MONASH University

MONASH INSTITUTE OF MEDICAL ENGINEERING

MONASH YOUNG MEDTECH INNOVATORS

Invent Student Internship Impact Report 2024-2025

Acknowledgement of Country

We acknowledge the Traditional Owners of Country throughout Australia and recognise their continuing connection to land, waters and culture. We pay our respects to their Elders past and present.

We recognise First Nations Peoples' inherent rights as custodians of land and waters and that sovereignty was never ceded. We affirm that this always was, and always will be, Aboriginal land. As an organisation committed to shaping a better future, we value First Nations Peoples' knowledge systems and practices. We honour those who protect, preserve and celebrate them, leaving a profound legacy for future generations of Elders and leaders.

We're committed to fostering a society that recognises, respects and includes Indigenous peoples, cultures and knowledge by working with and celebrating Aboriginal and Torres Strait Islander peoples to advance the wellbeing of people and the planet for current and future generations.

> The Invent Student Internship has provided me with the tools to discover a future in medical technology, and the project I've worked on has shaped my career in research and medtech

ISI Intern '24-25
Bachelor of Biomedical Engineering

About the Invent Student Internship

The Invent Student Internship (ISI) is a project-based internship that connects current Monash Institute of Medical Engineering (MIME)-funded research projects with high-performing undergraduate students across universities who are interested in co-developing defined technological solutions. Established in 2024, ISI is facilitated and funded by MIME, led by Professor John Forsythe and Professor Patrick Kwan. The program provides students with hands-on experience in cutting-edge biomedical engineering research and practical, applied development.

Through ISI, students learn and apply the Stanford Biodesign methodology under the guidance of Associate Professor Khoa Cao and Dr Julie Dao. This includes structured learning in commercialisation pathways, intellectual property, regulatory strategy, and reimbursement planning. Students also participate in a suite of workshops and masterclasses delivered by leading academic and industry experts.

MIME delivers this program in partnership with Monash Young MedTech Innovators (MYMI), a student-led organisation affiliated with Monash University. MYMI is committed to bridging the gap between medicine, technology, and entrepreneurship by cultivating the next generation of medtech innovators. The organisation provides opportunities for students to collaborate on impactful projects, gain industry insights, and develop skills essential to the future of healthcare. In addition to running MedHack - Melbourne's premier student-run healthcare innovation hackathon - MYMI is now expanding its activities to include the ISI internship program in collaboration with MIME.

Team

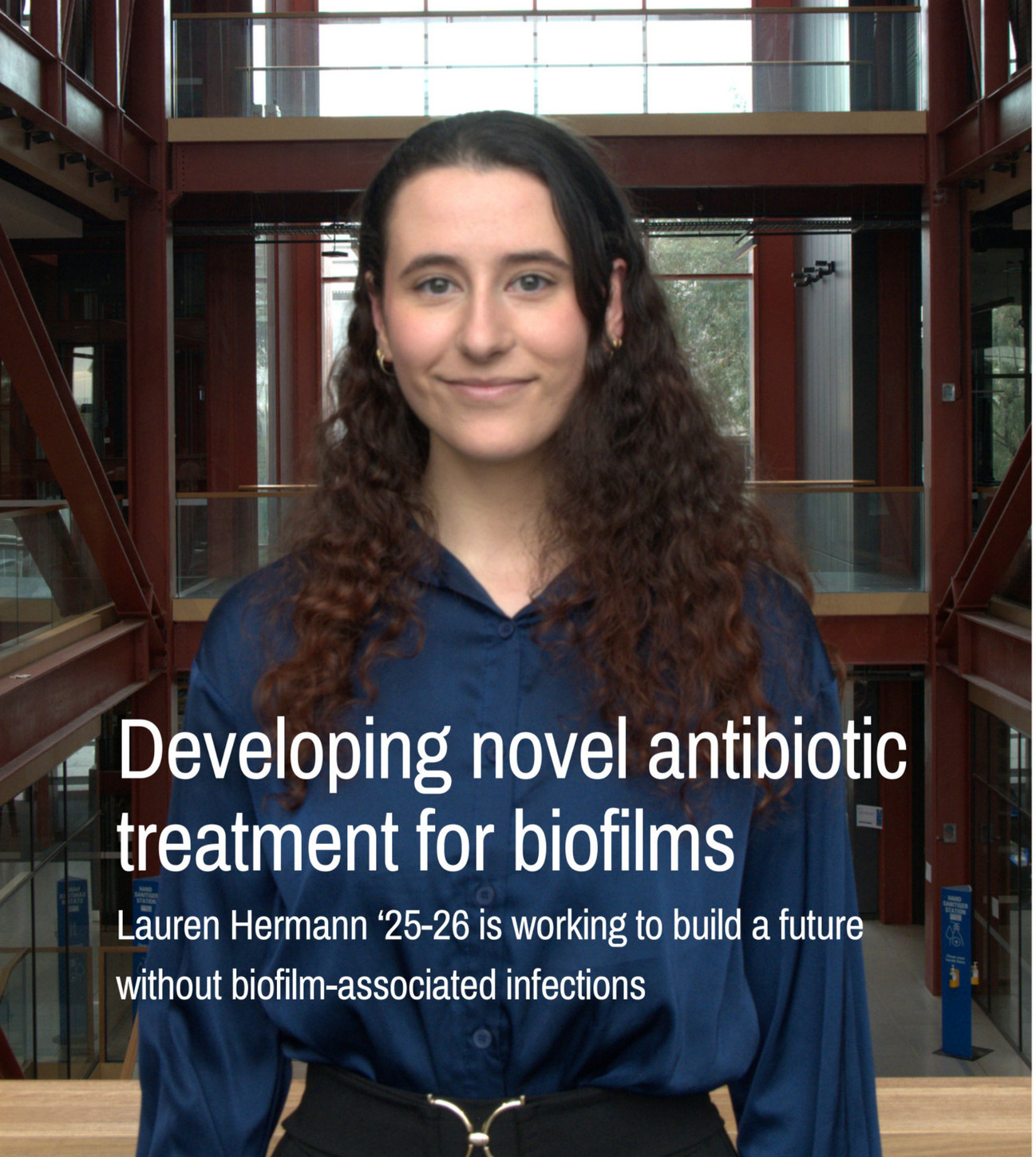
Dr. Julie Dao
Program Lead

Lloyd Lok
Program Coordinator

Bora Ith
Program Coordinator

A/Prof Khoa Cao

Dr Andrew Carey



Developing novel antibiotic treatment for biofilms

Lauren Hermann ‘25-26 is working to build a future without biofilm-associated infections

> “I would certainly recommend this project to other students as it incorporates many different experiences vital to developing a career in medical device innovation that are not necessarily taught in general classes”

From inspiration to implementation

Lauren joined the ISI Program seeking a hands-on experience that would deepen her understanding of medical device innovation and allow her to apply her passion for biomedical engineering in a real-world setting. Drawn to the antibiotic microparticle hydrogel project, Lauren explored how antimicrobial materials could help tackle staphylococcal biofilm infections on implantable medical devices, an area with profound clinical relevance.

Working alongside researchers in the lab, she developed new technical and experimental skills, from creating cell culture mediums and conducting DNA recombination to investigating biofilm growth. Through shadowing and independent lab work, Lauren strengthened her confidence in practical research while learning how scientific discovery intersects with market and regulatory considerations.

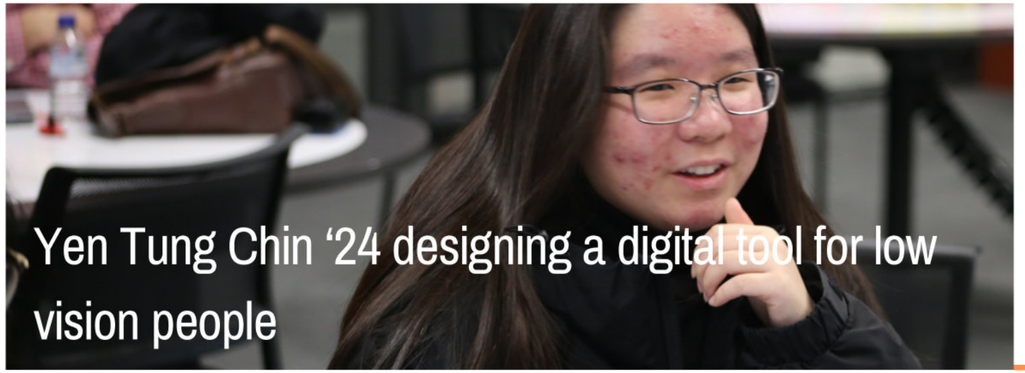
“The ISI workshops introduced me to key areas like regulatory strategy, IP, and medtech commercialisation, concepts I now apply across my studies and current work,” Lauren reflects. “The experience solidified my desire to pursue postgraduate study in medical device engineering and helped clarify the pathway from innovation to impact.”

Program background and timeline

The ISI program aims to connect student innovators with active research projects, providing immersion in research, development, and translational problem-solving. This aligns with the Australian Government's Research Translation and Commercialisation Agenda, which places university innovation and industry collaboration at the forefront of national priorities. By equipping emerging talent with the skills to translate research into real-world solutions, the program supports the development of a long-term, highly skilled workforce and contributes to future economic and technological growth.

Selection and Demographics
ISI is a highly competitive program, offering only one application round per year. Across 2024 and 2025, 175 students applied from a wide range of disciplines, including engineering, information technology, law, biomedical science, and business. Selection is based on demonstrated skills and experience, supported by a written statement outlining each applicant's motivations and interest in the program.

> "This program pushed me to think outside the box, approach challenges from multiple angles, and expand my problem-solving skills"



January – February: Project Interest & Planning
The process commences with project leads expressing their interest to participate during which potential projects for interns are identified. This stage helps determine which laboratories and projects may participate in the program.

March – May: Applications & Selection
The Winter Scholarship application process is launched, with applications opening in April and closing in late May. During May and June, candidates go through two rounds of interviews: the first with MYMI and MIME, and the second with MYMI and MIME + the lab lead, ensuring a comprehensive selection process.

June – July: Winter Internship Program
The five-week Winter Program takes place during the Semester 1 to Semester 2 break. Interns engage in full-time, hands-on project work and attend weekly professional development workshops, and 'demo' sessions for progress updates and to practice presenting and pitching. Upon completion, participants submit a final report summarising project outcomes, learnings, and contributions.

August – September: Program Continuation
Following the winter period, interns continue their engagement with host laboratories on a part-time basis throughout Semester 2. This extension allows for further project development and continuity. Concurrently, discussions commence regarding potential summer funding opportunities to support extended research placements.

October – December: Final Showcase & Future Planning
The program culminates in a final showcase, where interns present their work, key findings, and professional growth to academic and industry stakeholders. This stage also facilitates forward planning, exploring post-winter opportunities.

> From regulatory strategy to medtech commercialisation, the depth of biodesign knowledge I gained was much more than I expected - and it's something I now apply across my studies, biodesign competitions, and current work

Turning curiosity into real-world innovation

Ruby applies her ISI experience to bridge engineering and science, exploring how biosensing technologies can transform early disease detection and patient care.

A Mechanical Engineering and Biomedical Science student at Monash University, Ruby joined the ISI Program to work on the BioFETs for Early Point-of-Care Applications project. "The project immediately stood out to me," she shares. "With many ground-breaking treatments becoming more accessible, it's more important than ever that we can monitor Alzheimer's from the early stages to provide patients with the maximum benefit possible." Through this experience, Ruby gained exposure to both the experimental and human-centred sides of innovation—testing biosensor performance in the lab while engaging with clinicians and patients to better understand their needs.

"What stood out to me was that the assumptions we make in desktop research can often be invalidated in the field," Ruby reflects. "One of the most important aspects of the biodesign process is the flexibility to pivot, quickly identify weak points, and use each step as a learning opportunity to develop a stronger, evidence-based iteration."

Building a point-of-care device for Alzheimer's disease

Ruby van Beveren '25-26 is working to detect early signs of Alzheimer's through a simple blood test

Impact

The Invent Student Internship (ISI) Program continues to generate measurable impact for both students and mentors within the medtech innovation ecosystem. Across two cohorts, the program has united 19 students and 20 mentors to deliver 11 multidisciplinary medtech projects, effectively bridging discovery research with real-world application and innovation. Throughout the program, students' skills, experiences, and professional growth were continuously tracked through pre- and post-program surveys, providing valuable insight into their development journey. The post-program survey results demonstrate substantial knowledge, technical capability, and career readiness, supported by strong mentor engagement and impactful project outcomes.

Interns Strengthened Knowledge and Technical Confidence

90%

Understanding of the Stanford Biodesign process

92%

Confidence contributing to prototyping/product development

85%

Ability to apply technical knowledge in real-world settings

Interns Enhanced Career Readiness and Industry Connection

95%

Clarity on career opportunities in the medtech sector

92%

Preparedness for the next career or academic step

95%

Opportunities to collaborate with research or industry partners

Mentor and Researcher Perspectives

93%

Made meaningful project progress

96%

Opportunities to collaborate with students, researchers, and industry

93%

Would recommend ISI Program

Advancing next generation AI EEG reporting

Hannah Tay ‘24 is working to scale AI assisted reporting of epilepsy

> “This project was a rewarding and insightful experience. Contributing to real-world challenges and attending industry meetings provided a unique opportunity to engage with professionals and see medtech innovation in action”

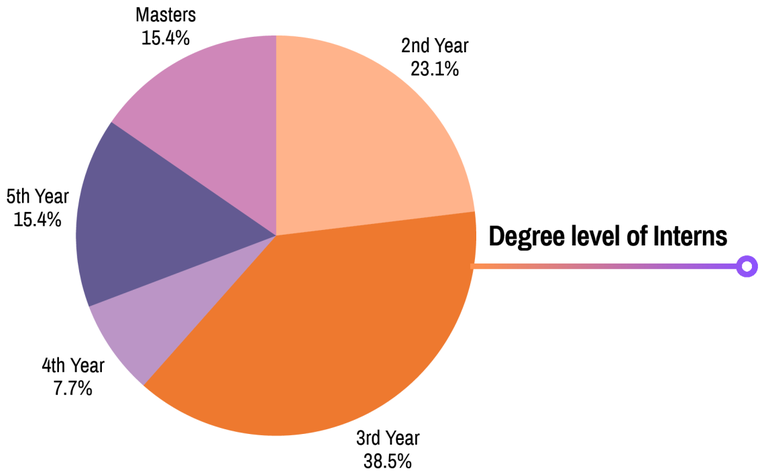
Engineering AI for real-world outcomes

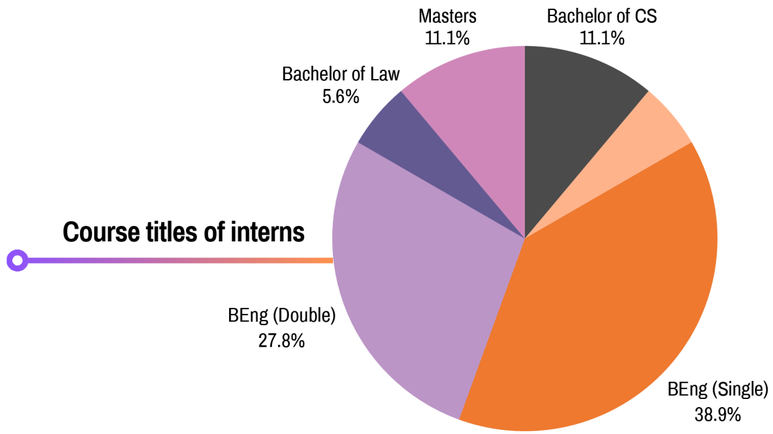
Hannah applies her ISI experience to connect biomedical engineering with real-world clinical challenges, exploring how AI can support faster, more accurate neurological diagnosis.

A Biomedical Engineering student at Monash University, Hannah joined the ISI Program to work on the Next-gen AI-augmented EEG reporting project. “The project was really well aligned with my experience and interest,” she shares. “I had worked on electrophysiology and AI separately before, so it was incredibly exciting to combine both areas into a single project.” Working alongside her lab team, Hannah focused on improving data quality for AI training by automating the calculation of inter-rater reliability—an essential step in ensuring the consistency and trustworthiness of EEG labels provided by clinicians.

“This was my first time working on a research project that interacted directly with clinicians and patients,” Hannah reflects. “It was eye-opening to see how much effort goes into building a dataset, and to understand the real impact this technology could have for people living with epilepsy. Being pushed to learn across neurology, IT, and engineering showed me how multidisciplinary innovation truly is—and how important collaboration is in creating tools that clinicians can rely on.”

Industry and University benefits





The ISI program brings clear value to both industry and universities by fostering a highly diverse and multidisciplinary talent pool. The distribution of students across year levels—spanning 2nd year to Master's students—creates teams with a healthy blend of emerging curiosity, developing technical skills, and advanced project maturity. This mix allows senior students to drive depth while earlier-year students contribute fresh perspectives, benefiting industry partners seeking a long-term, work-ready talent pipeline.

The wide range of degree backgrounds—most prominently single and double-degree engineering students, alongside participants from computer science, AI, and law—highlights the program's multidisciplinary strength. Such diversity mirrors real-world medtech development, where innovation depends on integrating engineering, software, regulatory insight, and user-centred design. For universities, this enhances applied learning and cross-faculty collaboration; for industry, it provides access to teams capable of approaching biomedical challenges from multiple angles.

Overall, the student distribution shown in the charts illustrates one of ISI's key advantages: it brings together varied expertise and stages of learning to accelerate translation, support co-creation, and strengthen Australia's medtech innovation pipeline.

> "The impact of the ISI program has been instrumental for bringing students passionate about the field into the medtech sphere. Academia and industry has and will continue to benefit greatly from these new minds"
>
> Dr Julie Dao

> “The ISI program is unique in that it helps interns build networks, work across disciplines, and address real-world problems very early in their careers.”

Mentor and researcher perspective

Associate Professor Sudha Mokkapati, from the Department of Materials Science and Engineering, has overseen the BioFETs for Early Diagnosis of Alzheimer’s Disease project as part of the ISI Program, working alongside fellow mentors to guide students at the intersection of engineering, biology, and clinical need.

For Sudha, hosting undergraduate researchers is an invaluable opportunity - both for students and for her lab. “It allows us to introduce them to our research early on,” she explains. “They get to see what a PhD student or academic does day-to-day, and if they become interested in the work, they often continue with us throughout their degree and even into postgraduate studies.” She highlights how students bring “fresh perspectives and ideas,” enabling the team to explore concepts they may not otherwise have had the time to pursue.

One contribution that stands out is the work of an ISI intern who developed a compelling case for using their BioFETs for mild traumatic brain injury (mTBI). “It opened unseen opportunities for us,” Sudha shares. “The one-pager she created is strong enough to serve as an introduction to the project.” She describes the students as “motivated, energetic and driven,” consistently showing initiative in tackling challenges within the research.

Sudha believes students gain something uniquely valuable through ISI: authentic exposure to real-world problems. “They wouldn’t normally get an opportunity like this in an undergraduate degree,” she notes. Whether experimenting at the bench or engaging with the complexities of research commercialisation, she sees the experience as formative.

Guiding the next generation of medtech innovators

A/Prof Sudha Mokkapati is a Project Lead working to build a point-of-care device for Alzheimer’s disease

Why participate

Participation in the program provides a meaningful opportunity to help cultivate the next generation of medtech innovators and researchers, while gaining early exposure to emerging talent and fresh ideas within the biomedical engineering ecosystem. Mentors consistently highlight the value of this engagement - noting how students “grow into confident contributors who bring fresh energy and new perspectives that advance the project,” as described by Associate Professor Reza Nosrati.

Supporting ISI also enables alignment with high-impact translational research that improves community health outcomes and strengthens the future medtech workforce through mentorship and applied learning. As Dr Fae Marzbanrad emphasises, the program offers a unique platform to help shape students’ understanding of innovation in medical technology and the broader mindset required to translate ideas into real-world impact. Through this collaboration, organisations can also explore emerging technologies, novel materials, and new market opportunities driven by student-led innovation.

There are multiple avenues for organisations and researchers to engage with the program. Involvement can include hosting a student-led project, providing mentorship and technical guidance, or sponsoring project costs and student placements. Contributors may also participate in skill-building workshops, serve as judges at the final showcase, or engage through networking and industry events. Organisations seeking deeper collaboration can explore co-development pathways, extended internships, or commercialisation opportunities that build on outcomes generated by student teams. These varied forms of engagement allow partners to tailor their involvement to their expertise, capacity, and strategic interests while strengthening the broader medtech innovation ecosystem.

> “The program content was highly relevant to industry. I initially saw myself in medtech R&D, but this experience broadened my perspective-I’m now eager to explore the commercial side. It truly opened doors to new career opportunities”

Engineering bone resorbable implants

Matt Isko ‘24 is working to build bone resorbable orthopaedic implants

Goals into the future

As Australia's first student-led internship we want to ensure students are catalysed to continue to solve the greatest challenges at the intersection between medicine, technology, and entrepreneurship.

"Medtech is one of the fastest growing sectors in Victoria's economy, with 650 medtech companies employing approximately 6,000 people and generating $1.4 billion in value." (Premier of Victoria, Hon Jacinta Allan MP).

We want to expand this program to include industry based projects to build workforce capacity and innovation into the future and are open to discussions on what this would look like.

Please contact the ISI Program team to discuss anything outlined within this report:
Dr Julie Dao: Julie.Dao@monash.edu
Dr Andrew Carey: Andrew.Carey@monash.edu