

## **The following programs are organized by RRGi virtually from June 2021 till May 2022**

### **June 2021**

#### **Business Incubator(RRBI) in Medical college Jun 19th 2021**

As a typical innovation-driven industry, medical and healthcare industry, the development and application of new products and technologies play a key role in the market competitiveness of enterprises. Biomedical incubation platforms incubate incubatees by providing a variety of entrepreneurial supports, including physical space, consulting services, financial assistance, and network connections.

### **July 2021**

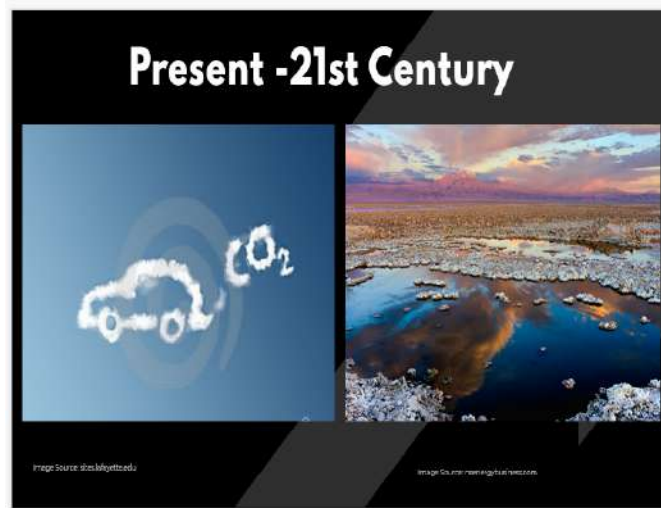
#### **IoT Innovations in Healthcare System, July 29th 2021**

Technology can move the routines of medical checks from a hospital (hospital-centric) to the patient's home (home-centric). The right patient outcomes will result in the reduced cost of hospitalization. Internet of Things (IoT) has an extensive applicability in numerous areas, including healthcare. IoT allows healthcare providers to practice beyond the confines of a clinic or hospital. The full application of this paradigm in the healthcare service is a mutual hope because it allows medical service providers to function more competently and patients to obtain better treatment.

## September 2021

### **Sustainable Innovation**

External experts team conducted a virtual session on Sustainable Innovation, aligned with UN's Sustainable Development Goals. Students were piqued to think about how past inventions and innovations have affected and afflicted mankind in every aspect of life. They were taught about the key tenets of innovations before and how sustainability is the way to move forward if we're to save our only home, this Earth.



## October 2021

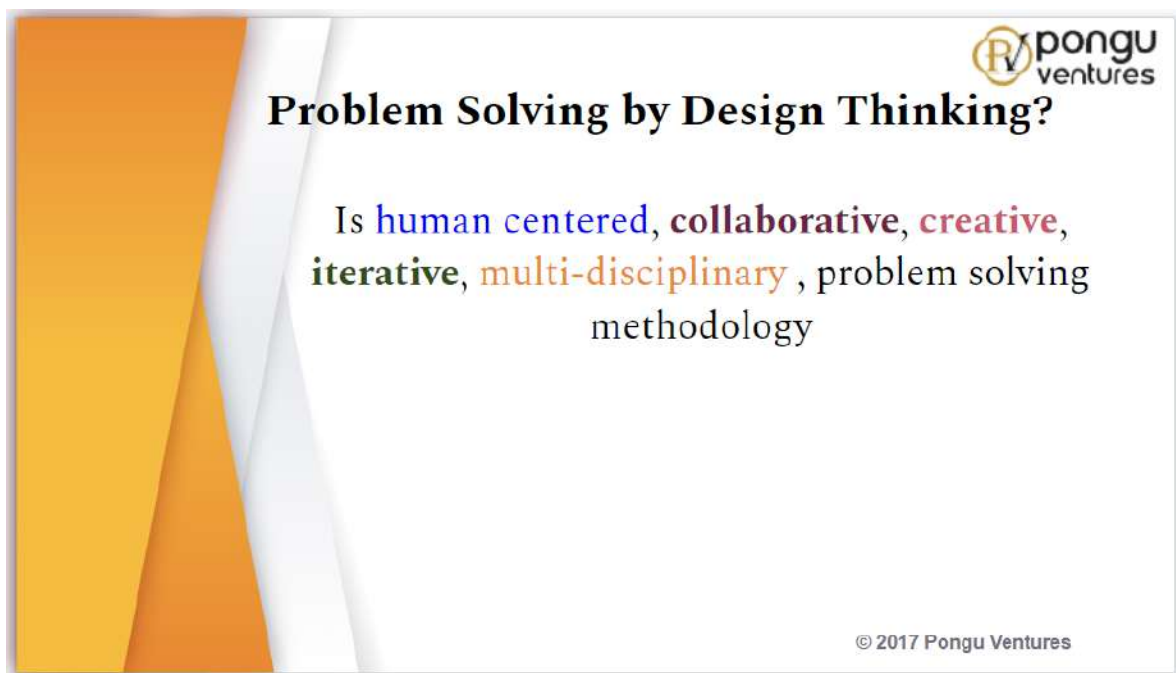
### **Entrepreneurship as a Career Opportunity**

External experts team conducted an exclusive motivational session for RRMCH students on Entrepreneurship as a Career Opportunity. Students were asked to think outside the box on how to choose a career as a Job Creator rather than a Job Seeker. Students and faculty members were given orientation on Entrepreneurship and brainstorming on critical and creative thinking skills, practical entrepreneurial skills. Student & faculty members were motivated to distinguish between Entrepreneurship as career choice or by Chance to become an Entrepreneur.

## November 2021

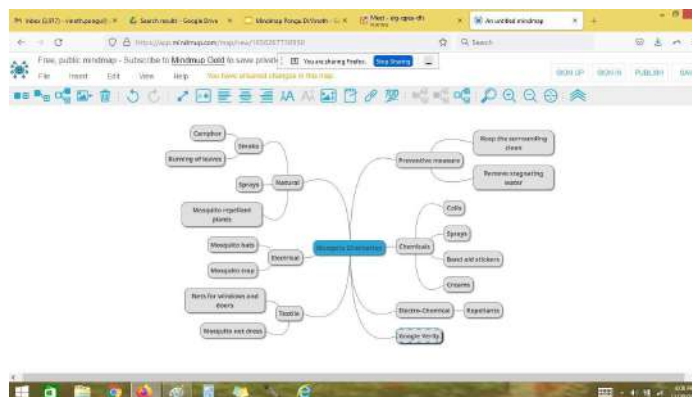
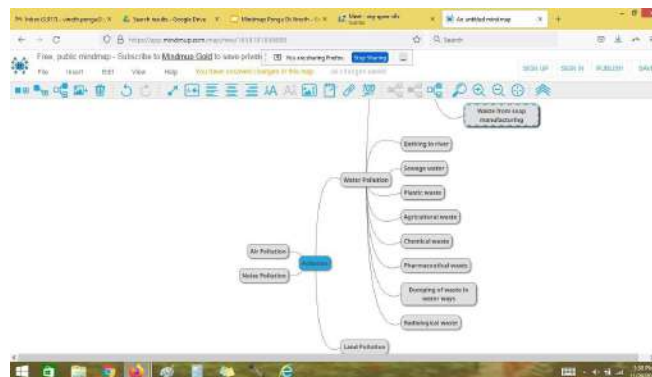
### Problem Solving

A program on Problem Solving and Ideation was conducted on Nov 29th 2021 with RRMCH IIC members, including students and faculty present in the meeting. Design Thinking methodology was discussed to go about choosing a real world problem, breaking it into subproblems and finally figuring out one particular problem that one could solve, given the limitations. Once we arrive at the well defined problem statement, we go about using different ideation techniques that are available to come up with a solution that could solve the chosen problem, given the limitations.



### Ideation through Mindmapping

A session on Ideation technique of Mind mapping was done on Nov 30th 2021. RRMCH students took in a visual form of note taking that offers an overview of a topic and its complex information, allowing them to comprehend, create new creative ideas and build connections with existing solutions. Through the use of mind mapping technique we encouraged RRMCH IIC students to begin with a central problem statement and expand outward to more in-depth sub-topics. At the end of the session, each team organized creative solutions and ideas, drew Mind Maps, planned tasks and presented in front of everyone making it easy for students to communicate new ideas and thought processes.



## December 2021

### Air Pollution day

A session on Air Pollution was conducted on Dec 18th as part of RRMCH IIC to bring awareness and the severe repercussions of pollution, including lung cancer, COPD, etc.,. Ambient air pollution has been associated with a multitude of health effects, including mortality, respiratory and cardiovascular hospitalizations, changes in lung function and asthma attacks. Air pollution is detrimental to human health, with adverse effects that range from restrictions in physical activity, to Intensive care unit (ICU) visits for asthma and hospitalizations for respiratory and cardiovascular causes, to premature mortality. We also stressed the economic costs of such effects are substantial.

# Human Impact on Atmosphere

## Causes

Refining crude oil & Burning Fossil Fuels

Using man made Fertilizers

Manufacturing

## Effects

Adds Carbondioxide and atmospheric Ozone

Acid Rain

Global Warming

Unpredictable weather

Release of harmful chemicals like Nitrogen and its compounds, Sulphur and its compounds, heavy metals into atmosphere

## Innovation through TRIZ for new Indian healthcare products

A program on Innovation through TRIZ was conducted on Dec 27th 2021. TRIZ is another problem solving tool that has its origins from Russian Patent Officers and is utilized in improving healthcare services and medical equipment worldwide. Students often find it difficult to come up with new ideas when you're trying to develop or improve a product or service. Therefore, as a first Ideation technique second year students learned to find a part of their concept, product, service or process etc. that they could replace with another to see whether it will result in improvements, such as efficiency gains. Then as another ideation technique they learned to join, affiliate, or force together two or more elements of their subject matter and consider ways that such a combination might move them toward a solution. Our team also inculcated the Innovation culture by teaching students to make it a habit to keep on the lookout for novel and interesting ideas using the techniques taught to them. As a part of ideation techniques how students can put their current idea to different uses or what could be reused from elsewhere so as to fix your own problem.

# TRIZ - 40 Principles for Invention

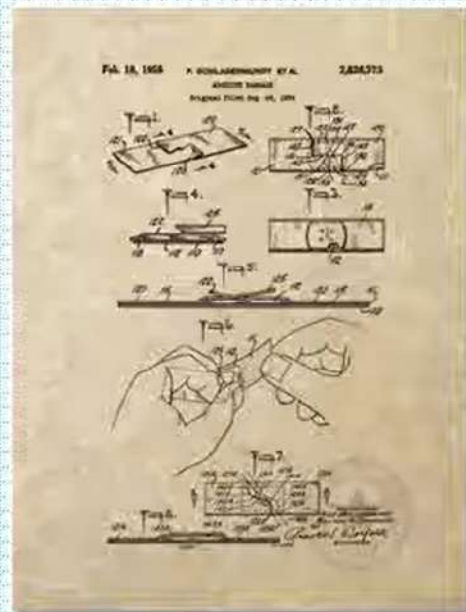
## TRIZ – 40 Principles

- |                                 |                                   |
|---------------------------------|-----------------------------------|
| 1 Segmentation                  | 21 Skipping                       |
| 2 Taking out                    | 22 Blessing in disguise           |
| 3 Local quality                 | 23 Feedback                       |
| 4 Asymmetry                     | 24 Intermediary                   |
| 5 Merging                       | 25 Self-service                   |
| 6 Universality                  | 26 Copying                        |
| 7 Russian dolls                 | 27 Cheap short-lived objects      |
| 8 Anti-weight                   | 28 Mechanics substitution         |
| 9 Preliminary anti-action       | 29 Pneumatics and hydraulics      |
| 10 Preliminary action           | 30 Flexible shells and thin films |
| 11 Beforehand cushioning        | 31 Porous materials               |
| 12 Equipotentiality             | 32 Colour changes                 |
| 13 "The other way round"        | 33 Homogeneity                    |
| 14 Spheroidality - Curvature    | 34 Discarding and recovering      |
| 15 Dynamics                     | 35 Parameter changes              |
| 16 Partial or excessive actions | 36 Phase transitions              |
| 17 Another dimension            | 37 Thermal expansion              |
| 18 Mechanical vibration         | 38 Strong oxidants                |
| 19 Periodic action              | 39 Inert atmosphere               |
| 20 Continuity of useful action  | 40 Composite materials            |

**Problem: bandage needs to be adhesive to remain attached but needs to be non-adhesive to avoid trauma to wound**



**Solution:**



## January 2022

### Entrepreneurial Skill Development

External experts handled a session on Entrepreneurial Skill development on Jan 8th 2022 to RRMCH IIC members, comprising of students and faculty of RRMCH. Attendees were taught about the difference between businessman and entrepreneur, innovation, developing time management skills, improving financial skills, finding the right co-founder, getting the right team, etc.

#### Reasons why Healthcare Startups Struggle



- Choosing a product idea with market need or very niche market
- Targeting wrong audience and stakeholders
- Choosing initial indication and wrong technology stack
- Complying with rigid regulations for healthcare
- Getting short of precise funds and investments
- Competing with market leaders & expecting higher ROI from start
- Avoiding exact requirement and need criteria
- Wrong choice for product development partner

### Healthcare Problem and Innovative Solution Fit Analysis

On Jan 12th 2022, a session on Problem Solution Fit Analysis was conducted by an external experts team. Attendees were educated on all the types of mins, maxs, and fits that a Startup needs to achieve to be successful. One of the most important fits to take notice in a Startup lifecycle is Problem Solution Fit and this is achieved when you have solved customers' pains and given them value addition in the form of gains.



## Problem Solution Fit Canvas

The Problem-Solution Fit Canvas is a strategic tool for developing a business model. It consists of a 3x3 grid of sections, each with a specific focus and a set of guiding questions. The sections are:

- 1. CUSTOMER SEGMENT(S)** (CS): Who are the target customers?
- 2. PROBLEMS / PAINS - ITS FREQUENCY** (PM): What are the problems/pains of the target customers? How often do they occur?
- 3. TRIGGERS TO ACT** (TA): What triggers the target customers to act?
- 4. EMOTIONS BEFORE / AFTER** (EM): What emotions do the target customers experience before/after the problem/solution?
- 5. AVAILABLE SOLUTIONS** (AS): What solutions are available to solve the problem/pain?
- 6. CUSTOMER LIMITATIONS** (CL): What are the limitations of the target customers?
- 7. BEHAVIOR - ITS FREQUENCY** (BH): What are the behaviors of the target customers? How often do they occur?
- 8. CHANNELS OF BEHAVIOR** (CH): What channels do the target customers use to behave?
- 9. PROBLEM ROOT / CAUSE** (PR): What is the root/cause of the problem/pain?
- 10. YOUR SOLUTION** (YS): What is your solution to solve the problem/pain?

The canvas also includes a sidebar on the right with additional questions and a footer with the logo of the creator, **idea4teachers**.



## Innovation Management & Technology Readiness Level in Healthcare sector

Our external experts handled a session on Innovation Management and Technology Readiness Level of various Innovative Medical Systems on Jan 25th 2022. Attendees learnt about different types of medical innovation, the need for medical technology readiness level, the many levels of TRL, and how to assess one's own TRL level when coming up with a product. Presented a webinar of various classes of TRL followed in western world. Category 1 or class 1 devices are deemed to be low risk and are therefore subject to the least regulatory controls. Category 2 devices are higher risk devices than Category I and require greater regulatory controls to provide reasonable assurance of the device's safety and effectiveness. Category 3 devices are generally the highest risk devices and are therefore subject to the highest level of regulatory control



## February 2022

### Product Market Fit Analysis

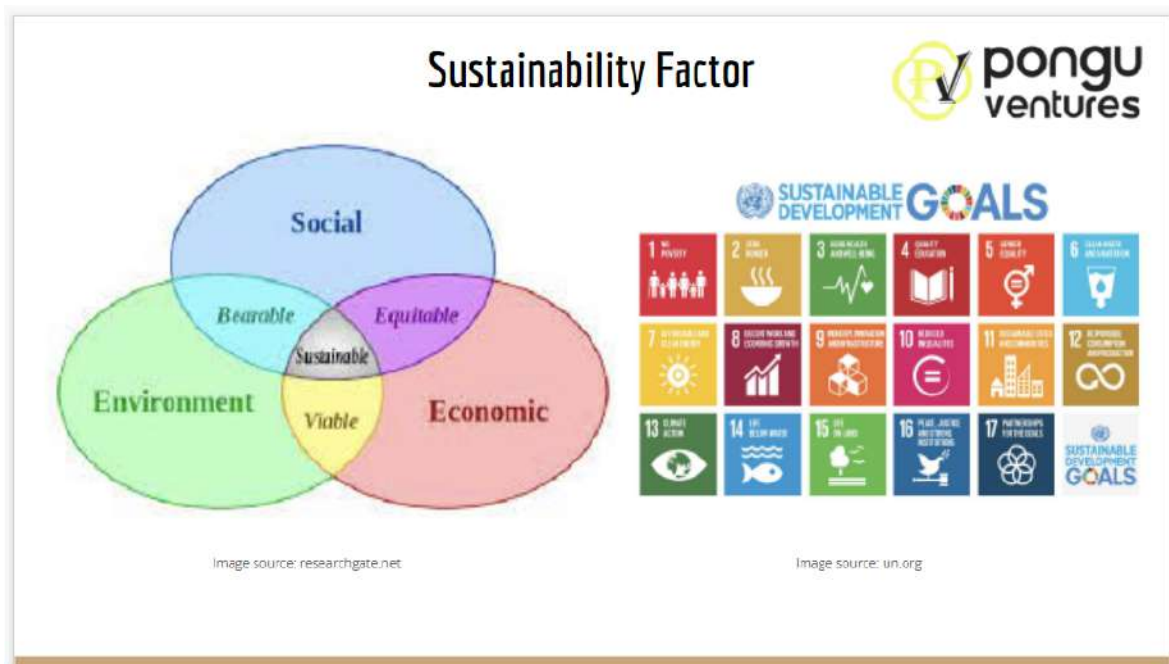
On Feb 24th 2022, a session on Product Market Fit Analysis was conducted by external experts. Attendees were once again refreshed on all the types of mins, maxs, and fits that a Startup needs to achieve to be successful. The most important fit for any Startup to succeed is the Product Market fit and this importance was taught to all attendees, along with the ways to achieve it using the Product Market Fit canvas. In healthcare, achieving Product/Market Fit is at the center of customer-led product design, which is achieved by talking to the intended customers. However, the main difference is the vast array of different stakeholders like enterprises, payers, providers, and patients to name just a few as the healthcare landscape is pretty complex.





## Sustainable Innovation on National Science Day

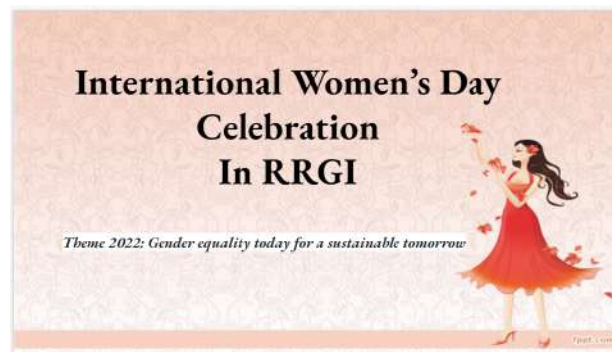
External experts handled a session on Sustainable Innovation for National Science Day celebration on Feb 28th 2022. Attendees learnt about the need for sustainability because of the dire situation that mankind is in right now due to severe weather pattern changes and global warming.



## March 2022

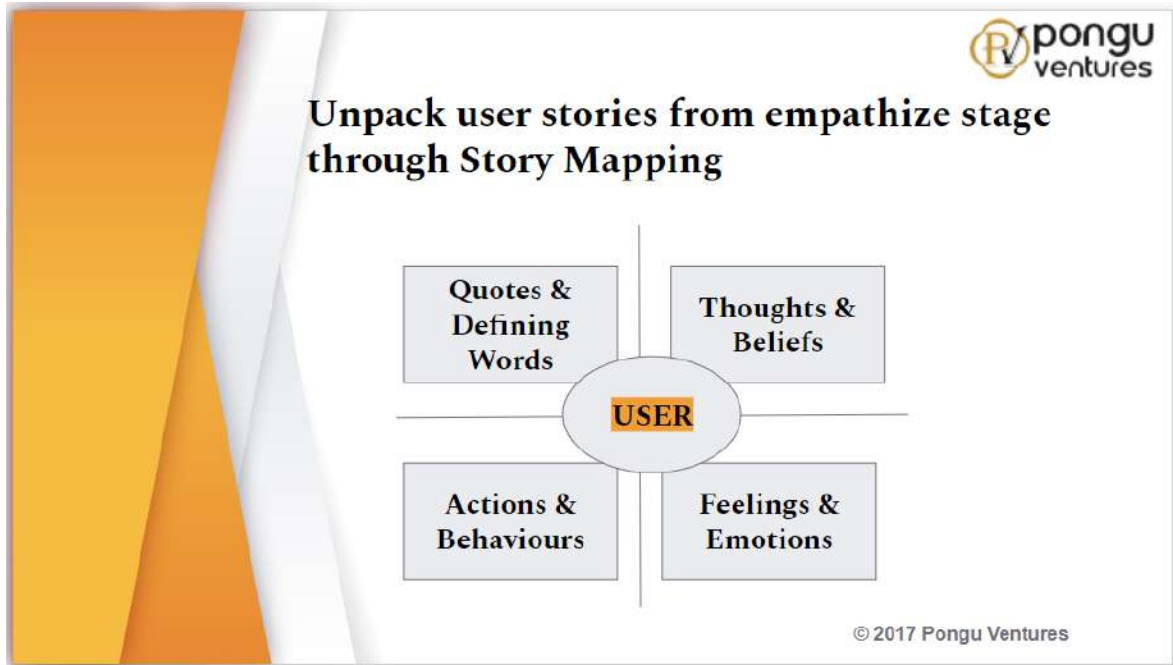
### Women's Day Celebration

External experts team powered International Women's Day Celebration on Mar 8 2022. RRMCH Staff and students alike were given a glimpse into how tough life is for a female entrepreneur even in modern day India. We have crossed many bridges but as far as female entrepreneurship is concerned, a lot of mentality and mindset needs changing for female entrepreneurs to be super successful was stressed upon. Empowering women and girls to have a voice and be equal players in decision-making related to climate change and sustainability is essential for sustainable development and greater gender equality. Without gender equality today, a sustainable future, and an equal future, remains beyond our reach.



### Innovation & Design Thinking

On Mar 15th 2022, a session as part of National Innovation Day was conducted by external experts team under the topic Innovation and Design Thinking for Budding Entrepreneurs in RRMCH. The importance of innovation in a society, the improvement in standard of living that it has brought about, how Design Thinking helped in bringing about products and services that caters to the needs of consumers were discussed among the participants.



## Legal and Ethical Steps

External experts team handled a session on How to Start a Startup - Legal and Ethical Steps on Mar 25th 2022. The healthcare sector is governed by sets of rules, regulations, laws and ethical standards. Laws are designed to protect individuals when making decisions about their healthcare. In addition, they also set out the responsibilities of healthcare professionals. Non-compliance with laws or ethically questionable misconducts can land startups and its founders and co-founders in serious trouble resulting in heavy fines, punishments and sometimes in license revocation as well.

ESG stands for **Environmental, Social, and Governance**.

**Environmental** factors determine a company's stewardship of the environment and focus on waste and pollution, resource depletion, greenhouse gas (GHG) emissions, deforestation, and climate change.

**Social** factors look at how a company treats people and focuses on employee relations and diversity, working conditions, local communities, health and safety, and conflict.

**Governance** factors take a look at corporate policies and how a company is governed. They focus on tax strategy, executive remuneration, donations and political lobbying, corruption and bribery, and board diversity and structure.

## **April 2022**

### **Rapid Prototyping**

External experts conducted a session on Rapid Prototyping on Apr 13th 2022. Rapid prototyping technologies have introduced a new approach for surgical planning and simulation. The technologies enable one to create anatomical objects in a three-dimensional view giving the surgeon a realistic representation of the target organ in the body. Rapid prototyping medical models have found application for planning treatment for complex surgery procedures, training, surgical simulation, diagnosis, design and manufacturing of implants as well as medical tools. Its use in medicine is quite a complex task which implies a multidisciplinary approach and very good knowledge of engineering as well as medicine; it also demands many human resources and tight collaboration between doctors and engineers. The procedure for making 3D medical models using Rapid Prototyping technologies implies few steps:

- 3D digital image;
- Data transfer, processing and segmentation;
- Evaluation of design;
- RP medical model production;
- RP medical model validation.

### **Earth Day**

On Apr 23rd 2022, as part of IIC Celebration Day series, Earth Day was celebrated in RRGI, powered by an external experts team under the topic Conscious Planet - Save Soil and Save our Planet.

Detrimental effects of technological invention and innovation on our planet, especially the biohazard waste that has ravaged the soil, was discussed and how saving our soil can help save our life on planet earth was stressed upon the participants.

## May 2022

### Biodiversity Day May 21 2022

To celebrate Biodiversity day our external experts handled a session on biomimetics in the medical field. Biomimicry, or bioinspiration, is proving to be an effective approach to reimagining technology, especially in biomedical engineering. We are currently seeing a new wave of potential medical devices tapping into nature.

### **Biomimicry in Biomedical Engineering**

- ★ 1. Parasitic wasp inspired needles
- ★ 2. Gecko inspired surgical glue
- ★ 3. Octopus inspired sucker for tissue grafting
- ★ 4. Peacock inspired biosensors
- ★ 5. Electric fish inspired catheter
- ★ 6. Electric Eel inspired power source for artificial organs
- ★ 7. Parasitic worm inspired Theragrippers
- ★ 8. Puffer fish inspired device to monitor ulcer and tumour
- ★ 9. Slug inspired adhesive for wound healing



### Incubators: Opportunities for Medical Students and Faculty May 30 2022

At present the climate of innovation in India, there is a lot of support available for both R&D of ideas and commercialization of products, with the help of TBIs promoted by DST. Nevertheless there is a profound lack of support for early stage prototyping in the country, causing many innovators to lose interest in their ventures in the absence of support at that critical juncture. Our external experts discussed investment opportunities available for both students and faculties in the medical, bio-medical and healthcare field.

















### Institution's Innovation Council:

Ministry of Human Resource Development (MHRD), Govt. of India has implemented 'Institution's Innovation Cell (IIC)' to systematically foster the culture of innovative amongst all higher education institutions (HEIs). The primary function of IIC is to promote, support and nurture good & innovative ideas originating from HEIs with new ideas and innovative ideas to be implemented in the HEIs.

And has an award recognizing innovative institutions for their contribution in the field of innovation. The award is given to the HEIs which have been recognized as innovative institutions by the Ministry of Human Resource Development (MHRD), Govt. of India.

### IQAS FLOW CHART







## Training record

Topic: \_\_\_\_\_ Trainer: \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Venue: \_\_\_\_\_

## Attendance

Sl No	Name	Department	Designation	Signature
1.	Sahayananda H.			
2.	Anbazhagan. K	CRL	Asst. prof	
3.	Dr. Dneajani. S.	Pharmacology	Assoc prof	
4.	Dr. Prasanna. T.Y	Orthopaedics	Asst Prof	
5.	Dr. Dilip Kumar. Mo	Anesthesiology	JR-I.	
6.	Dr. Sindhuja Adala	ENT	JR-1	
7.	Dr. Karishma. K	Pathology	JR-1	
8.	Dr. ALKA BALRAJ	ENT	JR-1	
9.	Shreya Krishnamurthy		MBBS VII term	
10.	Raj Kushal. H.		MBBS VI term	
11.	Mouya. G. S		MBBS VI term	
12.	Dr. Satyanarayana. V.	Pharmacology	Professor.	
13.	Dr. S. Prabhalaxmi	CRL	Professor	
14.	Dr. YOGESH. M.K	Physiology	Professor	
15.	Dr. R. Dinesh Kumar	GNT.	Asst Professor	
16.	Dr. Swapna. M.	Com. Med	Professor	
17.	JUWAYRIYA SADIQ	-	MBBS III year	
18.	B. Rakshitha	IIIrd year	MBBS III year	
19.	HARSHINI. R	III year	MBBS student	
20.	ESHA RAJA	III year MBBS	MBBS student	

21. FARZEEN ARFA III year MBBS MBBS student  
 22. FATIMAH ZOHRA KALEEM III YEAR MBBS MBBS STUDENT

Signature of the Trainer