



## **BIO-SHARK TANK**

### **DESCRIPTION OF BIO-SHARK TANK**

Bio-Shark Tank is an innovation-driven scientific pitching competition designed to provide a platform for students and researchers to present transformative ideas in biotechnology, healthcare, and bioengineering with real-world application potential.

The event encourages participants to translate scientific knowledge into feasible, scalable, and commercially viable solutions aligned with modern healthcare and industrial needs. Participants present their ideas before a panel of expert judges (“Sharks”) through an oral presentation format followed by an interactive question-and-answer session.

Projects are evaluated based on innovation, scientific merit, feasibility, relevance, and commercialization potential.

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### **ORAL PRESENTATION FORMAT (SLIDES CONTENT)**

Slide 1: Title of the Project and Problem Statement

Slide 2: Team Member Names and Institution

Slide 3: Overview of the Topic

Slide 4: Background / Existing Solutions and Limitations

Slide 5: Proposed Innovation / Concept

Slide 6: Methodology / Technical Approach

Slide 7: Feasibility (Technical and Economic)

Slide 8: Translational and Industrial Relevance

Slide 9: Commercialization Potential / Market Scope

Slide 10: Expected Outcomes, Conclusion and Future Scope

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# **PROBLEM STATEMENTS**

## **1. BIOMEDICAL ENGINEERING-**

### **1. Portable Health Monitoring for Remote Areas**

People in rural or low-resource areas lack access to continuous health monitoring, leading to delayed diagnosis and treatment. There is a need for an affordable portable system that can track vital parameters and provide early warnings. AI can enable real-time data analysis and remote health insights, improving access to preventive healthcare in underserved regions.

### **2. Early Detection of Dehydration and Fatigue**

Dehydration and physical fatigue often go unnoticed until severe symptoms appear due to the absence of continuous monitoring tools. A wearable solution integrated with AI could analyze physiological signals to predict dehydration or exhaustion early and provide timely alerts for prevention and safety.

### **3. Infection Monitoring in Wounds**

Early detection of wound infections is difficult without clinical examination, increasing the risk of complications and delayed healing. A simple monitoring system combined with AI could analyze wound parameters and detect early signs of infection, enabling timely treatment and remote medical support

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## **2. BIOINFORMATICS**

### **1. Disease Risk Prediction Using Health Data:**

Many health conditions develop slowly over time, but early warning systems using available data are limited. There is a need for tools that can help identify potential health risks earlier

### **2. Organizing Large Biological Databases Efficiently:**

Biological data such as DNA sequences and protein information are stored in multiple databases, making access and comparison difficult. Lack of integration reduces research efficiency.

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### **3. GENETICS**

#### **1. Identification of Genetic Risk Factors in Lifestyle Diseases:**

Limited awareness of individual genetic predisposition to lifestyle diseases such as diabetes and cardiovascular disorders delays preventive interventions. There is a need for AI-based tools that can analyze genetic data to predict disease risk and support personalized health management.

#### **2. Genetic Factors Influencing Drug Response:**

Variations in genetic makeup lead to differences in drug response among individuals, often resulting in ineffective treatments and adverse effects. An AI-driven system is needed to predict medication response based on genetic profiles to enable safer and more personalized therapies.

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### **4. BIOPROCESS ENGINEERING**

#### **1. Monitoring Fermentation Processes in Small Industries:**

Small-scale industries using fermentation processes often lack affordable and efficient monitoring systems, leading to inconsistent product quality and reduced yield. There is a need for AI-based monitoring solutions that can optimize fermentation conditions and improve production outcomes at low cost.

#### **2. Low-Cost Production of Useful Biological Products:**

The high production cost of biological products such as enzymes and biofertilizers limits their accessibility for small businesses. AI-assisted process optimization is needed to enhance production efficiency, reduce costs, and enable scalable manufacturing.

#### **3 Shelf-Life Improvement of Biological Products:**

Many biological products such as probiotics, enzymes, and vaccines require strict storage conditions and have limited shelf life. Maintaining product stability during storage and transportation remains a significant challenge.

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## **5. BIOMECHANICS**

### **1. Posture Problems in Students and Office Workers:**

Prolonged sitting and excessive screen usage contribute to poor posture and musculoskeletal discomfort among students and office workers. There is a need for AI-based systems that can continuously monitor posture and provide real-time corrective feedback to prevent long-term health issues.

### **2. Injury Risk During Exercise:**

Improper exercise techniques due to lack of guidance increase the risk of injuries among individuals during physical activity. An AI-driven solution is required to analyze body movements and provide real-time feedback to ensure safe and correct exercise performance.

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### **TIME AND ALLOCATION**

Each team should consist of a maximum of 5 members.

Presentation Time: 5 minutes per team

Question & Answer Session: 3 minutes

Total Time per Team: 8 minutes

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### **TIME ALLOCATION**

Each Team: 8 minutes total (5 minutes presentation + 3 minutes Q&A)

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### **RULES AND GUIDELINES**

1. All participants must register before the specified deadline.
2. Participants must adhere strictly to the presentation time limit.
3. Use of plagiarism or copied content will lead to disqualification.
4. Presentations must be original and related to biotechnology, healthcare, or bioengineering innovation.



Scan this QR for participation



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