

NEWSLETTER

Society of Crystallographers in
Australia and New Zealand

SCANZ PRESIDENT'S REPORT 1



Dear SCANZ colleagues,

The last 10 months since I last wrote to you were unimaginable to any of us at the time of SCANZ newsletter No 71. The whole world suffered a transformation that has put science in the spotlight and our field of crystallography has been particularly important in the understanding of some of the 29 proteins of the SARS-COV-2. We should look to the future with optimism and confidence. Our field of research became stronger and, in the challenges, ahead there are also opportunities including for our society.

2020 was a colossal revolution in our personal and professional lives. We all had to adapt to new ways of work as well as how to be with our families and friends. Small and big non-profit organisations have been greatly affected with some able to adjust while others have not. Fortunately, our society is in a robust situation and although we had to delay, now twice, our crystal meeting it has not generated a large impact in membership or interest as of yet. However, as with any transformation I do feel we do need to see this opportunity to also modernise and evolve. A lot of the future of SCANZ will be, like it or not, virtual. More online interaction in many forms including meetings, schools and workshops. This should be accompanied by also the possibility to attend virtual business meetings and allow election of members of our bodies via electronic



<http://scanz.iucr.org/>

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voting. These processes need to be done with security and fairness but could also be a form to increase transparency. Above all I truly believe the major benefit we will get, if we embark in this modernisation journey, is more involvement of members at all levels but particularly the junior ones. The latter are so important in a dynamic and vibrant society and could be transforming for the future too. The most interesting and successful cyber experiences with scientific non-profit organisations I participated in recently were smaller events, from one or two hours to a day instead of the traditional conferences and workshops that are weeks long. If possible we should support, promote and even embark on some of those.

As you know, I should already have been replaced by vice-president Megan Maher but as we had to postpone our Crystal Meeting, we have not had an election. I feel that it is now the right time for me to step down. Following Section 6 of our constitution “the Vice-President shall succeed to the Presidency for the remainder of the unexpired term and will succeed in the following term” so I will leave the rest of this President’s report for, as have heard elsewhere, the president-elect Megan Maher to describe some of the outcomes we have been able to do despite the pandemic situation. I intend to continue to be involved in the SCANZ society as Past President for the next term as well as an ordinary member for a long time. I wish Megan a very successful presidency and I am sure she will be a President that will leave a very positive mark on our society.

I wish you, your family and your friends good health & success but also a Merry Christmas and Happy New Year

David Aragão

SCANZ PRESIDENT’S REPORT 2



It is a great honour and privilege to take over from David as SCANZ President. I am very conscious of the proud history this Society has enjoyed and have to confess to feeling a little overwhelmed at the prospect of my new role.

I’d like to begin my first President’s report by expressing my and the society’s deepest thanks to David for the astounding amount of work, energy and commitment he has contributed to SCANZ, first as Treasurer (2014), then Vice President (2017) and President (2018). Importantly, David has made this contribution over the past ~20 months remotely, from his new home in the UK. This has been incredibly generous and much appreciated.

As David mentioned and as is apparent to everyone, this has been a tumultuous year. Unfortunately, the impacts of SARS-COV-2 have led to the postponement of the Crystal 33 meeting. We are hoping to have an update on its scheduling to share in the very near future. In the meantime, I’d like to acknowledge the ongoing work and commitment of the meeting Organising and Program committees, particularly the meeting chair Chris Ling. I’m sure the committee members didn’t originally sign up for this length of service, so we very

much appreciate their continued contributions. I'm sure the whole membership will be looking forward to an opportunity to finally meet face-to-face in 2021.

Despite the prevailing chaos that has been 2020, the SCANZ Trustees, with the Council, have been able to make some important progress with the 1987 Fund. The fund is now being managed professionally by Grant Thornton Australia Ltd. and as a result, we are able to forecast an annual yield with some certainty. The SCANZ Council have decided to use this opportunity to generate a list of new initiatives that are currently under development, further details of which will be communicated in future newsletters. These include: a membership drive to better engage with the crystallographic community in New Zealand, the introduction of travel awards for postdoctoral fellows, a dedicated fund for outreach activities and conference travel support for SCANZ members with carer responsibilities. I'd like to take the opportunity to thank the current and previous trustees for the care they've put into the preservation of this fund. In the current circumstances, the financial security that SCANZ enjoys is certainly unique. I'd like to make particular mention of Mark Spackman for his tireless efforts in this area – particularly this year, with so many changes needing to be facilitated.

Wishing you all a safe and calm conclusion to 2020 and a welcome reunion at Crystal 33 in 2021.

Megan Maher

SCANZ COMMITTEES



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IUCr 2023 UPDATE

Despite the challenges of COVID-19, planning for the IUCr 2023 conference to be held in Melbourne has continued this year with a number of meetings and discussions between the local organising meeting and our professional conference organiser, ICMS Australasia, with support from SCANZ.

COVID-19 has certainly impacted on our planning. The IUCr 2020 meeting planned for Prague has been moved to August 2021 and so our plans to advertise our own meeting at IUCr 2020 shift as well. There was some consideration whether we should move our own meeting to 2024 but this did not prove logistically possible.

We have seen an explosion of virtual conferences this year. Although many have been successful, they don't replace the advantages of face-to-face conferences where we can meet old friends, make new ones and formulate ideas and collaborations over coffee with experts around the world. It is still our intention, regulations permitting, to have a memorable conference where we will all be able to meet in person again.

The IUCr 2023 local organising committee consists of Michael Parker (Chair, University of Melbourne and St. Vincent's Institute), Brendan Abrahams (University of Melbourne), David Aragao (Diamond Synchrotron), Stuart Batten (Monash University), Melissa Call (WEHI), Daniel Eriksson (ANSTO), Brendan Kennedy (University of Sydney), Helen Maynard-Casely (ANSTO), Megan Maher (University of Melbourne) and Tom Peat (CSIRO). As we get closer to 2023, we have plans to expand the committee to achieve better geographical representation across Australia and New Zealand.

We thank Emma Bowyer and her team from ICMS Australasia who are providing valuable support and advice to us. Emma was successful in obtaining a digital marketing grant from Tourism Australia. A web site is in development and hopefully will be ready by early next year. We also have a twitter handle @IUCr2023.

We are planning increased activity in 2021 and will keep SCANZ members informed during the coming year.

NEW MEMBERS WELCOME!!!

SCANZ welcomes new members, particularly from New Zealand. Benefits of membership include:

- Global representation through ASCa, IUCr and STA*
- Prestigious Awards*
- Discounted conference fees*
- Exceptionally generous student travel support*
- Information and job vacancy sharing*
- Membership from as little as \$10 per year for students*

Membership applications can be made through the newly improved SCANZ website, contact your friendly SCANZ committee members if you require a sponsor for your application.

<https://scanz.iucr.org/>

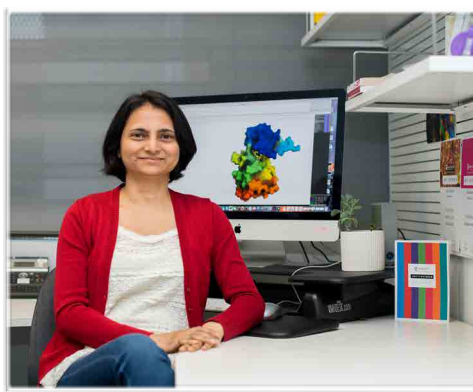
SUPERSTARS OF STEM PROGRAM AT SCIENCE AND TECHNOLOGY AUSTRALIA

Australian workforce constitutes 47% women, however, Australia's STEM-skilled workforce represents only 16% women compared to 84% men. According to Women for Media Report, women were the source for only 26% commentary on science and technology compared to 74% of men. This lack of visibility of women of STEM in various sectors, including in media has resulted in societal norms and stereotypes that has inhibited participation of young girls in STEM. To address this gender gap, Science and Technology Australia (STA) initiated the Superstars of the STEM program in 2017 (<https://scienceandtechnologyaustralia.org.au/what-we-do/superstars-of-stem/>) with backing from the Federal Government and industry sponsors. The Superstars of STEM program aims to smash society's assumption about scientists and increase visibility of women in STEM by creating a critical mass of STEM role models. STA recently celebrated 35 years as Australia's peak body representing more than 80,000 scientists and technologists. They also maintain a strong relationship with industry, government, office of the Chief Scientist to develop evidence-based policies through collaboration across various disciplines representing Australian Science and Technology.

In 2019, I was selected to the Superstars of STEM program along with 59 other women representing various STEM disciplines. I applied to the Superstars of STEM program for my professional development but also to be a role model for the next generation, especially boys and girls from a culturally diverse background. Being a first-generation immigrant and seeing my nephews and nieces growing up here, I know that being a visible role model was important for me to make them appreciate the opportunities that exist in STEM. At a professional level, I found this program a huge confidence booster, which I have struggled with for a long time. Also meeting other like-minded women in STEM thriving to make STEM diverse and inclusive is an opportunity of a life time. Some of my professional highlights being part of this program include, attending the Science meets Parliament event and a chance to talk to Minister Stephen Jones, Shadow Minister of Financial Services and his policy advisor; attending the Prime Minister's Prizes for Science; communication workshop with journalists from TV, radio and print; social media workshops; how to write for 'The

Conversation'; mentorship program; and how to communicate with influence. As a part of this program, we are visible role models, and our role also included school visits to inspire the next generation about the work we do but also about our journey in STEM, overcoming barriers along the way, subject choices and sharing tips. Since I am a part-time artist, I enjoy talking about the intersection of art and science and given structural biology as a field has countless examples of this intersection, it was a great way to grab student's attention. I also collaborated with the Protein Data Bank Europe (PDBe) and a Melbourne public school this year to bring the PDBArt exhibition to Australia for the first time and build an ongoing relationship with this school to promote structural biology through art. This exhibition which will showcase the work from the Melbourne school along with schools in the UK who are part of the PDBe collaboration will go online virtually on the 4th of December (look out on the PDB Europe website or twitter feed). In addition to this, I was able to write for 'The Conversation' about the power of structural biology in understanding the SARS-CoV-2 virus at a molecular level when COVID hit earlier this year. Overall, after this program I felt more comfortable speaking to the media, pitching my work in front of different audiences, giving leadership and public talks and doing media interviews, skills that I never had opportunities to learn otherwise. I highly recommend this program, which has made an impact which you can read more about on the STA website. If anyone is interested in knowing more about my experiences, please feel free to reach out or visit the STA website for future rounds of the Superstars of STEM program.

*Onisha Patel
Walter and Eliza Hall Institute*



MX3 UPDATE

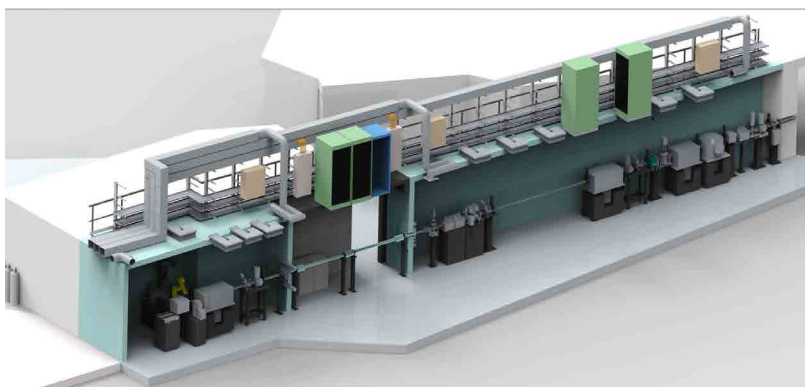
In 2009 the Australasian crystallography community began discussing possible specifications for a third single-crystal diffraction beamline at the Australian Synchrotron to complement the existing MX1 and MX2. This led to inclusion of HMX – a High Performance Macromolecular Crystallography Beamline – in the Synchrotron’s “Science Case 2” for a new set of beamlines (http://archive.synchrotron.org.au/images/stories/aboutus/sc2_final_web_version.pdf). Plans for such developments stalled for a number of years until the funding of Synchrotron operations was placed under ANSTO, and a major capital development programme was created in 2018: The BR!GHT Project (<https://www.ansto.gov.au/research/facilities/australian-synchrotron/project-bright>), funded by the major stakeholders. One of the eight new beamlines proposed in this Project (<https://www.ansto.gov.au/research/facilities/australian-synchrotron/project-bright/bright-beamlines>) is MX3 – an updated version of the HMX concept. In a meeting of stakeholders in 2019, MX3 was scheduled in the second wave of new beamlines with a planned commissioning date of January 2023 with first users scheduled for the 1st of July 2023.

In 2019 and early 2020, the Lead Scientist (Tom Caradoc-Davies) and second Beamline Scientist (Daniel Eriksson) were recruited and an MX3 Beamline Advisory Panel created (Charlie Bond [Chair, UWA], Aina Cohen [Stanford/SLAC], Gwyndaf Evans [Diamond], Stephanie Gras [Monash], Christopher Sumbly [Adelaide], Peter Czabotar [WEHI] and Emily Parker [Wellington]). The concept for MX3, as a highly automated micro-focus beamline, capable of serving an unmet need for high-throughput structure-based drug design, serial crystallography, and conventional analysis of challenging crystals, was presented to the community at a public Webinar and discussion “Current and Future Crystallography at the Australian Synchrotron” in June 2020. The MX3 beamline will produce an intense beam with the full beam of 7x2 microns at the sample (HxV). This can be reduced to 2x2 microns via closing the secondary source aperture or rapidly increased to 15x15 microns using defocusing compound refractive lenses. The double multilayer monochromator will have three stripes with different bandpass (0.3%, 0.5% and 1% at the sample) with a full-beam flux at the sample for the 1% stripe of 6e13 ph/s at 13 keV.

Following approval of the budget, as of October 2020 the Conceptual Design Report prepared by the Beamline team has been reviewed externally, and tendering for the major optical and infrastructure components is now underway with a start date for building scheduled in early 2022.

*Charlie Bond
Tom Caradoc-Davies
Daniel Eriksson*

*MX3 concept design showing a cut-away view of the optics hutch (right), transfer line and endstation (left). The user cabin is shown in white behind the endstation.
Image by Hima Cherukuvada.*



CRYSTAL 33 UPDATE

Plans to reschedule Crystal 33, originally planned for April 2020 but postponed due to COVID-19, are currently underway. Updates on revised plans are due in the new year. Details will be communicated to SCANZ members when available and will also be available through the following link.

<https://www.crystal33.org>