# **ANZBMS Newsletter**



# Member Achievements ANZBMS Committee Updates ANZBMS ECI Spotlight ANZBMS Member Publication Highlights

**Cover Image** by Dr Mohsen Dorraki of The University of Adelaide. In 'Hip osteoarthritis: A novel network analysis of subchondral trabecular bone structures' (https://doi.org/10.1093/pnasnexus/pgac258) Dr Dorraki and colleagues explore a novel network analysis methodology for describing microcomputed tomography (micro-CT) images of human trabecular bone. The above image is an example of identifying edges and vertices from micro-CT images showing networks in femoral heads with hip osteoarthritis. More information about this methodology can be found here.



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Next Issue: September 2023

Please send us your scientific images and the best will feature on the front page of our next issue!



newsletter@anzbms.org.au



@ANZBMSoc

# Welcome to the **ANZBMS** Newsletter

Welcome to our second newsletter for 2023! We are excited to present this quarters stories and successes of our ANZBMS community.

In this issue, we thank our exiting board members, and welcome our new member, Michelle (pg. 6). We highlight available funding opportunities for ECIs (pg 23) and celebrate the achievements of our ANZBMS members (pg 26). Recent publications, both basic and clinical, from our membership are highlighted (pgs 27-30), celebrating the breadth of techniques and approaches taken by bone researchers throughout Australia and New Zealand, to further our knowledge in the field.

We are continuing our ECI and Lab Spotlights (pgs. 16, 20), in addition to spotlighting recent highlights from ANZBMS members at conferences (pgs. 17-19). We are loving seeing the successes and collaboration of our community both in Australia and New Zealand, and on the the international stage.

We are also looking to expand our Editorial Board, so be sure to apply if you'd like to join our fantastic team! A reminder to also submit your abstracts for the 2023 ANZBMS ASM in Newcastle.

Best wishes from the ANZBMS Newsletter Editorial Board!

### ANZBMS Newsletter Editorial Board



Dr Madhuni Herath



Laura Trainor



Dr Lena Batoon



Emma Cheney



Dr Martha **Blank** 



**Dr Shanal** Kumar



**Dr Michelle** Maugham-Macan



Dr lakub Mesinovic

2



**Dr Tian** Nie



**Dr** lason

Talevski



Dr Yinghong Zhou



# **President's Comments**



### Professor Mark Forwood

"Now is the winter of our discontent Made glorious summer by this sun of York".

Shakespeare, Richard III

ANZBMS President Chair of Anatomy, School of Pharmacy and Medical Sciences Griffith University, Gold Coast

Many of us, mostly south or SE of Queensland, are starting to feel the chill of winter. However, our discontent is made alorious summer bv our anticipation for the Scientific 2023 Meeting in Newcastle. Ok, Shakespeare had a different metaphor in mind, and reminds us that not all coronations proceeded in an orderly manner. The program for our 33<sup>rd</sup> Annual Scientific Meeting is now well-developed and available at:

https://www.anzbmsconference.org.

We have an outstanding line-up of International and National speakers. Professor Laura Calvi is the Leader of the Cancer Microenvironment Research Program at Wilmot Cancer Centre University of Rochester. Laura is the President-Elect of the ASBMR and her bone research encompasses the microenvironment and marrow treatment of patients with pituitary tumours. Prof Yumie Rhee is Professor of Internal Medicine at Yonsei University College of Medicine, Seoul. Yumie is

Secretary General of the KSBMR and has studied PTH action in preclinical models osteocyte and involvement in remodelling. Her current research focuses on rare skeletal diseases and secondary osteoporosis. Our international speakers also include two B.O.N.E speakers, Dr Lama Alabdulaaly & Dr Michaela Tencerova. Go to the meetina website their to see presentation topics and the line-up of National speakers. The early-bird registration and abstract deadline is Friday 21<sup>st</sup> July. We look forward to seeing you all in Newcastle.

The first of the ANZBMS Osteoporosis Series "Initiating Osteoporosis Therapies" was delivered by the Clinical Practice Committee on 10<sup>th</sup> May with an excellent turnout. Thanks to our speakers Christian Natalie Sims. Girgis, and Michael Bennett, and our expert panel Peter Wong, Aleksova Jasna and Charles Inderjeeth. Upcoming webinars in this series will include: "Sequencing Osteoporosis Therapies" Wed 2<sup>nd</sup> August,



and "*Planning Safe Anti-resorptive Drug Intermissions*": Wed 13<sup>th</sup> September, both at 7-8:30pm (AEST). Additionally, our Densitometry Faculty will deliver the Clinical Densitometry Course to the Emirates Rheumatology Association in September, highlighting the international standing of this program.

The Therapeutics Committee have been active in advocacy and delivery of treatment guidance. We have asked the Hon Mark Butler, Minister for Health, to consider the PBAC advice on pricing of romosozumab for primary treatment of osteoporotic fracture. AMGEN advised Committee that it the is not commercially viable to deliver at the PBAC recommendation, and this will affect availability to patients in Australia. We await a response from the Minister. The committee also recently delivered "Advice for ANZBMS clinicians on the diagnosis and management of adult hypophosphatemic osteomalacia in Australia". This was published recently in our eNews bulletin and will also be shared with ESA.

The popular **ANZBMS-Bone** Health Foundation (BHF) Grant-in-Aid is open now for applications. This is a "near-miss" funding opportunity aimed at early to mid-career investigators. Council is also on collaborating two new grant opportunities with BHF, and we will also announce those in the near future. Finally, the term of the current Council will end at our meeting in Newcastle. We will opening nominations be for President-Elect and Councillors very soon, so please consider this important service to your society.

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# The ANZBMS Newsletter Editorial Board is searching for new members!

Open to all ANZBMS members at any stage in their career. For more information and to apply, please e-mail newsletter@anzbms.org.au with up to 150 words explaining why you would be a good addition to the newsletter team.

### ANZBMS ASM Abstracts Now Open!

There will be many opportunities for scientific and social networking and we encourage you to take full advantage of the program. Newcastle is situated in a beautiful region of NSW on a working harbour and offers many attractions to enjoy before or after the meeting, including the Hunter Valley wine region.

Whether you are an early or mid-career investigator, clinician, basic scientist, or allied health professional, we know that you will reconnect with peers, drive new collaborations and learn from an exciting program of cutting-edge musculoskeletal science.



33rd Australian & New Zealand Bone and Mineral Annual Scientific Meeting 22nd - 25th October, 2023 Newcastle City Hall, NSW

ANZBMS

KEY DATE: Friday 21st July, 2023 Earlybird Registration Deadline Abstract Submissions Deadline Clinical Cases Submission Deadline

Conference website: www.anzbmsconference.org



# The ANZBMS Newsletter Editorial Board is changing!

### Thank you to our outgoing members!

### **Dr Tian Nie**

#### PhD, University of Melbourne

Being a part of the ANZBMS newsletter board this past year has been a great experience. It was fun getting to know our members from around the world virtually, and made meeting them in person at conferences even more memorable. I particularly enjoyed learning and celebrating the successes of fellow ECIs, and learning from senior community leaders while writing newsletter articles. Feel free to keep in touch on Twitter (@tian\_in\_can), and I look forward to reading new issues!





### Dr Jason Talevski

#### Postdoctoral Research Fellow, Deakin University

Joining the ANZBMS editorial board and working together with the team over the past year to create relevant content for members has been a very rewarding experience. I really enjoyed acknowledging the success of early career members and using this as a platform to showcase the various talents, work, and achievements of the society's up and coming researchers! It also gave me the opportunity to get to know more people within the society, as well as discussing new ways to engage our members.



# The ANZBMS Newsletter Editorial Board is changing!

### Welcome to our incoming member!

### Dr Michelle Maugham-Macan

#### Lecturer, University of the Sunshine Coast

I am a lecturer at the University of the Sunshine Coast. My current research focus is investigating the aetiology of early-onset osteoporosis in people with Down Syndrome, and the effect of adipose tissue on bone metastases. I have always enjoyed reading the ANZBMS general and ECI newsletters, learning more about ANZBMS members and their work. I look forward to contributing to the newly merged ANZMBS newsletter and I hope to get to know the ANZBMS community even better while doing so.



## Find us on Twitter!

Links to events, opportunities and community updates are posted daily on Twitter.

To find our pages, you can:

- Search "ANZBMS twitter"
- Follow the links below





### **Program Organising Committee**

#### ANZBMS Annual Scientific Meeting, Newcastle City Hall, October 22-25

The 2023 ASM program is now available to view on our meeting website. The International speakers are **Professor Laura Calvi**, University of Rochester, New York State, USA, **Professor Yumie Rhee**, Yonsei University College of Medicine, Seoul, South Korea, **Dr Lama Alabdulaaly** (Boston, USA) and **Dr Michaela Tencerova** (Prague,CZ), the latter two being selected as part of the ECIC's B.O.N.E Program.

The program key sessions include:

- <u>Day 1</u>, Prof Susan Kurrle speaking on *Ageing successfully* and Prof Laura Calvi on *Role of macrophages in bone homeostasis*;
- <u>Day 2</u>, We look forward to hearing from Prof Yumie Rhee on *Denosumab discontinuation in postmenopausal osteoporosis*, and OMICs session by Prof Luciano Martello and Dr Ryan Chai; Rare bone diseases session by Dr Joel Vanderneit and Dr Syndia Lazarus, ECI B.O.N.E Symposium will be presented by Dr Michaela Tencerova;
- Day 3, Dr Lama Alabdulaaly will continue on ECI B.O.N.E Symposium, in **Allied health** session, we will hear from Dr Greg Lyubomirsky, CEO of Healthy Bones Australia, on *Interface between advocacy and patient outcomes* and Mrs Solange Bernardo, the Fracture Liaison Nurse Coordinator at AIMSS/Western Health, will present on *FLS service and how FLS can enhance clinical care.*

We will have our exciting **Great Debate session** this year again, Prof Natalie Sims, Prof Rory Clifton-Bligh, Prof Jill Cornish, and A/Prof Nathan Pavlos will have a battle of wits in a debate on **"Animal models are an accurate model of human disease"**. This year, we also invited our **Previous Award Winners**, A/Prof David Scott, Dr Natalie Wee, Dr Natalie Hyde and Dr Kai Chen to present on their research as part of their award on Day 3.

There will also be plenty of space for oral abstracts to showcase the latest research from our ANZBMS members so please finalise those last-minute results and get your abstracts in! The submission deadline is Friday 21<sup>st</sup> July. Finally, the awards sessions will provide a platform for early career researchers to share their findings - we strongly encourage applications for these awards. We hope there's something for everyone in the program and we look forward to welcoming you in person on Newcastle!

Ayse Zengin, Peter Simm and Hong Zhou (POC Co-Chairs)



### **Clinical Practice Committee**

The Clinical Practice Committee has had a busy first half of the year reviewing clinical guidelines and strategy statements for various societies in diverse areas, including standards of care for hip fracture, engagement of physicians in rural and remote regions and cancer council recommendations on safe sun exposure and vitamin D. If you are a clinician working in a rural region and would like to share your experiences on the practice of bone and mineral medicine, please reach out to us.

The committee also seeks to actively engage our clinical members through educational and CPD activities. Throughout the year, a 3-part webinar series on the osteoporosis treatment "life-cycle" from therapy initiation to drug consideration sequencing and of drug intermissions has been planned. The first of these webinars was held on Wednesday 10<sup>th</sup> May and a recording will soon be available. Members are invited to register on the ANZBMS website to access the recording of this session and future webinars in this series are scheduled for the evenings of 2<sup>nd</sup> August and 13<sup>th</sup> September. Registration can also be found here:

https://www.anzbms.org.au/webinars.asp

This year, we will be holding the Clinical Postgraduate Seminar on the weekend of the g<sup>th</sup> and 10<sup>th</sup> December. Similar to last year's seminar, this will be delivered in an online virtual format, over two half-day sessions. The seminar will cover broad themes with a focus on pragmatic case-based discussions, and clinical updates. Further information on this seminar and registration will soon be available. Please save the date in your diary: 9<sup>th</sup> and 10<sup>th</sup> December.

The committee hopes that through these educational activities, the society remains the primary go-to place for clinicians to be updated and engaged in bone and mineral medicine. If you'd like to hear more or have ideas around clinician engagement/education, please feel free to email Christian on christian.girgis@sydney.edu.au.



### **Therapeutic Committee**

#### **1**. Romosozumab and PBAC

At its March 2023 meeting the PBAC informed the Minister for Health Mark Butler, that it advised approval of romosozumab for first line use in certain high risk osteoporotic patients, as ANZBMS have previously supported, ie. a BMD T-score ≤ -2.5 AND a recent (i.e. last 24 months) hip or clinical vertebral fracture OR at least 2 (including 1 in the last 24 months) clinical fractures.

However they went on to say "The PBAC's recommendation for listing was based on, among other matters, its assessment that romosozumab would be cost-effective in the first-line setting if its price was reduced such that the incremental cost-effectiveness ratio was no higher than the revised base case in the July 2022 submission (\$35,000 to < \$45,000 per quality adjusted life year gained) and with a risk arrangement to address sharing the uncertainty associated with the size of the eligible first-line population and also with any regarding residual concerns the cost-effectiveness of romosozumab use in the first-line setting."

Amgen advises that "If the QALY gained was valued just 20% higher at \$45,4661 Amgen would be able to move forward to achieve a PBS listing this year.

Recent information suggest new drugs are generally recommended by the PBAC if their expected incremental cost per QALY is somewhere between \$45,000 and \$75,000. Given these differences ANZBMS Council and Therapeutics has sent a letter to the Minister for Health Mark Butler, a copy of which will be sent to members, expressing our concerns over access to this important new drug for our patients. You may wish to write to the Minister providing your views.

# 2. Burosumab treatment- Hypophosphatemia working party

Following recent PBAC approval approximately 120 patients are now receiving regular treatment with burosumab.

At the last meeting of the working party on 6<sup>th</sup> April the following steps were agreed:

 Providing a ANZBMS website-based calculator for TmP
 Providing advice to ANZBMS members
 Seeking MBS support for a rebate for FGF23 testing
 Seeking MBS support for PHEX gene mutation testing

# 3. Theramex Risedronate EC PBAC application to March 2023 meeting

We note that "The PBAC did not recommend an amendment to the current age restriction on the PBS listing of risedronic acid (risedronate) for the primary prevention of fracture in patients with a bone mineral density (BMD) T-score of -2.5 or less, on the basis that the Medical Services Advisory Committee (MSAC) Executive advised that resubmission as a co-dependent application would be required to assess the cost-effectiveness and financial implications of expanded BMD testing on the Medicare Benefits Schedule to support such a listing."

The Therapeutics Committee was not involved in this submission and has not been contacted by Theramex.



### Therapeutic Committee

# 4. Aromatase inhibitor treated women post breast cancer

The Therapeutics Committee awaits the outcome of an Imaging Committee application to the MBS for a bone densitometry rebate to allow PBS support for antiresorptive treatment.

# 5. Medical facilities for the intravenous administration of zoledronic acid.

Therapeutics is supporting the Professional Practice in its efforts to find new providers of intravenous access for Zoledronic acid following the recent closure of the Sonic service.

#### 6. New Therapeutics Committee Chair

As previously advised Richard Prince will stand down as the chair at the next Annual Scientific Meeting.

Richard Prince, April 2023.

#### **Current members**

Name	Current Position	Appointment date
Richard Prince	Adult Endocrinology Perth	Chair 2017 -
Ivone Johnson	ANZBMS	Ex officio
Mark Forwood	President ANZBMS	2021 -
Peter Sim	Paediatric Endocrinology Melbourne	2018 -
Grahame Elder	Nephrology Sydney	2018 -
Alan Doube	Rheumatology Hamilton NZ	2020 -
Belinda Beck	Director of Research, The Bone Clinic, Griffith	2020 -
Christian Girgis	Adult Endocrinology Sydney	2022 -
Mathis Grossmann	Adult Endocrinology Melbourne	2022 -
Hanh Nguyen	Adult Endocrinology Melbourne	2022 –
Weiwen Chen	Adult Endocrinology Sydney HBA	2022-

## **Clinical Guideline & Consensus Statements**

We are excited to bring timely updates on relevant guidelines and position statements. Please note that these documents have not necessarily been endorsed by the ANZBMS (and if endorsed, this will be noted next to the title). For this issue, we have chosen to summarise 3 articles published over the last 12 months.

# Petkovic, MJ, Tran, HA, Ebeling, PR, Zengin, A. Osteoporosis management and falls prevention in patients with haemophilia: review of haemophilia guidelines. *Haemophilia*. 2022; 28:388–396. DOI: 10.1111/hae.14540

This database search was used to assess currently available guidelines for osteoporosis management in people with Haemophilia. Their summary was:

- Early diagnosis and treatment of osteoporosis in this population remains important
- The effects of thrombin generation, Factor VII, Factor IX and/or IIA generation deficiency in haemophilia and its effects on bone mineral density remain unknown
- Currently, there is inadequate recommendations due to lack of evidence in the literature
- Further studies are needed to evaluate effects of pharmacological and non-pharmacological interventions in this population

#### Duque G, Iuliano S, Close JCT, Fatima M, Ganda K, Bird S, Kirk B, Levidiotis M, Said CM, Papaioannou A, Inderjeeth CA. Prevention of Osteoporotic Fractures in Residential Aged Care: Updated Consensus Recommendations. J Am Med Dir Assoc. 2022; 23(5):756-763. DOI: 10.1016/j.jamda.2021.12.041

Virtual attendance by multidisciplinary healthcare providers working in residential aged care facilities determined the following recommendations:

- Comprehensive multi-factorial falls assessment and documentation of 'red flags' is
  important
- A medication review should be conducted
- Education to all stakeholders about falls minimisation should be provided, especially regarding the use of sedatives
- Exercise as part of a multifactorial intervention should be encouraged
- Environmental assessment and use of hip protectors is recommended
- Use of physical, mechanical or chemical restraints are not recommended as part of a falls prevention strategy
- Vitamin D supplementation should be considered for all residents with an aim of 25 (OH)D concentration of >50 nmol/L
- High daily doses (>4000 units) or high periodic doses of vitamin D are not recommended
- Total daily calcium intake of 1300mg recommended with use of supplements if needed.
- For those with high fracture risk, consider denosumab or intravenous zoledronic acid

## Clinical Guideline & Consensus Statements

Bilezikian JP, Khan AA, Silverberg SJ, Fuleihan GE, Marcocci C, Minisola S, Perrier N, Sitges-Serra A, Thakker RV, Guyatt G, Mannstadt M, Potts JT, Clarke BL, Brandi ML. Evaluation and Management of Primary Hyperparathyroidism: Summary Statement and Guidelines from the Fifth International Workshop. J Bone Miner Res. 2022; 37(11):2293-2314. DOI: 10.1002/jbmr.4677

Following review of the available literature, recommendations on the management of primary hyperparathyroidism (PHPT) were made, including the following:

- Adjusted total serum calcium (or ionised calcium if normocalcaemic PHPT is suspected), phosphorus, intact parathyroid hormone, 25 hydroxyvitamin D and creatinine is recommended for evaluation of PHPT. Patients should also undergo three-site dual x-ray absorptiometry (DXA) and imaging for vertebral fracture. Renal function evaluation with eGFR or creatinine clearance, 24 hour urinary calcium and imaging for nephrolithiasis is recommended
- Parathyroidectomy by an experienced surgeon is recommended for all patients with PHPT aged <50 years, all symptomatic patients aged 50 years or above who are symptomatic, and those who are asymptomatic but meet criteria for target-organ (skeletal and renal) involvement
- Surgery is not recommended in those with only neuropsychiatric or cardiovascular symptoms as the only manifestation of PHPT
- Pre-operative imaging including neck ultrasound, technetium-99m-sestamibi subtraction scintigraphy and contrast-enhanced four dimensional computed tomography are recommend for localisation of the culprit lesion; imaging should not be used for diagnosis.
- Bisphosphonates and denosumab are recommended for bone protection in those unsuitable for parathyroidectomy





### Dr Luisa Rosi

2nd Year Advanced Trainee in Endocrinology, Peninsula Health, Victoria.

Research Category: Clinical

**Research interests:** My interest in metabolic bone disease has been furthered by my involvement in clinical research in transplant bone health in both lung and heart transplant recipients.

What I hope to gain from joining ANZBMS: I'm interested in furthering my knowledge in basic science and clinical evidence in metabolic bone conditions and hope to learn from the many clinicians and scientists in this society though the teaching and publications affiliated with ANZBMS.





### Dr Jessica Sandy

Institute of Endocrinology and Diabetes, The Children's Hospital at Westmead

Research category: Clinical

**Research Interests:** Bone and mineral disorders in children, in particular X-linked hypophosphataemia and calcium/phosphate homeostasis disorders.

What I hope to gain from joining ANZMBS: To network and collaborate with other health professionals with interest and expertise in bone and mineral disorders, and to learn more about bone and mineral disorders across the lifespan.



### ECIC Co-Chairs Report

Welcome to the second update from the ANZBMS ECIC for 2023. We hope the year is treating you well so far. The ECIC has been busy preparing for the ASM - don't forget to submit your abstracts, the deadline - 21st July - is fast approaching! For our clinician community, a reminder to submit your cases for the ECIC's Clinical Cases in Metabolic Bone Disease Seminar. The Clinical Cases Seminar is always a fantastically attended event and is an excellent opportunity to showcase complex bone cases. The winner of the seminar will have the opportunity to submit their case to the Journal of Bone and Mineral Research Plus for publication for free, so make sure you don't miss out.

The first session of the RACP/ANZBMS Webinar Program will be held on the 26th June and will feature ANZBMS' current President, Prof. Mark Forwood. The RACP/ANZBMS Webinar Program is part of RACP's Speciality Society Webinar Series which aims to provide continuing professional development resources to their members. Mark will be presenting on bone biology for clinicians, so if your bone biology could use with a brush up, be sure to attend. Expressions of interest for our Fellowship Coaching Program closed at the end of May many thanks to all those who applied; for those taking part in the program for 2024, we trust that your experience will be invaluable and wish you all the best with your fellowship application. Once again, we would like to highlight our commitment to promoting ANZBMS ECIs and their achievements - if you have recently published an article and would like us to promote it through our please send a link to platforms, the publication and a short blurb (no more than 50 words) to ecic@anzbms.org.au.

We have a new direction for our Coffee Catch-Ups in the works, so be sure to keep an eye out on our Twitter to stay up-to-date with all things ECIC!

Until the next newsletter, Bridie Mulholland and Cassandra Smith ECIC Co-Chairs





# **ANZBMS ECI Spotlight**



Dr Ben Kirk, PhD Research Fellow, Melbourne Medical School The University of Melbourne Australian Institute for Musculoskeletal Science (AIMSS)

У @DrBenKirk

#### Can you briefly describe what your research is about/what are your research interests?

At AIMSS, my research program focuses on two key aspects:

- Understanding the biomechanical and biochemical interactions between bone and muscle loss in fracture risk via epidemiological studies (big data!)
- Identifying safe and effective therapies for bone and muscle loss (osteosarcopenia) in clinical trials of older adults and geriatric patients

# What was your highlight of the Advances in Mineral Metabolism (AIMM)-ASBMR Young Investigators' Meeting?

I loved the presentation format (20-30 minutes) which allowed me to express my research. Basic and clinical scientists ask questions from slide 1 onwards and this makes the atmosphere informal yet allowing for thought provoking questions and collegial debate. Your knowledge is tested in an enjoyable manner and you come away with new ideas. I haven't experienced that since my 2019 PhD viva in the United Kingdom!

The AIMM meeting strikes an amazing balance between rigorous science, enjoyment (epic skiing and amazing scenery on the Snowmass mountains) and most importantly, everyone is super friendly and encouraging. There is a real emphasis on fostering the next generation of basic and clinical scientists. It is certainly the most enjoyable meeting I have attended... I will be back!

#### What motivates your research/what are your goals for the future?

Combining my passion for musculoskeletal science with my pursuit of research excellence, I hope I can improve health outcomes for older people with bone fragility and muscle weakness and reduce the socioeconomic burden of falls and fractures globally. My ultimate aim is to become an independently funded researcher and professor with my own program of research (i.e., NHMRC, NIH or CIHR career fellowships) and help younger scientists like I have been (thank you Prof. Duque!).

# B.O.N.E. Awardee: Dr Dzenita Muratovic



### Dr Dzenita Muratovic

Senior Research Fellow Centre for Orthopaedic and Trauma Research University of Adelaide

🥑 @DrDzenitaM

#### Congratulations on being a B.O.N.E. awardee! Please tell us your experience at ECTS 2023.

Firstly, I would like to express my gratitude to ANZBMS and ANZBMS Early Career Investigator Committee for choosing me to represent ANZBMS at the ECTS conference in Liverpool. Also, I would like to thank ECTS Academy for its warm welcome and hospitality. This was my first time attending an ECTS meeting in person and I was presently surprised by both organisation and the great science. Particularly, I have enjoyed a number of workshops that covered a broad range of technical topics. I might sound biased, but one of the best was "Bone at single-cell resolution" delivered by Dr. Ryan Chai, Garvan Institute of Medical Research.

#### Please describe the research you presented.

I was invited to present my work in the "Multiscale Imaging and Analytics of Interfaces in Musculoskeletal Health" session. In my recent project, I used a combination of powerful Synchrotron micro CT imaging and histology to investigate structural and cellular characteristics of osteochondral tissue in hip and knee osteoarthritis (OA). Excitingly we found that hip OA and knee OA exhibits different characteristics at the tissue and cellular levels. These findings indicated a potential existence of different mechanisms of OA progression in different joints and that specific approaches to treat disease progression may be needed for OA in different joints. I am very happy to announce that our manuscript "Microstructural and cellular characterisation of the subchondral trabecular bone in the human knee and hip osteoarthritis

using synchrotron tomography" has been accepted for publication in Osteoarthritis and Cartilage.

# What advice would you give to other ECIs planning to attend international conferences ?

Australians have one big disadvantage, we are too far away. The International conference often means 20+ hours of travel time and on top

of that, time difference. One advice that I always try to remind myself is to **manage your energy by having a strategic plan when you travel**, what sessions/workshops you will attend and ensure you are planning a break for yourself. Personally, I think this is especially important for female ECIs with caring responsibilities for young families.

## Do you have tips that would help ECIs maximize their conference experience?

In addition to my previous advice, I would recommend setting a learning objective, and checking the attendance list so you can plan to build relationships and feel free to ask lots of questions.



# **ANZBMS** Members at Conferences

### European Calcified Tissue Society Congress 2023, Liverpool, UK



"This was my first in person ECTS since 2019 and I was so excited to be in the lovely Liverpool, and see my European colleagues in person after so many years! The meeting was very well organised and provided us with networking events, a fabulous program across basic and clinical research, meet the professor sessions, open forum, workshops and of course entertaining yet informative debates. I was very honoured to have been an international associate member of the scientific programme committee, allowing me the opportunity to contribute to the delivery of a globally diverse programme which highlighted exciting advances in the basic science field. I am really looking forward to ECTS 2024 in Marseilles in France next May!! - A/Prof Michelle McDonald

"This was my first ECTS and I was very excited to be able to talk about my work in three separate sessions. The program was excellent, featuring a well-rounded blend of basic and clinical presentations. There were plenty of networking sessions as well and I had a blast meeting our European colleagues. Without a doubt the highlight for me was witnessing the impressive presentations by the Australian delegation and the triumphant performance of our young investigators in winning multiple awards. Team ANZBMS definitely left its mark!" - Dr Ryan Chai

"ECTS was my first international conference, and a first time to meet many local (ANZBMS) and international researchers. I was very excited to present my research in the New Investigator Seminar, and thrilled to be awarded the New Investigator Nestlé Clinical Award. Watching my fellow ANZBMS ECIs and colleagues present, many of whom received awards, were my highlights! I have returned from ECTS energised, eager and motivated – can't wait for the upcoming ANZBMS annual meeting, see you all in Newcastle!" - Dr Cassandra Smith

"It was great to attend the ECTS again this year. The welcome from our European colleagues was as warm as always and it really drove home how much we have been missing (and being missed) during the pandemic. As always, the program was vibrant and engaging, with lots of fantastic presentations on an amazing array of topics. Congratulations to all the Australian presenters for representing bone and mineral research and ANZBMS so well. I am looking forward to ECTS 2024 in Marseilles in France next May!!" - A/Prof Joshua Lewis

# **ANZBMS** Members at Conferences

### WCO-IOF-ESCEO 2023 World Congress on Osteoporosis, Osteoarthritis and Musculoskeletal Diseases, Barcelona, Spain



(L-R): Prof Robin Daly, A/Prof David Scott, and Dr Jason Talevski presenting a symposium on the implementation of digital health technologies for osteoporosis, sarcopenia, falls and fractures.



(L-R): Dr Alicia Jones; Dr Ayse Zengin; Dr Weiwen Chen, Mr Greg Lyubomirsky, Dr Thiyagarajan, and Prof Peter Ebeling; and Dr Kara Anderson networking & presenting their work at the congress.

"I had a great time presenting my work in Spain. There were a lot of interesting talks, and I especially enjoyed the wide variety of symposia, but I wish I was able to attend multiple of the concurrent sessions!" - Dr Kara Anderson

> "It was exciting to physically attend an international meeting for the first time since 2019 and I enjoyed re-connecting with long-time colleagues and developing new collaborations." - A/Prof David Scott

"I had a very busy schedule at WCO-IOF-ESCEO 2023 with 3 oral presentations (1 symposium, 1 plenary & 1 podium presentation!). Overall I think they went very well and enjoyed interacting with researchers from all over the world." - Dr Jason Talevski



# ANZBMS Lab Spotlight

### It takes a team to make science happen. Here's a snapshot of members from a bone clinic, and what they're up to!

### Alfred Health Osteoporosis and Metabolic Bone Clinic

Featuring: Dr Shoshana Sztal-Mazer (Clinical Lead), Professor Hans Schneider (Interim Chief Pathologist and Clinical Endocrinologist) and Elisabeth Ng (Endocrinologist)



#### Dr Shoshana Sztal-Mazer, Clinical Lead

Eleven years ago, I was asked to set up an Osteoporosis Clinic at Alfred Health in Melbourne, Victoria. Over time, this service expanded to manage metabolic bone disease and bone protection in organ transplantation. Protocols have been set up, audited and published. We have broadened the scope to the inpatient sphere with our pharmacy led re-fracture prevention program. Our research revolves around clinical questions arising from the patients we see, often in collaboration with our esteemed colleagues from neighbouring hospitals. Topics researched include bone density and fracture outcomes in transplantation, hypophosphatasia, screening for height loss, atypical femoral fractures and adverse drug reactions. Teaching is a crucial part of the service, which has meant that we have been fortunate to receive a number of junior medical staff as well as international fellows accompanying the clinic. I am so grateful to the dedicated team whose enthusiasm for work and generosity with their time has held the service together and enabled it to grow despite the diminishing resources available in the public service. I look forward to many rewarding years of high quality service to our patients, while contributing to the bone literature by conveying the lessons our patients teach us.



### Professor Hans Schneider, Interim Chief Pathologist for Alfred Health and Monash Health Services and Clinical Endocrinologist in the Osteoporosis and Metabolic Bone Service

How long have you been in this clinical group? 8 years

What topics are researched in your lab? PTH, Vitamin D, ALP levels, Bone Turnover markers, FGF 23 levels

What was your career trajectory leading to this moment? I have always liked clinical medicine and pathology. Starting from a postdoc in calcitonin receptor physiology I have been interested in bone for a long time. I asked Shoshana to work in the osteoporosis clinic and we have collaborated on many initiatives. Shosh has set up a pharmacy-led re-fracture prevention service and recently led investigations in hypophosphatasia.

What's your mentorship style? Shoshana says it is warm, supportive and encouraging.

What's a fun fact about the clinical group? I was Shoshana's consultant on the general medicine ward 23 years ago and now she is my boss in the clinic.

### Elisabeth Ng, Endocrinologist

How long have you been in this group? 6 years (starting as a registrar, then research associate, and recently, consultant)

What inspired you to choose the group? The Alfred Hospital looks after a large cohort of transplant recipients, amongst other specialised conditions. As such, the Alfred Osteoporosis Clinic sees an interesting patient cohort that is varied and challenging at times, which creates opportunities for team discussion and poses research questions for us to work on.

What are you excited to do? We are undertaking research exploring how our hospital looks after the bone health of our heart transplantation recipients, and seeing how we can optimise this. We are excited to see the direction this takes and how we can collaborate with our cardiology colleagues to improve our delivery of care to this unique patient group.

What's a fun fact about your group? We enjoy a chatty post clinic meeting

### If you and your lab want to be featured in our next issue, please email us! newsletter@anzbms.org.au



Grant/Fellowship Scheme*	<b>Application Period</b>
NHMRC Investigator Grants	TBA
MRFF Early to Mid-Career Researchers Grant	15 February 2023 - 21 June 2023
ARC Industry Fellowships	TBA
Christine & T. Jack Martin Research Travel Grant	Deadline: 7 September 2023
ANZBMS Travel Grant	Deadline: 21 July 2023
Arthritis Australia (fellowships, scholarships, project grants and grants in aid)	Deadline: 7 July 2023
Rebecca Cooper Fellowship	Open: 1 August 2023
<u>The MJA Award for Excellence in Medical</u> <u>Research</u>	Deadline: 31 December 2023

\*Clicking on the scheme will redirect you to the grant/fellowship website.



# **RACP/ANZBMS** Webinar Program

June 26, 2023

6-7PM AEST 8-9PM NZST



### **Prof Mark Forwood**

**Griffith University** Gold Coast. Queensland. Australia **ANZBMS** Council President

### Title: Bone biology for clinicians

Professor Mark Forwood is the current President of the ANZBMS. He was appointed as the Foundation Chair of Anatomy at Griffith University in 2009, and Head at the School of Medical Science from 2013-2021. His laboratory studies skeletal adaptation, mechanotransduction and bone quality, funded by grants form NHMRC since 1996. He has been a member of the IFMRS Board of Directors since 2017 and Chair of the IFMRS International Education Working Group. He is on the Editorial Board of Bone and was a section editor for Current Osteoporosis Reports. In 2016, he was elected as a Fellow of the Queensland Academy of Arts and Sciences, and in 2019 a Fellow of the ASBMR.

**REGISTER HERE** - you will receive an email detailing information about joining the webinar following registration.







# Clinical Cases in Metabolic Bone Disease Seminar

Newcastle City Hall, Newcastle, NSW OCTOBER 23, 2023 | 5:30 PM

Are you an Advanced Trainee with an interesting bone case? Submit your case study for the chance to present!

## **SUBMISSION DEADLINE: JULY 21, 2023**

#### **COVER PAGE**

Name Training hospital Email address Supervisor's name(s) Supervisor's signature approving the case submission

#### **CASE SUMMARY\***

Title Clinical case detail Laboratory and medical imaging findings Brief outline of the literature 3-5 take home messages (dot points) References

\*500-1000 words excl. references. Highest ranked abstracts will be selected for oral presentation.

We are also looking for cases with a focus on the multidisciplinary management of musculoskeletal disease to stimulate discussion of both pharmacological and non-pharmacological management.

### **PRESENTATION PRIZE**

Opportunity to submit their case report to JBMR<sup>®</sup> Plus for FREE (\$2500 USD fee waived)

# MORE INFO: WWW.ANZBMSCONFERENCE.ORG/CLINICAL-CASESX

Contact details: Dr Albert Kim (a.kim@garvan.org.au), Dr Madhuni Herath (madhuni.herath@monash.edu), and Dr Cassandra Smith (cassandra.smith@ecu.edu.au)

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# ANZBMS Member Awards & Achievements



### Cassandra Smith, Edith Cowan University

2023 ECTS New Investigator Seminar Nestlé Clinical Award

### Marc Sim, Edith Cowan University

2023 ECTS Nurses & Allied Health award 2023 ECTS New Investigator Best Clinical Poster Award





### Lena Batoon, University of Michigan

2023 ECTS New Investigator Award 2023 ASBMR Harold M. Frost Young Investigator Award

### Rhiannon Healy, Victoria University

Dean Scholar Award



## Submit your achievements at newsletter@anzbms.org.au!

# **ANZBMS Member Publications**

Tay ML, Monk AP, Frampton CM, Hooper GJ, Young SW. The Strongest Oxford Knee Score Predictors of Subsequent Revision are "Overall Pain," "Limping When Walking," and "Knee Giving Way". J Arthroplasty. 2023. 9:S0883-5403(23)00218-8. DOI: 10.1016/j.arth.2023.03.001.

#### What is the background of the study?

Patient-reported outcome measures, or PROMs, are questionnaires used to measure patient outcomes after treatment, and were initially designed for use in clinical research. More recently, however many centres and registries are using these to track patient outcomes after surgery, as PROMs can be completed electronically with low burden for the patient. Additionally, long-term face-to-face clinic follow-ups are becoming unsustainable due to increasing patient volumes.

In this study, we looked at PROMs collected from patients who have undergone knee replacement surgery, and investigated associations with incidence of revision surgery (considered to be failure of the procedure). The data was collected by the New Zealand Joint Registry and all patients who underwent knee replacement surgery between 1999 and 2019 were included. Therefore, it is prudent to investigate how PROMs are associated with clinical outcomes of interest to estimate the utility of PROMs for patient follow-up after surgery.

#### What did you find?

We used the Oxford Knee Score (OKS), which is a 12-item PROM measuring patient pain and function in the knee. We found that patients with poor post-operative OKS outcomes (<27) had a disproportionately larger risk of revision, and this was consistent across all follow-up (six months to 10 years after surgery).

In a prediction model, for every one-unit decrease in OKS, the odds of a patient having revision surgery increased by approximately 10% at 6 months and 5 years, and between 5% and 10% at ten years, depending on the type of knee replacement. Patients who had a decrease in OKS of 7 points or more (the Minimal Clinically Important Difference) between subsequent follow-ups also had higher risk of revision.

#### What is the application of these findings?

As the OKS showed a strong negative correlation with risk of revision surgery at all study timepoints, the score can be a useful tool for surgeons to track long-term patient outcomes remotely, and to identify patients who may have a higher risk of revision and may require additional follow-up in clinic. In the paper, we also estimated some potential score cut-offs that can be used to optimise sensitivity and specificity of an OKS prediction model for use in a clinic setting.









# Ng PY, Ribet ABP, Guo Q, et al. Sugar transporter Slc37a2 regulates bone metabolism in mice via a tubular lysosomal network in osteoclasts. Nat Commun. 2023. 14, 906. DOI: 10.1038/s41467-023-36484-2

#### What is the background of this study?

Osteoclasts are giant multinucleated cells that play a central role in skeletal bone metabolism and underscore bone pathologies such as osteoporosis and osteopetrosis. Osteoclasts resorb bone via a unique membrane domain called the ruffled border, which abuts the bone surface and serves as the osteoclast's 'resorptive apparatus'. The ruffled border is derived from specialized organelles termed 'secretory lysosomes', which store cathepsin K and fuse with the bone-lining membrane. As a precursor to the ruffled border membrane, secretory lysosomes therefore represent attractive grounds for the discovery of new regulators of bone mass and thus potential therapeutic targets. Until recently, the molecular composition and spatiotemporal organization of secretory lysosomes in osteoclasts remained poorly understood.

#### What did you find?

In this study, we combined organelle enrichment methods with quantitative proteomics to unbiasedly survey the molecular landscape of secretory lysosomes isolated from mouse osteoclasts. Using this approach, we identified 218 secretory lysosomal resident proteins including Solute carrier protein 37a2 (Slc37a2), a poorly characterized membrane transport protein. When assessed against a large human genome-wide association study (GWAS) for estimated bone mineral density, the human SLC37A2 homolog showed a strong genetic association, indicating that SLC37A2 may be a physiological regulator of bone mass. We confirmed this using mice lacking the Slc37a2 gene, which manifest a profound high bone mass (osteosclerotic) phenotype primarily attributed to osteoclast dysfunction (Figure 1A). By monitoring the subcellular localization of Slc37a2 on secretory lysosomes in living osteoclasts we further discovered that secretory lysosomes adopt a 'tubular' organization (Figure 1B) that services the osteoclast ruffled border. This was unexpected as secretory lysosomes are traditionally viewed as 'spherical' vesicles. Finally, by combining multi-omics with a series of cell biological experiments, we found that Slc37a2 regulates the export of monosaccharide sugars from osteoclast secretory lysosomes, a prerequisite for ruffled border bone resorption. Overall, our findings unmask Slc37a2 maturation and as а new physiologically-relevant regulator of bone mass that operates on tubular secretory lysosomes as a sugar transporter required for osteoclast function.

#### What is the application of your finding?

Mutations in a few genes are known to cause osteosclerosis but explain only a very small proportion of high bone mass cases. Our discovery adds Slc37a2 to the list of osteosclerosis causing genes and may provide a genetic basis for patients with high bone mass diseases that currently remain undiagnosed. In addition, our work offers a rationale for the development of Slc37a2 inhibitors as a potential therapeutic treatment option for bone-wasting diseases like osteoporosis.



#### Did you face any challenges?

We had to overcome several technical obstacles in this study that are inherent when working with osteoclasts, which are complex cells and impervious to conventional cell biological manipulations. First, we had to devise a reliable and scalable organelle purification strategy to isolate sufficient amounts of secretory lysosomes demanded for proteomics. To circumvent this, we used iron nanoparticles (SPIONs) that were engulfed by osteoclasts, trafficked into lysosomes, and then magnetically retrieved to enrich organelles. We also faced several challenges imaging the localization



of Slc37a2 in living osteoclasts, especially on bone surfaces. To overcome this, we combined microinjection and viral-mediated delivery methods to introduce fluorescent Slc37a2 expression plasmids into primary osteoclasts and modified our imaging platform to enable up-close visualization of the osteoclast plasma membrane at the level of the bone surface.

# ANZBMS Researchers: We want to share & celebrate your wins!

We are on the lookout for ANZBMS members who have celebrated success (awards and publications) to be highlighted in the Spotlight or Publication sections for the upcoming editions of the newsletter.

We would also love to highlight member's beautiful research-related images on our newsletter cover.

If you know of someone or want to self-nominate, please email us at **newsletter@anzbms.org.au** 



# Calendar of Events

# 33<sup>rd</sup> Australian & New Zealand Bone and Mineral Society Annual Scientific Meeting

SAVE THE DATE October 22 – 25, 2023 Newcastle City Hall, New South Wales

#### **ASMR Medical Research Week**

2-9 June 2023, Australia State-specific event information here

#### **Cancer and Bone Society Conference**

7-10 June 2023, St Louis, USA Abstract submission deadline: 15 March 2023 More information here

#### **OIFE Topical Meeting: Balancing life with OI**

9-10 June 2023, Stockholm, Sweden Abstract submission deadline: 6 March 2023 More information here

#### **RACP-ANZBMS Webinar Series 2023**

'Bone Biology for Clinicians' - Prof Mark Forwood 26 June 2023 6-7:30pm AEST More information here

#### **ORS Musculoskeletal Workshop**

22-27 July 2023, Utah, USA Abstract submission: closed More information here



#### **ANZBMS** Osteoporosis Webinar Series

Sequencing Osteoporosis Therapies 2 Aug 2023, virtual, 7 - 8:30pm AEST

Planning safe anti-resorptive drug intermissions 13 Sept 2023:, virtual - 8:30pm AEST More information here

#### Bone Marrow Adiposity Society Summer School 2023

4-6 September 2023, virtual More information here

#### **ASBMR** Annual Scientific Meeting

13-16 October 2023, Vancouver, Canada Late-breaking abstract deadline: 19 July 2023 More information here

#### **ANZBMS Annual Scientific Meeting**

22-25 October 2023, Newcastle, Australia Abstract submission deadline: 21 July 2023 More information here



# HubLE News

### Early investigator spotlight

#### Ms Carolyn Chlebek, PhD Candidate Cornell University, U.S.A

**Research Title:** Load-induced differenial gene expression is spatially-distinct in murine cortical bone

**Keywords**: Biomechanics, Bone, Mechanobiology, Bioinformatics, Gene Expression, Osteoporosis, Preclinical studies



### We are recruiting new Associate Editors!

Are you an investigator in the musculoskeletal field? Are you passionate to join a dynamic team of investigators who love to contribute to the musculoskeletal field? *Apply now to join the HubLE as an Associate Editor!* 

We are recruiting **1-2** Associate Editors to pursue new ideas and generate innovative content for HubLE. The Associate Editors support and work closely with the two Editors-in-Chief. They play a key role in reviewing and curating the content of HubLE, as well as promoting the platform externally and providing input to its overall future development.

The posts are voluntary and there is no specific time commitment required, but Associate Editors commit to having regular meetings (bi-monthly) with the rest of the HubLE editorial team, responding promptly to requests, reviewing content as required and proactively promoting the platform and obtaining new content.

Successful candidates must be have completed their PhD and will have an interest in and relevant experience of digital communications, research publication and working with early-career investigators.

If you would like to join our international editorial team, please send your CV or short biosketch (2-pages), including your expertise and your field of research, with a brief cover letter outlining why you would like to join HubLE as an Associate Editor and how you feel you would help it grow and develop. All applications materials can be sent to <u>editors@huble.org</u>. The deadline for applications is **June 16, 2023**.

To view the current editorial team at HubLE, please visit<u>www.huble.org/about-huble.</u>

**Contribute to HubLE**: We're always interested in new content for our growing platform. To share your ideas, your current research or proposals for future research in the field, please visit our website <u>www.huble.org</u> or scan this QR code.

Join the discussion: Join other musculoskeletal researchers from around the world in discussing shared themes of interest via our online discussion channel on the Discord platform! It's free and easy:<u>https://discord.com/invite/RCmJgAnzxU</u>

