

Curriculum Vitae
April Isch Neander

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Organismal Biology and Anatomy
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Education

- M.S. Biomedical Visualization, University of Illinois at Chicago, 2012
Graduate Research Project: Visualizing the Parasagittal Step Cycle of *Kryptobaatar dashzevegi*, a Multituberculata with Transitional Shoulder Girdle.
- B.A. Biology, University of Vermont, 2010
Minor in Studio Art

Awards

- 2016 Lanzendorf PaleoArt Prize for Computer Imaging and Animation.
Haramiyavia: Publicity Video for Mandible Reconstruction
Society of Vertebrate Paleontology
- 2019 Lanzendorf PaleoArt Prize for Scientific Illustration
Vilevolodon 2942 Teeth
Society of Vertebrate Paleontology
- 2021 Palaeoart: judges' choice
Triassic: Lystrosaurus and Thrinaxodon
Triassic Vertebrate Paleontology Meetup (TVPM) 2021

Peer-Reviewed Scientific Publications

- Gignac, P.M., et. al. (in review). *The Non-Clinical Tomography Users Research Network: Why it Matters*. Journal of Tomography of Materials and Structures.
- Yang, X., Hanna, R. D., Davis, A. M., Neander, A. I., & Heck, P. R. (2022). A record of post-accretion asteroid surface mixing preserved in the Aguas Zarcas meteorite. *Nature Astronomy*, 6(9), 1051-1058.
- Luo, Z. X., Bhullar, B. A. S., Crompton, A. W., Neander, A. I., & Rowe, T. B. (2022). Reexamination of the mandibular and dental morphology of the Early Jurassic mammalia form *Hadrocodium wui*. *Acta Palaeontologica Polonica*, 67(1), 95-113.
- Sulser, R. B., Patterson, B. D., Urban, D. J., Neander, A. I., & Luo, Z. X. (2022). Evolution of inner ear neuroanatomy of bats and implications for echolocation. *Nature*, 602(7897), 449-454.
- Yang, X., Hanna, R. D., Davis, A. M., Neander, A. I., & Heck, P. R. (2021, August). A Possible Record of an Active Asteroid: Discovery of a Compact Lithology in the Aguas

Zarcas CM Chondrite. In *84th Annual Meeting of the Meteoritical Society* (Vol. 84, No. 2609, p. 6075).

Zhou, C. F., Bhullar, B. A. S., Neander, A. I., Martin, T., & Luo, Z. X. (2019). New Jurassic mammaliaform sheds light on early evolution of mammal-like hyoid bones. *Science*, 365(6450), 276-279.

Meier, M. M. M., ... Neander, A. I., et al. (2018). Cosmic History and a Candidate Parent Asteroid for the Quasicrystal-bearing Meteorite Khatyrka. *Earth and Planetary Science Letters* 490:122-131. (A. I. Neander among 11 authors)

Meng, Q. J., Grossnickle, D. M., Liu, D., Zhang, Y. G., Neander, A. I., Ji, Q., & Luo, Z. X. (2017). New gliding mammaliaforms from the Jurassic. *Nature*, 548(7667), 291.

Luo, Z. X., Meng, Q. J., Grossnickle, D. M., Liu, D., Neander, A. I., Zhang, Y. G., & Ji, Q. (2017). New evidence for mammaliaform ear evolution and feeding adaptation in a Jurassic ecosystem. *Nature*, 548(7667), 326.

Girard, R., Zeineddine, H. A., Orsbon, C., ... Neander, A. I., ... Luo, Z.-X., Awad, I. (2016). Micro-computed tomography in murine models of cerebral cavernous malformations as a paradigm for brain disease. *Journal of Neuroscience Methods*, 271, 14-24. (A. I. Neander among 20 authors of this paper)

Meier, M. M., Bindi, L., Busemann, H., Heck, P. R., Neander, A. I., Maden, C., ... & Wieler, R. (2016, March). Cosmic-ray exposure and shock degassing ages of the quasicrystal-bearing Khatyrka meteorite. In *Lunar and Planetary Science Conference* (Vol. 47, p. 1226).

Meier, M. M. M., Bindi, L., Busemann, H., Heck, P. R., Isch Neander, A., Maden, C., ... & Wieler, R. (2015). Shedding Light on the Origin of the Quasicrystal-Bearing Khatyrka Meteorite. *LPI Contributions*, 1856, 5035.

Luo, Z. X., Meng, Q. J., Ji, Q., Liu, D., Zhang, Y. G., & Neander, A. I. (2015). Evolutionary development in basal mammaliaforms as revealed by a docodontan. *Science*, 347(6223), 760-764.

Art Publications and Exhibits

Illustrations and Visualizations For Scientific Literature

Figure illustration for Sulser, R. B., Patterson, B. D., Urban, D. J., Neander, A. I., & Luo, Z. X. (2022). Evolution of inner ear neuroanatomy of bats and implications for echolocation. *Nature*, 602(7897), 449-454.

Editorial art for Yang, X., Hanna, R. D., Davis, A. M., Neander, A. I., & Heck, P. R. (2022). A record of post-accretion asteroid surface mixing preserved in the Aguas Zarcas meteorite. *Nature Astronomy*, 6(9), 1051-1058.

Figure illustration and editorial art for Zhou, C. F., Bhullar, B. A. S., Neander, A. I., Martin, T., & Luo, Z. X. (2019). New Jurassic mammaliaform sheds light on early evolution of mammal-like hyoid bones. *Science*, 365(6450), 276-279.

Editorial art for Jones, K. E., Angielczyk, K. D., Polly, P. D., Head, J. J., Fernandez, V., Lungmus, J. K., ... & Pierce, S. E. (2018). Fossils reveal the complex evolutionary history of the mammalian regionalized spine. *Science*, 361(6408), 1249-1252.

Figure illustration, CT visualization, and editorial art for Meng, Q. J., Grossnickle, D. M., Liu, D., Zhang, Y. G., Neander, A. I., Ji, Q., & Luo, Z. X. (2017). New gliding mammaliaforms from the Jurassic. *Nature*, 548(7667), 291.

Figure illustration and CT visualization for Luo, Z. X., Meng, Q. J., Grossnickle, D. M., Liu, D., Neander, A. I., Zhang, Y. G., & Ji, Q. (2017). New evidence for mammaliaform ear evolution and feeding adaptation in a Jurassic ecosystem. *Nature*, 548(7667), 326.

Figure illustration for Schultz, J. A., Zeller, U., & Luo, Z. X. (2017). Inner ear labyrinth anatomy of monotremes and implications for mammalian inner ear evolution. *Journal of morphology*, 278(2), 236-263.

Figure illustration and CT visualization for Schultz, J. A., Bhullar, B. A. S., and Z.-X. Luo. (2017). Re-examination of the Jurassic mammaliaform *Docodon victor* by computed tomography and occlusal functional analysis. *Journal of Mammalian Evolution*. (doi.org/10.1007/s10914-017-9418)

Figure illustration for Anthwal, N. Urban, D. J., Luo, Z.-X., Sears, K. E., and Abigail S. Tucker (2017). Meckel's cartilage breakdown offers clues to mammalian middle ear evolution. *Nature Ecology & Evolution*. 1:0093. (DOI: 10.1038/s41559-017-0093)

Figure illustration for Chen, M., Z.-X. Luo, and G. P. Wilson. (2017). The postcranial skeleton of *Yanoconodon allini* from the Early Cretaceous of Hebei, China and its implications for locomotor adaptation in eutriconodontan mammals. *Journal of Vertebrate Paleontology*. e1315425 (23 pages) (DOI: 10.1080/02724634.2017.1315425)

Figure illustration, CT visualization, and editorial art for Luo, Z. X., Gatesy, S. M., Jenkins, F. A., Amaral, W. W., & Shubin, N. H. (2015). Mandibular and dental characteristics of Late Triassic mammaliaform *Haramiyavia* and their ramifications for basal mammal evolution. *Proceedings of the National Academy of Sciences*, 112(51), E7101-E7109.

Figure illustration, CT visualization, and editorial art for Luo, Z. X., Meng, Q. J., Ji, Q., Liu, D., Zhang, Y. G., & Neander, A. I. (2015). Evolutionary development in basal mammaliaforms as revealed by a docodontan. *Science*, 347(6223), 760-764.

Figure illustration, CT visualization, and editorial art for Meng, Q. J., Ji, Q., Zhang, Y. G., Liu, D., Grossnickle, D. M., & Luo, Z. X. (2015). An arboreal docodont from the Jurassic and mammaliaform ecological diversification. *Science*, 347(6223), 764-768.

Figure illustration, CT visualization, and editorial art for Zhou, C. F., Wu, S., Martin, T., & Luo, Z. X. (2013). A Jurassic mammaliaform and the earliest mammalian evolutionary adaptations. *Nature*, 500(7461), 163-167.

Figure illustration and editorial art for Yuan, C. X., Ji, Q., Meng, Q. J., Tabrum, A. R., & Luo, Z. X. (2013). Earliest evolution of multituberculate mammals revealed by a new Jurassic fossil. *Science*, 341(6147), 779-783.

Illustrations and Visualizations in Books and other Notable Media

Panciroli, E. (2021). *Beasts before us: The untold story of mammal origins and evolution*. Bloomsbury Sigma. Chapter illustrations.

Gonçaves, Ingrid (2017, Fall) Mammals Like Us. The University of Chicago Magazine Volume 110 (1): 42-47.

Centerfold illustrations for Brusatte, S., Luo, Z. X. (2016). Ascent of the Mammals. *Scientific American*, June 2016 Issue: 30-35.

Illustration in Prothero, D. R. (2016). The Origin and Early Evolution of Mammals. In *The Princeton Field Guide to Prehistoric Mammals* (pp. 20-36). Princeton University Press.

Figure illustration for Luo, Z. X., Schultz, J. A., & Ekdale, E. G. (2016). Evolution of the Middle and Inner Ears of Mammaliaforms: The Approach to Mammals. In J. A. Clack et al. (editors) *Evolution of the Vertebrate Ear* (pp. 139-174). *Springer Handbooks for Auditory research (Volume 59)*, Springer International Publishing.

Figure illustration for Hopson, James A. (2015). Fossils, Trackways, and Transitions in Locomotion. In Dial, Kenneth P., Neil Shubin, and Elizabeth L. Brainerd (Editors). *Great transformations in vertebrate evolution* (pp. 125-141). University of Chicago Press.

Figure illustration for Luo, Z. X. (2015). Origin of the mammalian shoulder. In K. P. Dial et al. (Editors) *Great Transformations: Major Events in the History of Vertebrate Life*. The University of Chicago Press, Chicago, Illinois, 167-187.

Figure illustration for Chen, M. (2015). Investigating the functional morphology, locomotor diversification, and paleoecology of Mesozoic mammals Doctoral Dissertation. Department of Biology, University of Washington.

Chang, Kenneth. (2015, November 16). Jawbone in Rock May Clear Up a Mammal Family Mystery. *The New York Times*.

Art in Exhibits

In Real Life, an Art Show at Pumping Station One, Chicago, IL, 2023

Public Exhibition "Mesozoic Mammals from China," Beijing Museum of Natural History, Beijing, China. June-July 2018. Visualizations and publicity videos for the BMNH-UChicago scientific publications are shown in this exhibition.

Art & Science Show, University of Chicago, Chicago, IL, 2018

Maiopatagium Glider Scene, accepted to Guild of Natural Science Illustrators Conference Members Exhibition, American Association for the Advancement of Science (AAAS) Art Gallery, Washington, DC, 2018

Docodont Scene, accepted to Guild of Natural Science Illustrators Conference Members Exhibition, Warren Wilson College, Asheville, NC, 2017

Art & Science Show, University of Chicago, Chicago, IL, 2017

Megaconus illustration featured in Cliff Field Gardens Timeline, Seaton, Devon, England. 2015.

Presentations and Workshops

Conroy, L., Neander, A.I. (2022) *Utilizing CT Data for Illustration Reference*. Workshop, GNSI Conference, Virtual.

Neander, A.I. (2022) Guest Lecture, Medical 3D Printing Class, UIC Biomedical Visualization.

Neander, A.I. (2021) *PaleoCT Video Training Course*. Two hour online video training written, recorded, animated, and edited by AI Neander for use in training new users at the UChicago PaleoCT Lab, University of Chicago, Chicago, IL.

Conroy, L., Neander, A.I., and Tietjen, K. (2018) *Techniques in Digital Scientific Illustration: A Guide to Improving Workflow*. Workshop, 78th Annual SVP Meeting.

Scientific Illustration workshop for the University of Chicago Undergraduate Paleontology Club, Chicago, IL, May 2018

Neander, A. I. (2018). *Some Challenges and Solutions to the Needs of Scanning Diverse Natural History Specimens*. Presentation, 4th Annual GE Industrial X-Ray & CT Forum, Cincinnati, OH.

Hurdle, K., & Neander, A. I. (2018). *Lucy and the 3D Printer*. Workshop, Expanding Your Horizons, University of Chicago, Chicago, IL.

Neander, A. I., & Tietjen, K. (2016) *Scientific Illustration: various media in a nutshell*. Lightning talk, Darwinian Cluster Retreat, Chicago, IL.

Professional Experience

Micro-CT

- Experience with GE Phoenix v|tome|x s micro/nano CT at UChicago PaleoCT since 2014
- Initial MicroCT training, Steinmann-Institut für Geologie, Mineralogie und Paläontologie at Universität Bonn, Germany, 2014
- X-ray Computed Tomography (CT) – Advanced Scan Operator/Intermediate Data Analyst, GE Inspection Academy, 2015
- Troubleshooting and maintenance such as rotating targets, changing filaments, and replacing minor broken parts.
- Identified and figured out more optimized ways to scan natural history specimens.
- Trained new users of UChicago PaleoCT lab (trained around 81 users 2015-2023)
- Wrote and updated lab manual for PaleoCT lab
- Created online training course and resource portal for training new users in the UChicago PaleoCT Lab that includes two hours of video content and quizzes and other content on Canvas
- Improved communication among users and scheduling by implementing Slack and Canvas discussions

- Administration of CT lab and users including scanning various specimens, safety documentation, billing, ordering parts, troubleshooting technical issues, training new users, and arranging for GE Preventative Maintenance

CT Segmentation

- Experience since 2011
- Mimics, Materialise since 2012
- 3D Slicer since 2018
- Train students to use Mimics and 3D Slicer
- Familiar with various CT segmentation softwares including Materialise Mimics and 3-matic, FEI Avizo, VG Studio Max, OsiriX, 3D Slicer, and ORS Dragonfly

Illustration and Animation

- Practiced in watercolor, gouache, oil pastel, figure drawing and other traditional media
- Professional experience with 2D software. Current primary software is Affinity Photo and Affinity Designer, but also experienced with Adobe Illustrator and Photoshop
- Professional experience with 3D software. Current primary software is Blender, but also experienced with, Autodesk Maya, MeshLab, Occlusal Fingerprint Analyser
- Professional experience with video editing software. Current primary software is Blender, but also experienced with Adobe After Effects

3D printing

- 10 years experience with Makerbot Replicator 2
- 1 year of experience with Prusa i3
- 1 year experience with Formlabs Form 3 SLA Printer
- Create and cleanup 3D models for printing
- Troubleshooting and maintenance of Makerbot Replicator 2
- Train students on use of Makerbot Replicator 2 and how to prepare models for printing

Professional Affiliations

Non-Clinical Tomography Users Research Network 2022-Present

Society of Vertebrate Paleontology, 2014-Present

Guild of Natural Science Illustrators, 2013-Present

Student Member Association of Medical Illustrators 2011-2012