shirt Design for the UO Anthropology Department Fundraiser, March 2014. I was contacted by the University of Oregon Anthropology Department about a drawing of *Muccaca mullata* I had completed about a year before. I cleaned up the drawing and gave them permission to use it on a t-shirt design for a nonprofit fundraiser.

Elementary School Presentation, March 18th, 2014. Fellow graduate student Benn Breeden and I gave a 30 minute presentation to two groups of fourth and fifth graders at Williams Elementary. We emphasized all the different roles paleontologists contribute to society and the opportunities for women and minorities in the sciences.

Explore UT, March 1st, 2014. I was part of the paleontology graduate student group that led microfossil picking and vertebrate skull variation stations as part of a campus-wide outreach event at the University of Texas at Austin.

Scribe for the Summit on the Future of Undergraduate Science Education, January 10-12, 2014. The Jackson School of Geosciences hosted this three day conference, where I took notes and prepared presentations for breakout sessions.

UO Mentoring, Fall 2012-Spring 2013. I met biweekly with an aspiring scientific illustrator who was in middle school to discuss drawing techniques, resources, projects, and life.

Paleontology Presentation, January 31st, 2013. Presented a 40 minute talk three times to the students of the Rachel L. Carson School of Environmental Science as part of their Science Fair.

Society Memberships

Society of Vertebrate Paleontology

Interviews

'Running on Possum Time' with Caleb Sponheim for the podcast Science and Feelings. <http://www.calebsponheim.com/podcast/2018/10/4/running-on-possum-time>

'Author Interview: Kelsey Stilson on Gnarly Rhino Bones' by Andrew Farke for PLOS Blogs. <http://blogs.plos.org/paleocomm/2016/02/05/author-interview-kelsey-stilson-on-gnarly-rhino-bones/>

'How the rhino got his walking stick', by Matt Kaplan for The Economist online. <http://www.economist.com/blogs/babbage/2012/10/arthritis-rhinoceros>

References

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