THE HUB CONNEXION
Department of Human Biology

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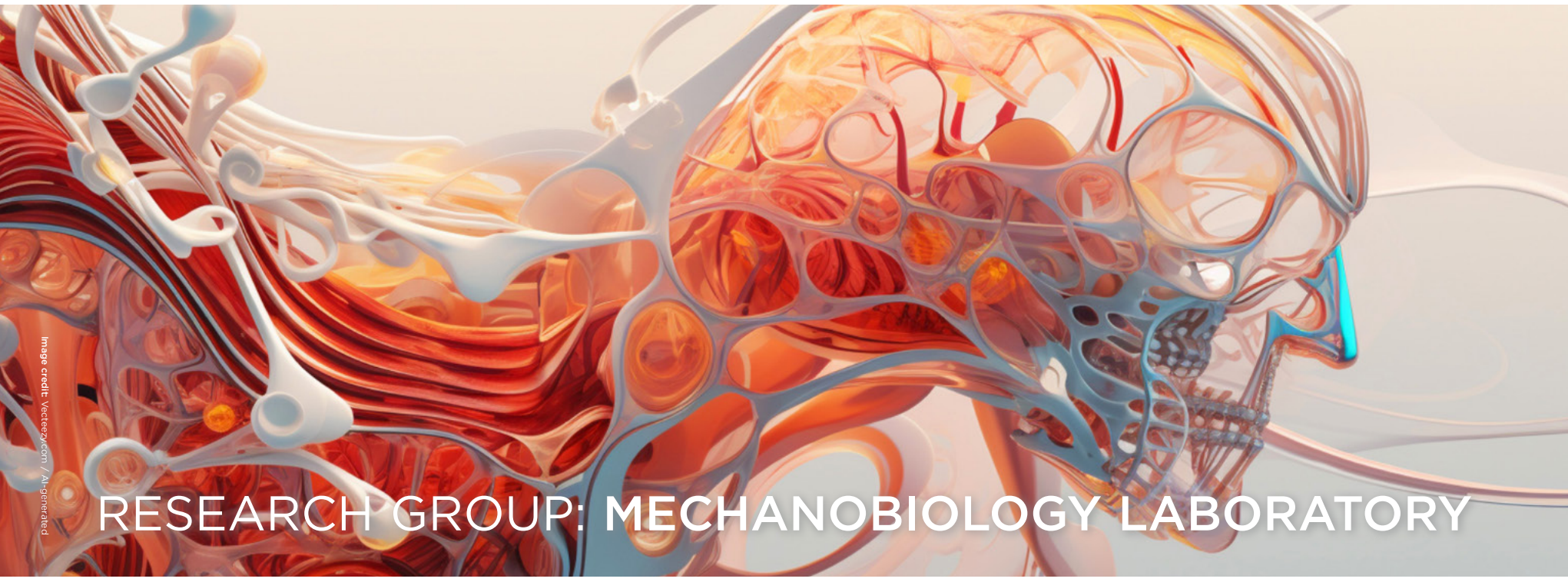

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RESEARCH GROUP: MECHANOBIOLOGY LABORATORY

The Mechanobiology Lab and Research Group is part of the Biomedical Engineering Research Centre and the Division of Biomedical Engineering.

We are a team from Cameroon, Eswatini, Lesotho, South Africa, Togo and Uganda with backgrounds in mechanical and biomedical engineering, physics and mathematics - two principal investigators, Ghodeejah Higgins and Thomas Franz, four postdoctoral fellows, Dodzi Motchon, Juliet Nagawa, Lee Kruse and Majahonkhe Shabangu, two PhD students, Absalom Maluleke and John Nchejane, and one MSc student, Arthur Ndeh Foute.

We study organ, tissue, cell and pathogen mechanobiology to understand and treat cardiac diseases, cancers and infections using computational, numerical and experimental methods. In cardiac research, we develop computational models of hearts from magnetic resonance (for patients) and micro-computed tomography (for small animals) images.

We use these models to investigate the biomechanics and mechanobiology of biomaterial and cell therapies for myocardial infarction, characterise the cardiac mechanics of peripartum cardiomyopathy and preeclampsia (pregnancy-related cardiac and cardiovascular conditions) to improve understanding and diagnosis and develop personalised left ventricular assist device treatment.

In the area of cancer, we study how the mechanical properties of cells change during the onset, progression, and treatment of various cancers, including melanoma, breast cancer, oesophageal cancer, HIV-associated Kaposi's sarcoma and Burkitt lymphoma. We use experimental *in vitro* methods such as mitochondrial tracking microrheology, microfluidics assays, and nanoindentation. We are interested in identifying physical biomarkers of cancer cells for early diagnosis, disease staging, and detection of developing drug resistance. We have also used mathematical and computational models to quantify intracellular mechanics and predict collective cell migration in 2D and 3D environments.

Our pathogen research has focused on the mechanical interaction of viruses and parasites with host cells during infection. This work involves the mechanical characterisation of influenza and chikungunya viruses and HIV-like particles with atomic force microscopy and computational modelling of the mechanical interaction between viruses and cells. We further used mathematical and computational models to study the mechanobiology of the entry of a malaria merozoite into a red blood cell.

Our research is enabled through many interdisciplinary collaborations at UCT and beyond, which is essential for developing innovative and impactful solutions. In our cardiac projects, we have worked with **Prof Neil Davies** (UCT Cardiovascular Research Unit), **Prof Ntobeko Ntusi** (SAMRC), **Dr Sarah Kraus** (UCT Medicine), **Prof Karen Sliwa** (UCT Cape Heart Institute), **Prof Malebogo Ngoepe** and **Dr Reuben Govender** (UCT Mechanical Engineering), **Dr Kevin Sack** (Medtronic), **Dr Suchita Nadkarni** (Queen Mary University of London), **Dr Anna Herrey** (Barts Heart Centre, London), **Prof Julius Guccione** (University of California, San Francisco), and **Prof Mohammad Mofrad** (University of California, Berkeley).

Above (from left): Dr Ghodeejah Higgins, Absalom Maluleke, Prof Thomas Franz, Dr Juliet Nagawa, Dr Majahonkhe Shabangu, Dr Lee Kruse and Dr Dodzi Motchon. Absent: John Nchejane and Arthur Ndeh Foute. **Image credit:** UCT FHS HUB supplied.

For the cancer projects, we work with **Prof Sharon Prince** (UCT Human Biology), **Prof Georgia Schäfer** (ICGEB), **Prof Zainab Mohamed** (UCT Radiation Oncology), **Prof Jessica Opie** and **Prof Shaheen Mowla** (UCT Haematology), **Prof Estelle Verburgh** (UCT Clinical Haematology), **Prof Muhammad Zaman** (Boston University), **Prof Ben Fabry** (Friedrich Alexander University Erlangen-Nuremberg), and **Prof Sudesh Sivarasu** (UCT Biomedical Engineering).

Our research is built on the work of many former group members and collaborators not mentioned above to whom we are grateful.

We have been supported financially by the National Research Foundation (NRF), the South African Medical Research Council (SAMRC), the Dr Leopold and Carmen Ellinger-Stiftung Foundation, the German Academic Exchange Service (DAAD), the Royal Society of Tropical Medicine and Hygiene(RSTMH), The World Academy of Science (TWAS), the CSIR Centre for High Performance Computing, and UCT.

UNIVERSITY OF CAPE TOWN
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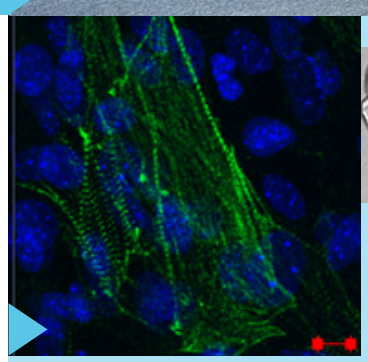
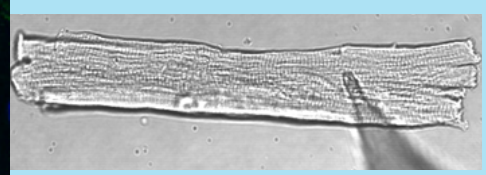
FACULTY OF HEALTH SCIENCES

HUB PROFILE

Meet **Assoc. Prof Asfree Gwanyanya** Head of Division of Physiological Sciences

Image credit: UCT FHS HUB supplied.





Left: Stem cell derived cardiac cells showing actinin strands and nuclei the background.
Above: An isolated cardiac cell being probed by a patch clamp electrode to record action potentials.
Images credit: UCT FHS HUB

Assoc. Prof Asfree Gwanyanya is a physiologist and NRF rated principal investigator in the cardiovascular research laboratory in HUB. By background Asfree is an anaesthesiologist. He did his undergraduate and post-graduate studies in Zimbabwe, South Africa and Belgium.

His interest in cardiovascular research was stimulated by the physiological nature of clinical interventions on the cardio-respiratory systems during peri-operative and high care management in anaesthesia. Such medical insights led him to delve deeply into physiology at a fundamental level.

Asfree has a special interest in cardiovascular pathological remodelling. His research focuses on the mechanisms underlying cardiac cellular electrophysiological and structural pathological remodelling in disease conditions such as diabetes mellitus and myocardial infarction. His work involves the use of stem cell-derived cardiac cells and in vitro disease models to identify potential molecular therapeutic targets in cardioprotection.

He has had productive collaborations with colleagues in South Africa and internationally, including those at the Universities of Leuven and Hasselt (Belgium), the University College Cork (Ireland), and the University of Zimbabwe.

Asfree has a great passion for teaching and especially enjoys interactive engagements with students. Such interactions are especially highlighted during the running of practical sessions. As such he is always keen to find new ways to enhance the quality of practicals both as a key learning platform and an effective method of skills transfer and acquisition.

Outside of work Asfree is interested in learning from nature, and is therefore not only a keen traveller but also a regular viewer of programs such as the National Geographic expeditions. As a hobby, he likes to try out different musical instruments (but without singing any notes, for peace's sake!) and is also an ardent supporter of many types of ball games – though he doesn't kick or hold any ball himself.

NEW FHS TRAINING PROGRAMME

天津中醫藥大學
Tianjin University of Traditional Chinese Medicine

Launch of the International Cooperative Training Program for Stroke Rehabilitation Study at UCT

Potential Benefits and Neural Correlates of Adjunctive Acupuncture Therapy in Unilateral Stroke Rehabilitation

Together with Tianjin University of Traditional Chinese Medicine (TJUTCM), **Dr Jia Fan** has been awarded the International Cooperative Training Program for Innovative Talents by the China Scholarship Council. This grant supports an exchange initiative, enabling Chinese medical doctors and researchers to contribute to Dr Fan's research study entitled *Potential Benefits and Neural Correlates of Adjunctive Acupuncture Therapy in Unilateral Stroke Rehabilitation*.

Dr Qian Song (right), a distinguished scholar from TJUTCM, is the first Chinese expert to join this program. After receiving recognition of her Chinese medical qualifications by the Allied Health Professions Council of South Africa (AHPCSA), she has been administering acupuncture treatments for stroke patients at the Western Cape Rehabilitation Centre. Her expertise is instrumental in advancing the potential of adjunctive acupuncture therapy while also promoting medical collaboration and innovation.

Image credit: UCT FHS HUB supplied.

HUB HERO

Meet **Mrs. Ayesha Hendricks** Division of Physiological Sciences Administrative Assistant

Interviewed by **Dr Supratim Biswas**




Images credit: UCT FHS HUB supplied.

Tell us about your career journey.

After completing my undergraduate degree at UWC, I began my career at an Islamic institution, where I spent 11 fulfilling years - first as a counselor and later as an administrator. After the birth of my daughter, I chose to step away from work to spend some time at home. My journey at UCT began in 2002, starting with a one-day assignment as a secretary in the Law Faculty. This initial role extended into a two-week stint, and shortly after, I transitioned to a project administrator position in the Health Sciences Faculty, where I worked on a Teaching Audit Project for six months. Following that contract, I was offered a role in the PG Funding Office, and not long after, I was given a permanent position in the Department of Surgery - a role for which I was immensely grateful, as it allowed me to settle into a stable role. From 2004 to 2007, I served as a senior secretary under Prof. Del Khan, Head of the Department. In 2007, I moved to the Division of Physiological Sciences, formerly known as the Division of Exercise Science and Sports Medicine. By 2015, my role was upgraded to that of an administrative assistant, marking yet another step forward in my career at UCT.

Tell us about your time at UCT.

My time at UCT has been an epic journey. Coming from an institution rooted in Islamic ethos, where the focus was primarily on Arabic and Islamic sciences, adjusting to UCT's diverse environment was initially a challenge. However, this experience has broadened my perspective and helped me grow in ways I hadn't anticipated. My dream has always been to become a child psychologist, and while my path has evolved, I now find fulfillment as a counselor, supporting students through their own challenges. This role is more rewarding than I ever could have imagined, as I am part of an incredible team that has become like family. I love every aspect of my work, and being able to make a difference in students' lives has truly been a dream come true.

Who in the department, past or present, has had the biggest influence on you?

I had the privilege of working under a truly awesome manager Professor Mike Lambert, who was not only a remarkable leader but also a wonderful human being. His ability to connect with people on a personal level created an environment where I felt valued and supported. He consistently offered insightful advice that guided me through challenges, and his influence extended far beyond just professional development. His genuine care for me inspired me to strive for excellence, making a lasting impact on both my career and personal growth.

What motivates you?

My motivation comes from a deep desire to make a positive impact on others, particularly students. I'm driven by the idea of empowering young minds, helping them overcome challenges, and guiding them toward success. Whether it's offering advice, sharing knowledge, or simply being there to support them, I find fulfillment in knowing I have made a difference. This passion for helping others fuels my purpose, giving me a sense of accomplishment and meaning as I watch students grow, learn, and succeed.

What do you feel are your greatest accomplishments while at UCT?

During my time as an administrator at UCT, some of my greatest accomplishments have revolved around making a positive impact on students and improving the overall campus experience. I've been able to implement student support programs that have significantly enhanced access to resources and streamlined various processes, making it easier for students to focus on their academic and personal growth. I'm proud of initiatives that foster inclusivity and promote a welcoming environment for all students, ensuring that everyone feels valued and supported. Additionally, I've worked on building partnerships with external organizations, which has created new opportunities for students, including internships and collaborative projects. Ultimately, my proudest moments have come from knowing that I've played a role in helping students succeed and thrive during their time at UCT.

What are your hobbies? What do you like to do outside of work?

Outside of work, I enjoy engaging in activities that allow me to unwind and express my creativity. Color therapy and coloring in provide a peaceful escape, helping me relax and recharge through the soothing effects of colors. I also love knitting, as it allows me to create something tangible with my hands while finding a sense of calm. On the more active side, I enjoy playing table tennis, which keeps me sharp and energized. These hobbies give me a balanced mix of relaxation and activity, adding joy and fulfillment to my life beyond work.

Who are your personal heroes or people you admire?

My parents are my personal heroes and the people I admire most. They have always been a source of strength, guidance, and unconditional love. Through their hard work, resilience, and selflessness, they've shown me the true meaning of dedication and sacrifice. They've instilled in me strong values, such as integrity, compassion, and perseverance, which shape who I am today. Watching them face challenges with grace and determination has inspired me to approach my own life with the same spirit. Their support and encouragement fuel my ambition, and I'm deeply grateful for the example they've set for me. My parents' legacy is deeply intertwined with UCT, as the SHAWCO branch in Manenberg was established in my hometown of Manenberg. Knowing that their impact has extended to this community is a source of immense pride and inspiration for me. Their dedication to uplifting others lives on through this branch, which continues to serve and support the people of Manenberg. It's a reminder of the powerful influence they have had and a legacy I carry forward with gratitude and commitment.

FACULTY OF HEALTH SCIENCES HERITAGE DAY CELEBRATION

Heritage Cook of the Day Event

by **Mrs Patience Zantsi**

Above: Shirees Benjamin, Suparna Chakraborty, Lindie Du Plessis, and Patience Zantsi. **Image credit:** UCT FHS HUB supplied.

The Faculty of Health Sciences recently circulated an email announcing the Heritage Cook of the Day event, which took place on Friday, 20th September 2024. Each team was required to have four members, including a designated team leader. To ensure broad representation, we reached out to the department, asking each division to suggest one representative, resulting in a diverse team composition. The members of our team, named **Anatomy of Flavour** included Shirees Benjamin, Patience Zantsi, Lindie Du Plessis, and Suparna Chakraborty.

Eager to participate, we faced challenges due to a lack of funds for purchasing food, which would enable us to compete effectively with other departments. In response to this hurdle, the Acting HOD requested that I reach out to the Department's HODivs within our division for donations. Fortunately, Associate Professor Sudesh Sivarasu generously agreed to support our efforts.

With funding confirmed, we registered our participation under the team name **Anatomy of Flavour** which reflects our dedication to diversity and Ubuntu - a spirit of togetherness. This name embodied contributions from all divisions of our department, symbolizing the unity and shared purpose within our faculty.

On the day of the event, we showcased our culinary skills with a carefully curated menu: a rich beef potjie, a seafood curry bursting with flavour, and a cheese paneer option for our vegetarian guests. Each dish was served with fragrant basmati rice and homemade dumplings, creating a memorable dining experience. To enhance our offerings, we prepared refreshing homemade ginger beer, along with Koeksisters and Bollas, adding a sweet, traditional touch that attendees enjoyed. A Cape Malay influence was woven into our dishes, paying homage to the cultural diversity that we celebrated.

The event provided a wonderful opportunity for collaboration and cultural exchange, allowing us to appreciate the richness of our department's diversity while strengthening our sense of community through food. Teams from various departments participated, each contributing unique flavours and creativity to the competition.

The judging process evaluated teams based on a variety of criteria, including:

- **Setup:** Ensuring braai and cooking stations were ready for use.
- **Fire Management:** Teams managed their own fires based on their cooking needs.
- **Utensils:** Teams were responsible for bringing cooking, serving, and presentation utensils, which was part of our donation request.

The event provided a wonderful opportunity for collaboration and cultural exchange, allowing us to appreciate the richness of our department's diversity while strengthening our sense of community through food.

- **Sharing:** Teams could not sell their meals but were encouraged to share among their department or other staff members, with takeaway containers required for distribution.
- **Presentation:** Preparation tables served as presentation tables for judging.
- **Cleanliness:** Teams maintained a clean cooking area and washed their pots after cooking, for which we brought dishwashing supplies.
- **Water Supply:** Drinking water was provided, but teams needed their own cooking water.
- **Judging Time:** Meals were ready for judging by 12:30 pm.

The judges assessed each team based on additional aspects, including:

- **Décor**;
- **Teamwork**, **spirit**, and **hospitality**;
- **General hygiene**;
- **Presentation**;
- **Taste**; and
- **Creativity**.

With around ten teams competing, the event was lively and well-attended. We were thrilled to have a long queue at our table, with guests eagerly returning for seconds. Our dishes were a hit, and we managed to serve as many attendees as possible.

We are proud to announce that **Anatomy of Flavour** won second place in the competition. This recognition was a testament to our hard work, creativity, and the collaborative spirit within our department. The Heritage Cook of the Day event was not just a culinary competition but a celebration of our collective heritage, embodying the diverse and vibrant culture that defines our Faculty of Health Sciences.

To enhance the festive atmosphere, a dance group was invited to perform, bringing even more energy and joy to the event. The dancers captivated the crowd with their lively routines, creating a hilarious and fun-filled ambiance that had everyone laughing and cheering. Attendees thoroughly enjoyed themselves, with music, dance, and delicious food blending seamlessly to make the day unforgettable.

The event served as a beautiful reminder of the power of coming together as a community to celebrate and honour our diverse backgrounds, and it left everyone looking forward to next year's celebration.

ANNUAL TEACHERS WORKSHOP

Division of Cell Biology: Supporting Educators from Under-Resourced Schools

by **Dr Ashwin Isaacs**

Image credit: UCT FHS HUB supplied.

LIFE SCIENCES ANNUAL TEACHERS WORKSHOP

Supporting Teachers. Fostering Relationships.

On September 7, 2024, the University of Cape Town's Division of Cell Biology held its **6th Annual Teachers Workshop**, reinforcing its commitment to supporting educators from under-resourced schools in the Western Cape. In collaboration with the Western Cape Education Department (WCED), the workshop has been fostering relationships between UCT staff and local teachers since its inception in 2018.

The workshop aimed to achieve two primary goals: equipping teachers with affordable tools for simple experiments to inspire students toward scientific careers and providing HUB staff insights into the secondary school science curriculum to enhance first-year teaching strategies.

This year's program focused on the Life Sciences curriculum for Grades 9 to 12, addressing common challenges faced by first-year students. The interactive sessions, led by academic and PASS staff included hands-on experiments covering topics such as dissection, respiratory system models, virtual reality, cardio-physiology and scientific investigations.

Participants praised the workshop for its informative and engaging format. One attendee noted: *"The workshop was very informative. I enjoyed the discussions and working on scientific investigations."* Others highlighted the hands-on experiences, with comments such as: *"I enjoyed being able to get 'hands-on' if you wanted to, but no pressure if you didn't."* Another participant appreciated the networking opportunities: *"The synergy with what we teach learners in our schools was great. It's always welcome to find ways to make practical work easier for students."*

Each teacher received a HUB practical manual and a biology practical textbook, enhancing their classroom resources. Feedback from attendees reflected the value of the presenters' expertise, with one saying: *"The presenters were knowledgeable and approachable, which helped us tackle the most random questions our learners might ask."*

While many found the interactive format beneficial, one participant humorously remarked: *"The activity on the stairs and all the walking from one venue to the next was a bit hectic for us 'older colleagues'... lol."* Overall, attendees expressed a strong desire for future workshops, emphasizing their importance in teaching Life Sciences: *"Please continue with these workshops as they are a valuable asset to teaching."*

As UCT strengthens its collaboration with the WCED, the impact of these workshops continues to resonate, fostering a vibrant educational community focused on enriching the science learning experience for students across the region.

Images credit: UCT FHS HUB supplied.

WORLD ANATOMY DAY CELEBRATION & OUTREACH

CABA: Education & Ubuntu

by **Mrs Megan Petersen**

Image credit: UCT FHS HUB supplied.

HONOURING WORLD ANATOMY DAY

Anatomical Education. Fun Activities. Uplifting Communities.

On 15 October 2024, the **Division of Clinical Anatomy and Biological Anthropology (CABA)** honoured **World Anatomy Day** with a series of engaging events that highlight the significance of anatomical education and community involvement.

This annual celebration, recognised by the International Federation of Associations of Anatomists (IFAA), honours Andreas Vesalius, Father of modern human anatomy who died on 15 October 1564.

The day started at **Groote Schuur High School**, where Anatomy Lecturer Jeshika Luckrajh-Williams addressed Life Sciences students from grades 10 to 12. Her presentation focused on the history of anatomy and provided insight into some of the anatomical work and research being done at UCT. The highlight was the generous donation of two anatomical models representing heart and renal structures, presented to the school by Jeshika and postgraduate students from CABA.

Following this outreach, the festivities continued at the Anatomy Building, where staff and students took part in a variety of interactive activities designed to educate and entertain. The afternoon was filled with anatomy quizzes, a spirited rendition of *30 Seconds*, and canvas painting. A creative twist of the classic *Pin the Tail on the Donkey* transformed into *Pin the Muscle on the Human*, allowing both staff and students to engage with human anatomy in a fun and memorable way.

In an effort to give back to the community, organizers of the event arranged a special raffle encouraging staff at the Department of Human Biology to donate sanitary pads for an entry and a chance of winning a R500 Takealot voucher. The sanitary pads were later handed over to the **Thulani Dasa Foundation**, a non-profit organisation operating within impoverished communities in and around Cape Town. The pads will assist grade 12 girls currently busy with their final examinations, ensuring that the financial burden that comes with menstruation does not hinder their education.

Images credit: UCT FHS HUB supplied.

THE INTERNATIONAL FEDERATION OF ASSOCIATIONS OF ANATOMISTS

Division of Clinical Anatomy and Biological Anthropology (CABA) Presentations

by **Mrs Megan Petersen** & **Dr Kentse Mpolokeng**

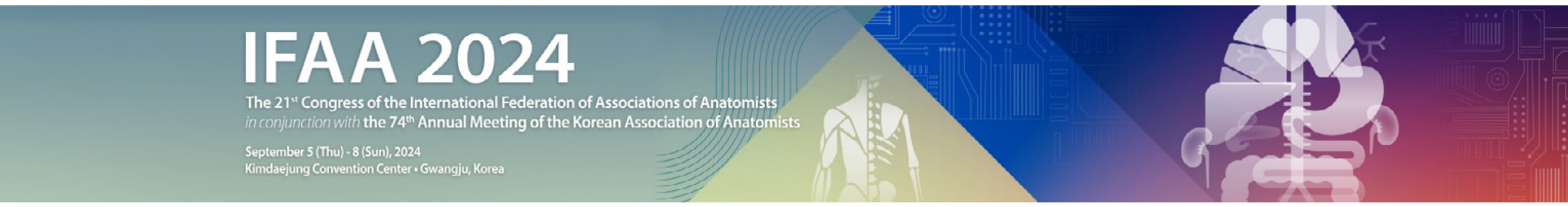


Image credit: UCT FHS HUB supplied.

CABA REPRESENTS UCT AT IFAA, SOUTH KOREA

The 21st Congress of the International Federation of Associations of Anatomists in conjunction with the 74th Annual Meeting of the Korean Association of Anatomists was held at the Kimdaejung Convention Center in Gwangju, South Korea in September 2024. The theme for this year's conference was ***Innovative Anatomy.***

Three academic staff members from HUB's CABA Division attended and presented posters: **Dr Kentse Mpolokeng**, **Associate Prof Geney Gunston**, and **Mrs Jeshika Luckrajh-Williams**.

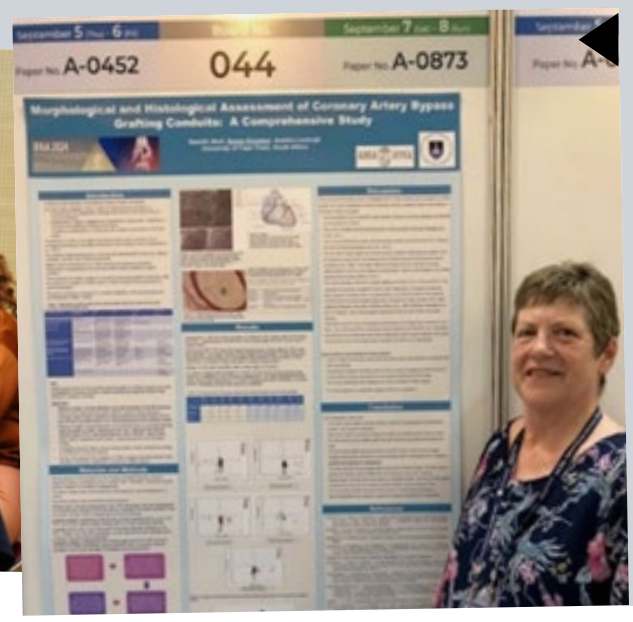
Dr Kentse Mpolokeng presented a poster: *A Unilateral Accessory Head of the Semitendinosus Muscle: An Unusual Variation*.

Dr Mpolokeng won the iNNO-ANAT (Innovative Anatomy) Award for the Best Poster Presentation and a cash prize of $1000. The iNNO-ANAT Award is for innovation in anatomy for the research that contributes to the continued development of anatomy.

Dr Mpolokeng also co-chaired an oral session: *Trends in Embalming of Human Bodies for Teaching Anatomy* with Prof. Tracey Wilkinson from University of Birmingham, UK and also presented an oral paper titled: *A South African Case Study on Anatomical Embalming for Human Body Donation Programmes with Toxicological Considerations*. Both papers she presented at this Congress are published in recognised international journals in the field: Folia Morphologica and Annals of Anatomy.

A/Prof Geney Gunston presented two posters: *Morphological and Histological Assessment of Coronary Artery Bypass Grafting Conduits: A Comprehensive Study*; and *A Dissection and Angiographic Study of Anatomical Variations in the Anterior Communicating Artery Complex in a South African Sample*.

Mrs Jeshika Luckrajh-Williams presented a poster: *An Anatomical Study of the Ulnar Nerve within the Ulnar Tunnel and Hand.*



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HEALTH THROUGH PHYSICAL ACTIVITY, LIFESTYLE AND SPORT (HPALS)

Provisional Sports Programme between the Italian Embassy-South Africa and the HPALS-UCT Research Centre

by **Mrs Ayesha Hendricks**

Image credit: Italian Embassy of Pretoria

BREAKING BOUNDARIES
Celebrating Excellence in Sport

The Italian Embassy in Pretoria and the HPALS-UCT Research Centre hosted a series of talks aimed at exploring how individuals from Italy, Africa, and South Africa have transcended obstacles and pursued their dreams through the power of sports. The discussions focused on the resilience, determination, and partnerships that have enabled athletes to break through limitations imposed by boundaries, both physical and societal.

The HPALS-UCT Research Centre held the inaugural Italian-Sports Symposium on 27 September 2024 following an invitation from the Italian embassy, Pretoria, South Africa. The theme was ***Breaking Boundaries***.

We were honoured to have **Mr Marcello Luigi Fiasconaro**, who, along with **Professor Luca Tiano**, Scientific Attaché at the Italian Embassy, presented a talk entitled *Fiasconaro: the Italian-South African story*. Mr Fiasconaro shared with us his journey from South Africa, as a Rondebosch Boys high school learner, to Italy, where he trained with the best and broke the 800m world record at the Arena Civica in Milan on 27 June 1973. He told his story of moving metre by metre in the arena against one of the strongest specialists in Europe, the Czechoslovakian Jozef Plachý. His time of 1'43"7 is still the Italian national record today. The audience were fascinated to hear the story behind the champion.

HPALS' **A/Prof Andrew Bosch** presented a talk entitled *Eliod Kipchoge: The Story*. **A/Prof Jeroen Swart**, Head of UCT's Sports and Exercise Medicine, presented a talk entitled *Current insights into tracking performance, lessons learnt in Italy by South Africans*.

Dr Giovanna Ghiani is a senior lecturer at the University of Cagliari, Sardinia, Italy in the Medical Sciences Department. Her main field of research is sport science and sports nutrition. She presented a talk *Managing human limitations and extreme performances through sport science in the name of solidarity*.

Dr Roxy Davis, a champion, entrepreneur, and advocate for change, is a true force in the realms of business, surfing, and community empowerment. Not only is she a 9-time South African surfing champion, but she is also the founder of Surf Emporium and Ocean Freedom. She leads the Roxy Davis Foundation, a non-profit dedicated to improving mental and physical well-being through ocean-based therapy. Dr Davis presented a talk entitled *A PhD story using surf therapy to impact communities towards the world sports arena*.

HPALS Director **Professor Yumna Albertus** welcomed our audience and special guests; **Professor Alison September** was responsible for leading the symposium; and **His Excellency Alberto Vecchi**, the Italian Ambassador, introduced the programme of events and highlighted the value of breaking boundaries in everyday day life, not just in the sports arena.

As the programme drew to a close, UCT's acting DVC for Research and Internationalisation **Professor Jeff Murugan** thanked the speakers, special guests and dignitaries present in the audience and online. The symposium concluded with closing remarks from **Professor Luca Tiano** on behalf of the Italian Embassy.

HUB Department of Human Biology Exercise Science and Sports Medicine

HPALS Health Through Physical Activity, Lifestyle, and Sport RESEARCH CENTRE

Embassy of Italy Pretoria

WATCH ON YouTube

HEALTH THROUGH PHYSICAL ACTIVITY, LIFESTYLE AND SPORT (HPALS)

Provisional Sports Programme between the Italian Embassy-South Africa and the HPALS-UCT Research Centre

by **Mrs Ayesha Hendricks**

Above (from left to right): A/Prof Andrew Bosch, Dr Roxy Davis, Professor Malcolm Collins, Professor Alison V September, A/Prof Jeroen Swart, Professor Yumna Albertus, Professor Jeff Murugan, His Excellency Alberto Vecchi, Mr Marcello Luigi Fiasconaro, and Professor Luca Tiano. **Images credit:** Images credit: UCT FHS HUB & HPALS supplied.

Images credit: UCT FHS HUB & HPALS supplied.

HUB Department of Human Biology Exercise Science and Sports Medicine

HPALS Health Through Physical Activity, Lifestyle, and Sport RESEARCH CENTRE

Embassy of Italy Pretoria

WATCH ON YouTube

SO/ME DESIGN (SOCIAL/MEDICAL/DESIGN)

UCT MedTech / Biomedical Engineering Research Centre Workshop

Image credit: Vecteezy.com / AI-generated

R20 000 PRIZE AWARDED

LIDAR-enabled bite mark scanning and analysis tool design captures accurate perpetrator bite marks

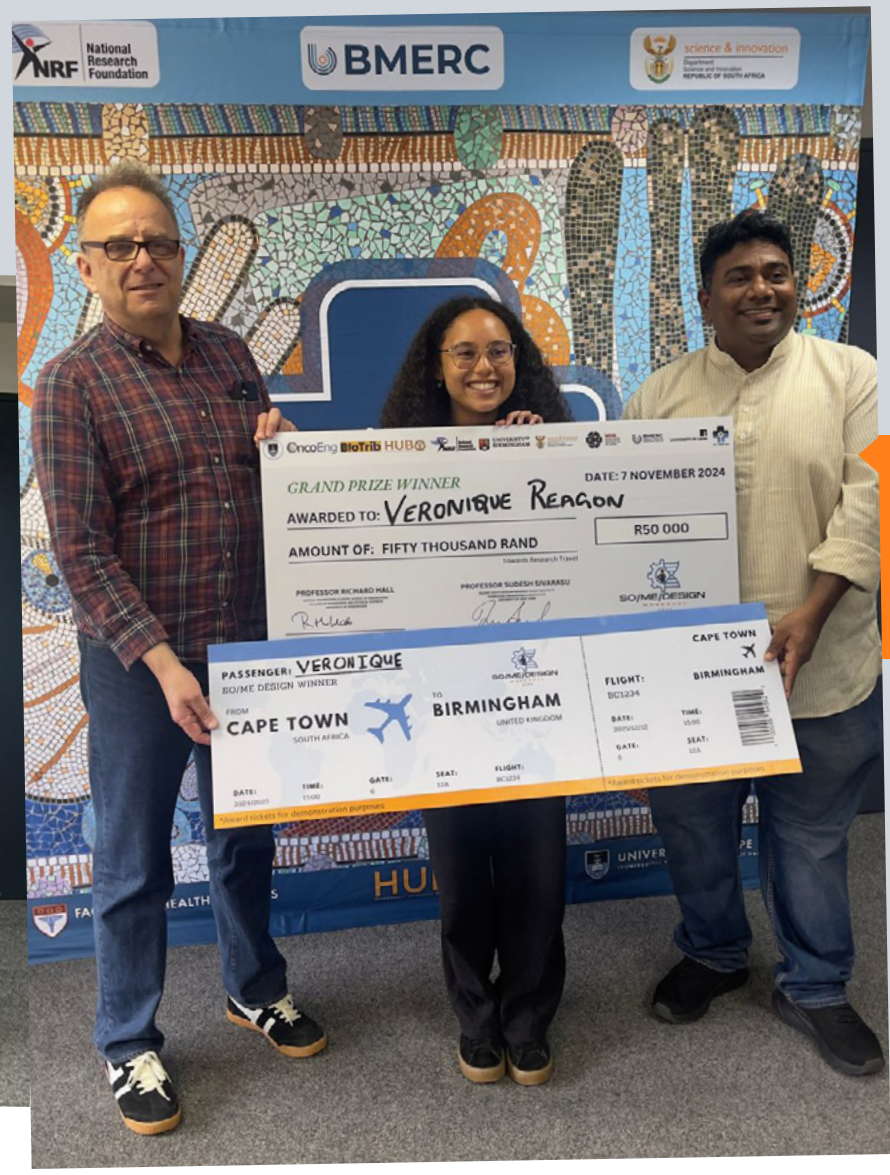
The **SO/ME Design (Social/Medical/Design) Workshop** was developed between the University of Leeds (UL), the University of Birmingham (UB) and UCT MedTech. In 2023, a large discussion occurred where the partners highlighted the need to understand and create innovative solutions that would disrupt the standard of care models and create opportunities for the otherwise under-serviced to access effective and much-needed healthcare.

The inaugural Workshop, held in 2023, focused on trauma and musculoskeletal injuries. Interestingly, the conversation organically looked at **Gender-based Violence (GBV)**. The participants had an opportunity to interact with medical doctors from the emergency units of public healthcare facilities who provided their insight. The 2023 grand prize was a fully funded research trip to UL.

The 2024 Workshop, held on 6 and 7 November, showcased as much innovative thought as the first. While the topic remained the same, it also looked more closely at **Intimate and Interpersonal Violence (IPV)** and **spinal cord injuries**.

The participants developed truly innovative solutions, with the winning team designing a LIDAR-enabled bite mark scanning and analysis tool to aid in capturing accurate bite marks (commonly found on survivors of IPV). These scans can recreate bite marks, from which the dental profile of perpetrators can be determined to assist the investigative process. For this tool the team won a R20,000 prize.

The grand prize for this year was won by **Ms Veronique Reagon**, who received a fully funded research trip to UB in 2025. She will work with **Prof. Richard Hall** from UB, one of the partners of the SO/ME Design Workshop.



Images credit: UCT FHS HUB supplied.

HUB Department of Human Biology Biomedical Engineering

UCT MedTech

UNIVERSITY OF BIRMINGHAM

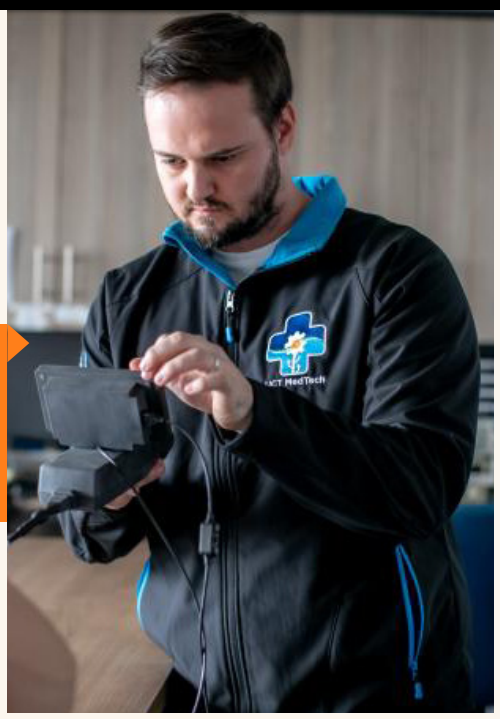
UNIVERSITY OF LEEDS

HUB ACHIEVEMENTS & AWARDS

NRF Ratings, Grants, Scholarships, Publications, Conference Presentations, Inventions, Achievements & Awards

Please send any recent achievements, awards, NRF ratings or the like that you would like published in the next issue of the HUB CONNEXION newsletter to your Divisional Comms Reps. We love to celebrate the achievements of the HUB family!

ACHIEVEMENTS



Above (from left to right): Dr Edmund Wessels, UCT MedTech holding the SAB Foundation Social Innovation Award-winning FlexiGyn™ device; Prof Victoria Gibbon received the UCT Global Citizen Award 2024, and Dr Rachael Dangarembizi, a Speaker at the Science Summit at UNGA79 in September 2024.

Image credits: HPALS-UCT Research Centre, UCT News, and portrait of Dr Dangarembizi supplied.

BME MedTech's **Dr Edmund Wessels** won the ***Development Award*** at the ***SAB Foundation Social Innovation Awards 2024,*** for his FlexiGyn™ device.

FlexiGyn™, an innovative medical device developed by Dr Edmund Wessels, PhD graduate in UCT MedTech in the Faculty of Health Sciences, is one of the winners of the SAB Foundation Social Innovation and Disability Empowerment Awards, announced in October 2024. FlexiGyn™ is a mobile gynaecological device that allows specialists to undertake much-needed hysteroscopy procedures — internal examination of the uterus — even in under-resourced rural clinic settings.

The award included a cash prize of R700, 000. FlexiGyn™, invented by **Dr Wessels** and **Prof Sudesh Sivarasu**, is a groundbreaking device that enables gynaecologists to diagnose and treat uterine-related challenges without the need for general anaesthesia. This easy-to-use device not only makes procedures less invasive but also enhances patient comfort and care. By eliminating the need for anaesthesia, FlexiGyn™ offers a more accessible and patient-friendly approach to gynaecological treatment, significantly reducing recovery times and broadening the scope of care. Congratulations to Edmund, the FlexiGyn™ team and his startup, Vas MedTech, for this incredible achievement.

In June, **Prof. Sudesh Sivarasu** represented UCT MedTech at the 9th European Medical and Biological Engineering Conference (EMBEC 2024) in Slovenia, delivering four impactful sessions. His presentations covered crucial topics such as advancing health technology innovation, the standardization of medical devices in South African healthcare, and improving ventilator procurement processes in Africa. Additionally, he co-chaired a session on biomedical engineering (BME) education in Latin America and Africa, underscoring the importance of global collaboration in health technology.

Prof. Sivarasu gave several lectures and presentations while overseas recently, including a lecture at Universidad Politécnica de Madrid, building on the strong relationship established by Prof. Andrés Díaz Lantada. His talk, titled *Medical Device Innovation for Achieving Equitable Universal Health Coverage*, focused on innovative solutions aimed at making healthcare more accessible and equitable for all. His presentation at the IMDEA Materials Institute entitled *Developing Impactful Medical Devices in International Context* offered valuable insights into innovative approaches and global perspectives on medical device development. He delivered an invited lecture at the University of Manchester, hosted by Prof. Andy Weightman and Assoc. Prof. Glen Cooper, which focused on *Mastering the Challenges of Medical Device Product Development.*

Prof. Sivarasu further gave a keynote presentation at the University of Birmingham School of Engineering for a Mini-Conference on ***Innovation in Africa***. His keynote, titled *Transforming Healthcare with Innovative, Accessible Medical Technologies*, delved into how adapting technological advancements to local contexts can create sustainable and scalable interventions, empowering healthcare providers and transforming patient outcomes.

UCT MedTech made a significant impact at the AKTO Leeds Summit 2024**. Prof. Sudesh Sivarasu**, **Michael Awood**, and **Ansuya Chetty**, winner of SO/ME Design 2023, attended the summit in person while **Dr. Oluwamayowa Ogundaini** contributed virtually from South Africa. The team engaged in in-depth discussions on frugal innovation design, sharing insights and exploring groundbreaking partnerships in healthcare technology.

Liam McEvoy received the 2024 Tania Samantha Douglas Scholarship for Excellence in Biomedical Engineering. The scholarship is awarded annually to the 2nd year MSc in BME student who achieved the highest overall grade in their first year.

UCT MedTech's Sarah McEwan was selected as an Emerging Leader for TechWomen 2024. Out of more than 6000 applicants, Sarah was one of 103 women chosen for this prestigious program in the U.S. in September and October. Representing South Africa, she joined inspiring women such as Pindiwe Filtane, Dr Emma Molobi, Apiwe Hotele, and Ntokozo (Happy) Msiza. Her selection highlights her exceptional project management skills and passion for innovation and technology.

Prof. Sudesh Sivarasu presented the launch of Triumphs, Legacies & Milestones (TLM) of Dr. Thalakkotur Lazar Mathew (TLM), a heartfelt tribute to his mentor and a true legend in bioengineering.

The African Research Society (ARS) Expo at UCT was a great success. As a panelist, Prof. Sivarasu highlighted his pioneering work in frugal biodesign and emphasized the importance of Africa-based solutions. **Master's student Raeesa Ismail** presented her research through a poster, showcasing innovative solutions to real-world problems.

PhD candidate Alexandra Lancaster showcased her talent at the Fencing Senior National Championships, securing a bronze medal in the individual event and a gold in the team event.

HUB ACHIEVEMENTS & AWARDS

NRF Ratings, Grants, Scholarships, Publications, Conference Presentations, Inventions, Achievements & Awards

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ACHIEVEMENTS

At the UCT Inventors Breakfast 2024, UCT MedTech was recognised for its ongoing contributions to medical innovation, including the award of patents for the FlexiGyn™ device and Easy Squeezy. The latter, developed by **Prof. Sudesh Sivarasu**, **Mike Levin**, **Giancarlo Beukes**, and **Jason Voorneveld**, is a smart sleeve fitting over standard asthma inhalers which reduces activation force by two-thirds, making it more comfortable, especially for children.

Prof. Sudesh Sivarasu was a keynote speaker at the Transforming Africa Medtech Conference (TAMC) 2024 in Nairobi, from 28 - 30 August.

UCT MedTech had the honour of attending and presenting at the launch of the Innovation HUB at Mediclinic Victoria in KwaZulu Natal. Under the leadership of Dr Sudeshan Govender, the Director of Mediclinic Victoria, the Innovation HUB is set to revolutionise the healthcare sector by leveraging cutting-edge technologies to enhance patient outcomes and improve the interactions between doctors and their patients.

Prof. Sudesh Sivarasu was named as a finalist for the ***TW Kambule-NSTF Researcher Award***, and the ***Engineering Research Capacity Development Award***, at the 2023/2024 National Science and Technology Forum (NSTF) Awards.

UCT MedTech was featured in the latest edition of ***Brainstorm*** - the business technology magazine. Prof. Sudesh Sivarasu shared his unique perspective on medical innovation, emphasising the importance of patient involvement, accessibility, and regulatory considerations and highlighting the journey of translating academic research into practical, life-changing medical devices.

PhD student Prosper Magara, supervised by Dr. Bessie Malila, was the winner of the 2024 Google PhD Scholarship for Africa: Health and Bioscience. Prosper's research, titled: *Leveraging Augmented Reality (AR), Artificial Intelligence (AI), and 5G/6G Technologies to Improve Access to Surgical Services for Rural, Remote, and Underserved Communities* is aimed at investigating how AI and AR technologies could be developed to support remote provision of quality surgical care to rural and remote areas, while leveraging the capabilities of 5G and beyond mobile communication technologies.

PhD student Ajibola Oladokun, supervised by Dr. Bessie Malila, was awarded a travel grant by the Medical Image Computing and Computer Assisted Intervention (MICCAI) Society to attend the MICCAI 2024 Conference in Marrakesh, Morocco. Ajibola's paper was accepted for presentation at this prestigious conference after a rigorous review process. He was selected for the MICCAI 2024 Outstanding Reviewer Award in recognition of his contribution to the conference review process.

Dr Bessie Malila, Junior Research Fellow in the Division of Biomedical Engineering, and African Research Initiative for Scientific Excellence-Pilot Project (ARISE-PP) leader was awarded the Worldwide Universities Network Research Development Fund (WUN RDF) in December 2023 for her project *User-centred design of a Tele-mental Health Virtual Clinic system for rural, remote, and underserved Communities*.

HUB physiology students participated in the 2024 Southern African Neuroscience Society (SANS) Symposium in Durban. **Masters student Emily Higgitt** (supervised by R. Dangarembizi and J.C. Hoving) was awarded first prize in the student oral presentation competition, while postdoc Dr Anja de Lange (supervised by R. Dangarembizi) won first prize in the poster competition.

Dr Rachael Dangarembizi attended the UN General Assembly Science Summit in September: *"It was an amazing event that brought together thought leaders, scientists, policymakers, and innovators to address the most pressing scientific and technological challenges of our time. I was honoured to speak and also participate in a panel discussion organised by the African Research Excellence Fund (AREF). My talk emphasized the importance of empowering Africa's next generation of researchers to drive sustainable solutions. I highlighted that although Africa faces significant public health challenges, there are incredible opportunities for creating scientific solutions to tackle disease burden and reduce mortality. I called upon global leaders, policymakers, and funders to invest in young researchers and to create an enabling environment for research excellence (develop infrastructure, increase research funding quotas, create training programmes) to unlock innovative solutions that will benefit not just Africa, but the world at large."*

Dr Sharief Hendricks received the SASMA (South African Sports Medicine Association) Life Membership Award after serving his term as President.

PhD student Lara Paul presented preliminary data on a global tackle height law change intervention to reduce head injury risk at World Rugby's Science and Medical Conference 2024.

Above (from left to right): PhD student Lara Paul presenting preliminary data on a global tackle height law change intervention to reduce head injury risk at the 2024 World Rugby's Science and Medical Conference.; UCT MedTech's Sarah McEwan selected as an Emerging Leader for TechWomen 2024; and Prof Alison September, a Speaker at the 3rd UNICA Sports Science International Conference in Cagliari-Sardinia, Italy. **Images credit:** UCT FHS HUB supplied and TechWomen 2024 artwork for Sarah McEwan.

HUB ACHIEVEMENTS & AWARDS

NRF Ratings, Grants, Scholarships, Publications, Conference Presentations, Inventions, Achievements & Awards

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ACHIEVEMENTS

Left: WIRE-SA, a project funded by a grant from the British Academy, provides training for 10 academics to write for academia and publish one paper each in an internationally-recognized journals. Here they are in the Eastern Cape in October. **Above:** Prof Malcolm Collins attended the GSUN Summit in Eugene, Oregon, USA in September. **Images credit:** UCT FHS HUB supplied.

HPALS students **Firzana Firfirey** and **Lethabo Ramoshaba** attended the 7th International Summer School *Human Growth - Data Analysis and Statistics* in Germany, from 3 - 12 July 2024. Guided by experts in anthropology, genetics and biostatistics, students from around the world applied their knowledge and to present-day challenges, by learning to analyse, assess and interpret their data.

The GenMS Team (Genomic Solutions to MusculoSkeletal Injuries) presented talks at two international conferences: the 3rd UNICA Sports Science International Conference from 19 - 21 June 2024, in Cagliari-Sardinia, Italy, where **Prof Malcom Collins** presented a plenary session titled *Advances in the genetics of musculoskeletal soft-tissue injuries*; **Prof Alison September**, as an invited speaker, presented *Novel approaches identifies key genetic loci in contributing to ACL rupture susceptibility*; and **Dr Mary-Jessica Nancy Laguette** presented *The col11a1 gene is associated with risk of ACL rupture in a large international cohort: a preliminary study*, for which she received the Best Oral Presentation (3rd place) in the Senior Investigation Award category. **Prof Collins** and **Prof September** also presented oral and poster talks at the 29th Annual Congress of the European College of Sport Science from 2 - 5 July, in Glasgow, Scotland.

The HPALS research centre was invited to be one of 10 universities to form part of the leadership council of the Global Sport University Network (GSUN). GSUN is a group of universities from around the world that harnesses knowledge on sport to solve timely, complex problems that no single university could fully address on its own. The network connects industry, governing bodies, sport commissions, media and other key stakeholders with researchers, educators and higher education institutions in four key thematic areas: Health and Performance, Inclusivity and Societal Impact, Innovation and Sustainability. Across these four themes, GSUN invites participation from all disciplines, leveraging science, engineering and technology, the social sciences, humanities, business, design, law, communications, education, and other fields to maximize the positive impact of sport. **Prof Malcolm Collins** attended the leadership council meeting and GSUN Summit in Eugene, Oregon in the USA in September to represent UCT.

Writing for International Research Excellence for Early Career Academics in South Africa (WIRE-SA) is a project funded by a grant from the British Academy. The PI is Professor Lindsay O'Dell from the Open University and Co-PI is Prof AV September from UCT. The 2-year grant aims to provide training for 10 academics to write for academia and to publish one paper each in an internationally recognized journal. The project involves the hosting of monthly 1-hour workshops. The first face-to-face workshop was held in Cintsa, Eastern Cape in October, where institutional leads and three editors of international journals were invited to speak on peer review and the editorial process.

Prof Sharon Prince presented a Molecular Basis of Disease Short Talk at the Biomolecular Horizons 2024 Congress, from 22 - 26 September 2024 in Melbourne, Australia.

Prof Sharon Prince received two ***NRF Knowledge Interchange and Collaboration (KIC) grants***.

Prof Sharon Prince, Ms Carly Burmeister and **Dr Saif Feroz Khan** presented at the Arturo Falaschi Conference ICGEB DNA Tumour Virus Meeting between 16 - 21 July 2024 in Trieste, Italy.

Dr Mubeen Goolam received the ***NRF "P" rating***.

Dr Jia Fan from BME received the ***Faculty Research Committee (FRC) Awards: FHS Research Stimulus Awards 2024*** for the Researchers Stimulus Grant project *Potential benefits and neural correlates of adjunctive acupuncture therapy in unilateral stroke*.

Ms Jeshika Luckrajh received a 3-year award from the Department of Higher Education and Training as part of the University Capacity Development Programme.

Professor Vicky Gibbon received the ***UCT Seed Funding Award for NRF rating outcome*** (ZAR 20 000) and ***UCT Enabler Grant Seeker Excellence Award*** (ZAR 20 000).

Ghodeejah Higgins was awarded an ***FHS Startup and Emerging Researcher Award***.

Mr Jining Bai, a master's student in the Prince laboratory, received a ***Postgraduate Research Training Grant: 2024***.

Ms Anjani Rama was awarded Best MSc Oral Presentation-Biomedical research and innovation platform at the South African Medical Research Council's (SAMRC) 14th Annual BRIP Conference 2024.

Ms Anjani Rama Received ***Best MSc Poster Award 2024*** for the session ***Non-Communicable Diseases*** at the South African Society of Biochemistry and Molecular Biology Congress 2024.

Ms Siwaphiwe Mfengu received the ***Ada and Bertie Levenstein Bursary*** *and* ***Canadian Alumni Postgraduate Scholarship***. Siwaphiwe presented at the European Paleopathology Association PPA Conference 2024.

Dr Karabo Serala and **Dr Lucy Macharia** attended the 36th EORTC-NCI-AACR Symposium on Molecular Targets and Cancer Therapeutics from 23 – 25 October in Barcelona, Spain.

Prof Victoria Gibbon received the 2024 UCT Global Citizen Award.

Prof Sudesh Sivarasu received the **University Equipment Committee (UEC) Equipment Grant** of R602,700 towards the purchase of a Multi-Axis CNC Milling Machine.

THE HUB FAMILY

HUB CELEBRATES AND HONOURS RETIREES

Congratulations on your successful and fulfilling career! We are so grateful for the years you have dedicated to our department and the University.

A/PROF DELVA SHAMLEY

A/PROF ANDREW BOSCH

MR NAZEEM DAMON

MR CHARLES HARRIS

Images credit: UCT FHS HUB supplied.

And now it was evening.

People of Orphalese, the wind bids me leave you.

Less hasty am I than the wind, yet I must go.

We wanderers, ever seeking the lonelier way, begin no day where we have ended another day; and no sunrise finds us where sunset left us.

Even while the earth sleeps we travel.

We are the seeds of the tenacious plant, and it is in our ripeness and our fullness of heart that we are given to the wind and are scattered.

Brief were my days among you, and briefer still the words I have spoken. But should my voice fade in your ears, and my love vanish in your memory, then I will come again,

And with a richer heart and lips more yielding to the spirit will I speak.

Yea, I shall return with the tide,

And though death may hide me, and the greater silence enfold me, yet again will I seek your understanding.

And not in vain will I seek.

It aught I have said is truth, that truth shall reveal itself in a clearer voice, and in words more kin to your thoughts.

I go with the wind, people of Orphalese, but not down into emptiness;

And if this day is not a fulfilment of your needs and my love, then let it be a promise till another day.

Extract from the poem **The Farewell** by Kahlil Gibran, The Prophet (Knopf, 1923).

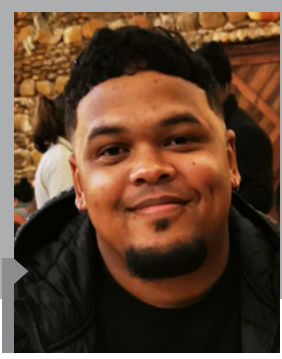
AD HOMINEM PROMOTIONS & POSITION UPGRADES

Congratulations to our members who have received a well-deserved ad hominen promotion, and position upgrades.

DR KENTSE MPOLOKENG
TO SENIOR LECTURER

DR ASHWIN ISAACS
TO PRINCIPAL TECHNICAL OFFICER

MR TYRONE DE WET



MR JACQUES JACOBS

MRS PATIENCE ZANTSI

MRS MEITAH MASHA

Images credit: UCT FHS HUB supplied.

PROPERTIES & SERVICES TEAM

Acknowledging the fantastic efforts that our very own heroes from **Properties and Services** put in for the smooth running of the department. **A big thank you from the entire HUB family!**

Left to Right: Dimitri Otto, Rene Burnett, Thobela Baba, Cynthia Walker, and Patricia Dingiswayo. **Image credit:** UCT FHS HUB supplied.

2025 INSPIRATION

"Look at the sky. We are not alone. The whole universe is friendly to us and conspires only to give the best to those who dream and work."
A. P. J. Abdul Kalam

"Let us strive for the impossible. The great achievements throughout history have been the conquest of what seemed the impossible."
Charlie Chaplin

"Take up one idea. Make that one idea your life – think of it, dream of it, live on that idea. Let the brain, muscles, nerves, every part of your body, be full of that idea, and just leave every other idea alone. This is the way to success."
Swami Vivekananda

"We can't solve problems by using the same kind of thinking we used when we created them."
Albert Einstein

"Nothing in life is to be feared, it is only to be understood. Now is the time to understand more, so that we may fear less."
Marie Curie

"It is better to lead from behind and to put others in front, especially when you celebrate victory when nice things occur. You take the front line when there is danger. Then people will appreciate your leadership."
Nelson Mandela

Image credit: Vecteezy.com / AI-generated

SUPPORT

FHS Student Wellness Service

24/7 TOLL-FREE hotline

for FHS Students in distress

FREE telephonic counselling and referrals

call 0800 32 33 23

sms 31393 for a call-me-back

www.sadag.org

Mental Health Matters

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FACULTY OF HEALTH SCIENCES

COUNSELLING SUPPORT (FOR UCT STAFF)

Contact Independent Counselling and Advisory Services (ICAS):

- **Call toll-free** for counselling **0801 11 39 45** /
- Send a **please-call-me** to ***134*905#**
- **Email** uct@icas.co.za / Website
- **Chat live** with an ICAS counsellor via the app, **ICAS On-the-Go** (Google and Apple downloads). ***The code for UCT staff is UNI003.***

SOUTH AFRICAN DEPRESSION AND ANXIETY GROUP (SADAG)

- Access the SADAG webinars and podcasts for tips and coping skills
- **Call 0800 17 11 71** (toll-free from a Telkom line 24 hours a day)
- Send an **SMS** to **31393** to request a **call-back**
- **Email** office@anxiety.org.za for a counsellor to call you back / Website
- Visit SADAG Facebook page **Daily Expert Q&A from 13:00 to 14:00**
- **SADAG UCT Student Careline 0800 24 25 26** (free from a Telkom line)

COUNSELLING SUPPORT (FOR UCT STUDENTS)

UCT Health Services for students
Tel: +27 (0)21 650 1020 / **Email:** faranaz.murat@uct.ac.za / Website

UCT Counselling Services
Tel +27 (0)21 650 1017 / **Email** lerushda.cheddie@uct.ac.za / Website

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FACULTY OF HEALTH SCIENCES