

Curriculum vitae

NICOLE L. ACKERMANS, PhD



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Comparative Vertebrate Neurodegeneration Lab
Department of Biological Sciences, SEC 2326
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RESEARCH FOCUS

Inspiring human solutions from extreme animal anatomy.

Comparative Neuroscience – Neurodegeneration – Traumatic Brain Injury

PROFESSIONAL APPOINTMENTS

- Jan 2023 - Present Assistant Professor, Department of Biological Sciences, the University of Alabama, Tuscaloosa, AL, USA.
Curator of Vertebrate Zoology for the Alabama Museum of Natural History.
- 2020 – 2022 Postdoctoral Fellow of the Swiss National Science Foundation, Department of Neuroscience, Center for Anatomy, at the Icahn School of Medicine at Mount Sinai, New York, NY, USA.
Project: Learning from the extreme: unconventional models for traumatic brain injury. Advisors: Patrick Hof, Joy Reidenberg

EDUCATION

- 2019 PhD in Evolutionary Biology, University of Zurich, Vetsuisse faculty, Clinic for Zoo Animals, Exotic Pets, and Wildlife, Switzerland.
PhD Thesis: Exploring tooth wear in experimentally fed caprids. A validation of dietary reconstruction proxies. [link](#)
- 2016 MSc European Masters of Comparative Vertebrate Morphology, Erasmus Mundus, joint program between the University of Antwerp, Belgium and the University of Veterinary Medicine Vienna, Austria.
- 2014 BSc Biology of Organisms, Populations and Ecosystems, University of Toulouse III Paul Sabatier, France.

PUBLICATION RECORD

Google scholar profile: <https://scholar.google.ch/citations?user=5jqXffAAAAAJ&hl=en>

Peer-reviewed publications (student contributors marked with *)

- ◆ **Ackermans NL**. Neurobiological tradeoffs of headbutting bovids (2023). *Trends in Neurosciences*. 1946:1-3. [link](#)
 - Press: [Psychology Today](#)
- ◆ **Ackermans NL**, Smoliga J, Hollin G. The animal within: The ethics and epistemics of bio-inspired solutions to the concussion crisis. *Brain Games: Critical Perspectives of Concussion in Sport and Leisure*, edited by Townsend S. *In press*.
- ◆ Magistretti P, Hof PR, **Ackermans NL**, Cali C. Glial expansion. *Evolutionary roots of human brain diseases*. Oxford University Press. *In press*.
- ◆ **Ackermans NL**, Varghese M, Williams TM, Grimaldi N*, Selmanovic E*, Alipour A, Balchandani P, Reidenberg JS, Hof PR. Evidence of traumatic brain injury in headbutting bovids (2022). *Acta Neuropathologica*, **144**:5-26. [link](#).
 - Press: [National Geographic](#), [CBC](#), [ScienceNews](#)
- ◆ Martin LF, Winkler DE, **Ackermans NL**, Müller J, Tütken T, Kaiser T, Codron D, Schulz-Kornas E, Hatt, J-M, Clauss, M. Dental microwear texture analysis correlations in guinea pigs (*Cavia porcellus*) and sheep (*Ovis aries*) suggest that dental microwear texture signal consistency is species-specific (2022). *Frontiers in Ecology and Evolution*, 10:958576. [link](#)
- ◆ Martin LF, **Ackermans NL**, Tollefson TN, Kircher PR, Richter H, Hummel J, Codron C, Hatt J-M, Clauss M. Tooth wear, growth, and height in rabbits (*Oryctolagus cuniculus*) fed pelleted or extruded diets with or without added sand (2022). *Journal of Animal Physiology and Animal Nutrition*, **106**, 630-641. [link](#)
- ◆ Chusyd DE, **Ackermans NL**, Austad SN, Hof PR, Mielke MM, Sherwood CC, Allison DB. Aging: What we can learn from elephants (2021). *Frontiers in Aging*. **2**:36, 726714. [link](#)
- ◆ **Ackermans NL**, Varghese M, Wicinski B, Torres J*, De Gasperi R, Pryor D, Elder GA, Gama Sosa MA, Reidenberg JS, Williams TM, Hof PR. Unconventional animal models for traumatic brain injury and chronic traumatic encephalopathy (2021). *Journal of Neuroscience Research*, **99**, 2463-2477. [link](#)
- ◆ Martin LF, **Ackermans NL**, Richter H, Kircher PR, Hummel J, Codron D, Clauss M, Hatt J-M. Macrowear effects of external quartz abrasives of different size and concentration in rabbits (*Oryctolagus cuniculus*) (2021). *Journal of Experimental Zoology Part B: Molecular and Developmental Evolution*, 1-12. [link](#)
- ◆ **Ackermans NL**, Winkler DE, Schulz-Kornas E, Kaiser TM, Martin LF, Hatt J-M, Clauss M. Dental wear proxy correlation in a long-term feeding experiment on sheep (*Ovis aries*) (2021). *Journal of the Royal Society Interface*, **18**:180, 20210139. [link](#)

- ◆ **Ackermans NL**, Martin LF, Codron D, Kircher PR, Richter H, Clauss M, Hatt J-M. Confirmation of a wear-compensation mechanism in dental roots of ruminants (2021). *The Anatomical Record*, **304**:2, 425-436. [link](#)
- ◆ Clauss M, Trümppler J*, **Ackermans NL**, Kitchener AC, Hantke G, Stagegaard J, Takano T, Shintaku Y, Matsuda I. Intraspecific macroscopic digestive anatomy of ring-tailed lemurs (*Lemur catta*), including a comparison of frozen and formalin-stored specimens (2021). *Primates*, **62**:2, 431-441. [link](#)
- ◆ **Ackermans NL**, Martin LF, Codron D, Hummel J, Kircher PR, Richter H, Kaiser TM, Clauss M, Hatt J-M. Mesowear represents a lifetime signal in sheep (*Ovis aries*) within a long-term feeding experiment (2020). *Palaeogeography, Palaeoclimatology, Palaeoecology*, **553**, 109793. [link](#)
- ◆ Schulz-Kornas E, Winkler DE, Clauss M, Carlsson J, **Ackermans NL**, Martin LF, Hummel J, Müller DWH, Hatt J-M, Kaiser TM. Everything matters: molar microwear texture in goats (*Capra aegagrus hircus*) fed diets of different abrasiveness (2020). *Palaeogeography, Palaeoclimatology, Palaeoecology*, **552**, 109783. [link](#)
- ◆ Hatt J-M, Codron D, **Ackermans NL**, Martin LF, Richter H, Kircher PR, Gerspach C, Hummel J, Clauss M. The effect of the rumen washing mechanism in sheep differs with concentration and size of abrasive particles (2020). *Palaeogeography, Palaeoclimatology, Palaeoecology*, **550**, 109728. [link](#)
- ◆ **Ackermans NL**. The history of mesowear: a review (2020). *PeerJ*, **8**, e8519. [link](#)
- ◆ **Ackermans NL**, Winkler DE, Martin LF, Kaiser TM, Clauss M, Hatt J-M. Dust and grit matter: abrasives of different size lead to opposing dental microwear textures in experimentally fed sheep (*Ovis aries*) (2020). *Journal of Experimental Biology*, **223**:3, jeb220442. [link](#)
- ◆ Stauffer JB*, Clauss M, Müller DWH, Hatt J-M, **Ackermans NL**. Testing inner-mesowear III on goats (*Capra aegagrus hircus*) fed experimental diets (2019). *Annales Zoologici Fennici*, **56**:1-6, 85-91. [link](#)
- ◆ **Ackermans NL**, Clauss M, Winkler DE, Schulz-Kornas E, Kaiser TM, Müller DW, Kircher PR, Hummel J, Hatt J-M. Root growth compensates for molar wear in adult goats (*Capra aegagrus hircus*) (2019). *Journal of Experimental Zoology Part A: Ecological and Integrative Physiology*. **331**:2, 139-148. [link](#)
- ◆ **Ackermans NL**, Martin LF, Hummel J, Müller DW, Clauss M, Hatt J-M. Feeding selectivity for diet abrasiveness in sheep and goats (2019). *Small Ruminant Research*. **175**, 160-164. [link](#)
- ◆ Hatt J-M, Codron D, Müller DWH, **Ackermans NL**, Martin LF, Kircher PR, Hummel J, Clauss M. The rumen washes off abrasives before heavy-duty chewing in ruminants (2019). *Mammalian Biology*. **97**:1, 104-111. [link](#)
 - Press: [A Moment of Science](#)

- ◆ **Ackermans NL**, Winkler DE, Schulz-Kornas E, Kaiser TM, Müller DW, Kircher PR, Hummel J, Clauss M, Hatt J-M. Controlled feeding experiments with diets of different abrasiveness reveal slow development of mesowear signal in goats (*Capra aegagrus hircus*) (2018). *Journal of Experimental Biology*. **221**:21, jeb186411. [link](#)

Manuscripts in preparation

- ◆ **Ackermans NL**, Introduction to “Head impacts in non-model species” special issue, *Anatomical Record*, Summer 2024.
- ◆ **Ackermans NL**, Frey R, Fritsch G, Reidenberg JS. Neurocranial anatomy of muskoxen. *Anatomical Record*, special issue, Summer 2024.
- ◆ Wooddruff C, **Ackermans NL**. Headbutting through time: A review of this hypothesized behavior in the fossil record. *Anatomical Record*, special issue, Summer 2024.

GRANTS AND FELLOWSHIPS

2023	\$ 10,000	National Science Foundation conference travel award for ICVM 2023, CO-I, IOS-2331942.
	• \$ 3,000	Anatomical Record Symposium Funding for ICVM 2023.
	• \$ 1,300	Company of Biologists Scientific Meeting Grant for ICVM 2023.
2022	\$ 400	AAA Postdoc Travel Award, 2022 EB conference.
2021	\$ 98,000	Swiss National Science Foundation, postdoc mobility fellowship. National competitive application. P2ZHP3_191255.
	• \$ 9,900	Swiss National Science Foundation, COVID-19 extension.
	• \$ 500	Travel grant contest winner, ThinkSwiss & Fulbright Alumni event.
	• \$ 400	Postdoc Registration Award, AAA conference.
2020	\$ 93,500	Swiss National Science Foundation, early postdoc mobility fellowship. National competitive application. P500PB_202971.
2019	\$ 6,800	University of Zurich Graduate campus Grant for “Pint of Science Zurich: Science for Everyone!”, funding Zurich’s chapter of the International Pint of Science Festival (co-applicant). University-wide application.
2018	\$ 2,300	University of Zurich Graduate Campus Travel Grant for two months at the University of Hamburg. University-wide application.
2014	\$ 22,000	European Union Erasmus Mundus Master’s Degree Scholarship, International competitive application.

INVITED TALKS

Mar 2024 - <i>Predicted</i> Wilmington NC	Invited lecture: "Goats as a large animal model for naturally acquired TBI and ADRD". Biology Departmental Seminar
Feb 2023, Online	Invited lecture: "TBI in headbutting animals". Wassermann Lab Seminar.
Jun 2022 Tuscaloosa, AL	Invited lecture: "Studying traumatic brain injury through headbutting animals".
Feb 2022 Online	SciViz NYC: "The battering ram. Traumatic brain injury in headbutting bovids." Video .
Nov 2021 Washington DC	ThinkSwiss & Fulbright Alumni event: "Sturer Bock: traumatic brain injury in headbutting animals."
July 2021 Online	The Musk Ox Farm's "Ask the Oxperts" lecture series: " The consequences of head-butting ".
Nov 2020 Online	Girls Advancing in STEM Conference (GAINS) - Laboratory tour and Career Q&A.
Dec 2018 Zurich	International Pint of Science Festival, Zurich: Convergent evolution: made for, or by the environment?

CONFERENCE CONTRIBUTIONS (presenter marked with *)

July 2023 Cairns	International Congress of Vertebrate Morphology (ICVM) - Symposium organizer and Session chair: "TBI, not just for Humans". Oral presentation: "Is the braincase a headbutting stabilizer?". Ackermans NL , Williams T, Hof PR, Reidenberg JS*. Oral presentation: "Lessons outside the laboratory: Naturally-occurring TBI". Ackermans NL*
Nov 2022 San Diego	J.B. Johnston Club for Evolutionary Neuroscience meeting – Oral presentation: "As strong as an ox brain? Tau accumulation in brains of headbutting muskoxen." Ackermans NL* , Varghese M, Williams TM, Reidenberg JS, Hof PR.
May 2022 NYC	Mount Sinai 14 th Annual Neuroscience Retreat – Poster presentation: "TBI-like tauopathy in muskoxen." Ackermans NL* , Varghese M, Williams TM, Grimaldi N, Selmanovic E, Reidenberg JS, Hof PR.

- April 2022 Philadelphia American Association for Anatomists, Experimental Biology – poster presentation: “Skull-Brain Biomechanics of Headbutting. An XROMM Pilot Study on Goats.” **Ackermans NL***, SJ Montuelle, Williams SH. **Received AAA Postdoc Travel Award.** [Poster.](#) [Abstract.](#)
- Nov 2021 Online Society for Neuroscience - poster presentation: Bull-headed: tauopathy distribution in relation to traumatic brain injury in muskoxen. **Ackermans NL***, Wicinski B, Williams TM, Grimaldi N, Varghese M, Reidenberg JS, Hof PR. [Poster.](#)
- April 2021 Online American Association for Anatomists, Experimental Biology - oral presentation: Does head-butting cause traumatic brain injury? The case of combative bovids. **Ackermans NL***, Williams T, Hof PR, Reidenberg JS. **AAA Postdoc Registration Award, selected as Twitter correspondent.**
- Jan 2021 Online Society for Neuroscience Global Connectome – poster presentation: Traumatic brain injury-like pathology in a muskox brain and implications for the natural occurrence of TBI. **Ackermans NL***, Williams T, Alipour A, Balchandani P, Varghese M, Reidenberg JS, Hof PR. [Poster.](#)
- Oct 2020 Online Society of Vertebrate Palaeontology (SVP) – oral presentation: Correlation of proxies in a long term experiment on sheep (*Ovis aries*). **Ackermans NL***, Winkler DE, Hatt J-M, Kaiser TM, Martin LF, Clauss M. [Video.](#)
- July 2019 Prague International Congress of Vertebrate Morphology (ICVM) – oral presentation: Long Teeth, Long Life: Understanding the effect of external abrasives on hypsodont teeth and defining the duration of the dietary signal created by tooth wear. **Ackermans NL***, Clauss M, Martin LF, Codron D, Kircher PR, Hummel J, Hatt J-M. [Abstract.](#)
- July 2018 Paris International Palaeontology Conference (IPC) - oral presentations: Absolute and meso-wear in goats fed diets of different abrasiveness for half a year. **Ackermans NL***, Clauss M, Schulz-Kornas E, Kaiser TM, Winkler DE, Müller DWH, Kircher PR, Hummel J, Hatt J-M. [Abstract.](#)
- The ruminant sorting mechanism: an innovative digestive strategy that washes off external abrasives before chewing. Clauss M*, Müller DWH, **Ackermans NL**, Martin LF, Kircher PR, Hummel J, Hatt J-M. [Abstract.](#)
- Dec 2018 Zurich Vetsuisse Zurich Networking Day - Poster presentation: Tooth wear in goats fed diets of different abrasiveness for half a year. **Ackermans NL***, Winkler DE, Schulz-Kornas E, Kaiser M, Müller DWH, Kircher PR, Hummel J, Clauss M, Hatt J-M. [Poster.](#)

June 2018 Evolutionary Biology PhD Retreat - Oral presentation: Dietary signal in
Binn ovicaprids. **Ackermans NL***, Clauss M, Martin LF, Hummel J, Hatt J-M.

MENTORSHIP AND TEACHING

Mentorship

2023 University of Alabama

Graduate students: Rana Adam, Ayodele Oyadeyi

Undergraduate students: Emma Bowie, Brienna Ciemny, Ava Mayberger,
Tyler Hadeen, Abigail Yarborough, Lillian Howe

2022 Valentyna Lysetska & Tannishtha Sethi – Volunteer, Mount Sinai

2021 Nicholas Grimaldi – Research assistant, Mount Sinai

2019 Jelscha Trümpfer – Master's student, University of Zurich

2018 Julian Stauffer – Undergraduate, University of Zurich

Teaching – University of Alabama

2024 Comparative Neuroanatomy – BSC 495/695 – Mixed Undergrad/Grad elective
course, lecture & lab.

2023 Comparative Neuroanatomy – BSC 495/695 – Mixed Undergrad/Grad elective
course, lecture & lab. SOI 3.55

Teaching - Icahn School of Medicine at Mount Sinai

2021 Human Anatomy labs for first- and second-year medical students

2020 Curriculum development for the online version of Human Anatomy lab for
first-year medical students

TA - University of Zurich

2019 Tooth Anatomy and Physiology Lecture series for third-year biology
undergraduates

2018 TA - Dissection of the Ruminant Digestive System lab, for second-year
veterinary undergraduates

- TA - Evolutionary Morphology of Vertebrates lab and lectures for second-year
biology undergraduates

- TA - Ethology lab for second-year biology undergraduates

2017 TA - Blood and Blood Cells lab for first-year veterinary undergraduates (in
German)

- TA - Heart and Liver lab for first-year veterinary undergraduates (in German)

SCIENTIFIC COMMUNICATION AND OUTREACH

Podcasting

- 2021 - Monthly appearances as Science Correspondent for the “[Daily Tech News present Show](#)” (approx. 25,000 downloads/episode). Research featured in “[Scanning Your World](#)”.
- 2022 Guest on “[Ologies with Alie Ward](#)”: “[Bovine Neuropathology](#)”
- 2021 Guest on “[Chit Chat Across the Pond](#)”: “[Dr. Niki Ackermans on Anatomy and Neuroscience](#)”.
- Guest on “[All Around Science](#)”: “[Animal Brains w/ Dr. Niki](#)”, “[Homeopathy](#)”, “[Evolution w/ Dr. Niki](#)”.
 - Host of multiple science-based episodes for “[America’s Next Top Podcaster](#)”.

Outreach/Media

- 2023 Psychology Today – [What can headbutting goats reveal about brain injury?](#)
- 2022 National Geographic – [Why some animals evolved to sacrifice themselves](#)
- Canadian Broadcasting Corporation CBC – [Headbutting animals can accumulate brain damage](#)
 - The Scientist – [Muskoxen headbutts may cause brain damage - Study](#)
 - Weeklong Twitter curator for [@IAmSciComm](#) (41K followers).
- 2021 Sci-Comm talk with elementary school students in Alberta, via “[Skype a Scientist](#)” (in French).
- Twitter Correspondent for the American Association for Anatomists at the 2021 virtual conference.
- 2020 Sci-Comm talk and career Q&A with the high school students of Manchester college, via “[Skype a Scientist](#)”.
- 2019 Weeklong Twitter curator for Real Scientists DE ([@RealSci_DE](#), 17K followers, in German). [Blogpost](#)
- Sci-Comm visit and career Q&A at the Jules Ferry Middle School in Gabarret, France (in French).
- 2018 Team leader, webmaster, event manager, and social media manager for the Zurich chapter of the International Pint of Science Festival.

SCIENTIFIC SOCIETIES AND AFFILIATIONS

Currently a member of the following professional societies: **Since 2022:** J.B. Johnston Club for Evolutionary Neuroscience; **2021:** Society for Neuroscience, American Association for Anatomists; **2019:** International Society of Vertebrate Morphology

SCIENTIFIC REVIEWING ACTIVITIES

2022: Brain Structure and Function. 2020: Royal Society Open Science. 2019: Integrative and Comparative Biology, Journal of Archaeological Method and Theory, Canadian Journal of Zoology, Mammalian Biology. 2018: Palaeontologica Electronica.

DIGITAL COMPETENCIES

Imaging software: Amira 6, Slicer 3D, OsiriX/Horos, Meshlab, Drishdi, ImageJ/FIJI, GIMP, Inkscape, and Photoshop

Other software: R, StereoInvestigator, MorphoJ, Past 3 (Geometric morphometrics), GIS, Ultimaker Cura (3D printing), Audacity (sound editing), XMAlab, Maya (XROMM)

CERTIFICATIONS

- 2023 Scientific Collection License for Woodpeckers (Fish and Wildlife Services, Federal & AL state permits)
- 2020 Scientific Collection License for *Ovis canadensis* (Fish and Wildlife Services NY, CO, and MT)
- 2016 3D Geometric Morphometrics (Transmitting Science)
 - LTK Module 20 (Labortierkurs - Education and Training of Persons Conducting Animal Experiments in Switzerland - Ruminant module)
- Other SCUBA diving (PADI Open Water Diver); Watchkeeping for Seafarers (STCW); Emergency Management (FEMA, AMSEAS), Driver's license
- Languages Fluent in English and French, C1 level in German and Spanish

ONGOING SCIENTIFIC COLABORATIONS

Susan Williams	Ohio University	XROMM biomechanics
Gregory Hollin	University of Leeds	Sports concussion
James Smoliga	High Point University	
Terrie Williams	University of California Santa Cruz	Muskox and whale TBI
Priti Balchrandani	Mount Sinai Biomedical Imaging	Brain MRIs and atlases
Akbar Alipour	Institute	
Joy Reidenberg	Icahn School of Medicine at Mount	Bovid brain trauma
Patrick Hof	Sinai	
Merina Varghese		
Akinobou Watanabe	New York Institute of Technology	Woodpecker brain damage
Daniel Tobiansky	St. Mary's College of Maryland	