



**GENUS**

**DSI-NRF CoE Palaeo**

# Directors Report

2021

Director: Professor Bruce Rubidge

# 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 ground-breaking 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

We will 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, practical 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.

**Enriches our world** – Enabling us to instil national pride, where citizens have the potential to become a custodian of their heritage.

**Preserves our future** – Connecting the story of life to the future of humanity. Wherewith 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 impact 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 ground-breaking 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<br>University of the Witwatersrand, Johannesburg<br>Wit 2050                           |
| Email:                         | info.genus@wits.ac.za  |
| Office:                        | 011 717 6695   |
| Facebook, Twitter & Instagram: | GENUS  |
| YouTube:                       | GENUS Palaeosciences   |
| Websites:                      | <a href="http://www.genus.africa">www.genus.africa</a><br><a href="http://www.wits.ac.za/genus/">www.wits.ac.za/genus/</a> |

## Table of Content

|     |   |    |
|-----|---|----|
| 1   | Executive Summary .....                                       | 5  |
| 1.1 | 2021 CoE Palaeoscience in a Snapshot .....                    | 6  |
| 1.2 | 2021 CoE Palaeoscience Highlights .....                       | 6  |
| 1.3 | 2013-2021 Funding Highlights .....                            | 7  |
| 2   | Our Network of Partners and Collaborators .....               | 8  |
| 3   | Service Level Agreement Achievements .....                    | 8  |
| 3.1 | Continuing from the DSI CoE Five Year Review Assessment ..... | 10 |
| 4   | Our Challenges .....  | 10 |
| 4.1 | The future of Palaeosciences .....                            | 10 |
| 4.2 | Museums .....   | 11 |
| 6   | Cash Flow .....   | 11 |

# 1 Executive Summary

The Centre of Excellence in Palaeosciences has rebranded to GENUS, built on the achievements and growth of our CoE. Our new brand highlights our movement forward while strengthening our global footprint in excellent palaeoscience research. In early November, we internally launched the new name, logo, website, and *We Dig Fossils Grant* to our internal stakeholders from grantees, university and museum partners, government, and the palaeoscience community. A media release was given to the public on 17 February 2022.

The enabling research environment created by GENUS (DSI-NRF Centre of Excellence in Palaeosciences) builds on opportunities provided by the (unique for any single country) temporally diverse southern African fossil and archaeological record, enabling the Centre to support higher research accomplishments.

The research initially envisaged is well-established amongst most participating institutions. Of importance is our proactive effort to encourage research on areas of the southern African fossil and archaeological record, which are of international significance. These include the origins of life, invertebrate and vertebrate palaeontology, palaeobotany and human evolution, and material culture. The South African fossil and archaeological record is continuously applied in ground-breaking transdisciplinary earth system studies.

GENUS is proud of our members' productivity and quality, reflected in the many researchers with National Research Foundation (NRF) ratings: five 5 A-rated, nine B-rated, ten C-rated, four Y-rated, and 2 P-rated. This large number of rated palaeoscientists, despite the paucity of palaeoscience positions relative to that of other developing countries around the world, attests to the excellence of the research undertaken in this country and the international esteem of our palaeoscientists.

Knowledge brokerage and service rendering are an essential part of the CoE Palaeo. All researchers and students participate in science communication or public awareness as part of our grants' conditions. Our public engagements include writing educational programmes for popular online magazines, multimedia engagements, and numerous press releases and articles.

Apart from supervising more than 57 postgraduate students and hosting ten postdoctoral fellows, members of the CoE Palaeo also teach in undergraduate and Honours programmes in the archaeology, geosciences, and biological sciences of Rhodes University, University of Cape Town, University of Pretoria, University of the Free State, Nelson Mandela University, and the University of the Witwatersrand.

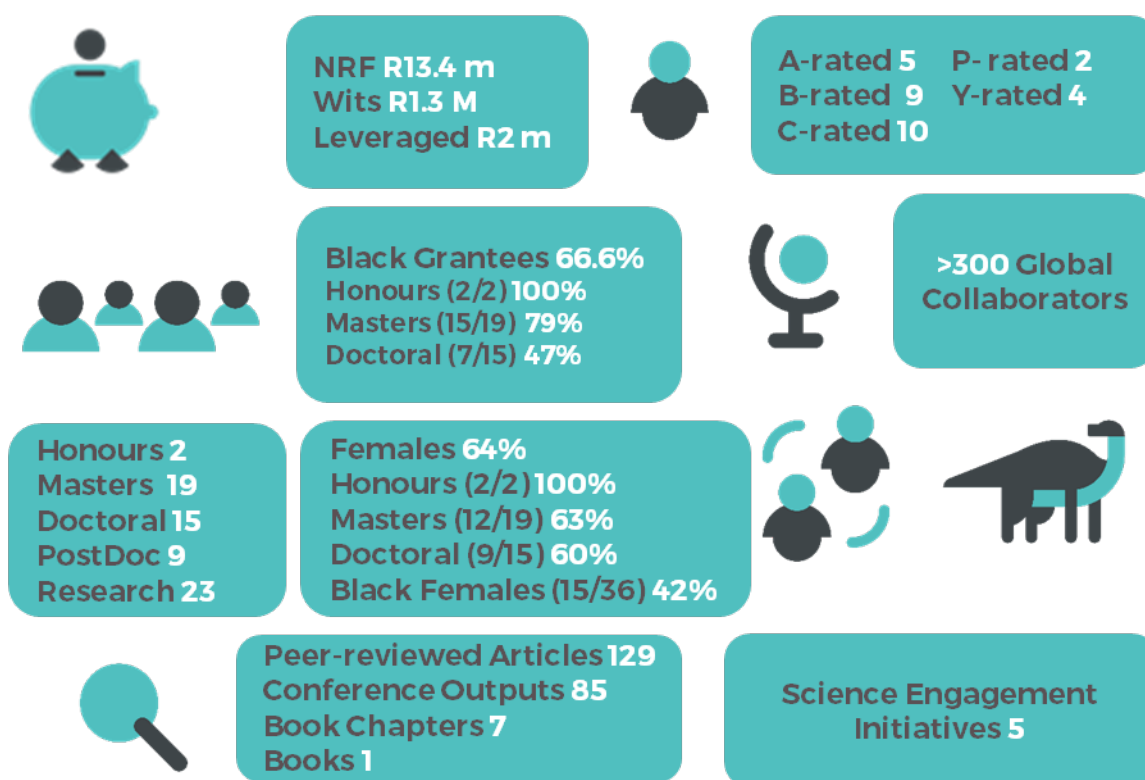
Due to the uniqueness and importance of the South African fossil and archaeological heritage, its significance to South Africa and its global status, we are building on this momentum and have developed a strategy document to establish a National Institute in Palaeosciences soon. This document builds on our strengths, finds solutions for challenges, and promotes the rich fossil heritage of this country while continually maintaining the highest international standing.

In summary, the South African fossil and archaeological record is important internationally. GENUS plays a pivotal role in the palaeoscience output of South Africa, and indeed in Africa, in a wide variety of spheres that facilitates research; expansion and custodianship of SA fossil collections; palaeoscience training at various levels (tourism guides, technicians, schools, undergraduate students, postgraduate students, postdoctoral fellows, emerging researchers); science communication and developing sites for palaeotourism. By international standards, GENUS is a leader in supporting research in palaeosciences. The researchers that we support are some of the world's leading palaeoscientists. They maintain a vast network of national and international collaboration. These collaborations provide access to research, fieldwork, facilities, and equipment for SA students to build and enhance their expertise.

It is self-evident that the far-sighted vision of the DSI and NRF to establish a Centre of Excellence in Palaeosciences has paid off in many different spheres. It has dramatically enhanced the palaeoscience research output of South Africa, resulting in numerous local and international research collaborations. It has significantly increased the cohort of postgraduate graduates. Moreover, it addresses the STEM skills shortage in South Africa. The extensive Science Engagement Programme has led to much greater science awareness by the public and resulted in more young people considering science as a profession. Now that the foundation is firm, future phases of the CoE will achieve even greater success.

A worrying aspect is that the Natural Science Museums of South Africa, who are important partner institutions of GENUS as they curate the fossil and archaeological heritage of South Africa, are lagging in their research contribution. This is mainly because of the erosion of research positions at museums and the fact that the management of the museums does not recognise research as an essential aspect of their activities. This has resulted in poor possibilities for career advancement for museum scientists and poor morale.

## 1.1 2021 CoE Palaeoscience in a Snapshot



## 1.2 2021 CoE Palaeoscience Highlights

1. NRF A-rated Researchers:
  - a. Professor Lyn Wadley, Evolutionary Studies Institute & School of Geography, Archaeology, & Environmental Science, Wits
  - b. Professor Anusuya Chinsamy-Turan, Dept of Biological Sciences, UCT
  - c. Professor Bruce Rubidge, Genus (CoE Palaeo) & Evolutionary Studies Institute, Wits

- d. Professor Christopher Henshilwood, SARCHI Chair & Evolutionary Studies Institute, Wits.  
Director of SFF Centre of Excellence for Early Sapiens Behaviour, University of Bergen
- e. Professor Roger Smith, Evolutionary Studies Institute, Wits & Iziko Museum
2. NRF P-rated Researchers
  - a. Dr Robyn Pickering, Dept of Geological Sciences, UCT
  - b. Dr Rosalie Tostevin, Dept of Geological Sciences, UCT
3. Media Releases
  - a. Amelie Beaudet (Wits), Dominic Stratford (Wits), et al. - New technology allows scientists the first glimpse of intricate details of Little Foot's life
  - b. Julien Benoit (Wits), Prehistoric killing machine exposed
  - c. Kimi Chapelle (Wits), Jennifer Botha (National Museum), Jonah Choiniere (Wits), et al. - Southern African dinosaur had irregular growth
  - d. Jonah Choiniere (wits), Kimi Chapelle (Wits), et al. - Evolution of vision and hearing in theropod dinosaurs
  - e. Rob Gess (Albany Museum), et al. - Rewriting History: Fossil lamprey larvae from South Africa overturn textbook assumptions on vertebrate origins
  - f. Jayne Wilkins, Benjamin Schoville, Robyn Pickering, Jessica von der Meden, Wendy Khumalo, Amy Hatton (All UCT) - Early modern humans thrived in a wet Kalahari region 105,000 years ago
  - g. Silindo Mauvso et al. (Wits) - Study cement age and locations of a hotly debated skull from *Homo erectus*
  - h. Viktor Radermacher, Kimi Chapelle, Jonah Choiniere (all Wits) - Breathing life into new dinosaur skeleton of Heterodontosaurus
  - i. Caitlin Rabe, Masters grantee, Dept of Biological Sciences, University of Cape Town, FameLab 2021 South Africa, 1<sup>st</sup> runner-up

### 1.3 2013-2021 Funding Highlights

We are breaking Boundaries and driving inclusivity. Our commitment to creating opportunities and enabling access through open collaboration and inclusive research programmes knows no bounds.

- 165 Postgraduate students funded
- 88% of postgraduates are South Africans
- 62% Female postgraduates and growing
- 58% of Postgraduates of colour and growing
- 914 Peer-reviewed publications
- 12 sponsored research conferences and workshops
- 734 Conferences attended by grantees
- R30.1 million leveraged as co-funding to GENUS projects
- 400 Grantee collaborations with researchers around the globe
- R24.5m in support of 61 postdoctoral fellows
- 308 research projects supported

## 2 Our Network of Partners and Collaborators

|  |   |  |
|--|---|--|
| Date of formation  | SLA stage                                     | Host University  |
| November 2013  | 4   | University of the Witwatersrand  |
| Academic and Research Partnerships   | Natural Science Museum Partnerships           | Funding Partnerships   |
| Wits, UCT, Rhodes U<br>UP, UFS, NMU<br>SapienCE (Norway)<br>& Council of Geosciences | Iziko<br>Ditsong<br>National Museum<br>Albany | DSI, NRF, Millennium Trust<br>Foundation, Centre national de la<br>Recherché Scientifique (CNRS),<br>The Research Council of Norway<br>& Private Donations |

## 3 Service Level Agreement Achievements

The challenges of 2021 have spurred the CoE Palaeo to reimagine our future and our role within palaeosciences. Several new initiatives were implemented last year and will bear fruit this year. Below is a quick look into what has been developed and implemented.

### Research

The CoE for Palaeosciences aims to produce research of the highest quality. Attention is given to maximising the research output and keeping meaningful and relevant research topics around three broad themes: (1) Evolutionary Processes, (2) Cultural and Behavioural Evolution, and (3) Palaeo-environments and Palaeoclimates.

|                                   |               |                           |                  |                 |                  |               |
|-----------------------------------|---------------|---------------------------|------------------|-----------------|------------------|---------------|
| Origin of Life & Multicellularity | Fossil Plants | Devonian Animals & Plants | Karoo Therapsids | Early Dinosaurs | Human Evolution  | Earth Systems |
|                                   |               |                           |                  |                 | Middle Stone Age |               |

### Human Capacity Development

The CoE focuses on Postgraduate Students' support (Honours, Masters, & Doctoral), Postdoctoral Fellows, Researchers, and Support Staff. The CoE is committed to building a diverse, equitable, and inclusive palaeoscience landscape.

|                        |  |
|------------------------|--|
| Bursaries              | Palaeoscience Accelerator Field School |
| NGP PD Fellowships     | Upskilling Workshops                   |
| GENUS Research Grant   | PalaeoLink                             |
| She Digs Fossils (New) | Conferences                            |
|                        | Courageous Conversations               |



## Knowledge Transfer / Science Engagement

We are finding innovative ways to engage our stakeholders with southern Africa's fossil wealth.

Tourism

Website

Play Africa: Dino Dig

Social Media

SuperScientist

Podcasts

Workshops

Thandi's Dino Adventure: Puppet Theatre

## Service & Operations

The CoE in Palaeoscience grantees are recognised as global leaders. Palaeoscience's future is embedded in our geographic advantage and brings value to multiple societal and economic sectors.

Future Planning  
Document

Multifaceted Fundraising  
Strategy

New Positions & Internships

## Networking

Active research collaborations are already in place and expanding as these activities continue.

Build strategic partnerships with:

- International Research Institutes
- Industry

## Growing Team Spirit

Team spirit provides a sense of purpose and value by effectively communicating, actively listening to stakeholders' needs, and supporting the palaeoscience community.

Grantee Welcome Webinar  
Roadshows with our Partner Institutions  
Lecture Series

### 3.1 Continuing from the DSI CoE Five-Year Review Assessment

The activities for each strategic goal outlined by the evaluation panel from our five-year review are assessed below. We continue to make strides in achieving our goals.

| Topic  | 2013-2018 | 2019 | 2020 | 2021 | 2022 |
|--|-----------|------|------|------|------|
| Human capacity development                             |           |      |      |      |      |
| Intentional transformation strategy and implementation |           |      |      |      |      |
| Enabling research environment                          |           |      |      |      |      |
| Changing our committees to be more diverse             |           |      |      |      |      |
| Carry out the research proposed                        |           |      |      |      |      |
| Transdisciplinary research approach                    |           |      |      |      |      |
| Increase research productivity at universities         |           |      |      |      |      |
| Increase research productivity at museums              |           |      |      |      |      |
| Extensive local and international collaborators        |           |      |      |      |      |
| Knowledge brokerage                                    |           |      |      |      |      |
| A future sustainable strategy for Palaeoscience        |           |      |      |      |      |

- Achieved
- Partially achieved
- Not achieved
- Not available data
- Covid

## 4 Challenges

### 4.1 The Future of Palaeosciences

Successive DSI Professional Officer: Research Chairs and Centres of Excellence Ministers realising the South African palaeoscience global significance and the international scientific community's considerable interest have recommended establishing a *Smithsonian-type institute*. In turn, the DSI has suggested that a National Institute would ensure the longevity of productivity Palaeosciences.

The CoE Palaeoscience's existence has demonstrated the discipline's capacity to catapult South Africa as an essential and significant player at the forefront of the international scientific arena. Thus, establishing a multidisciplinary National Institute for Palaeosciences is a logical follow-on to enhance the high level of productivity achieved so far.

Our goals and implementations:

1. Develop a multifaceted funding strategy

2. A campaign that highlights palaeosciences to all stakeholders
3. Continue workshopping the Future Planning Strategy Document for a National Institute for Palaeoscience with our stakeholders.
4. Lobby the government for continued support for palaeosciences that is of global significance and strategically advantageous for South Africa

## **4.2 Museums**

Museums house priceless fossils and artefacts from South Africa; however, many fossils and other scientifically significant finds go unstudied and are vulnerable to loss as museum budgets decrease.

The CoE Palaeo strategically partnered with universities near our museum partners to build and increase research collaborations and productivity between the institutions. These include the University of the Free State and the University of Pretoria, aligned with the National Museum, Bloemfontein and Ditsong National Museum of Natural History.

Regarding salaries and positions, museums' current situation requires intervention beyond the scope of the CoE Palaeo. Implementing long-lasting changes requires a higher level of engagement between the Dept of Sport, Arts & Culture, the Dept of Science & Innovation, and the DSI National Science Collections Facility.

The CoE continues to assist the museum research environment through the abovementioned initiatives. Because the Natural History Museums hold important fossil and archaeological collections of National Heritage and global relevance, the CoE in Palaeoscience will continue to lobby for museums.

Palaeoscience research at Natural History Museums is much lower than the level of productivity at universities. Several key factors have led to a decrease in research productivity at Natural History Museums:

1. Reduction in budgets given to museums to operate, preserve, and conserve national fossil and archaeological heritage
2. No budgets for research initiatives or equipment to analyse material
3. Lack of hiring Curators with advanced postgraduate degrees with a willingness to conduct research
4. Insufficient industry-based salaries centred on education level, experience, and skillsets
5. The decrease in positions and descent salaries to employ lab & exhibition technicians, and science communication staff
6. The lack of drive from museum CEOs and staff to build sustainable research programmes at their institutions
7. Lack of resources and equipment
8. Low morale

## **5 Cash Flow**

The last instalment of the second tranche (R3 583 000.00) was given in late-January 2022. The net surplus funding for 2022 will be used for postdoctoral fellowships, research grants and science engagement initiatives such as a TED x Johannesburg Salon Talks scheduled for August 2022.

| Description of Revenue & Expenses | NRF                | Wits 10%           | Total              |
|-----------------------------------|--------------------|--------------------|--------------------|
| Revenue 2021                      | R13 400 957        | R1 340 096         | R14 741 053        |
| Balance Brought Forward 2020      | R1 184 525         | R0                 | R1 184 525         |
| <b>Total</b>                      | <b>R14 585 482</b> | <b>R 1 340 096</b> | <b>R15 925 578</b> |
| Human Cap Dev                     | R4 355 000         | R0                 | R4 355 000         |
| Conferences & Travel              | R0                 | R3700              | R3700              |
| Salaries                          | R3 430 498         | R180 000           | R3 610 498         |
| Equipment                         | R48 490            | 0                  | R48 490            |
| OPEX & Research Grants            | R3 127 218         | R1 164 087         | R4 291 305         |
| <b>Total</b>                      | <b>R10 961 206</b> | <b>R1 347 787</b>  | <b>R12 308 993</b> |
| <b>Surplus</b>                    | <b>R3 624 276</b>  | <b>-R7691</b>      | <b>R3 616 585</b>  |

<sup>1</sup>Unspent Wits Council funds not carried over in 2021.