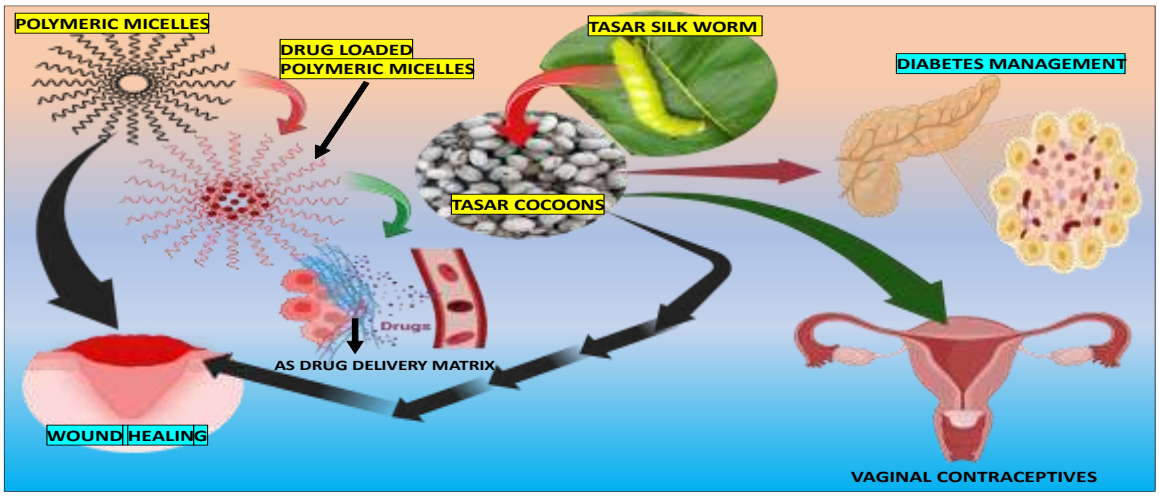
Research Group- Biomaterial & Biomedical Research Lab-Bit

- **Name of Principal Investigator/ Group Leader**: **Dr. Trishna Bal**
- **Research Theme**: Biomaterial & Biomedical Devices
- **Broad Area of Research and Scope:**

➢ Polymeric scaffold for wound healing & tissue regeneration for both soft and hard tissues
➢ Pharmaceutical excipients for enhancement of solubility & permeability of poorely soluble drugs
➢ Andrology research and contraceptives
➢ Diabetes management

Schematic Representation of Broad Area of Research



Total Number of Publications by the group: 50

Top 5 Article with impact factor:

1. Shreya Sharma [a], Uma R. Lal [b], Trishna Bal. pH-sensitive polymeric micelles of polyvinyl acetate grafted neem gum amphiphilic graft copolymer for curcumin delivery. International Journal of Biological Macromolecules. Volume 303, April 2025, 140574
2. Fahaduddin, Trishna Bal. Fabrication and evaluation of *Dillenia indica*-carrageenan blend hybrid superporous hydrogel reinforced with green synthesized MgO nanoparticles as an effective wound dressing material. International Journal of Biological Macromolecules. Volume 265, Part 2, April 2024, 130835
3. Aditya Dev Rajora, Trishna Bal. Evaluating neem gum-polyvinyl alcohol (NGP-PVA) blend nanofiber mat as a novel platform for wound healing in murine model. International Journal of Biological Macromolecules.Volume 226, 31 January 2023, Pages 760-771

4. Itishree Jogamaya Das, Trishna Bal. Evaluation of Opuntia-carrageenan superporous hydrogel (OPM-CRG SPH) as an effective biomaterial for drug release and tissue scaffold.**International Journal of Biological Macromolecules. Volume 256, Part 2, January 2024, 128503.**
5. Aditya Dev Rajora, Trishna Bal **.Evaluation of cashew gum-polyvinyl alcohol (CG-PVA) electrospun nanofiber mat for scarless wound healing in a murine model.** International Journal of Biological Macromolecules. Volume 240, 15 June 2023, 124417

Patents by the group:

Sl. No	Title and Inventors	Application No. & Date	Status
1.	A biopolymers hydrogel-based dosage formulation and method of preparation thereof Inventors: 1. SINGH, Snigdha 2. BAL, Trishna 3. RAJORA, Aditya Dev 4. SWAIN, Mahendra Pratap 5. SHARMA, Shreya 6. DAS, Itishree Jogamaya 7. UDDIN, Fahad 8. DAFADAR, Samsur Ali	202331071051& October 18, 2023	Product Patent Published
2.	AIR PERMEABILITY TESTER FOR THIN FILM Inventors: Dr. Trishna Bal, Dr. Manik Ghosh, Dr. Balaji Ayyanar Chinnappan, Dr. Chanchal Mishra and Dr. Mugilan Thanigachalam	420716-001& June 20, 2024	Design Patent Granted
3.	ADJUSTABLE BLOW SPINNING MACHINE Inventors: Dr. Trishna Bal, Dr. Manik Ghosh, Dr. Balaji Ayyanar Chinnappan, Dr. Chanchal Mishra	415842-001 &May 03, 2024	Design Patent Granted
4.	GREEN SYNTHESIZED PHARMACEUTICAL EXCIPIENT AND METHOD FOR SYNTHESIS THEREOF Inventors: BASAK, Biswasarathi 2. KUMARI, Laxmi 3. BAL, Dr. Trishna 4. PRABHA, Prachi 5. DAS, Itishree Jogmaya 6. DAFADAR, Samsur Ali 7. SHARMA, Shreya	202431103557 & December 26, 2024	Product Patent Published

Research Projects:

Title	Role (PI/ Co-PI)	Funding Agency	Amount (in Lacs)	Duration
Inflatable mucoadhesive vaginal tablet coin (VTC) for instant spermicidal action as local vaginal contraceptive and microbicide" (2024-2027)	PI	DBT	76Lakhs	3years
Management of TypeII Diabetic (T2D) condition through tasar sericin (2024-2026)	PI	CTRTI, CSB	54.31Lakhs	2years 6months

Targeted Application Area: Biomedical Industry, Andrology Products

Brief Description of Project

Problem Statement:

1. Contraceptive medications lead to numerous problems in females and most of the contraceptives available are steroids, which lead to tremendous health related issues.To alleviate such problems, biomaterials in the form of localized contraception within the vaginal area can not only bring a solution but also will reduce any localized infections and highly contagious sexually transmitted diseases
2. Diabetes related complications lead to many unwanted problems like progressive wound which never heal and later they can lead to amputation of organs.
3. Thus Tasar silk proteins are a promising biomaterial in the field of diabetes management as well as for loaclized contraceptive devices which will act as spermicides.

Applications:

- The product can be used by females both from urban and rural areas who have problems in taking steroidal drugs.
- The Silk based scaffold can easily heal wounds and also if taken orally can reduce diabetic conditions

Group Members