
ASTRO 3D Black Lives Matter (BLM) Action Plan

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1 Context

1.1 Our Mandate: We Can All Take Action

Our ASTRO 3D community will work to:

1. Acknowledge the racial inequity in the Australian Astronomy Community and across Australian Academic Institutions in general.
2. Take steps to combat and work toward eradicating academic institutional inequities and racial biases.
3. Make astronomy more accessible to Indigenous and Black Australians.

With our BLM Action plan, we will:

1. Educate our community about racial biases and equip ourselves with the tools necessary to combat racial inequities in our institutions and nodes.
2. Engage with marginalised communities and voices, especially Indigenous and Black Australians and people from underprivileged socioeconomic backgrounds.
3. Empower individuals from the abovementioned underprivileged groups to succeed in Astronomy and related sciences.

So that every person feels that they are valued, that they are heard, and that they belong.

1.2 Existing Resources & Opportunities

As members of the ASTRO 3D community, we all have the opportunity to help implement the BLM Action Plan within our respective institutions as well as across Australia and internationally. It cannot be stressed enough how important it is to have people at every career stage be engaged in working towards dismantling the systemic racial barriers that still exist within our academic communities. Fortunately, we have within the ASTRO 3D network a number of resources and existing programs that we can build upon in our BLM Action Plan.

1. ASTRO 3D has staff working on developing Indigenous Astronomy for education and outreach. Current members include Duane Hamacher at University of Melbourne (Indigenous astronomy), Delese Brewster at ANU (Indigenous work experience program), and Tash Marshall at University of Sydney (Indigenous astronomy in the classroom).
2. ASTRO 3D is a community of about 250 members who can all contribute time to supporting the BLM Action Plan. For example, helping our education/outreach staff with developing educational materials such as graphics, posters, and videos. *If everyone just donated 4% of their time to these efforts, that would be the equivalent of hiring 10 people to work only on the BLM Action Plan!*
3. We can collaborate with and build on existing programs such as [Australian Indigenous Astronomy](#), [Deadly Science](#), and the STEM Indigenous Network. Liaise with [OzGrav](#), [ASA](#), other astronomy/physics programs to pool resources and not duplicate efforts.
4. To maximise our efforts, we can identify and connect with other programs across Australia that have common goals. A first step is to have a general call to the Astronomy community, e.g., via the [ASA](#), to identify a database of existing programs and their contacts.
5. ASTRO 3D has funds for professional development and training as well as workshops and conferences. We can use some of these resources to support, e.g., facilitated discussions on cultural awareness at ASTRO 3D meetings.

2 Immediate Actions: By 2021

During our recent discussions, the ASTRO 3D community has identified various actions that will aid in bringing our Australian Astronomical Community forward and increase the much-needed diversity in our community. In our Action Plan, we divide the plan into immediate actions to be in place by mid-2021, along with intermediate and long-term plans for the remaining life of this Centre. The focus of the immediate actions is on Indigenous and Black communities, whereas the mid and long-term plans expand to encompass marginalised communities and people of colour.

2.1 Celebrating Indigenous Astronomy

2.1.1 Indigenous Australians, the most ancient astronomers in the planet

- a.) As Australian astronomers, we should celebrate the ancient history of Indigenous Australians as scientists. As individuals, we should highlight the legacy of Indigenous astronomy by educating ourselves and sharing broadly with our international communities.
- b.) Before the Greeks and the Renaissance, Indigenous Australians knew of variable stars and navigated using the sky. Indigenous Astronomy is thus a powerful narrative that resonates and can be an effective entry point for science communications with Indigenous pupils.
- c.) Include Indigenous astronomy in the curriculum. A set of lectures could be produced to discuss Indigenous astronomy, e.g. the Emu, variable stars, sky navigation and many more, to pass on to the node institutions to include in their Astronomy 101 courses. ASTRO 3D can lead the way to provide materials to be used across all the nodes/partner institutions.
- d.) Indigenous history is incorporated across the curricula for high school pupils but implementation across Australia is uneven. An area that is lacking is in the Physics curriculum. Information to include in the Physics would be well received. Also, we could modify the Indigenous astronomy lectures to be more suitable for high school students. Further, we could liaise with the ministry of education to include this great heritage of astronomical knowledge that indigenous Australians have in the curricula across all the states.

2.1.2 Indigenous Knowledge Dissemination

- a.) Development of posters promoting Indigenous knowledge in astronomy in a modern context. Posters can be easily sent to multiple different locations to ensure that they are seen by Indigenous students and young people. Further, most scientific institutions have pictures of older white males, these posters could sit alongside these images to promote a more inclusive/welcoming environment that is uniquely Australian.
- b.) Development of an ASTRO 3D branded module for National Science Week (Aug 2021). Celebrate Indigenous discoveries such as navigation of the celestial sky and variable stars. This education module could be made available on the A3D website. Development will need to be coordinated with our Education & Outreach staff for use in schools.
- c.) Share narratives through videos, multi-media, etc. to provide role models “see it to be it”. It would be powerful to produce a series of A3D interviews with Indigenous or Black researchers in Australia who are purely talking about their science. The video profiles will primarily focus on research, but should also include their individual journeys about where they are now and how they got there.

2.2 Looking Inward within Our Communities

2.2.1 Track Demographics

ASTRO 3D currently only collects data about gender; there are no self-identification boxes on the mem-

bership form for selecting heritage. The ARC has just introduced a new reporting system that does ask for data on Indigenous people which ASTRO 3D can expand to include demographics. ASTRO 3D should develop an online form and request that all existing members update their demographic information at the next retreat scheduled for November 2020.

2.2.2 Climate Survey

ASTRO 3D is scheduled to have a follow-up Climate Survey in 2020/2021. We should include questions in the survey that encourage members to reflect on the challenges that people from marginalised groups face. This can include examples of systemic racism and inequities in academic environments as well as broader societal biases.

2.2.3 Racial Equity Workshops at Annual Meetings

ASTRO 3D provides a number of professional workshops run as part of annual meetings, workshops, writing retreats, etc. We should expand on strategies for inclusive practices. Previous workshops have focused on unconscious bias and gender, future ones could focus more on inequality from Indigenous and Black communities' perspective. Suggestions include:

- a.) Run bystander training
- b.) Develop a racial inequity workshop with Dr. Nicole Cabrera Salazar to run at ASTRO 3D science retreat in November 2020.
- c.) A workshop on understanding and promoting respectful language and culture.
- d.) A discussion on how unspoken rules and assumptions about learning, technology, education, etc excludes different groups.
- e.) Learning strategies to help empowering voices and flatten power structure (Dr. Nicole Cabrera Salazar)

3 Mid-range Actions: By 2023

From the [AIP TEAM-Up Report](#) on the persistent under-representation of African-Americans in physics & astronomy, the two key factors are 1) lack of a supportive environment for these students in many departments; and 2) the enormous financial challenges that these students and the programs that support their success face.

To work towards removing these barriers, the mid-range actions described below are to develop strategies now that will be implemented during the remaining lifetime of this Centre. These strategies must be regularly assessed and evaluated to ensure continuous improvement as a whole. Development and implementation of mid and long-term actions will be in coordination with existing programs, e.g. [Indigeneous Astronomy Australia](#).

3.1 Making Astronomy Attractive & Accessible to Students

Students who are Black, Indigenous, and/or people of colour (BIPOC) are historically under-represented at the university level and beyond. However, waiting until university to address this systemic short-fall is too late.

3.1.1 Science Academy/Study Programs

Moving beyond single-experience outreach, we should develop Indigenous work experience programs and/or invite Indigenous high school students to visit ASTRO 3D nodes. ASTRO 3D can expand on current programs with a focus on Indigenous and Black students (e.g. work experience programs already

running at Swinburne or adopt a Winter School format). Work experience programs will require a coordinator to channel students into the program, e.g., Corey Tutt ([Deadly Science](#)).

We also need to consider barriers that exist for Indigenous and Black students which include:

- a.) Financial hardship: Budget A3D scholarships or sponsorships for work experience students. This type of program exists in South Africa so that UCT and other traditionally white elite universities accept government funded Black students to study astronomy. Vacation scholarships may also be an option because they typically do not require substantial funding. However, students who are awarded vacation scholarships usually are already connected to the institute, thus spots would need to be made available specifically for Indigenous and Black students.
- b.) It is not easy to see a clear career path for astronomy. For example, students and their families see that an engineering degree can lead into a successful career in engineering. Astronomy generally requires an undergrad and then higher research degrees, and career paths beyond academia are not clear. It may be more attractive for students to do a combined degree in astronomy with another subject such as engineering. More generally, we need to do a better job of promoting that training in astronomy is a strong foundation for a wide range of high-earning careers across sectors including economic, corporate, and industry.

3.1.2 Astronomy Ambassadors

Identify Astronomy ambassadors/points of contact to establish a direct and sustained line of communication to Indigenous and Black communities. Ambassadors are charged with going to Indigenous and Black communities and bringing their voices to our academic circles. We need to ensure space for listening and responding to learn how we can better connect with marginalised communities.

3.2 Retaining Astronomers from Under-represented Groups

3.2.1 A Support Network: Strength in Numbers

Within ASTRO 3D, we have a small cohort of under-represented people of color who may feel isolated at their institute. Along the lines of existing ASTRO 3D committees for students and early career researchers, we should connect people who identify as a person of colour and thus build an internal professional support network (similar to [Fisk-Vanderbilt Master's to PhD Bridge Program in the USA](#)).

Fostering a peer level community also provides a space for sharing unspoken knowledge that includes the “hidden curriculum” for navigating the academic environment. ASTRO 3D already provides professional development workshops to better prepare students and young researchers, we should develop an additional module that specifically addresses these unspoken professional expectations.

3.2.2 Hiring and Promotion Practices

Dismantling systemic racism requires structural changes in hiring practices, thus guidelines for hiring are essential for enabling diversity at all levels, especially in leadership. The ASTRO 3D EDI committee is currently drafting hiring guidelines that provide specific strategies for ensuring diverse selection committees and inclusive application processes.

ASTRO 3D has demonstrated success with offering fellowships for women, and in several cases the fellowships are leveraged into continuing academic positions. A similar fellowship for Indigenous and Black astronomers should be offered, and opportunities for making Indigenous/Black only positions in hiring explored.

3.3 Indigenous Advisory Board

To ensure that we are guided by the voices of Indigenous communities and prioritise their input, ASTRO 3D and future Centres of Excellence should set up an Indigenous Advisory Board.

4 Long-term Actions: Beyond 2023

As we build on the current momentum and demands for change, we must be mindful that challenging institutional racism is not easy nor quickly eradicated. As a community, we must have a long-term vision that is sustainable and continuously empowers marginalised voices, i.e. “this is a marathon and not a sprint”. Most notably, “drop-in” outreach where young people interact with astronomers only a handful of times in their early lives is not effective by itself.

The long-term plan relies on establishing, strengthening, and sustaining partnerships with universities, schools, and businesses. Ideally the long-term actions described below will be in place by the end of the current Centre. These foundations can then be integrated and expanded upon in the next Centre of Excellence, e.g. in collaboration with [Australian Association for Astronomy in Culture, Inc.](#)

4.1 Recruiting, Training, & Retaining the Next Generations

4.1.1 Universities

The Visiting Scholar Scheme can be used to bring people from countries that are underrepresented to promote conversations and future collaborations and programs. This would focus on increasing inclusion and diversity.

Awareness of and solutions to visa issues/challenges for travel and study abroad.

Writing support and resources. This may be incorporated into existing writing retreats with tailored support for students where English is not their first language.

Partnering with universities to offer undergrad scholarships, e.g. top-up.

The Cultural & Indigenous Astronomy program at the University of Melbourne offers interdisciplinary undergraduate and postgraduate courses and qualifications, including four undergraduate courses, a Minor for the Bachelor of Arts, a Breadth Track, and upcoming Graduate Certificate, Graduate Diploma, and possibly a Master of Cultural Astronomy. The courses on offer all focus learning about astronomy and space from a social and cultural perspective, with a major focus on Indigenous cultures and knowledges.

- PHYC10010: Indigenous Astronomy
- PHYC20017: Archaeoastronomy
- HPSC20015: Astronomy in World History
- PHYC30025: Astronomy and Society in the Space Age

Develop pathways for Indigenous students and researchers to join Centres of Excellence such as ASTRO 3D. Membership can be made available through scholarships and postdoctoral positions as well as networks at secondary schools and universities.

4.1.2 Primary & Secondary Schools

Bringing the education modules, posters, ambassadors, etc into marginalised communities by working with existing programs at each institute, e.g.

- [Aspire program at UNSW](#)
- [Residential Indigenous Science Experience \(RISE\)](#) at the University of Melbourne.
- [Ngarrngga Project at the University of Melbourne](#). Indigenous astronomy is being incorporated into the Australian Curriculum at all year levels across all subjects.
- Indigenous Work Experience programs at Swinburne University and the ANU.

4.2 Beyond Astronomy

4.2.1 Career Profiles

Profiles of people with astronomy training who have moved to professions beyond academia. Part of the “virtual rolodex” for careers beyond astronomy to be developed within ASTRO 3D and the next CoE. See ‘Beyond ASTRO’ video series on ASTRO 3D legacy website.

4.2.2 Businesses

Identify and support Indigenous and Black businesses whenever possible, e.g. through cultural experiences, hospitality, professional services, etc.

5 Resources

5.1 Partnering with University Indigenous Centres:

- [UNSW Nura Gili Centre for Indigenous Programs](#)
- [Swinburne Moondani Toombadool Centre](#)
- [Residential Indigenous Science Experience \(RISE\) at University of Melbourne](#)
- [ANU Tjabal Indigenous Higher Education Centre](#)
- [UWA School of Indigenous Studies](#)
- [Curtin Centre for Aboriginal Studies](#)

5.2 Some resources specific to Australia (need to identify other existing programs)

- [Aboriginal Indigenous Astronomy](#) and social media
- [Deadly Science](#)
- [CSIRO Indigenous STEM Education Project](#)
- [Stones and Bones](#)
- [National Aborigines and Islanders Day Observance Committee \(NAIDOC\)](#)
- [National Science Week](#)

Indigenous Scholars:

- Australia: Dr Stacy Mader (CSIRO), Dr Kirsten Banks (Swinburne), Krystal De Napoli (Monash), Karlie Noon (ANU), Pete Swanton (ANU), Christian Maskey (SpaceBridge), Peter Reeve (BOM), Prof Marcia Langton (Melbourne), Prof Martin Nakata (JCU), Uncle Segar Passi (Meriam elder), Uncle Alo Tapim (Meriam elder), Uncle Ghillar Michael Anderson (Euahlayi elder), Uncle Jimmy Smith (Wiradjuri elder), David Bosun (Mua artist), N’arweet Carolyn Briggs (Senior Boon Wurrung elder).
- International: Dr Annette Lee (Lakota astrophysicist and artist), Prof Rangi Matamua (Maori astronomer), Dr Pauline Harris (Maori astrophysicist), Dr Nancy Maryboy (Navajo elder), Dr David Begay (Navajo elder).

5.3 Useful BLM links (a sample and by no means complete list)

- [“Indigenous Engagement with Science” report by the Dept. of Industry, Tourism, & Resources](#)

- The USA AIP National Task Force to Elevate African American Representation in Undergraduate Physics & Astronomy
- The Nashville Recommendations for Inclusive Astronomy
- Astrobytes #BlackinAstro Series
- American Astronomical Society “Strike for Black Lives”
- Particles for Justice “Strike for Black Lives”
- Victoria Women’s Trust “Anti-Racism Resources from Australia & Beyond”
- Rowland Mosbergen’s slides on “Capability Maturity Model for Diversity in Organisations”
- Scaffolded Anti-Racist Resources
- Angela Saini: “Superior: The Return of Race Science”
- White Academia: Do Better