GENUS

DSTI-NRF CoE Palaeo

Directors Annual Report

2024

Director: Professor Jennifer Botha

We are GENUS.

Knowledge centre. Network leader. Explorer.

GENUS is a collective knowledge hub and inclusive network for Palaeosciences in Africa. Dedicated to studying the origins of species, we see beyond the science to inspire researchers and citizens to find meaning in the past and inform our decisions for a better future.

With South Africa's unmatched fossil and archaeological record at our feet, we enable groundbreaking discoveries that move Palaeosciences forward, encourage cross-discipline collaboration, and make knowledge accessible to all.

We provide access to a valuable repository of tools, information, funding, technology, and support through our broad international and local network. This empowers emerging researchers, postdoctoral fellows, and postgraduate students to further their research, grow their network and contribute to discovering sustainable solutions for society and the environment.

We are making a BOUNDLESS IMPACT for now and the future.

Our ambition

To transform Palaeosciences in South Africa by creating value for all stakeholders and undertaking a comprehensive study of the evolution of life on Earth.

Our vision

To be the **network leader** of an **inclusive and thriving palaeoscience community** that **enriches our world** and **preserves our future**.

Network leader – We are network leaders who are at the centre of creating collaborative partnerships beyond our discipline. Where we embrace the power of sharing, cooperating and collaborating. Where we break down barriers, encourage diversity, and share demonstrable, critical thinking that contributes to a hopeful future—becoming the storytellers of our generation and inviting the world to join us in building a future worth preserving.

Inclusive and thriving Palaeocommunity – Building a dynamic network of research experts collaborating from around the world in the heart of Africa, where we have an unmatched geographical advantage. We invest in people, programmes and research to discover our ancient past while guiding and nurturing our network to turn knowledge into practical solutions. We do all this from South Africa, a nation with an unmatched fossil heritage and a land endowed with evidence of the planet's evolution. With a fossil heritage that will ignite even the wildest of imaginations. We are setting a new standard in research excellence.

Enrich our world – Enabling us to instil national pride, where citizens have the

potential to become a custodian of their heritage.

Preserve our future – Connecting the story of life to the future of humanity. With every discovery, prediction, and resolve, we can impact solutions and contribute towards a future fit for generations to come.

Our mission

We invest in people, research, and programmes that move Palaeosciences forward that impacts South Africa and the global community.

Our values

We believe in a world where everyone has a role to play in preserving the future of our planet. From researchers, collaborators and partner institutions to ordinary citizens, aspiring students and young children. We aim to break down barriers and make a real contribution to a more hopeful future by:

Igniting Wonder - We capture imaginations and spark curiosity, opening minds to the limitless world that still needs to be explored.

Fuelling Discovery - We support our network with the resources and partners required to make groundbreaking discoveries.

Driving Inclusivity - We create an open culture of collaboration that represents the rich diversity of South Africa.

Enabling Real Impact - We empower our network to make a boundless impact – not only in the world of science but the bigger story of life itself.

Where to find us

Location:	First Floor, Palaeoscience Building University of the Witwatersrand, Johannesburg Wit 2050
Email:	info.genus@wits.ac.za
Office:	011 717 6695
Facebook, Twitter & Instagram:	GENUS
YouTube:	GENUS Palaeosciences
Websites:	www.genus.africa www.wits.ac.za/genus/

science & innovation
Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA

NRF National Research Foundation

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Table of Content

1. Executive Summary

Driving our mission forward, GENUS provided critical support to 65 grants in 2024, benefiting researchers, postgraduate students, postdoctoral fellows, emerging scholars, as well as conferences and workshops. Notably, more than half of our grantees were female across all academic tiers, reflecting our steadfast commitment to equity and inclusivity.

Among the 34 student grantees, representation of Black postgraduate students reached 68%, similar to 2023. Within the 2024 student grantee cohort, 80% of Honours students and 88% of Master's students were Black, demonstrating tangible progress in fostering inclusivity. In addition, our Postdoctoral Fellowship Grant supported nine researchers, further strengthening the next generation of scholars.

Expanding our collaborative reach, GENUS formalized a strategic partnership with the University of Johannesburg and is in active discussions with the University of KwaZulu-Natal and the University of the Western Cape (an HDI institution). These alliances will open new doors for researchers and students, providing bursary opportunities and research funding.

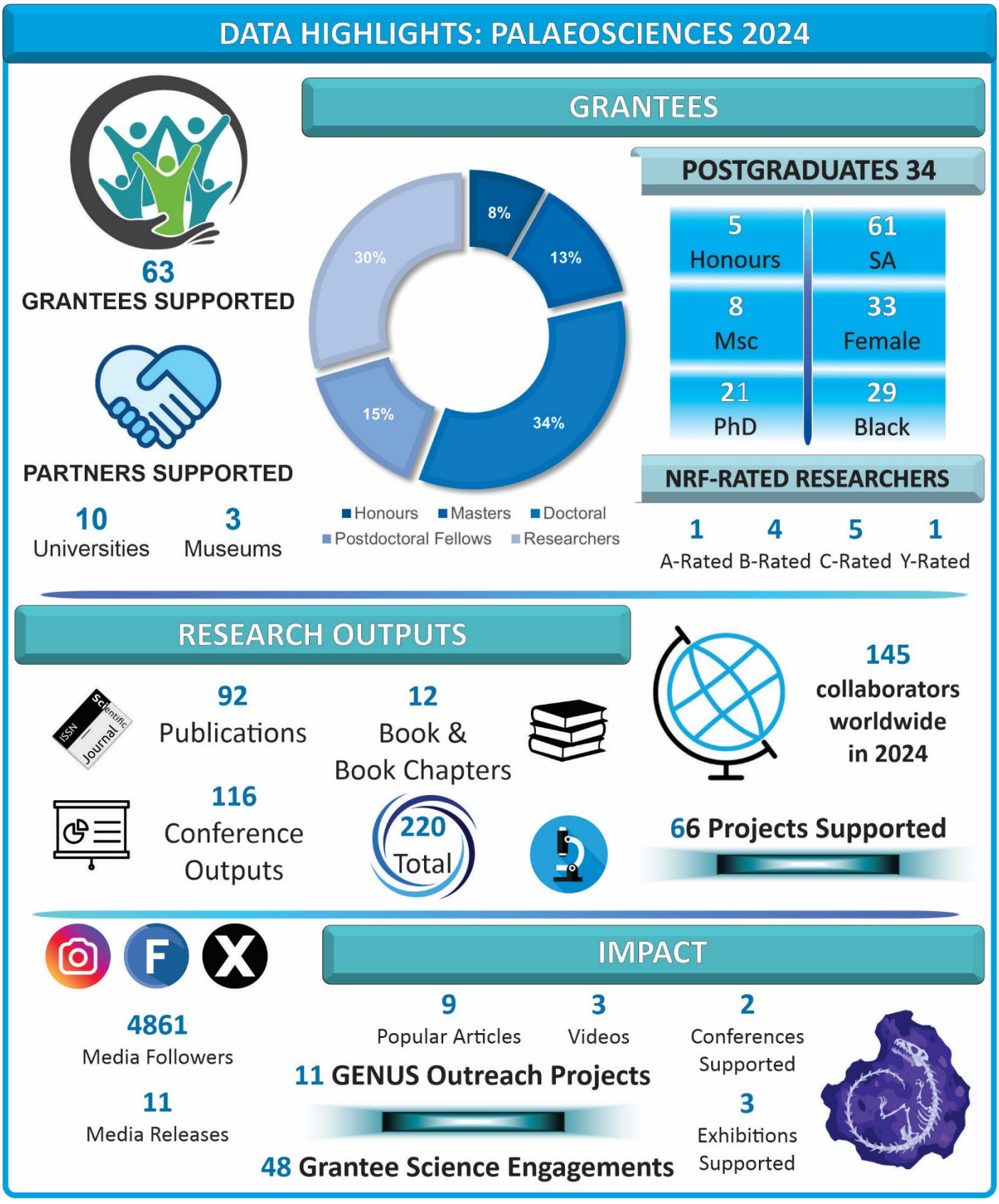
Our grantees explore a broad spectrum of palaeoscience topics, from the origins of life to human evolution, showcasing South Africa's extraordinary natural heritage on the global stage. This excellence is reflected in our members' outstanding productivity and recognition by the National Research Foundation (NRF). In 2024, our grantees included one A-rated, four B-rated, five C-rated, and one Y-rated researcher, with ratings evolving annually based on grant recipients. Their contributions were further solidified by the publication of 92 scientific papers, a testament to the rigorous research produced by both senior academics and students.

Beyond academic achievements, GENUS grantees are committed to science communication and public engagement, bringing palaeoscience to wider audiences through press releases, social media, and outreach initiatives. In 2024, GENUS led 11 outreach and science engagement programmes, while our grantees collectively launched 48 projects spanning public articles, workshops, videos, and school visits.

As dedicated stewards of knowledge, GENUS and the palaeoscientists we support are actively supervising postgraduate students, hosting postdoctoral fellows, and contributing to undergraduate and Honours programs across leading universities.

Standing as a cornerstone of innovation, GENUS continues to elevate South African palaeoscience on the international stage. Our unwavering commitment to pioneering research, fostering inclusivity, and empowering scholars is embedded in every aspect of our work, ensuring that GENUS grantees are prepared to make meaningful contributions on the international front.

1.1 2024 GENUS Acievements at a Glance

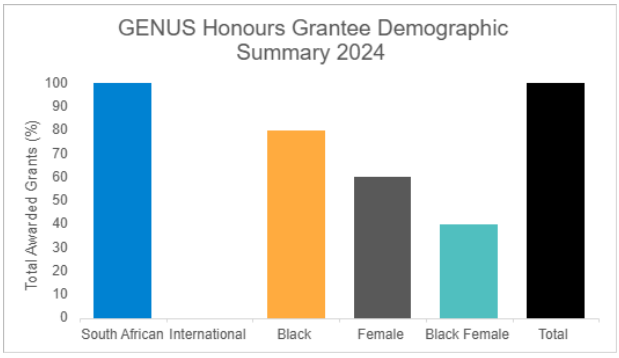


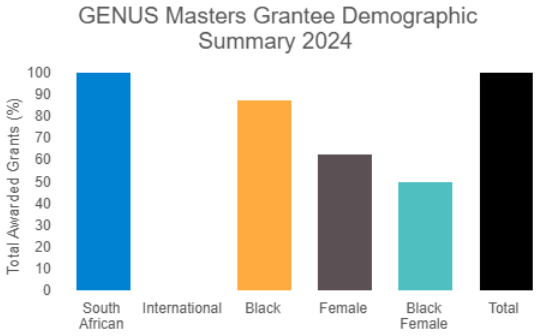
1.2 Postgraduate Student and Postdoctoral Fellowship Demographics

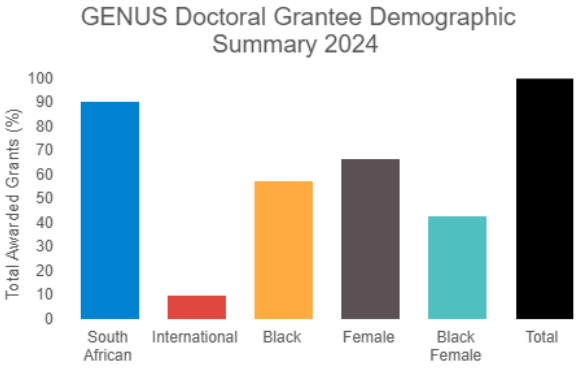
In 2024, all GENUS Honours and Master's students were South African. The Honours cohort saw increased enrollment, with 80% Black representation, 60% female, and 40% Black female students. At the Master's level, 88% of students were Black, 63% were female, and 50% were Black female.

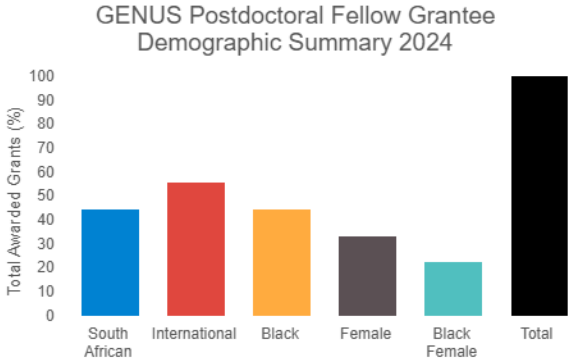
Doctoral students represent long-term investments in palaeoscience. While some current PhD candidates do not align with the NRF's demographic targets, many are in their second or third year and will soon complete their studies. By 2025, African doctoral representation will rise to more than 70% and is expected to continue increasing in the years ahead.

The demographic composition of our Postdoctoral Fellows remains influenced by historical factors, as several fellows either completed their tenure or withdrew in 2024. The international postdoctoral fellows completed their grants in 2024. Moving forward, no international postdoctoral fellows will be hired as per the NRF's requirements, which poses a significant challenge for the growth of the field. The lack of new international expertise limits opportunities for knowledge exchange and mentorship, ultimately affecting the development of South African students and postdoctoral researchers. Additionally, we currently **do not have any South African postdoctoral fellows who meet the NRF's demographic requirements**, highlighting a critical gap in the pipeline for early-career researchers. Without incoming postdoctoral talent, the long-term sustainability and competitiveness of South African palaeoscience could be impacted.

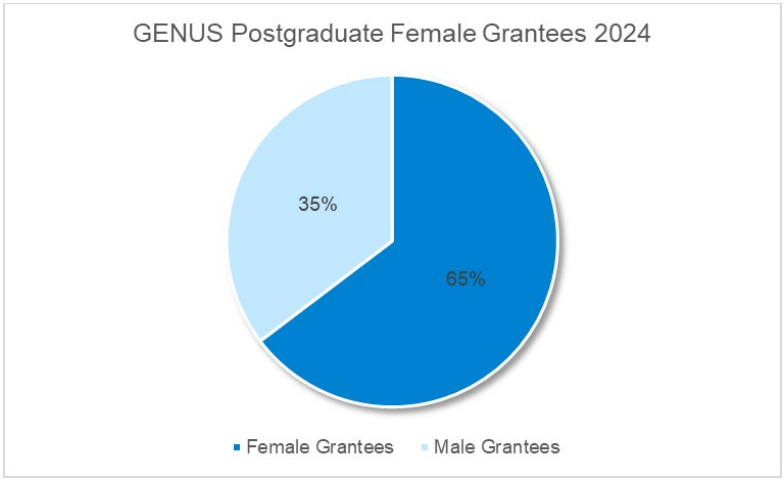


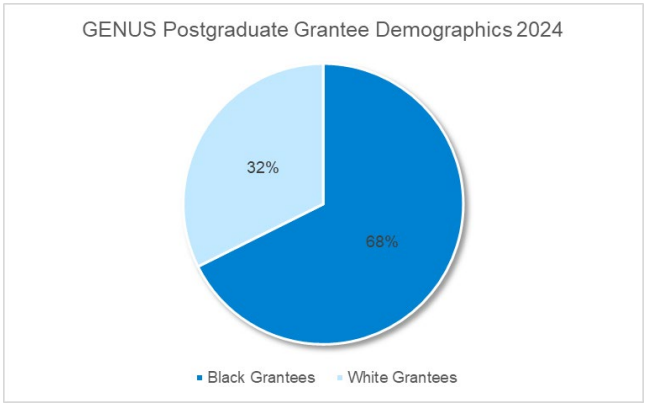


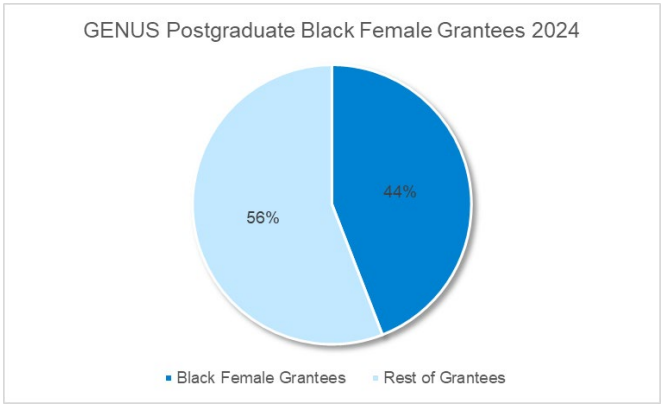




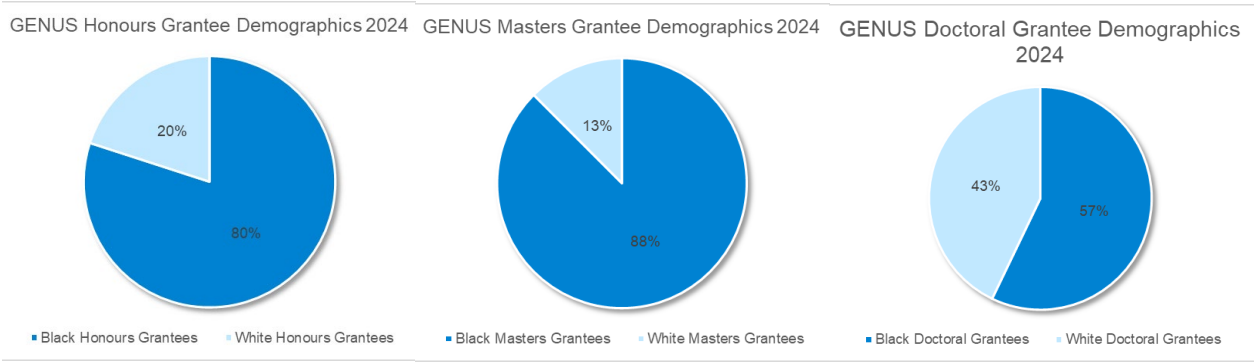
See below an overview of the 2024 demographics. Female and black students dominate the cohort.





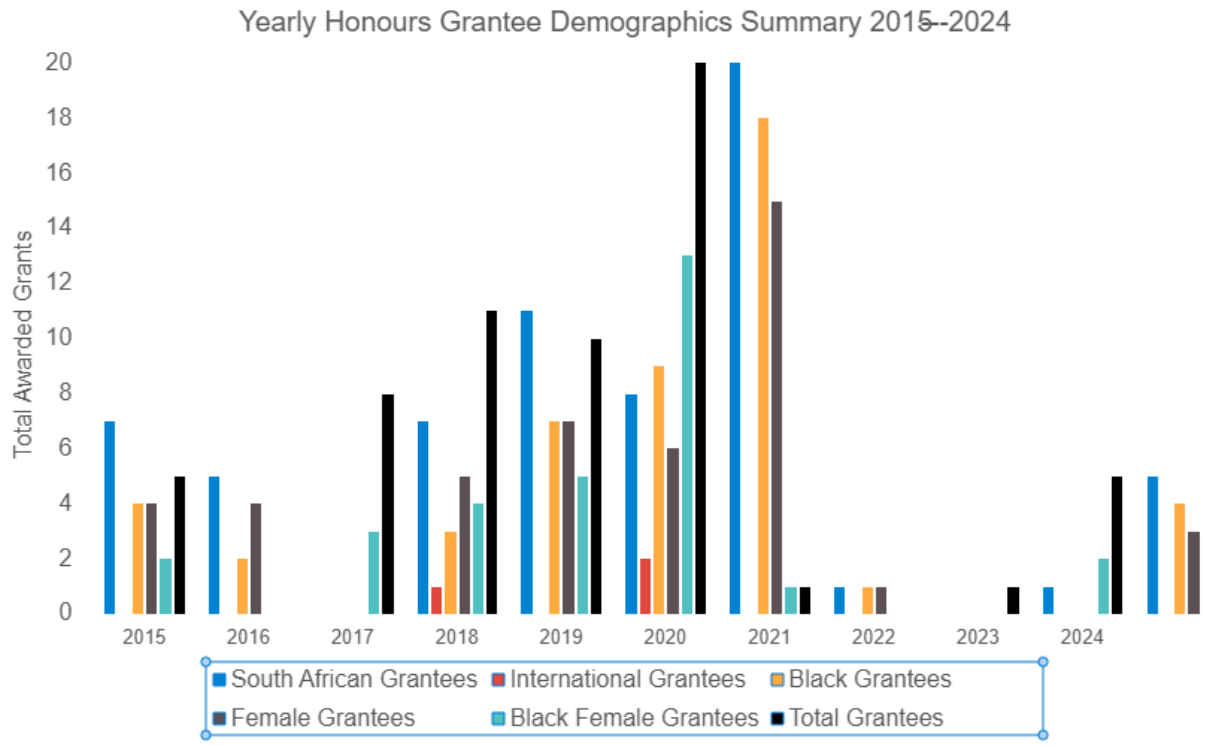


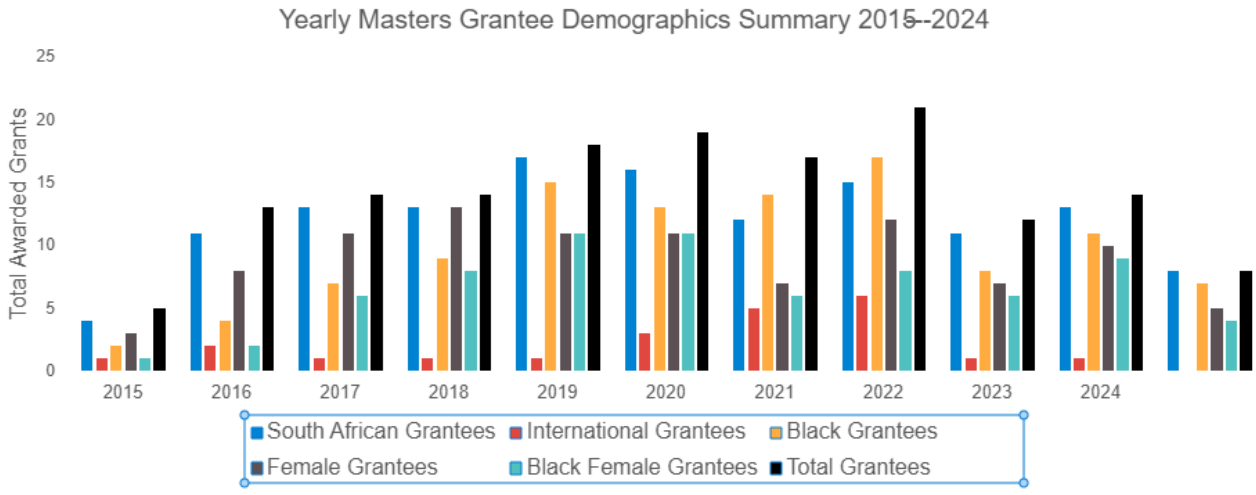
Breakdown of demographics per postgraduate level

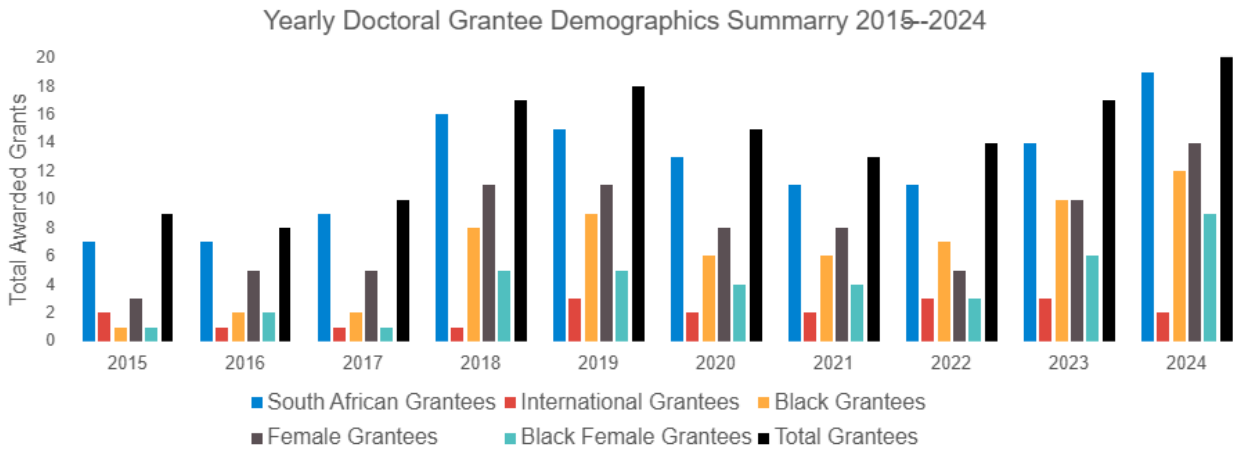


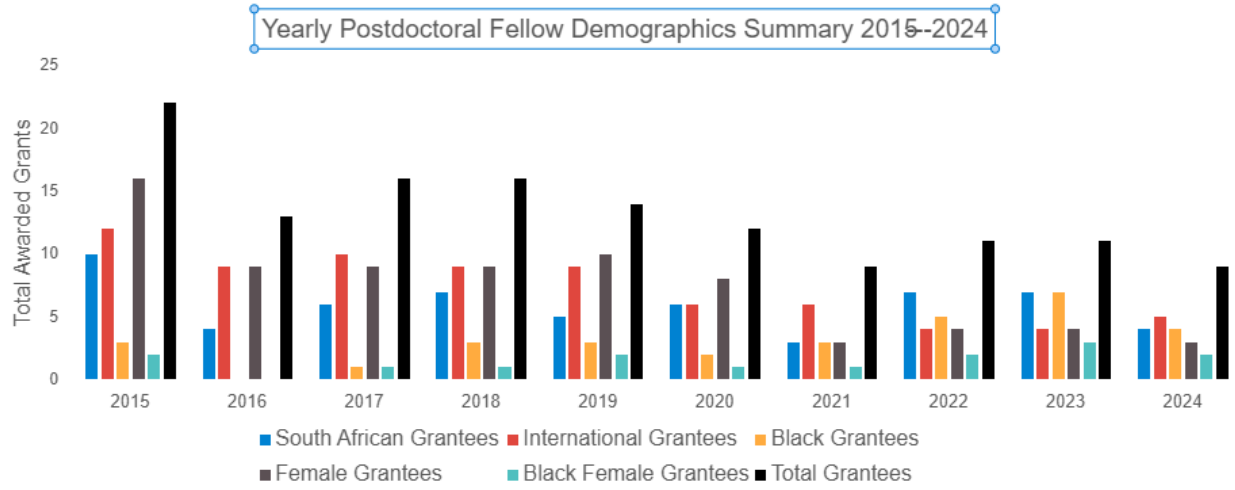
The Honours and Master's cohorts in 2024 were 80–88% Black, marking a significant shift from previous years. Similarly, the doctoral cohort is predominantly Black, with representation set to increase further as current second- and third-year doctoral students complete their studies. By 2025, Black doctoral student representation is expected to reach 70%, reflecting ongoing progress toward greater inclusivity in the field.

1.3 Long term trends in GENUS grantees from 2015-2024









2. Our Networks

GENUS stands out for its commitment to supporting dedicated and impactful palaeoscience researchers who excel in both academic productivity and social engagement. Its success is driven by strong partnerships with academic institutions and museums, which play a crucial role in advancing research excellence, education and training, human capital development, and science engagement initiatives.

In 2024, GENUS forged an exciting new partnership with the University of Johannesburg (UJ). This collaboration has generated significant interest, with at least five researchers from the Geological Department expressing their intention to apply for research grants and support for their postgraduate students. Key focus areas within the UJ Geology Department include geochronology (including the formation and chronology of the caves in the Cradle of Humankind), palaeoclimatology, palaeomagnetism, and human evolution. The department boasts a state-of-the-art LA MC ICP-MS facility (laser ablation multi-collector inductively coupled plasma mass spectrometer), which is crucial for geochronology (dating rocks). We are optimistic that this new partnership will provide further opportunities for GENUS to support more researchers and their students.

Since its inception, GENUS has built a robust network of around 330 global collaborators, contributing significantly to our research output, including publications and access to laboratory facilities. In 2024 alone, our grantees were involved in 145 national and international collaborations,

further solidifying our commitment to fostering a collaborative, global research community.

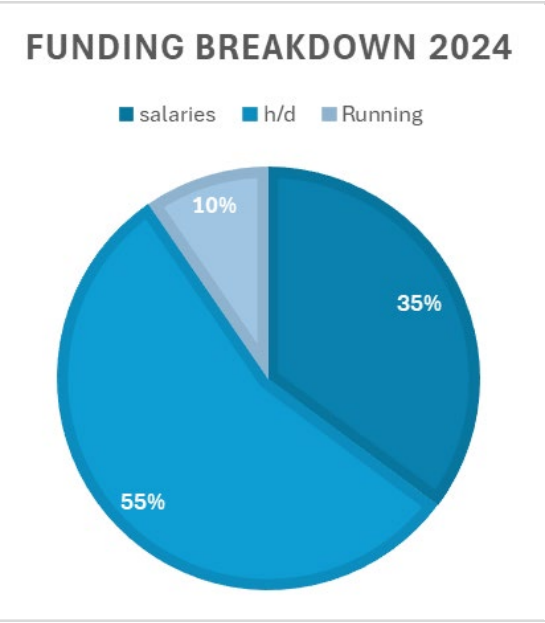
Date of formation	SLA stage	Host University	
2013	4	University of the Witwatersrand, Johannesburg	
CoE Academic Partnerships	CoE Natural Science Museum Partnerships	CoE Funding Partnerships	Seeking Out New Partnerships for 2025
University of the Witwatersrand, Cape Town, Free State, North-West, Pretoria, Rhodes, Johannesburg, Nelson Mandela University, North-West University **Collaborators** Council for Geosciences	Iziko South African Museums, Ditsong National Museum of Natural History, National Museum, Bloemfontein & Albany Museum	DSI, NRF, University of the Witwatersrand, Millennium Trust Foundation, Palaeontological Scientific Trust (PAST), Centre national de la recherché scientifique (CNRS), Institut Francis d'Afrique du Sud Research (IFAS)	University of Kwa-Zulu Natal, University of the Western Cape

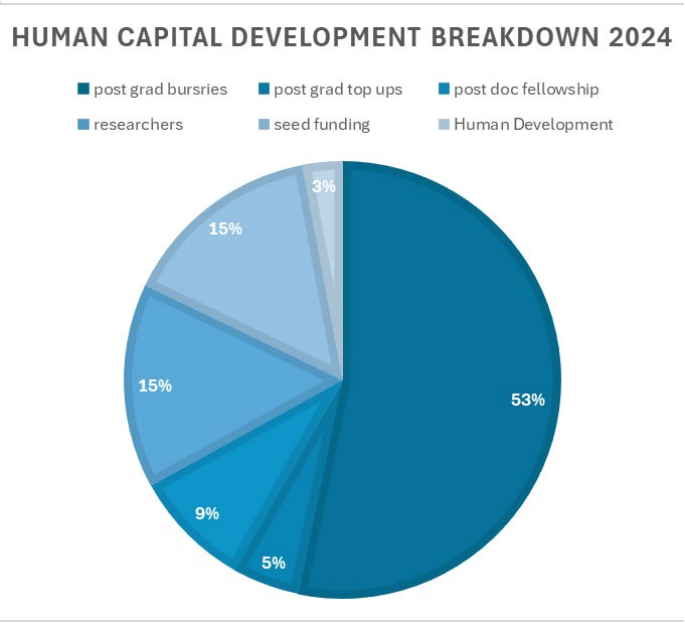
3. Effective Funding

3.1 2024 Cash Flow

R13 400 957 received from the National Research Foundation, which went to Postgraduate Bursaries, with the remaining amount for Postdoctoral Fellowships, emerging researchers, internships, running costs and salaries. The University of the Witwatersrand Research Council Funding of R1 340 096 was spent on research grants, postdoctoral fellowships, science engagement, student workshops, and events. Below is the cash flow for NRF funding.

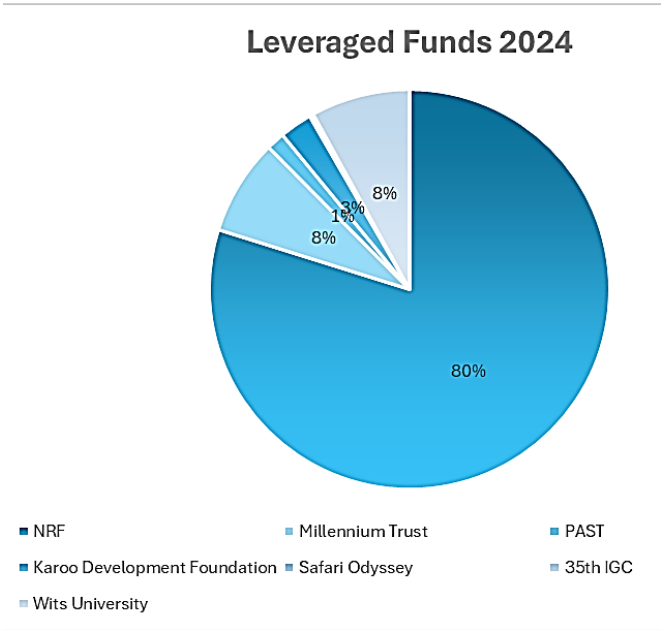
DESCRIPTION	TOTAL for 2024
Balance brought forward 2023	- 1 722 087.83
Unused Grants Returned 2023	-
NRF Funding 2024	13 400 956.80
TOTAL INCOME	**15 123 044.63**
Salaries	**5 050569.50**
Human Capacity Development	**7 926 849.96**
*Postgraduate Bursaries	4 220 305.00
*Postgraduate Top-ups	390 000.00
*Postdoctoral Fellowships	700 000.00
*Researchers	1 200 000.00
*Human Development	232 391.96
Running	**1 375 497.32**
*Conference and related travel	521 361.14
*Equipment	188 162.28
*Running	665 973.90
TOTAL EXPENSES	**14 352 916.78**
NET SURPLUS / DEFICIT FUNDS	770 127.85





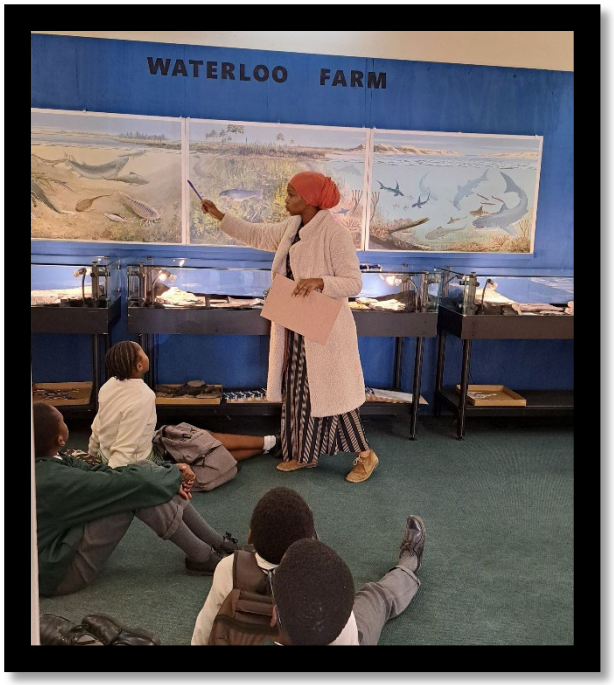
3.2 Leveraging Funds

Our CoE actively explores opportunities to support various research and science engagement initiatives. GENUS has leveraged funding from the University of the Witwatersrand, the Centre National de la Recherche Scientifique (CNRS), the Karoo Development Fund (KDF), the Millennium Trust (MT), and crowdfunding. Most of these funds are linked to specific research projects. In addition, our grantees are encouraged to use their CoE funds as leverage to source additional funds.



South African Devonian Ecosystems Project: Of special note is The Millennium Trust, a funding agency that is providing funding for Dr. Rob Gess at the Albany Museum in Makanda to support his groundbreaking work. This funding covers salaries for Dr. Gess and a technical assistant, in addition to operational research costs. Dr. Gess is renowned for his innovative discoveries of plants, early fish, and basal tetrapod fauna from the Devonian-aged Witteberg Group, with several of his findings featured in prestigious journals like Nature. In addition to his research, Dr. Gess has been deeply involved in outreach initiatives in Makanda, most notably through the Waterloo Farm Fossils Gallery at the Albany Museum. The

gallery, which includes fossils, paintings, and informational displays, raises awareness of South Africa's Devonian fossil heritage among both adults and students. The gallery draws a steady stream of visitors, with outreach officer Khokela Camagu (funded by the Millennium Trust) being especially popular among guests. Currently, a second adjacent gallery is under development to further expand the outreach efforts. Unfortunately, Dr Gess has not been able to secure a permanent position either at the Albany Museum or Rhodes University. We are working with Dr Gess to change this situation, but funds are limited and DSAC no longer considers research a priority.



Outreach officer Khokela Camagu giving a lesson to learners from Fizikolo Primary School in the Waterloo Farm gallery.

A large portion of the GENUS grants fund:

- Postgraduate Bursaries (Honours, Masters, & Doctoral)
- Postdoctoral Fellowships
- Next Generation Palaeoscientist Postdoctoral Fellowships
- We Dig Fossils Grant – open to Black Principal Investigators who identify as women
- Research Grants

4. Key Performance Areas

4.1 Research and Knowledge Production

South Africa's rich natural heritage and unique geographical location make it ideal for the fossil record. Through ongoing collaborations, GENUS and its partners continue to uncover and share new discoveries about South Africa's remarkable fossil and archaeological history. Their dedication ensures that valuable knowledge reaches both the public and the scientific community. Research supported by GENUS grants has far-reaching applications across multiple fields, including geology, biology, ecology, and climate science, extending well beyond palaeoscience.

KPA: Research and Knowledge Production						
The CoE aims to continue to produce research of the highest quality.						
Origin of Life & Multicellularity	Fossil Plants	Devonian Animals & Plants	Karoo Therapsids	Early Dinosaurs	Human Evolution & Middle Stone Age	Earth Systems

Due to the diverse nature of palaeoscience, there are three broad themes:

- **Evolutionary Processes** - This theme includes increasing knowledge of South African palaeobiodiversity, studying the timing of evolutionary events in major clades and climatic events, characterising the global geographic distribution of fossil taxa, and investigating the nature of functional morphology and key innovations in morphological evolution.
- **Cultural and Behavioural Evolution** - This theme explains key long-term hominid behaviour transitions and how they led to modern human behaviour.
- **Palaeo-environments and Palaeoclimates** - This theme explains how earth systems change dynamically and when stretched beyond certain thresholds, leading to changes (and potentially collapses) in ecosystems and biodiversity. This theme uncovers the variability in the resilience of past ecosystems to fluxes through space and time.

The research themes focus on areas where South Africa's palaeoscience record provides a significant advantage, particularly the Cape and Karoo Supergroups, the Tertiary and Quaternary fossil record, and the cultural and behavioural evolution of *Australopithecus* and *Homo*. This includes the development of early stone tool industries such as the Oldowan, Acheulean, and Middle Stone Age industries.

GENUS has a strong track record of converting raw research data into scientific publications, with many studies appearing in high-impact journals (impact factor ≥ 3).

Although the number of employed palaeoscience researchers is relatively small, GENUS remains highly productive, consistently generating new knowledge that is widely utilized by the global scientific community. This research also contributes to updates in school and university curricula, supports the development of palaeo-tourism sites, and helps establish palaeo-tourism routes.

4.2 Education and Training

Education and training form a core part of GENUS's initiatives. Its human capital development efforts prioritize support for Honours, Masters, and Doctoral students, as well as postdoctoral fellows, early-career researchers, interns, and technical staff.

KPA: Education and Training	
The CoE is committed to building a diverse, equitable, and inclusive palaeoscience landscape	
Postgraduate Bursaries (Honours, MSc, PhD)	Annual GENUS Grantee Conference
Postdoctoral Fellowships	Palaeoscience Accelerator Field School
Research Grants	Internships in Research Assistance, Collection Management, Big Data Analysis, Science Communication
We Dig Fossils Grants	Upskilling Workshops (e.g. CV writing, Grant Application training, Budget Management, Academic and Popular Presentations, etc.)
Technician Salaries	Student Participation in National Competitions (e.g. FameLab)
Conference Support	

Our ongoing efforts include:

Internships: Actively supporting postgraduate students by offering opportunities in various internship programs. These programs provide hands-on experience in palaeosciences, including research assistance, collection management, big data analysis, and science communication.

We Dig Fossils Grant: Empowering Black women principal investigators (PIs) through a two-year grant designed to provide the time and resources needed to achieve their research goals.

GEN(US) Upskilling Workshops: Hosting workshops to equip grantees with essential skills for career advancement in academia or industry. Topics include crafting a strong academic CV, delivering engaging scientific presentations, and effectively communicating science to the public. New initiatives are also being developed, covering job interview strategies, popular science writing, innovative science engagement methods, and a specialized course on snake bite management.

Postgraduate Funding Support: Offering financial assistance to postgraduate students, enabling them to participate in national competitions such as the 3-Minute Thesis Competition (SAASTA), the SAASTA Young Communicators Competition, FameLab, and the Wits Science Slam.

4.3 Information Brokerage

Informational brokerage is an essential function of GENUS, and our science engagement initiatives have expanded yearly. We remain active through our science communication via our website, social media platforms, and newsletters.

KPA: Information Brokerage	
Current activities to engage the public include the following	
Website	Palaeo-tourism support – Kitching Fossil Exploration Centre
Social Media Platforms	Ancient Odyssey excavation tours at Sterkfontein, opening of Dinosaur Interpretive Centre Clarens
Newsletters, Media Releases	Palaeo colouring-in books, popular palaeoscience children's books
Geocaching	Secondary school activities (syllabus related)
Geoddyssey	Support for Sterkfontein upgrade

Media Releases

1. **Eleven media releases** from grantees range from invertebrates to growth in dinosaurs.

   For each of the following media releases, GENUS contributed to drafting, editing and finalising the releases, compiled multimedia and images, distributed the releases to local and international media outlets and social media, published the items on the GENUS website and posted them on a global science news platform Eurekalert! These releases reached a total of **21 news sites**, including local and international platforms.

1. Mnguni, S., Badenhorst, S., & Bamford, M. K. (2024). Paleothius mckayi sp. n.: A New Species of Staphylininae (Arthropoda: Insecta: Coleoptera: Staphylinidae) from Orapa in Botswana1. Journal of Entomological Science.
    a. Fossil beetles found in a Botswana diamond mine help us to reconstruct the distant past. The Conversation. https://theconversation.com/fossil-beetles-found-in-a-botswana-diamond-mine-help-us-to-reconstruct-the-distant-past-226661?fbclid=IwAR17I7eu6-5A_tXjtFUYiVTusjhyBCIJHQqa-RX9uITHSDtiRtMuzEAcb-M_aem_AbwskDdadyvHR51XlzjWJGchHcXH45Q6rIG5K9s1mEaHQI-QeuA6YGhe6gQM9-gGzIeiJEo1yKldqiHpRJ3PGL0B
    b. New fossil rove beetle is a first in Africa. Wits Research News. https://www.wits.ac.za/news/latest-news/research-news/2024/2024-03/new-fossil-rove-beetle-is-a-first-in-africa.html
    c. Beetles Breaking Ground: A New Fossil Rove Beetle from Botswana a First in Africa. Genus Palaeosciences. https://www.genus.africa/explore-article/beetles-breaking-ground-a-new-fossil-rove-beetle-from-botswana-a-first-in-africa/

2. Van den Brandt, M. J., Day, M. O., Manucci, F., Viglietti, P. A., Angielczyk, K. D., & Romano, M. (2024). First volumetric body mass estimate and a new in vivo 3D reconstruction of the oldest Karoo pareiasaur Bradysaurus baini, and body size evolution in Pareiasauria. Historical Biology, 36(3), 587-601
    a. New description of a ‘dwarf’ pareiasaur from the Karoo Basin. Wits Research News. https://www.wits.ac.za/news/latest-news/general-news/2024/2024-04/new-description-of-a-dwarf-pareiasaur-from-the-karoo-basin-.html?fbclid=IwAR23a3WgAJ0sHZr-Vpa89U0n5WYeqFNEN-KDHAYcf0Dq5kuKXg0pVYJb_RI_aem_AbwtRrMjzwbR71u01jIdyU864zdDoxnSowTu_mfCkHDpgAuJz83RYRBdwKoZi3y2daghNj1Vb_fu3FyuJk-N1XO3
    b. Tiny Titans of the Permian: New anatomical description of the ‘dwarf’ pareiasaur Nanoparia luckhoffi from the Karoo Basin. Genus Palaeosciences. https://www.genus.africa/explore-article/tiny-titans-of-the-permian-new-anatomical-description-of-the-dwarf-pareiasaur-nanoparia-luckhoffi-from-the-karoo-basin/
    c. Paleontologists Redescribe Enigmatic Dwarf Pareiasaur. SciNews. https://www.sci.news/paleontology/nanoparia-luckhoffi-12828.html

3. Nhamutole, N. E., Bamford, M. K., Souza, P. A., Silva, T. F., & Carmo, D. A. (2024). Petroleum potential from Permian-Triassic strata of the Maniamba Basin, Mozambique: A preliminary characterisation. South African Journal of Geology. https://doi.org/10.25131/sajg.127.0013
    a. From Fossils to Fuel: Mozambique's Maniamba Basin’s Energy Potential. Wits Research News. https://www.wits.ac.za/news/latest-news/general-news/2024/2024-05/from-fossils-to-fuel-mozambiques-maniamba-basins-energy-potential-.html
    b. From fossils to fuel: Mozambique's Maniamba Basin's energy potential. ScienceDaily. https://www.sciencedaily.com/releases/2024/05/240507150016.htm#:~:text=Nelson%20and%20his%20research%20team,claystone%2C%20sandstone%2C%20and%20siltstone.
    c. From Fossils to Fuel: Mozambique’s Maniamba Basin’s Energy Potential. Genus Dig Deeper. https://www.genus.africa/explore-article/from-fossils-to-fuel-mozambiques-maniamba-basins-energy-potential/

4. Pretorius M. The elusive echo: The mystery of Africa's sparse bat fossil record. S Afr J Sci. 2024;120(3/4), Art. #16991. https://doi.org/10.1715 9/sajs.2024/16991
    a. Africa is full of bats, but their fossils are scarce – why these rare records matter. The Conversation. https://theconversation.com/africa-is-full-of-bats-but-their-fossils-are-scarce-why-these-rare-records-matter-227236 (also translated and published in French and Polish)

5. Hanon, R., Fourvel, J. B., Sambo, R., Maringa, N., Steininger, C., Zipfel, B., & Braga, J. (2024). New fossil Bovidae (Mammalia: Artiodactyla) from Kromdraai Unit P, South Africa and their implication for biochronology and hominin palaeoecology. *Quaternary Science Reviews*, *331*, 108621.

    a. New Fossil Bovids from Kromdraai. Wits Research News. https://www.wits.ac.za/news/latest-news/research-news/2024/2024-05/new-fossil-bovids-from-kromdraai.html
    b. New Fossil Bovids from Kromdraai shed light on South Africa's ancient ecosystems. Genus Dig Deeper. https://www.genus.africa/explore-article/new-fossil-bovids-from-kromdraai-shed-light-on-south-africas-ancient-ecosystems/
    c. New bovid fossils discovered in South Africa. Nature Africa. https://www.nature.com/articles/d44148-024-00160-4?fbclid=IwZXh0bgNhZW0CMTEAAR2oOQsLk6zvVjdEq7t6G-Xsgn9LOR_eRjheJynE47OApclu9BJ26u0Xz8I_aem_AZ0q53IclN1dkPUOPC2DpIIoLCCaWHi00WJHjjs7Dc4gCIBqliGJUHFjQz753PYqR_qK5407OKJKS4syVA00HL5Z

6. Szczygielski, T., Van den Brandt, M. J., Gaetano, L., & Dróżdż, D. (2024). Saurodesmus robertsoni Seeley 1891—The oldest Scottish cynodont. *PloS one*, *19*(5), e0303973.
    a. https://www.wits.ac.za/news/latest-news/research-news/2024/2024-07/discovering-scotlands-first-almost-mammal-saurodesmus-robertsoni.html
    b. https://www.genus.africa/explore-article/discovering-scotlands-first-almost-mammal-saurodesmus-robertsoni/

7. Mnguni, S., McKay, I. J., & Badenhorst, S. (2024). A Fossil Paederinae from a Lacustrine Deposit at Orapa Diamond Mine in Botswana1. *Journal of Entomological Science*. https://doi.org/10.18474/JES23-99
    a. A new species of fossil paederine rove beetle from Orapa. Genus Website. https://www.genus.africa/?post_type=explore-article&p=5610&preview=true&_thumbnail_id=5612
    b. https://www.wits.ac.za/news/latest-news/research-news/2024/2024-07/beetle-outbreak-another-fossil-rove-beetle-from-botswana.html

8. Stuart BP, Huttenlocker AK, Botha J. 2024. The postcranial anatomy of *Moschorhinus kitchingi* (Therapsida: Therocephalia) from the Karoo Basin of South Africa. PeerJ 12:e17765 https://doi.org/10.7717/peerj.17765
    a. https://www.wits.ac.za/news/latest-news/research-news/2024/2024-10/moschorhinus-kitchingi-the-ancient-stocky-survivor-of-the-karoo.html

9. Fitchett, J. M., & Mackay, A. W. (2024). Diatomite evidence for a small palaeo mountain lake at 3400 m asl, Lesotho, southern Africa. *Journal of Quaternary Science*.

a. https://www.wits.ac.za/news/latest-news/research-news/2024/2024-07/lesothos-lost-lake-sheds-light-on-past-and-future-water-security.html
b. https://www.news24.com/fin24/climate_future/news/the-lost-waters-of-lesotho-climate-change-behind-disappearing-oasis-20240804

10. Barrett, P. M., Chapelle, K. E., Sciscio, L., Broderick, T. J., Zondo, M., Munyikwa, D., & Choiniere, J. N. (2024). A new Late Triassic sauropodomorph dinosaur from the Mid-Zambezi Basin, Zimbabwe. *Acta Palaeontologica Polonica*, *69*(2), 227-241.
    a. https://www.wits.ac.za/news/latest-news/research-news/2024/2024-05/musankwa-sanyatiensis-a-new-dinosaur-from-zimbabwe.html

11. Pretorius, M. (2024). Peer review vs Publish all – Navigating the changing landscape of scientific publication. South African Journal of Science, 120(5/6). (opinion piece) https://doi.org/10.17159/sajs.2024/17103

Popular articles

Seven popular articles were published in 2024.

1. Van der Walt, M, “Unearth adventure: Discover fossils in your backyard and beyond with these simple tips,news24, August 13 2024. https://www.news24.com/life/travel/unearth-adventure-discover-fossils-in-your-backyard-and-beyond-with-these-simple-tips-20240813/
2. Mnguni, S. Fossil insects help to reconstruct the past: how I ended up studying them (and you can too). The Conversation 2024. https://theconversation.com/fossil-insects-help-to-reconstruct-the-past-how-i-ended-up-studying-them-and-you-can-too-232770
3. Van der Walt, M. A Tale of Two Audiences: The Transformative Power of Science Communication. https://www.genus.africa/explore-article/a-tale-of-two-audiences-the-transformative-power-of-science-communication/
4. Van der Walt, M. Fostering Future Scientists: SAASC’s Student Development Workshop 2023. https://www.genus.africa/explore-article/fostering-future-scientists-saascs-student-development-workshop-2023/
5. Van der Walt, M. From Ancient Apothecary to Modern Medicine. https://www.genus.africa/explore-article/from-ancient-apothecary-to-modern-medicine/
6. Van der Walt, M. From ancient apothecary to modern medicine. Wits Curiosity Issue 16. https://www.wits.ac.za/curiosity/stories/from-ancient-apothecary-to-modern-medicine.html#:~:text=pharmacy%20for%20healing.-,Throughout%20history%2C%20humanity%20has%20used%20nature's%20pharmacy%20for%20healing.,their%20roots%20in%20ancient%20knowledge.
7. FameLab 2024: Showcasing Scientific Excellence and Communication Skills. https://www.genus.africa/explore-article/famelab-2024-showcasing-scientific-excellence-and-communication-skills/

Videos:

1. Dineo Massia, Genus Palaeosciences - https://www.youtube.com/watch?v=Zy0a4pq8In8
2. Atashni Moopen, Genus Palaeosciences – https://www.youtube.com/watch?v=dh2KnWOfaJg
3. Recognise Sambo, Genus Palaeosciences - https://www.youtube.com/watch?v=zlxm-qBORbQ

Awards:

Congratulations to Prof Jennifer Fitchett: Physical Geography University of the Witwatersrand winner of the Communication Award. She received the award for her involvement in both communicating her own science to the public and in training early career researchers in science communication, notably through a Science Blog, articles in The Conversation and podcasts.

Jennifer Botha, the GENUS Director, was inducted as a fellow into the Royal Society of South Africa in 2024.

Jennifer Botha with other inducted fellows in the RSSAf

Ancient Odyssey Excavation Tours

In 2024, GENUS and Ancient Odysseys continued their successful partnership, offering an immersive **Cradle of Humankind tour**, where guests explored the story of human evolution and participated in active excavations led by Profs. Dominic Stratford and José Braga. This year's dig was a resounding success, with five international guests fully engaging in the experience. Beyond the excavation, the tour featured thrilling activities such as wildlife safaris, ziplining, and hot air balloon rides, creating a truly unforgettable adventure. Importantly, proceeds from these tours directly supported **bursaries for Black female palaeoscientists** through the We Dig Fossils grant, fostering greater diversity in the field. With the 2025 tour already fully booked, enthusiasm for these educational and hands-on experiences continues to grow.

Participants of the Cradle Dig Tour excavating at Kromdraai as part of the tour itinerary. Photograph Chanté Schatz.

Meanwhile, the "**Rewind Time Fossil Finding Odyssey**" in the Karoo, South Africa, is currently in development. This extraordinary expedition will take guests on a journey through deep time, working alongside renowned palaeoscientists from three different institutions: Prof. Bruce Rubidge from Karoo Origins Museum in Graaff-Reinet (set to open its doors to the public soon), Dr Rob Gess from the Albany Museum in Makhanda, and Assoc. Prof. Julien Benoit from the Evolutionary Studies Institute in Johannesburg. Participants will have the rare opportunity to discover fossils from the Devonian Period, including ancient fish and early tetrapods dating back 420 million years, as well as the famous therapsids of the Karoo—the prehistoric ancestors of mammals that provide crucial insights into the origins and evolution of modern mammals. This **one-of-a-kind palaeontological adventure** promises to be an unforgettable experience, bridging science, exploration, and discovery.

Sterkfontein Upgrade

In collaboration with PAST and MGG, GENUS has embarked on enhancing the outdoor educational signage and information boards at the Sterkfontein Caves, as well as developing educational materials and exhibitions for the research laboratory facility, all set to be launched later this year. To date, the main feature wall and four poster boards have been installed, along with display cases. The next phase will include a photo feature wall showcasing GENUS grantees, allowing young learners to see what palaeoscience “looks like” and inspiring the next generation of scientists. Additionally, a large cutout photo frame will be added to encourage visitors to interact with the display and share their experiences on social media, helping to spread awareness. Once the opening date is confirmed, the installation of boardwalk and cave signage will be completed, further enhancing the visitor experience at this iconic site.

The research laboratory at Sterkfontein in progress. Photograph by Mariëtte van der Walt

Accelerator Programmes ongoing at Wits, UFS and Rhodes Universities

Accelerator programs, spearheaded by Dr. Robert Muir (UFS), and Ms. Aviwe Matiwane (Rhodes) targeted undergraduate students displaying a keen interest and aptitude in palaeosciences. Participants are offered a comprehensive crash course in Palaeoscience, complete with field excursions, direct engagement with palaeoscientists, and in-depth discussions highlighting the significance of this field.

Wits palaeontologists recently visited SAHETI School to offer a fun and educational fossil learning experience for young students through a mini dinosaur show. Led by Professor Jonah Choiniere from the Evolutionary Studies Institute at Wits, along with three PhD students—Atashni Moopen, Chandelé Montgomery, and Lutendo Mukwevho—and MSc student Enele Twala, the team engaged Grade R learners with presentations about their work as palaeoscientists. This visit was the second outreach to SAHETI by Choiniere's team, aiming to foster curiosity and inspire the next generation of South African palaeoscientists. These activities form a vital part of Choiniere's outreach efforts, which extend beyond Johannesburg to rural areas, helping raise awareness of South Africa's rich palaeontological heritage.

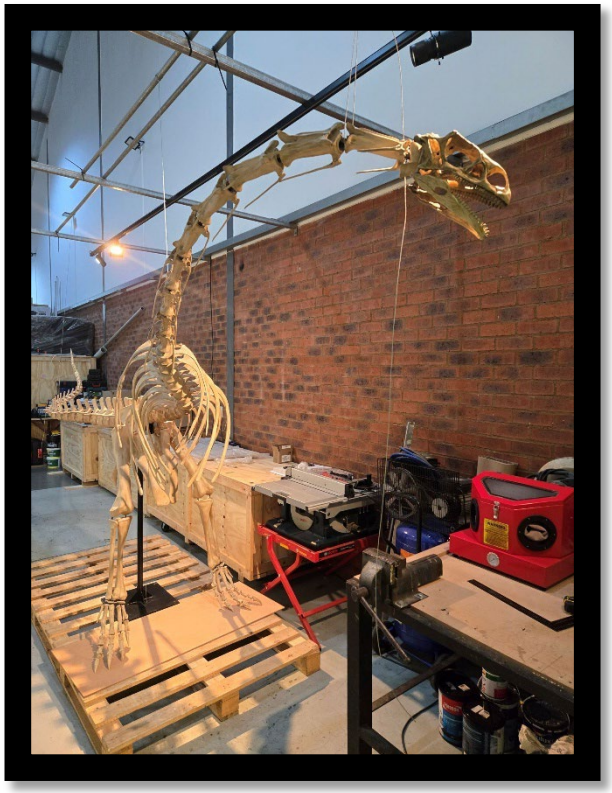
Teacher Luiss Perregil highlighted the significance of these educational initiatives, emphasizing that they allow children to explore worlds they might not otherwise encounter. This outreach event reinforced the importance of South Africa's fossil heritage and its role in educating future generations.

https://www.wits.ac.za/news/latest-news/general-news/2024/2024-08/dinosaurs-help-us-understand-the-natural-world-today.html

Opening of Dinosaur Interpretive Centre, Clarens

The new Dinosaur Interpretive Centre at the Golden Gate Highlands National Park in Clarens, Free State is nearing completion and will soon open its doors to visitors eager to explore the region's rich dinosaur heritage. The architecture of the centre is a standout, with brickwork designed to resemble dinosaur scales, adding a unique touch to its design.

In addition to serving as an interactive museum, the centre will also function as a scientific research station, focused on preserving the site's invaluable fossil remains. As part of this effort, GENUS is putting the finishing touches on a full-size digital print of a *Massospondylus* dinosaur, which will be a key feature in the centre's educational exhibits, enriching the visitor experience and deepening their understanding of the region's prehistoric past.



Life-size Massospondylus model

FameLab 2024

Participating in FameLab offers students a unique opportunity to refine their science communication abilities. This year, our MSc student, Enele Twala, excelled as a semi-finalist, showcasing her ability to present scientific concepts in an engaging and accessible way. Although she did not progress to the finals, her performance was commendable.

2024 Wits FameLab Cohort. Photograph by Jive Media

Through workshops, coaching sessions, and presentation opportunities, Enele and other participants honed their skills in distilling complex scientific ideas into captivating narratives for diverse audiences. This hands-on experience not only sharpened her communication skills but also fostered her growth as an emerging science communicator, capable of effectively conveying scientific discoveries to a broader audience.

Science Symposium at Queens College Boys High School

GENUS was proud to support the inaugural Science Symposium at Queens College Boys' High School in Komani/Queenstown, themed "Science of the Past, Present, and Future." Held on August 7th, the event brought together bright minds from Grades 10-12 at Queenstown Girls' High School, Hexagon High School, Hoërskool Hangklip, and Nkwanca High School for a day of knowledge-sharing and inspiration.

Key to organizing this event were Queens College teachers Christa Watt and Margolette Wege, along with Ryan Nel, a palaeoscience PhD student from Rhodes University. The symposium featured engaging talks from experts across various fields, including Ryan himself, Environmental Assessment Practitioner Chris Bradfield, Palaeobotanist Aviwe Matiwane, and Ecologist Nozuko Ngqiyaza.

PSSA Conference 2024

The 22nd PSSA Conference took place in Graaff-Reinet, from 8-12 September 2024, marking a significant event for the advancement of palaeoscience in southern Africa. The conference served as a platform for collaboration among experts and researchers dedicated to the study of evolution, comparative anatomy, and taxonomy across vast geological timeframes.

PSSA Conference 2024

GENUS and its grantees actively participated in discussions, presentations, and workshops, contributing to the Society's core mission of driving palaeontological science forward. Additionally, the conference emphasized the preservation and conservation of fossil sites, promoting heritage awareness and fostering stewardship of our rich paleontological legacy. This gathering provided invaluable opportunities for networking, knowledge-sharing, and advancing key objectives in the field.

School Curriculum

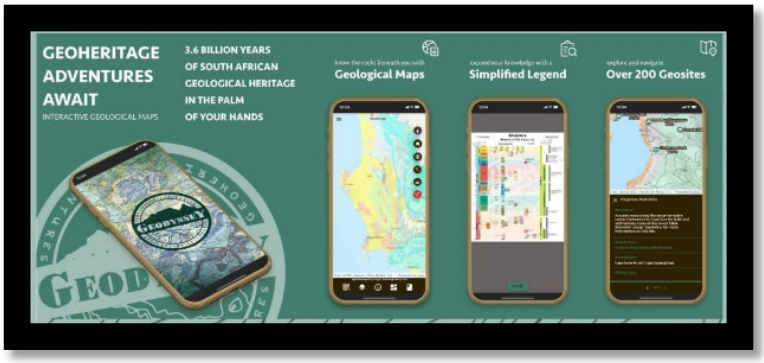
GENUS and PAST collaborated to support high school Life Science educators by assisting in the updating and development of the existing life science curriculum, with a particular focus on the evolution module. This initiative involved conducting focus groups with educators from diverse school sectors, including both private and public institutions, to determine their specific needs for materials and course content enhancements. The first meeting, held on 19 June 2024 at Wits University, saw an impressive turnout of about 30 teachers and educators, including the regional head from the Gauteng Department of Education.

The educators were highly engaged and enthusiastic, brainstorming ideas on how life science education can be improved. Discussions highlighted the need for additional educational tools such as posters, video shorts, and other locally relevant resources to make the curriculum more relatable and impactful for learners. The session fostered a collaborative atmosphere, with educators expressing a strong commitment to enhancing life science education and making South Africa's rich palaeontological heritage a core part of the classroom experience.

2024 Teachers Forum. Photograph M van der Walt.

Geoddysey

Geodyssey, a locally developed interactive geoscience mobile app for iOS and Android, along with its accompanying webmap, was launched in March 2022 through a partnership between the Geological Society of South Africa, Western Cape Branch (GSSA WC), and Forge SA. South Africa boasts a unique geological heritage spanning over 3.6 billion years, offering insights into the development of continents, lifeforms, and human origins. Despite the country's rich geological and paleontological significance, awareness among the general public remains low. The app aims to showcase South Africa's diverse landscapes and mineral wealth, emphasizing the importance of understanding the nation's geological history for both scientific and national pride reasons. GENUS is contributing financial support to aid in the development and implementation of the app.



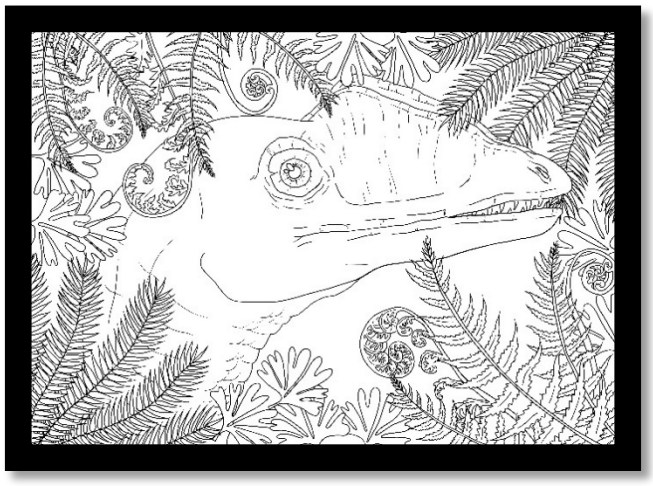
Geodyssey: A locally developed interactive geoscience mobile app for iOS and Android, accompanied by a webmap, revolutionizing geological exploration and education.

Geocaching

Genus is pleased to announce its partnership with Geocache South Africa, presenting an engaging palaeontology-themed adventure. Participants are invited to seek out the concealed Genus treasure strategically placed across selected sites throughout the country. By capturing a playful selfie with the discovered treasure, participants stand a chance to win prizes, simultaneously promoting GENUS and palaeontology. This initiative is strategically crafted to enhance public enthusiasm and involvement in the field of palaeontology, aligning with our mission to promote education and awareness in scientific endeavours.

Colouring Book

Genus is teaming up with postgraduate grantees possessing artistic talents to create an illustrated colouring book aimed at igniting excitement about South African palaeontology among young learners. This exclusive book will showcase South African prehistoric animals, offering children a glimpse into their national palaeontological heritage, fostering a deeper understanding and appreciation for diverse ancient creatures.



Dracovenator drawn by PhD grantee Atashni Moopen

Genus Student Conference 2024

The Genus Student Conference, held from 11-15 August, once again provided a highly anticipated and congenial platform for students to showcase their research findings to their peers. With prizes awarded for the most outstanding presentations, this annual event fosters scholarly exchange and collaboration. This year, the conference was hosted in Cape Town, offering students an enriching opportunity to engage with fellow scholars and experts in their field in a beautiful and stimulating setting.

Highlights of the conference included upskilling workshops led by science communication officer Dr. Mariette van der Walt, where students honed their presentation and communication skills.

Additionally, participants attended a snakebite safety and first aid course provided by the African Snakebite Institute, ensuring essential fieldwork preparedness. The event also featured a unique team-building activity organized by Beach and Bush, during which participants built bicycles that were donated to Sir Lowry's Pass Primary School, fostering a meaningful connection with the local community.

2024 Genus Conference cohort. Photograph M van der Walt.

Travel Buggz, Go Digging Children's Book

The Travel Buggz book series is still in development, with *Travel Buggz Go Digging* as its latest adventure. This story follows Sandy and her two children as they journey to the Free State to meet Dr. Kimi Chapelle and explore the world of *Massospondylus*, a remarkable South African dinosaur. Designed for children aged 3-8, the series introduces young readers to the world of dinosaurs through engaging storytelling by a palaeoscientist.

Travel Buggz adventure in a series of 8 books

Celebrating the Centenary of the Taung Child

GENUS and PAST collaborated to produce a mobile museum exhibit featuring an information banner and a plaster cast of the famous Taung Child fossil discovery. The innovative display, consisting of a detailed banner and a cast of the Taung Child skull housed in a protective box, was designed to be easily transported and displayed at various museums and institutions across the country. This mobile exhibit aimed to make the story of the Taung Child and its significance in human evolution accessible to a wider audience, helping to promote palaeontological awareness and education throughout South Africa.

Cast of the Taung Child and Mariette van der Walt with a poster that was created in celebration

4.4 Networking

The Centre continues to expand its partnerships. We assist our research in building networks to enhance the quality and scope of research projects and provide opportunities to train postgraduate students, postdoctoral fellows, and emerging researchers. These collaborations offer an additional funding stream and enable access to equipment and expertise not available in South Africa to students and researchers.

Through research collaborations of GENUS at various partner institutions, beneficial synergies and cooperation are actively encouraged. Many high-impact peer-reviewed publications have stemmed from this collaboration.

It is the policy of GENUS to develop and involve partnerships as the opportunity arises. During GENUS' operating period we have amassed an extensive network of ~330 collaborations, both national and international. In 2024, our grantees worked with 145 collaborators.

Attendance at conferences and workshops, both locally and abroad, and the presentation of papers are encouraged and supported. We support individual grantees in attending and presenting at conferences, and in 2024, we supported a conference for the Palaeontological Society of Southern Africa and for the South African Archaeology Student Council.

Developing a National Science Collections Facility and the PanAfrican curatorial network have increased curatorial efficiency. We are collaborating with the Southern African Association of Science and Technology Centres (SAASTEC), the South African Museums Association (SAMA), and the South African Heritage Resource Agency (SAHRA).

4.5 Service Rendering

Our grantees contribute to academia by serving as editors, participating in committees, conducting reviews, and mentoring students, fellows, and emerging researchers.

Recognized as a key resource for stakeholders and the broader scientific community, GENUS employs various approaches to share knowledge. Our members are deeply committed to serving the South African public, governance, and academia.

Together with our partners, GENUS has provided guidance and feedback on numerous government policies, including those for the South African Heritage Resources Agency, Palaeontological

Heritage in the Western Cape, and the Cradle of Humankind World Heritage Site's Integrated Management Plan.

5. Conclusion

South Africa's extensive palaeoscience record provides a unique geographic advantage, making it an ideal location for a dedicated Centre of Excellence in Palaeosciences. GENUS has successfully supported a wide range of research projects, leveraging the country's rich fossil heritage. These projects span critical areas such as the origin of life and multicellularity, invertebrate palaeobiology, palynology, and palaeobotany across different geological periods. Research also covers the taxonomy, life history, and palaeobiogeography of fish, amphibians, parareptiles, therapsids, and dinosaurs, as well as the origins of mammals and hominins. Additionally, studies in hominin morphology and behaviour, early tool use, the emergence of behavioural complexity, faunal analysis, bone taphonomy, and isotope-based investigations into physiology, ecology, and palaeoenvironments further enrich the field.

Beyond traditional palaeontological research, multidisciplinary approaches have been groundbreaking in applying palaeoscience to understand climate and biodiversity change, stratigraphy, and basin development. South African palaeoscientists have consistently demonstrated leadership in the global research community. With advancing technologies and continued investment, the potential for major discoveries and deeper insights into our natural heritage is vast.

GENUS has played a crucial role in sustaining and advancing palaeoscience in South Africa by supporting students from Honours through to postdoctoral levels. The diversity of palaeoscience sub-disciplines fosters connections across scientific fields, strengthening South Africa's research network. Moreover, the nation's rich palaeontological heritage holds significant potential for eco-tourism, with the right support from the Department of Tourism. Maintaining the current momentum is essential, as the South African palaeoscience community has much more to offer both nationally and internationally.

As a key driver of South African palaeoscience, GENUS continues to elevate the field on the global stage. The Centre plays a pivotal role in facilitating world-class research and publications across diverse subfields, safeguarding the country's fossil collections, and providing training at all levels—including tourism guides, technicians, school learners, undergraduate and postgraduate students, postdoctoral fellows, and emerging researchers. Through dedicated science engagement and palaeotourism initiatives, GENUS extends the reach of palaeoscience beyond academia.

What sets GENUS apart is its hands-on approach to supporting grantees, ensuring they receive both financial backing and mentorship that prepares them for success. By fostering a strong foundation, GENUS equips its researchers to compete for prestigious grants, postdoctoral fellowships, and academic positions on the international stage. In doing so, it continues to shape the future of palaeoscience in South Africa and beyond.