

Statement of Commitment

The 2023 BIOTech Futures Challenge is a 4 week challenge commencing on the 4th of September and ending on the 29th of September. Please ensure that you are able to commit to the Challenge during these dates. The Symposium will be held on the 16th of October for finalists to present their work. Everyone involved in the Challenge is encouraged to attend.

Mentors

Mentors are the backbone of the BIOTech Futures program and in the past teams have mentioned that working with their mentors has been the greatest take-away from the Challenge. Mentors need to be approachable and actively responsive to the queries of their teams. They communicate through email using their official, registered email address, online conference calls (zoom/skype), or over the phone. Mentors and teams are also able to meet in person if it is possible.

Mentors can guide students through two ways:

- 1. By suggesting particular project(s) in the area of expertise of the mentor, which students can choose.**
- 2. By mentoring students on projects that the students have devised themselves.**

Examples of past project titles include 'a novel non-thrombogenic film for mechanical heart valves', 'therapeutic clothes for eczema', '3D printed uterus transplant for endometriosis', 'drug elucidating hydrogel dressing for enhanced wound healing', and 'a smart greenhouse approach for maximising root oxygen levels in food crop'.

Mentors contributing a particular project should also contribute some relevant literature links. By and large, the provided literature should be open-access. If a particular pay-wall protected paper is necessary to the project, then the mentors should provide an executive summary on the key points of that paper.

Aside from serving as a source of scientific and engineering knowledge, mentors also provide insights into their own areas of research/study or career path. This serves to help provide students with a better understanding as to what tertiary pursuit of STEM can entail and lead to.

Therefore, mentors will need to provide appropriate time to guide their teams and help them in the formation and development of their idea (**maximum ten hours per team across 4 weeks**). Mentors are required to supervise their team's project aims, hypothesis, research and solutions. We also strongly encourage mentors to attend the Symposium on the 16th of October 2023 to see their own team present their finished project at the science fair and all the other projects as well.

Mentors will also be required to attend an introductory zoom-in with the BIOTech Futures team at the start of the Challenge, to outline expectations and meet their team(s).

Schools

Schools are required to give permission for competing students to attend the Symposium in person or online on the 16th of October 2023. The BIOTech Futures team is keen to work with teachers and students to ensure this participation on Symposium day is possible. Schools are not required to directly supervise students in the BIOTech Futures Challenge. However, teachers are able to support their respective representative teams in completing their projects and promote the Challenge to their students.

Students

Students are expected to invest sufficient time and effort into the completion of their project, keeping in mind that the aim of the BIOTech Futures Challenge is to, as the name suggests, a 'challenge'. The competition aims to encourage the ideation of original ideas and, subsequently, students are expected to conduct their own work and research (with the guidance of their mentors).

Innovations are to be conceptual, with a sound scientific background. No experimental results are required. However, any results in the literature that support the theory of the innovation are looked upon favourably.

Teams will complete a poster on their project, which outlines the team's research and solution. Teams will also answer a short list of questions about their project as a chance to further explain their process and posters. It is optional for students/teams to produce a prototype and/or write a scientific report detailing their research, analysis and justification of their design and design process. A separate prize will be awarded for the best report and best prototype. A guide for the poster, questions, report and prototype will be provided on our website.

All parts of the project will be due on the 29th of September and marked by judges.

Finalists will be invited to give a 3-minute presentation on their project during the Symposium to a panel of judges and participating audience members.

Time Indication

In preparation for this, students may spend the following indicative times:

1. (30) Deciding which project to pursue (pre-application)
2. (60) Online research on the core issues of the project (after application is approved)
3. (120) Initial contact with mentor
4. (120) Reading relevant literature and summarising their findings
5. (120) Team discussion regarding approaches to the core issues and brainstorming of different designs.
6. (60) Consult mentor regarding chosen approach and design pros/cons
7. (180) Articulating the solution, how it will work, how it is innovative and better than current alternatives
8. (60) Seek feedback from mentor
9. (180) Complete poster using template and accompanying questions
10. (60) Seek feedback from mentor and/or nominee as team

Therefore, students should not spend more than 20 - 25 hours on this project in total.

If you have any further questions, please get in touch with the team through biotech.futures@sydney.edu.au

Kind regards,

Josh and Dominica on behalf of the BIOTech Futures Team
<https://www.biotechfutures.org/>

Joshua J. B. Aarons | Co-Chair

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