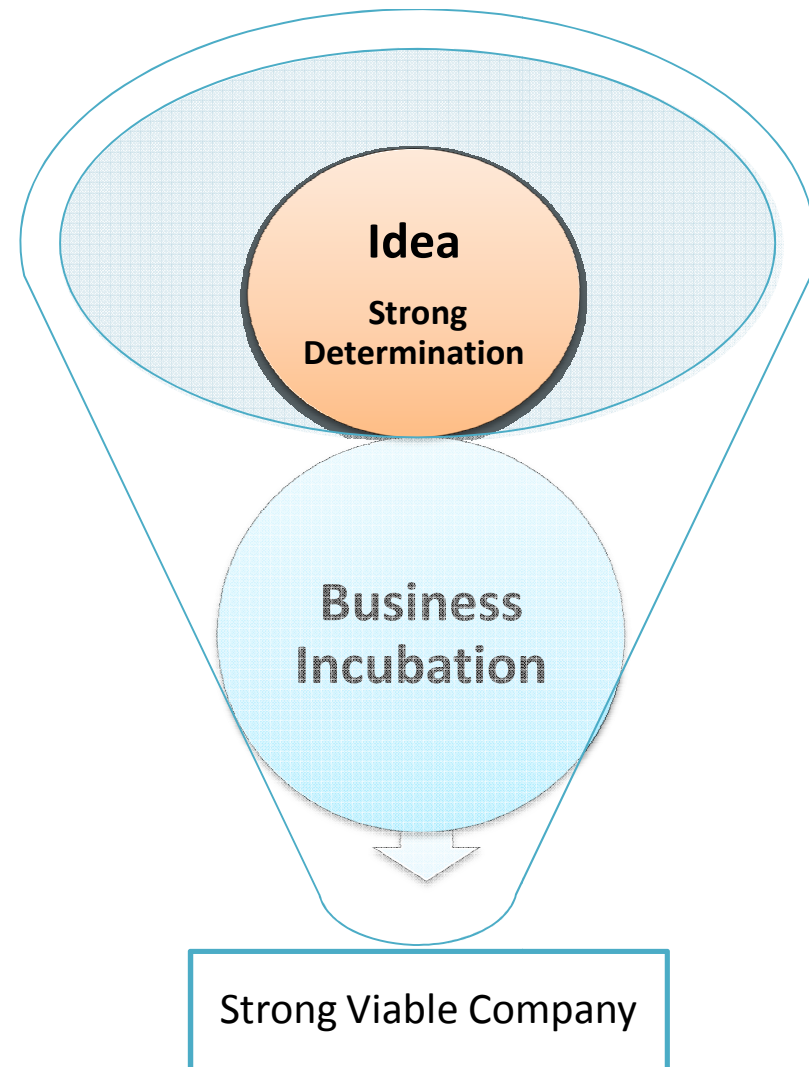
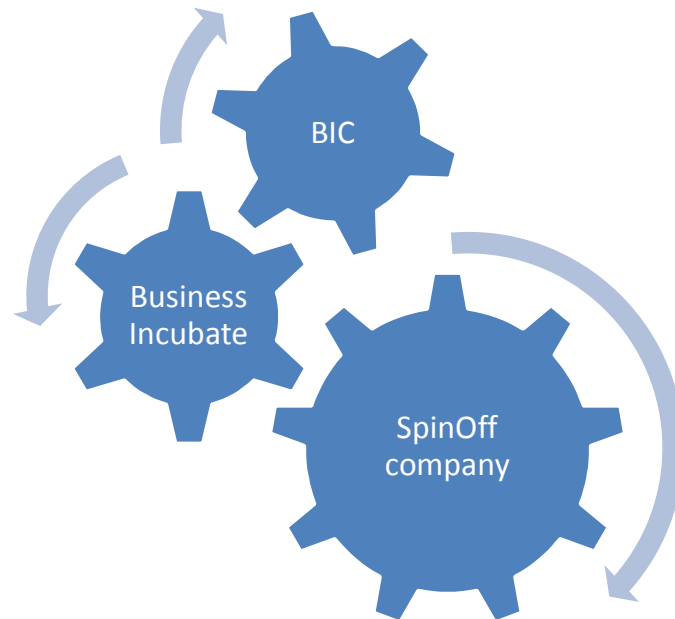


Business Incubation Centre:

The ORIC established Business Incubation Centre at Quaid-i-Azam University, so that entrepreneurship can be encouraged and new avenues can be opened. The new entrepreneur can look to the incubator for hands-on management assistance, education, information, technical and vital business support services, networking resources, financial advice as well as advice on where to go to seek financial assistance. The goal of the incubator is not only to ensure the small business survives the start-up period where they are most vulnerable, but to produce confident, successful graduates that are well grounded financially and secure in their knowledge of how to run a productive business independently, within two or three years of start-up. The resulting community benefits of business incubator are healthy companies, accelerated job growth and a significant return on investment for economic development. BIC shall provide ready to move in, plug and play facilities for startups in addition to the expert advisory and mentoring provided at Quaid-i-Azam University, Islamabad. Essential operational support services such as security, reception, telephone, photo-copying, etc. shall be provided by ORIC as part of the package, with nominal charges.



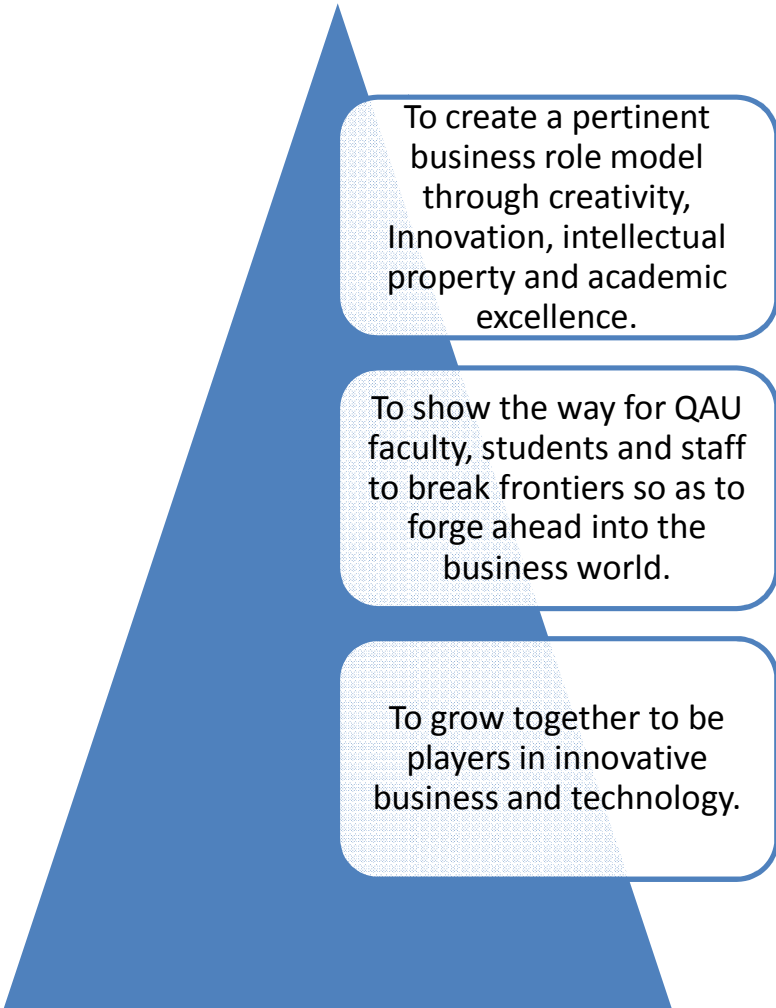
In addition, essential business support services including business consulting and advisory services applicable right from the stage of company formation shall be provided. Again, a service charge may be levied as appropriate for different services.



Infrastructure

ORIC by establishing a Techno-Science Park is dedicated to provide uninterrupted infrastructural services to emerging entrepreneurs/industries/multinational companies at Quaid-i-Azam University, Islamabad. The facilities include

- ✓ Pre-incubation facilities
- ✓ Virtual Incubation
- ✓ Video Conferencing
- ✓ Seed Capital Assistance
- ✓ Embedded Labs
- ✓ Ready to move in office premise
- ✓ Shared facilities
- ✓ Innovation Show Room
- ✓ Meeting space



To create a pertinent business role model through creativity, Innovation, intellectual property and academic excellence.

To show the way for QAU faculty, students and staff to break frontiers so as to forge ahead into the business world.

To grow together to be players in innovative business and technology.

Constructed Wetland: Bioremediation Systems for Domestic Wastewater



Constructed wetlands are artificially designed systems taking advantage of natural processes in a controlled way. These are bioremediation process, based on plant bacterial symbiotic relationship existing in the Rhizosphere. It can be used as both main or tertiary treatment. Sustainable and socially acceptable. Environmentalists have referred to wetlands as nature's kidneys.

Our Achievement:

1. Designed a Free Water Surface (FWS) constructed wetland.
2. Evaluated the efficiency of CW for treatment of domestic sewage found to be more than 90% for most contaminants.
3. Determined the treatment efficiency under different HRT (Hydraulic retention time) regimes and highest treatment is found at highest HRT.



Advantages: Most Appropriate Technology. Among all biological treatment systems, it is known to be the 'Most Appropriate Technology' in the technology due to its environmentally viable, environmentally enhanced treatment. One of the most common uses is to provide additional or advanced treatment of wastewater from homes, businesses and even communities. High efficiency. They provide effective and reliable wastewater treatment under fluctuating hydraulic and contaminant loading rates. They can be aesthetically pleasing and they also provide habitat for wildlife and human enjoyment. Low expenditure. They have low expenditure on construction and maintenance.

Experimental setup, side view

Making Environment Friendly Leather

Department of Microbiology, Quaid-i-Azam University, Islamabad

Introduction: Leather industry is one of the largest industrial sector contributes significantly to the national GDP. Number of workers in the sector has increased from 525 in 1995 to 725 in present (2015). It has been estimated that 100kg of skins are utilized to produce 240 kg of the finished leather of 60 or more, 45% of chemicals and 20 kg of the energy in this process. 80 kg of organic solvents, 40 kg of waste water/leather 1 kg. Chemicals 120 kg. Total solids 10 kg. Range 40-60 kg and 200 kg of solid waste (Sludge) 270 kg. Leathermaking consumes 65 kg of 100-150 mg 120 kg. Chemicals during 100kg. Sludge 270 kg. Green leathers 1 kg. It generates these waste products are direct loading on the environment. Currently all leather treatment processes are limited in the chemical use due to cost effectiveness but they are health hazards and pose significant threat to the ecosystem. Migration to water sources for utilization of chemicals in leather industry, and there is great need of production of eco-friendly leather to meet the requirement for industrial sector to ensure environmental protection caused by toxic chemicals produced by leather industries.

Typical Raw Material for Leather Production using Conventional Technology (Dermatol)



Aims and Objectives

- Recycling of No. 5 Replacement with enzymes
- Poly/Well using process/Utilization as planking tips, growth factor, vesicle cells.
- Use of non-gelable proteins in cattle/pony skin
- Gelable proteins in Pharmaceutical, Adhesives, and Fats
- Solid Waste as Fertilizers
- Water waste for irrigation

Achievements

- Minimization/Replacement of the health hazardous chemicals.
- Process optimized for Plant scale enzyme production up to 10L.
- Comparative efficacy of enzymes.
- Process optimization for wastewater absorption of chromium.
- Extraction of the value added products.
- Characterization of gelable proteins.
- Cost comparison for chemical replacement.

USE OF MICROBIAL LIPASES IN DETERGENTS

DEPARTMENT OF MICROBIOLOGY, QUAID-I-AZAM UNIVERSITY, ISLAMABAD

Enzymes reduce environmental load of chemical-containing detergent products, are biodegradable, non-toxic, leave no harmful residues, reduces pollution, have better cleaning properties and ability to wash at low temperatures.

Q-lip1: Lipase
Q-lip2: Lipase + Protease
Q-lip3: Lipase + Protease + Cellulase
Q-lip4: Lipase + Protease + Cellulase + Amylase

Microbial Lipases: stable in high pH, temperature and in presence of various surfactants, suitable to be incorporated as additives in commercial detergent formulations.



OUR ACHIEVEMENTS

- Production of lipase from indigenous microbes
- Optimization of lipase (Q-lip) production
- Purification, characterization and immobilization of purified lipase formulations
- Trials of crude and purified lipase in detergent formulations (in combination with commercial detergents and other enzymes, like amylase, cellulase, protease, etc.)
- Other fat residues

DUAL DIGESTION SYSTEM FOR DOMESTIC WASTE WATER TREATMENT

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Constructed Wet Land





