







DR. JAIMI ANN GRAY

Evolutionary Biologist | Postdoctoral Research Fellow

CONTACT

-  Gainesville, Florida
-  +1 918 576 9903
-  jaimigray@flmnh.ufl.edu
-  @jaimiAgray
-  www.graysvertebrateanatomy.com
-  Dickinson Hall
Florida Museum of Natural History
1659 Museum Road
Gainesville, Florida
USA 32611

PROFILE

Australian citizen

Specialist in 3D imaging and characterisation of biological structures using contrast-enhanced staining, microCT scanning, digital dissection, and 3D visualisations.

Expert in shape analysis and phylogenetic comparative methods to quantitatively assess morphological variation in an evolutionary context and examine how phenotypes change over time.

Passionate about dissemination of the importance of natural history collections and research on them, through science communication and outreach in public and educational contexts.

EDUCATION

2015 – 2018

PHD IN BIOLOGICAL SCIENCE

The University of Adelaide, Adelaide, South Australia

Dissertation entitled “Skull evolution in the Australian dragon lizards”

- I used 3D scans, 2D images, linear measurements, and dental characters to quantify morphological patterns and analysed my data using multivariate statistics.

Advisors: Dr. Marc Jones, Dr. Mark Hutchinson, Dr. Kate Sanders

2014

HONOURS, FIRST CLASS (top 20% of students)

One-year qualification taken after undergraduate degree, further study in a particular discipline area

In Environmental Biology, Palaeontology

Thesis entitled “Agamid lizard skeleton identification and inferences for Pleistocene distributions”

The University of Adelaide, Adelaide, South Australia

2010 – 2013

BACHELOR OF SCIENCE, GPA 6.417

in Evolutionary Biology, Major: Palaeontology

The University of Adelaide, Adelaide, South Australia

2002 – 2009

SOUTH AUSTRALIAN CERTIFICATE OF EDUCATION

Millicent High School, Millicent, South Australia

POSTDOCTORAL RESEARCH

The open Vertebrate (oVert) project

January 2021 – Current

Digital Imaging Division, Florida Museum of Natural History, University of Florida

- Broad scale digitisation of natural history specimens for open access via MorphoSource

Advisor: Dr. David Blackburn and Dr. Edward Stanley

Marsden Funded Harvestmen Weaponry Project

March 2019 – September 2019

Holwell Lab Group, University of Auckland, New Zealand

- 3D modelling and shape analysis of exaggerated male weaponry in Neopilionidae of New Zealand

Advisor: Dr. Greg Holwell

Endeavour Research Leadership Award

October 2019 – March 2020

Vertebrate Paleontology, Oklahoma State University Center for Health Sciences, USA

- Utilising diffusible iodine-based contrast-enhanced CT (diceCT) to study the neuroanatomy of sea snakes

Advisor: Dr. Paul Gignac

OTHER ACADEMIC WORK

3D image processing and modelling, administrative duties

March 2020 – December 2020

oVert TCN project, Florida Museum of Natural History, University of Florida

Data management duties

University of Adelaide, During 2017

Solved problems with large data sets (Synchrotron data); updated records of current literature for bite force studies.

RESEARCH OUTPUT

Peer-reviewed papers

Enge KM, **Gray JA**, Sheehy CM, Ferraro T, Martin DM. 2022

What killed the rarest snake in North America?

Ecology e3857 <https://doi.org/10.1002/ecy.3857>

Evers SW, Ponstein J, Jansen MA, **Gray JA**, Frobisch J. 2022

A systematic compendium of turtle mandibular anatomy using digital dissections of soft tissue and osteology.

The Anatomical Record, 1– 76. <https://doi.org/10.1002/ar.25037>

Callahan S, Crowe-Riddell JM, Nagesan RS, **Gray JA**, Davis-Rabosky AR. 2021

A guide for optimal iodine staining and high-throughput diceCT scanning in snakes.

Ecology and Evolution 11:11587-11603 <https://doi.org/10.1002/ece3.7467>

Gray JA, Sherratt E, Hutchinson MN, Jones MEH. 2019.

Evolution of cranial shape in a continental-scale evolutionary radiation of lizards.

Evolution. doi:10.1111/evo.13851

Gray JA, Hutchinson MN, Jones MEH. 2019.

Exceptional disparity in Australian agamids is a possible result of arrival into vacant niche.

The Anatomical Record. 302:1536-1543 <https://doi.org/10.1002/ar.24096>

Gray JA, Sherratt E, Hutchinson MN, Jones, MEH. 2019.

Changes in ontogenetic patterns facilitate diversification in skull shape of the Australian agamid lizards.

BMC Evolutionary Biology. 19:7 <https://doi.org/10.1186/s12862-018-1335-6>.

Gray JA, McDowell MC, Hutchinson MN, Jones MEH. 2017.

Geometric morphometrics provides an alternative approach for interpreting the affinity of fossil jaws.

Journal of Herpetology. 51:375-382 <https://doi.org/10.1670/16-145>.

Abstracts

Gray JA, Stanley EL, Blackburn DC. 2022.

Using cranial endocasts as a proxy for frog brain size and shape

Society of Integrative and Comparative Biology Program and Abstracts 78-III

Gray JA, Stanley EL, Blackburn DC. 2022.

Using cranial endocasts as a proxy for frog brain size and shape

Society of Integrative and Comparative Biology Program and Abstracts 78-III

Gignac PM, Beyl A, Gold MEL, **Gray JA**, Morhardt AC, Stout RF, Vazquez-Sanroman D, Watanabe A, Wilson M, and Kley NJ. 2020.

Extending the endocast paradigm: standard and contrast-enhanced computed tomography unite palaeontology and neontological neuroimaging

Society of Vertebrate Paleontology Abstracts

Gray JA, Sherratt E, Hutchinson MN, Jones MEH. 2020.

Dragons of the trees, the rocks, and the ground: the evolution of cranial shape in a continental scale evolutionary radiation of lizards

Society of Integrative and Comparative Biology Program and Abstracts 42-5

Gray JA, Painting CJ, Holwell GI. 2019.

Swords and battle axes: multiple weapon morphs across New Zealand harvestmen (Opiliones: Neopilionidae)
47th Annual Meeting of the Australasian Society for the Study of Animal Behaviour Abstracts 7-6

Gray JA, Sherratt E, Hutchinson MN, Jones MEH. 2018.

Dragons of the trees, the rocks, and the ground: the evolution of cranial shape in a continental scale evolutionary radiation of lizards
54th meeting of the Australian Society of Herpetologists Abstract Booklet 56:1A

Gray JA, Hutchinson MN, Jones MEH. 2017.

In front by a nose: cranial morphology in agamid lizards
53rd meeting of the Australian Society of Herpetologists Abstract Booklet 1-6

Gray JA, Reed EH, McDowell MC. 2016.

Agamid lizard fossils from South Australian caves: Implications for environmental change during the Quaternary
Palaeo Down Under 2 Abstract Book

Gray JA, Hutchinson MN, Jones MEH. 2016.

A survey of tooth data amongst iguanians reveals pattern related to size and taxonomy
International Congress of Vertebrate Morphology Abstracts LTG-2

Gray JA, Hutchinson MN, Jones MEH. 2016.

A survey of tooth number reveals patterns related to size and taxonomy but also substantial intraspecific variation
52nd meeting of the Australian Society of Herpetologists Abstract Booklet

Gray JA, Reed EH, McDowell MC. 2015.

Agamid (Reptilia: Squamata) assemblages from South Australia suggest differences between Pleistocene and modern distributions that reflect climate changes.
Journal of Vertebrate Paleontology, SVP Program and Abstracts Book 2015:135.

Gray JA, Hutchinson MN, Jones MEH. 2015.

Mountain dragons in the lowlands during the ice age
51st meeting of the Australian Society of Herpetologists Abstract Booklet

EDUCATIONAL RESOURCES (created as part of the oVert TCN project)

Forelimb Homology: <https://sketchfab.com/ufherps/collections/forelimb-homology>

Collection of 3D models and Scenes demonstrating vertebrate forelimb skeletal anatomy and homology.

Dinosaur Dentist: <https://sketchfab.com/ufherps/collections/smm-dinosaur-dentist>

Collection of 3D models and scenes demonstrating the dentition of dinosaurs and extant animal. Part of a Discovery Program in collaboration with the Science Museum of Minnesota.

Colours of Skull Anatomy: <https://sketchfab.com/ufherps/collections/colors-of-skull-anatomy>

3D models of vertebrate skulls with elements colour-coded and annotated to demonstrate anatomy.

Digital DiceCTion: <https://sketchfab.com/ufherps/collections/digital-dicection>

3D models of the soft tissue anatomy of vertebrates, produced from contrast-enhanced CT data.

PRIZES

- 2 0 1 8** Dean's Commendation for Doctoral Thesis Excellence
- 2 0 1 7** Faculty of Sciences Postgraduate Research Day 3-minute talk winner
- 2 0 1 6** University of Adelaide Innovation Fund Award for "Fantastic Plastic Reptile Skulls"
- 2 0 1 3** Faculty of Science Award for Outstanding Academic Achievement
- 2 0 1 2** Third Prize for Outstanding Academic Achievement in Level II Biology
- 2 0 1 2** Faculty of Science Award for Outstanding Academic Achievement
- 2 0 1 2** Golden Key International Honour Society Membership
- 2 0 1 1** Third Prize for Outstanding Academic Achievement in Level I Biology
- 2 0 1 1** Faculty of Sciences Award for Outstanding Academic Achievement

TEACHING / WORKSHOPS

WORKSHOPS RUN

2021

oVert Teacher Workshop – 3D vertebrates: from museum shelves to classrooms

Co-run five day workshop to design learning activities for middle school students with Dr. David Blackburn and Dr. Ed Stanley

2021

Computed Tomography workshop ASM 2021

Co-run one day workshop with Dr. Ed Stanley for American Society of Mammalogists Annual Meeting 2021

TEACHING

Department of Biology, University of Florida, Gainesville, Florida

2021 and 2022

Postgraduate course: CT for Biologists (ZOO6927)

Guest lecturer for contrast-enhanced CT component of course

School of Biological Science, University of Adelaide, Adelaide, South Australia

2018, Semester 1

3rd year course: Research Methods in Evolutionary Biology III (ENV BIOL 3535)

Presenter in Symposium designed to demonstrate research methods used by researchers

2017, Semester 1

3rd year course: Evolution of Australia Biota III (ENV BIOL 3550)

Lab Demonstrator for reptile anatomy practicals

2017, Semester 2

3rd year course: Evolution of Australia Biota III (ENV BIOL 3550)

Lab Demonstrator for reptile anatomy practicals

Demonstrator for palaeontology practicals on the Naracoorte Caves fossil site, 4 day camp

SCIENCE TUTOR AND COORDINATOR

Lincoln College, Adelaide, South Australia, Nov 2012 – Nov 2014

Provided tutorials to 1st and 2nd year university students and monitored their progress throughout the academic year; provided extra academic support to students who required it; oversaw the organisation of academic events.

FUNDING

Sep \$24,500 total value: monthly stipend, establishment allowance, and travel allowance

2019 – Endeavour Research Leadership Award, Awarded by the Australian Government

Mar

2020

Mar \$30,000 AUD per annum

2015 – Australian Postgraduate Award, awarded by the Australian Government

Aug

2018

2017 \$1,700 AUD

Small Grants Scheme, awarded by the Royal Society of South Australia

2016 \$250 AUD

Student Travel Grant, awarded by the Australian Society of Herpetologists

2015 \$600 USD

Society of Vertebrate Paleontology Student Travel Grant, awarded by the Jackson School of Geosciences (University of Texas at Austin)

2014 \$5,000 AUD

Faculty of Sciences Honours Scholarship, awarded to the two highest achieving Faculty of Sciences honours students, University of Adelaide

FIELDWORK AND DATA COLLECTION TRIPS

March and April 2019 – various trips consisting of several days or single day trips

Collection of harvestmen and giraffe weevils for behavioural and metabolic studies conducted in the Holwell Lab, with PhD Student Erin Powell (University of Auckland), multiple cave and forest field sites (Waitomo, Hunua) on the North Island of New Zealand.

Search for and collect live specimens.

December 2017 – 2 days

Fieldwork for tawny dragon speciation genomics and colouration with PhD student Caroline Dong (University of Melbourne), multiple field sites in the Barossa Valley, South Australia

Capture lizards; photograph; collect blood samples.

October 2017 – 1 week

***Pogona vitticeps* research project with Dr Mark Hutchinson and Dr Marc Jones (South Australian Museum), Witchelina Station, South Australia**

Capture lizards; measure bite force; carry out body condition measurements; collect samples of ticks where possible.

July 2016 – 2.5 weeks

Lab placement at the Field Museum of Natural History, Chicago Illinois, USA

Examination of skeletal lizard material; photography and data collection for PhD project.

October 2015 – 2.5 weeks

Lab placement with Dr Chris Bell, the University of Texas, Austin

Examination of skeletal lizard material; photography and data collection for PhD project.

September 2015 (5 days) | March 2016 (5 days) | October 2016 (1 day)

Pygmy Bluetongue monitoring program *Tiliqua* with PhD students Lucy Clive and Bonnie Derne (Flinders University), near Burra, South Australia

Capture lizards from burrows; carry out body condition measurements and collect samples; measure bite force; record movements of lizards between burrows: filmed segment for an episode of SCOPE television show.

OUTREACH

2021 — “Scientist in every Florida school” virtual session

Virtual “meet the scientist” session with 3rd grade class at Central Park Elementary. Talk about profession, lab tour, and Q and A session.

2021 — August featured scientist for Girls Excelling in Math and Science (GEMS), South Florida Science Center (virtual)

In-person sessions with a live educator and a virtual or in-person female speaker in the STEM field as we explore different STEM principles and hands-on activities. For girls in 3rd – 8th grade.

2019 — MOTAT Super Stem Fair

“It’s a Bug’s Lab” Family focussed annual event showcasing the wonders of STEM to the general public. Hands-on activities involving spiders, stick insects, and giraffe weevils, created by the Holwell lab.

2019 — South Australian Museum

“ASSETS” (Aboriginal Summer School for Excellence in Technology and Science) for high achieving grade 10 Aboriginal students, in partnership with CSIRO. Delivered program based on my dragon skull research.

2018 — South Australian Museum

“Out of the Glass Case” Science outreach trip to schools in the aboriginal communities in the APY Lands. Delivered program based on my dragon skull research.

2018 — South Australian Museum

National Science Week program at South Australian Museum for middle primary school students, based around my dragon skull research.

2016 to 2017 — University of Adelaide

“Fantastic Plastic Reptile Skulls” booth and demonstration (winner of the 2016 Open Day Innovation Fund Award).

2014 to 2018 — South Australian Museum

Event volunteer/science communication at various events at South Australian Museum.

2014 to 2018 — University of Adelaide

Event volunteer for University of Adelaide Faculty of Sciences.

CERTIFICATIONS AND COURSES

- 2 0 1 9** Oklahoma State University Center for Health Sciences medical gross anatomy lecture series on the head
- 2 0 1 8** MicroCT scanning workshop at the University of Melbourne (TrACEES Platform)
- 2 0 1 8** SciComm Workshop by Tullio Rossi from “Animate Your Science”
- 2 0 1 7** Bruker Skyscan Software Training Day, Adelaide Microscopy

- 2 0 1 6 Statistics for Researchers, University of Adelaide Postgraduate Course
- 2 0 1 5 Geomorph: R package for the Collection and analysis of geometric morphometric data, workshop at the 75th Annual Meeting of the Society of Vertebrate Paleontology
- 2 0 1 5 Iodine-Enhanced Soft Tissue Imaging: An introductory workshop for vertebrate paleontologists, at the 75th Annual Meeting of the Society of Vertebrate Paleontology
- 2 0 1 5 Venomous Snake Safety and Handling, Living with Wildlife by Geoff Coombe and the Adelaide Snake Catchers
- 2 0 1 5 Geomorph: R package workshop at the University of Adelaide, by Emma Sherratt
- 2 0 1 5 R for Researchers (Intermediate), University of Adelaide Postgraduate Course
- 2 0 1 4 User Training for Skyscan 1076, Adelaide Microscopy
- 2 0 1 4 Responsible Service of Alcohol
- 2 0 1 4 Hygienic Practices for Food Safety
- 2 0 1 3 Senior Certificate in First Aid
- 2 0 1 1 Certificate in Defensive Driving
- 2 0 1 0 South Australian Driver's License

SCHOLARLY PRESENTATIONS

- 2022 – Departmental seminar at Flinders University, Adelaide, South Australia**
 “Vertebrate anatomy in 65 thousand shades of gray” *Invited talk*
- 2022 – Postdoc lightning talk at the Florida Museum of Natural History, Gainesville, Florida, USA**
 “Vertebrate anatomy in 65 thousand shades of gray” *Nominated speaker*
- 2021 – Society for Integrative and Comparative Biology, Phoenix, Arizona, USA**
 “Using cranial endocasts as a proxy for frog brain size and shape” *Conference talk*
- 2021 – Talk at Paleo Club at University of Chicago, Chicago, Illinois, USA**
 “oVert and beyond – 3D imaging the anatomy of vertebrates and setting them free” *Invited talk*
- 2021– Departmental seminar at Findlay University, over Zoom**
 “oVert and beyond – 3D imaging the anatomy of vertebrates and setting them free” *Invited talk*
- 2021 – Guest lecture at Virginia Polytechnic Institute and State University for Morphology of the Vertebrate Skeleton course, over Zoom**
 “oVert and beyond – 3D imaging the anatomy of vertebrates and setting them free” *Guest lecture*
- 2021 – Talk for the Postdoctoral Society at the University of Florida, Gainesville, Florida, USA**
 “Converting shades of gray to greatness: bringing 3D models of vertebrate anatomy to life” *Nominated speaker*
- 2020 – Departmental seminar at New York Institute of Technology College of Osteopathic Medicine, Long Island, New York, USA**
 “A voyage on a vessel of voxels - Evolution of not-so-creepy crawlies of Australia and New Zealand, revealed by X-rays” *Invited talk*
- 2020 – Departmental seminar at Stony Brook University, Long Island, New York, USA**
 “A voyage on a vessel of voxels - Evolution of not-so-creepy crawlies of Australia and New Zealand, revealed by X-rays” *Invited talk*
- 2020 – Departmental seminar at Sam Houston State University, Huntsville, Texas, USA**
 “A voyage on a vessel of voxels - Evolution of not-so-creepy crawlies of Australia and New Zealand revealed, by X-rays” *Invited talk*
- 2020 – Society for Integrative and Comparative Biology, Austin, Texas, USA**
 “Dragons of the trees, the rocks, and the ground: the evolution of cranial shape in a continental scale evolutionary radiation of lizards” *Conference talk*
- 2019 – Annual Meeting of the Australasian Society for the Study of Animal Behaviour, Waiheke Island, New Zealand**
 “Swords and battle axes: multiple weapon morphs across New Zealand harvestmen (Opiliones: Neopilionidae)” *Conference talk*
- 2019 – Departmental seminar at the University of Auckland, Auckland, New Zealand**
 “Dragons of the trees, the rocks, and the ground: the evolution of cranial shape in the Australian dragon lizards (Lepidosauria: Agamidae)” *Invited talk*
- 2018 – 54th Meeting of the Australia Society of Herpetologists, Kindilan, Queensland, Australia**

- “Dragons of the trees, the rocks, and the ground: the evolution of cranial shape in a continental scale evolutionary radiation of lizards” *Conference talk*
- 2018 – 12th University of Adelaide Faculty of Sciences Postgraduate Symposium, Adelaide, South Australia**
Competitor in Three Minute Thesis Competition: “Evolution of skull shape in Australian dragons” *Conference talk*
- 2017 – Royal Society of South Australia December Meeting, South Australian Museum, Adelaide, South Australia**
“Cranial morphology of Australian agamid lizards” *Research update*
- 2017 – 11th University of Adelaide Faculty of Sciences Postgraduate Symposium, Adelaide, South Australia**
“Cranial morphology of Australian agamid lizards” *Conference talk*
- 2017 – 53rd Meeting of the Australian Society of Herpetologists, Fairbridge, Western Australia**
“In front by a nose: cranial morphology in agamid lizards” *Conference talk*
- 2016 – Palaeo Down Under 2 Conference, University of Adelaide, Adelaide, South Australia**
“Agamid lizard fossils from South Australian caves: Implications for environmental change during the Quaternary” *Poster*
- 2016 – 10th University of Adelaide Faculty of Sciences Postgraduate Symposium, Adelaide, South Australia**
“Agamid cranial morphology” *Symposium poster*
- 2016 – International Congress of Vertebrate Morphology, Washington DC, USA**
“A survey of tooth data amongst iguanians reveals pattern related to size and taxonomy” *Conference talk*
- 2016 – 52nd Meeting of the Australian Society of Herpetologists, Tamar Valley, Tasmania**
“A survey of tooth number reveals patterns related to size and taxonomy but also substantial intraspecific variation” *Conference talk*
- 2015 – 75th Annual Meeting of the Society of Vertebrate Paleontology, Dallas, TX, USA**
“Agamid (Reptilia: Squamata) assemblages from South Australia suggest differences between Pleistocene and modern distributions that reflect climate changes” *Symposium poster*
- 2015 – 51st Meeting of the Australian Society of Herpetologists, Eildon, Victoria, Australia**
“Mountain dragons in the lowlands during the ice age” *Conference talk*
- 2014 – Interdisciplinary Biomechanics Workshop, Adelaide, South Australia**
“CT scans, Avizo, Landmark, and Morphologika” *Conference talk*

REVIEWER DUTIES FOR SCHOLARLY PUBLICATIONS

22 in total

American Journal of Physical Anthropology
Asian Herpetological Research
Biological Journal of the Linnean Society
Biological Reviews
eNeuro
Integrative Organismal Biology
Journal of Experimental Zoology Part B: Molecular and Developmental Evolution
Methods in Ecology and Evolution
PeerJ

<https://publons.com/researcher/1633872/jaimi-gray/>

REFEREES

Dr. David Blackburn (postdoctoral advisor)
Curator of herpetology
Florida Museum of Natural History
University of Florida
1659 Museum Road
Gainesville, Florida
USA 35611
dblackburn@flmnh.ufl.edu

Dr. Edward Stanley (postdoctoral advisor)
Director of Digital Imaging Division
Florida Museum of Natural History
University of Florida
1659 Museum Road
Gainesville, Florida
USA 35611
elstanley@flmnh.ufl.edu

Dr. Paul Gignac (Postdoctoral advisor)
Associate Professor
Director, CoM-T Global Graduate Programs
UArizona Health Sciences International
Department of Cellular & Molecular Medicine

Dr. Mark N. Hutchinson (PhD advisor)
Senior Researcher
Herpetology
South Australian Museum
North Terrace, Adelaide SA 5000

University of Arizona
College of Medicine, Tucson
pgignac@arizona.edu

Dr. Marc E. H. Jones (PhD advisor)
Curator, Fossil Reptils
The Natural History Museum,
Cromwell Road,
London, UK,
SW7 5BD
marc.jones@nhm.ac.uk

mark.hutchinson@samuseum.sa.gov.au

Dr. Emma Sherratt (Academic mentor)
ARC Future Fellow
Department of Ecology & Evolutionary Biology
School of Biological Sciences
The University of Adelaide
North Terrace, Adelaide, SA 5005
emma.sherratt@adelaide.edu.au