

Christen Don Shelton
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I. Education:

PhD (Dr. rer. nat., *cum laude*) in Vertebrate Paleontology with emphasis in paleohistology. **2015**
University of Bonn, Bonn, Germany (DFG grant SA469/34-1); Supervisor: Prof. Dr. P. Martin Sander.
Dissertation: *Pelycosaur Long Bone Histology: Implications for the Origins of Endothermy in the Mammalian Lineage*

M.S. in Biology **2006**
Midwestern State University, Wichita Falls, TX, USA; Supervisors: Dr. Pamela Buzas-Stephens & Dr. Michael Shipley
Thesis: *Investigation of Biomarkers and Statistical Analysis of Lower Permian Spiraled Heteropolar Bromalites from Archer County, Texas.*

B.S. in Geology **2003**
Midwestern State University, Wichita Falls, TX, USA; Supervisor: Dr. M. John Kocurko

University of Missouri, Columbia, MO, USA
Geology Field Course, Summer **2000**

Iowa Park High School, Iowa Park, TX, USA
Graduated **1997**

II. Professional Academic and Post-doctoral work experience:

2015-2017 Postdoctoral researcher at University of Cape Town, Cape Town, South Africa. Bone histology of Dinocephalians, funded by the Claude Leon Foundation. Supervised by Prof. Dr. Anusuya Chinsamy-Turan.

- Taught 6 lectures on Evolution and diversity of vertebrates
- Assisted in supervising a 1-day field excursion to Langebahnweg
- Practical thin sectioning applications and techniques
- Assisted in discovery and recovery of fossil vertebrate material from KwaZulu-Natal (see field experience)

2013-2015 supervision of Bachelor Student Philipp Knaus: Bone Histology suggests sympatric *Dimetrodon* species in the Vale Formation (Clear Fork group, Lower Permian) of Texas and Oklahoma. Co Supervised with Martin Sander.

III. Pre-Doctoral work experience:

Jan-Oct 2009: Noble Foundation, FID, Mycology Lab: Supervisor: Dr. Carolyn Young (580)-224-6860
2510 Sam Noble Parkway
Ardmore, OK, USA 73401

Position: Research Associate

- Genomic DNA extraction of endophytes and *Phymatotrichopsis omnivora*
- Cosmid DNA preparations (*E.coli*) and Electrophoresis

Jan-Dec 2008: Noble Foundation, FID, Forage Breeding Lab: Supervisor: Dr. Malay Saha (580)-224-6840
2510 Sam Noble Parkway
Ardmore, OK, USA 73401

Position: Research Assistant

- Breeding, planting and harvesting switchgrass and tall fescue
- Ctab and mini kit genomic DNA extractions
- PCR

May-Dec 2007: Noble Foundation, FID, Mycology Lab: Supervisor: Dr. Carolyn Young (580)-224-6860

2510 Sam Noble Parkway
Ardmore, OK, USA 73401

Position: Research/Lab Technician

- Genomic DNA extraction of endophytes and *P. omnivora*
- Pour and run electrophoresis gels for genomic DNA

April 2007- 2009: Griffin-Hillcrest Funeral Home: Supervisor: John Key (580)-226-5560

1610 C st SE
Ardmore, OK USA 73402

Position: Embalmer's Apprentice

- Embalming and cremation

Feb-April 2007: Wichita Falls Independent School District

1104 Broad St
Wichita Falls, TX, USA 76037

Position: Substitute High School Teacher: Chemistry/Physics

2005-2006: Saint Gobain-Vetrotex: Supervisor: Philip Chu (940)-689-908

4515 Allendale
Wichita Falls, TX, USA 7631

Position: Co-Op Student Research & Development Technician

- Development, production, and testing of experimental fiberglass.

2002-2005: Wichita Falls Museum and Art Center: Supervisor: Danny Bills (940) 631-7344

2 Eureka Circle
Wichita Falls, TX, USA 76308

Position: Docent and Exhibits Assistant

- Lead public tours of art, natural history, and hands on science exhibits
- Organized and established tour regiment and schedule for natural history exhibits
- Maintain, secure, setup and display multi-thousand dollar exhibits
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1998-2006: Midwestern State University Supervisors: Dr. Michael Shipley (Biology) (940) 397- 4517

3410 Taft Blvd
Wichita Falls, TX, USA 76308

Dr. Bill Cook (Biology) (940) 397- 4192

Dr. Magaly Rincon (Biology) (940) 397- 4254

Position: Lab Instructor/Teaching Assistant

- Taught Physical and Historical Geology labs for five years as an undergraduate student.
- Taught and coordinated labs for Anatomy & Physiology I and II, and Zoology for three years as a graduate student.
- Gave presentations for public schools
- Gave tours of the in house exhibits for local organizations (Boy scouts, Gem and Mineral society, prospective students and donors).
- Assisted professors with lectures, field trips, collecting specimens, field data, guiding and supervising students.

IV. Peer reviewed Publications:

Shelton, C. D., Chinsamy-Turan, A., Rothschild, B., (*submitted*) Osteomyelitis in a 265-million-year-old, titanosuchid (Dinocephalia, Therapsida). *Journal of Experimental Biology*

Shelton, C. D. (*in review*) Caseid bone histology (monograph). *Palevol*

Shelton, C. D. Sander, M. (2017) Long bone histology of *Ophiacodon* reveals the geologically earliest occurrence of fibrolamellar bone in the mammalian stem lineage. *Palevol*. (In Press)

Shelton, C. D. (2015) Pelycosaur long bone histology and the origins of Fibro-lamellar bone in the mammalian lineage. (Dissertation) University of Bonn, Bonn, Germany. 350 p. <http://hss.ulb.uni-bonn.de/2015/4054/4054.pdf>

Lambertz, M., **Shelton, C. D.**, Spindler, F. and Perry, S. F. (2016) A caseian point for the evolution of a diaphragm homologue among the earliest synspsids. *Annals of the New York Academy of Science*. doi:10.1111/nyas.13264. <http://onlinelibrary.wiley.com/doi/10.1111/nyas.13264/full>

Konietzko-Meyer, D., **Shelton, C.**, Sander, M. (2016). The discrepancy between morphological and microanatomical patterns of anamniotic stegocephalian postcrania from the Early Permian Briar Creek Bonebed (Texas). *Palevol* 15. 107-115 p. <http://www.sciencedirect.com/science/article/pii/S1631068315001189>

Shelton, C. D., Sander, P. M., Stein, K., Winkelhorst, H. (2013) Long bone histology indicates sympatric species of *Dimetrodon* (Lower Permian, Sphenacodontidae). *Transactions of the Royal Society of Edinburgh Earth Science*. 103, 1 -20 p.

Shelton, C. D. (2013). A new method to determine volume of bromalites: morphometrics of Lower Permian (Archer City Formation) heteropolar bromalites. *Swiss Journal of Palaeontology*, 132 (2), 221-238 p.

V. Non-peer reviewed publications and international conference presentations:

Shelton, C. D. and Chinsamy, A. (2016) Postcranial bone histology of Dinocephalians (Therapsida) reveals periodic rapid rates of bone deposition, and evidence of a pathology in a titanosuchid. 76th Annual Meeting of the Society of Vertebrate Paleontology, Salt Lake City, UT, USA.

Shelton, C.D. and Chinsamy, A. (2016) Histovariability revealed in *Anteosaurus* (Therapsida: Dinocephalia) limb bones. 19th biennial meeting of the Palaeontological Society of South Africa, Stellenbosch, South Africa.

Shelton, C. D. and Sander, P. M. (2015) *Ophiacodon* long bone histology: the earliest occurrence of FLB in the mammalian lineage. PeerJ Preprints 3:e1262 <https://dx.doi.org/10.7287/peerj.preprints.1027v1>

Knaus, P. L., Van Heteren, A. H., **Shelton, C.**, Sander, P. M. (2015) The evolution of maximum metabolic rate in *Dimetrodon* (Sphenacodontidae). 75th Annual Meeting of the Society of Vertebrate Paleontology, Dallas, TX, USA. SVP 2015 Program and Abstract Book, *Journal of Vertebrate Paleontology*, 35A. 156 p.

Shelton, C., Sander, P. M. (2015) *Ophiacodon* (Basal Synapsida) bone histology and the origin of mammalian endothermy. 75th Annual Meeting of the Society of Vertebrate Paleontology, Dallas, TX, USA. SVP 2015 Program and Abstract Book, *Journal of vertebrate Paleontology* 35A. 212 p.

Shelton, C., Sander, P. M. (2015) Ophiacodontidae (Basal Synapsida) Bone histology and the origin of mammalian endothermy. Third international Symposium on Paleohistology. Bonn, Germany. Vol 3: 55 p.

Shelton, C., Ehret, D., Koschowitz, M. Hubbell, G. (2015) Exceptional soft tissue preservation within a tooth from the white shark *Charcharodon* (Lamniformes, Lamnidae) from Sacaco, Peru (Miocene, Pisco Formation). Third international Symposium on Paleohistology. Bonn, Germany. Vol 3: 91 p.

Knaus, P. L., **Shelton, C.**, Sander, P. M. (2015) Unraveling cryptic species of *Dimetrodon* from the Clear Fork Group (Lower Permian)- phylogenetic implications of ontogenetic histological features. Third international Symposium on Paleohistology. Bonn, Germany. Vol 3: 102 p.

Shelton, C., Perry, S., Spindler, F., Lambertz, M. (2014) Permian park: A Caseian point for the evolution of the mammalian diaphragm. PERMIAN PARK: 3rd International Congress of Respiratory Science. Bad Honnef, Germany: 34 p. <http://www.franzbecker.de/langfassung/924.pdf>

Shelton, C., Sander, M. (2014) Cellulose herbivory of basal Synapsida is not linked to endothermy or high growth rates. 74th Annual Meeting of the Society of Vertebrate Paleontology, Berlin, Germany, November 5-8, 2014. SVP 2014 Program and Abstract Book, *Journal of Vertebrate Paleontology* 35A: 229 p.

Shelton, C., Sander, M. (2014) Cellulose herbivory of basal Synapsida is not linked to endothermy or high growth rates. 74th Paläontologische Gesellschaft. Frankfurt, Germany.

Knaus, P. L., **Shelton, C., Sander, P. M. (2014)** Ontogenetic stages in the long bone histology of *Dimetrodon* (Lower Permian, Sphenacodontidae). 74th Annual Meeting of the Society of Vertebrate Paleontology, Berlin, Germany, November 5-8, 2014. SVP 2014 Program and Abstract Book, Journal of Vertebrate Paleontology 34A. 160 p.

Shelton, C., Sander, P. M. (2013) *Ophiacodon* long bone histology: supporting the Brinkman hypothesis 47th Geological Society of America, South-Central Division. Austin, Texas, USA. Geological Society of America Abstracts with Programs. Vol. 45, No. 3, p.68 <https://gsa.confex.com/gsa/2013SC/webprogram/Paper217529.html>

Shelton, C. (2013) A new method to determine volume of spiral bromalites: morphometrics of Lower Permian (Archer City Formation) heteropolar bromalites. In: Reitner, J., Yang, Q., Wang, Y., Reich, M. (Eds.), Palaeobiology and Geobiology of Fossil Lagerstätten through Earth History, Universitätsverlag Göttingen., A Joint Conference of the “Paläontologische Gesellschaft” and the “Palaeontological Society of China”, Göttingen, Germany. 154 p.

Shelton, C., Martens, T. (2013) The oldest known naturally formed tetrapod bone casts and the first bone casts discovered in the Lower Permian (Tambach Formation) – Evidence of a larger early Permian bipedal reptile from the Bromacker. In: Reitner, J., Yang, Q., Wang, Y., Reich, M. (Eds.), Palaeobiology and Geobiology of Fossil Lagerstätten through Earth History, Universitätsverlag Göttingen, A Joint Conference of the “Paläontologische Gesellschaft” and the “Palaeontological Society of China”, Göttingen, Germany. 154-155 p.

Shelton, C., Sander, M. (2013) Comparison of postcranial bone histology of carnivorous and herbivorous pelycosaur. In: Reitner, J., Yang, Q., Wang, Y., Reich, M. (Eds.), Palaeobiology and Geobiology of Fossil Lagerstätten through Earth History, Universitätsverlag Göttingen, A Joint Conference of the “Paläontologische Gesellschaft” and the “Palaeontological Society of China”, Göttingen, Germany. 43-44 p.

Shelton, C., Sander, P. M. (2013) Comparison of postcranial bone histology of carnivorous and herbivorous pelycosaur groups. Second International Symposium on Paleohistology Bozeman, Montana, USA. Vol 2: 73 p.

Shelton, C., Sander, M. (2012) *Ophiacodon* long bone histology- testing the Brinkman hypothesis. Proceedings of the 16th Biennial Conference of the Palaeontological Society of Southern Africa (5-8 September, 2012). Cape Town, South Africa. ISSN 0078-8554 Palaeontologica Africana 47: 53 p.
http://wiredspace.wits.ac.za/bitstream/handle/10539/13848/2012.v.47.PSSA_ABSTRACTS.pdf?sequence=1

Shelton, C., Sander, M. (2012) *Ophiacodon* long bone histology: testing the Brinkman hypothesis. Centenary Meeting of the Paläontologische Gesellschaft, Berlin, Program, Abstracts, and Field Guides. Terra Nostra – Schriften der GeoUnion Alfred-Wegener-Stiftung, 2012 (3): 167 p.

Shelton, C. (2012) A New Method to determine volume of spiral bromalites. Proceedings of the 16th Biennial Conference of the Palaeontological Society of Southern Africa (5-8 September, 2012). Cape Town, South Africa. ISSN 0078-8554 Palaeontologica Africana 47: 53
http://wiredspace.wits.ac.za/bitstream/handle/10539/13848/2012.v.47.PSSA_ABSTRACTS.pdf?sequence=1

Shelton, C., Sander, P. M. (2011) Validating *Dimetrodon* species from the Briar Creek Bone Bed (Lower Permian, Archer County, Texas) using bone histology and morphometrics of humeri and femora. 71st Annual Meeting of the Society of Vertebrate Paleontology, Las Vegas, NV, USA, November 2-5, 2011. SVP (2011) Program and Abstracts, Journal of Vertebrate Paleontology, 31A. 193 p. DOI: 10.1080/02724634.2011.10635174

Shelton, C., Stein, K., Sander, M. (2011) Utilizing morphometrics and histology of appendicular skeletal elements to determine what *Dimetrodon* species are present in the Briar Creek Bone Bed (Lower Permian, Archer County, Texas) 9th meeting of the European Association of Vertebrate Paleontologists. Crete, Greece page 52 p.

Shelton, C. (2011) Species validation of *Dimetrodon natalis* by evaluating histology of ontogenetic growth series of femora and humeri excavated from the Briar Creek Bone Bed (Lower Permian, of Archer County, Texas). First international Symposium on Paleohistology Barcelona Spain Vol 1. Page 62 p.

Shelton, C., Shipley, M., Hansen, C., Buzas-Stephens, P. (2007): Statistical analysis of physical characteristics of Lower Permian spiraled heteropolar bromalites from Archer County, Texas. 110th Texas Academy of Science Meeting. Waco, Texas, USA: (67) Page 88.

http://www.texasacademyofscience.org/assets/PastMeetingPrograms/2007_tas_program.pdf

VI. Field Experience:

1997 Goatcher Farm Randlett, OK, USA. Pleistocene vertebrates

2000 Geology Field Camp, Lander, WY, USA; University of Missouri-Columbia

2002 Rainforest Ecology Field Course through MSU, conducted in Panama

2003-2006 Archer City Formation, TX, USA; MSU, Permian vertebrates and coprolites

2010 Mesozoic trek through the UK (England; Co-editor for field guide)

2010 Nocona Formation, Archer, Co., TX, USA; University of Bonn, Briar Creek Bonebed, Permian verts

2011 Nocona Formation, Archer, Co., TX, USA; University of Bonn, Briar Creek Bonebed, Permian verts

2011 University of Bonn and Leiden University, Winterswijk Quarry, Netherlands, (Lower Muschelkalk) Triassic

2012 PSSA meeting in Cape Town Field trip: Dinocephalian skull:

Day MO, Guven S, Abdala F, Jirah S, Rubidge B, Almond J. (2015) Youngest dinocephalian fossils extend the Tapinocephalus Zone, Karoo Basin, South Africa. South Africa Journal of Science; 111

<http://dx.doi.org/10.17159/sajs.2015/20140309>

2013 North Texas Permian (Nocona and Archer City Frms). Redbeds: Lower Permian Vertebrate Fauna

2013 Montana: Livingston Quarry, *Apatosaurus* and *Allosaurus* remains

2015 KwaZulu-Natal expedition, South African Cretaceous dinosaur sites and marine reptile skeleton

2016 KwaZulu-Natal expedition, South African Cretaceous marine sites (*Mosasuarus*, marine turtle, ammonites)

2016 North Texas Permian (Baylor Co, Seymour, WMNH) George and Craddock Ranch (Pelycosaurs, misc. verts)

VII. Awards and Honors:

Abstract committee and session moderator for PSSA 2016 Stellenbosch

Highlighted speaker at SVP 2015 Dallas, TX (<http://vertpaleo.org/Society-News/SVP-Paleo-News/Society-News,-Press-Releases/Press-Release-A-new-study-of-fossil-bone-growth-re.aspx>)

Member of the organizing committee for ISPH 2015

Claude Leon postdoctoral fellowship award 2015-2017 (460,000 Rand)

2014 Session Chair GeoFrankfurt 84th meeting Paläontologischen Gesellschaft

2014 Charter member of the International Society of Respiratory Science

2013 Invited speaker at MSU

2010-2015 Deutsche Forschungsgemeinschaft Grant (DFG) SA469/34-1 (120,000 Euros)

2005 Nominated Outstanding Graduate Man at MSU

1997-2003 -12 MSU Departmental Geology Scholarships (+12,000 USD)

The Desk and Derek Scholarship (500 USD)

The North Texas Gem and Mineral Society Scholarship (250 USD)

2003- 2006 -6 MSU Biology Department/ Graduate Teaching Assistantships

2003-2006 Graduate Student Lab Coordinator for Biology

MSU Geology/Env.Sci. Club Treasurer, Vice President, President

President of Sigma Gamma Epsilon: Epsilon Zeta Chapter at MSU

Tri Beta Biology Honors Society at MSU

Circle K International

Published poem “*Cenote*” in Voices Magazine MSU, *nom de plume*: Sebastian D. Crawford

Reviews of own work: Nature, Research highlights: PALEONTOLOGY “Ancient Reptile had a diaphragm”

(Lambertz, et al. A caseian point for the evolution of a diaphragm homologue among the earliest synapsids. ANAS) Nature 540, 11 (01 December 2016) doi:10.1038/540011a

Journal of Experimental Biology, Outside JEB: W. Joyce, (Lambertz et al.) An ancient origin for the diaphragm (JEB: 2017 220: 737) doi: 10.1242/jeb.147298

Respiratory Physiology and Neurobiology, Letter to the Editor: T. Similwoski, "Early evolution of the diaphragm in caseids: The diaphragm as an adaptation to mixed aquatic-terrestrial lifestyle" doi.org/10.1016/j.resp.2017.03.011

REFERENCES

1. Dr. Robert T. Bakker
Curator of Paleontology
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University of Cape Town
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3. Prof. Dr. P. Martin Sander
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Rheinische Friedrich-Wilhelms-Universität Bonn
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D-53115 Bonn, Germany
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4. Dr. Michael M. Shipley
Associate Professor
Midwestern State University
Biology Department
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