स्वास्थ्य अनुसंधान विभाग
DEPARTMENT OF HEALTH RESEARCH

# Department of Health Research

**Ministry of Health and Family Welfare**

## Online application Preview "Support to Institutes for Training/Modules/Courses in biomedical research "

Proposal submitted on dated 20-06-2025 04:12:07 PM

**Proposal Id:** STI-2025-1086

**Proposal Title:** Bioinformatics and Artificial Intelligence in Healthcare and Disease Modelling

### PERSONAL/BASIC INFORMATION

| | |
|---|---|
| Photograph |  |
| **Full Name** | **Dr Nupur Joshi** *(Assistant Professor)* |
| **Date of Birth** | 19-04-1991 |
| **Gender** | Female |
| **Category** | GEN |
| **Is differently abled?** | No |
| **Nationality** | Indian |

### CONTACT INFORMATION

| | |
|---|---|
| **Mobile Number** | 7409446832 |
| **Email Address** | nupurjoshi@srhu.edu.in |
| **Landline Number** | 01352471541 |
| **Fax Number** | 01352471141 |

### PERSONAL ADDRESS INFORMATION

| | |
|---|---|
| **Address Line1** | School of Biosciences |
| **Address Line2** | Swami Rama Himalayan University |
| **City/Town** | Dehradun |
| **District** | DEHRADUN |
| **State** | UTTARAKHAND |
| **Pincode** | 248016 |
| **Country** | India |

### DETAILS OF THE INSTITUTE WHERE THE PROPOSED RESEARCH WILL BE IMPLEMENTED

| | |
|---|---|
| **Nature of Employment** | Permanent |
| **Department:** | School of Biosciences |
| **Institute Name** | Swami Rama Himalayan University |
| **Institute's Location (District, State)** | DEHRADUN, UTTARAKHAND |

Director Research

| # | Qualication | University/Institute Name | Institute/College Name | Passing Year |
|---|---|---|---|---|
| **HIGHER / ESSENTIAL QUALIFICATION DETAILS** | | | | |
| 1 | Doctor of Philosophy | Forest Research Institute | | 2018 |
| 2 | Master of Science | Apeejay Stya University Haryana | | 2013 |
| 3 | Bachelor of Science | Panjab University | GGDSD College | 2011 |
| **BASIC QUALIFICATION DETAILS** | | | | |

## Research Experience Details

| # | Research Institute Name | Position | From Date | To Date | Duration (Y) |
|---|---|---|---|---|---|
| 1 | Central Pulp and Paper Research Institute | Junior Research Fellow | 08-Mar-2016 | 12-Apr-2017 | 1.10 |
| 2 | ICAR-Directorate of Coldwater Fisheries Research, Bhimtal July 2018 to February 2019 • | Senior Research Fellow | 11-Jul-2018 | 05-Feb-2019 | 0.57 |
| 3 | National Institute of Hydrology, Roorkee | Research Associate | 11-Feb-2019 | 13-Jun-2019 | 0.33 |
| | | | **Total year of Research Experience** | | **2** |

## Publications

| # | Title | Author List | Journal Name | Page Number | Year | Volume | Issue Number | Author Type | Impact Factor | ISSN No. | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Synthesis of fungal polysaccharide-based nanoemulsions for cancer treatment | Archna Dhasmana, Pooja Dobhal, Abhilekh Sati, Ayushi Santhanam, Subham Preetam, Sumira Malik, Nupur Joshi, Sarvesh Rustagi and Ravi K. Deshwal | Royal Society of chemistry | 13 | 2025 | 13300–13312 |  | Co-Author | 4.6 |  |  |
| 2 | Plant–microbes–nanofertilizers and their interactions for plant growth promotion and stress management | Geeta Bhandari, Shalu Chaudhary, Parul Chaudhary, Nupur Joshi, Saurabh Gangola, Archna Dhasmana, Sanjay Gupta | ELSEVIER | 173-191 | 2025 |  |  | Co-Author |  |  |  |
| 3 | Rhizomicrobiome as a potential source of microbial inoculants for use in in vitro biotization mediated acclimatization of micropropagated plants | Vikash Singh Jadon, Nupur Joshi, Geeta Bhandari, Archna Dhasmana, Prateek Rauthan, Abhishek Rana, Sanjay Gupta, Deepanshu Rana, Vikas Sharma | ELSEVIER | 345-358 | 2025 |  |  | Co-Author |  |  |  |
| 4 | Probiotics in Aquaculture | Suresh Chandra, Nupur Joshi | CRC Press | 90-99 | 2024 |  |  | Co-Author |  |  |  |
| 5 | Revitalizing elixir with orange peel amplification of alginate fish oil beads for enhanced anti-aging efficacy | Archna Dhasmana, Subham Preetam, Sumira Malik, Vikash Singh Jadon, Nupur Joshi, Geeta Bhandari, Sanjay Gupta, Richa Mishra, Sarvesh Rustagi, Shailesh Kumar Samal | Scientific reports | 20404 | 2024 |  |  | Co-Author |  |  |  |

| | | | | | | |
|---|---|---|---|---|---|---|
| 6 | Demineralized Water Consumption: Unravelling Current Trends and Health Effects | Nupur Joshi, Nikku Yadav, Ashutosh Kumar Choudhary, Deep Shikha, Shweta Samant | IEEE | 181-184 | 2024 | First Author |
| 7 | Gastrointestinal Regeneration: Innovative Remedies for Gastrointestinal Defects | Archna Dhasmana, Indra Rautela, Nupur Joshi, Ayushi Santhanam | IEEE | 168-171 | 2024 | Co-Author |
| 8 | Experimental validation of nanotechnology-enhanced bio-filters for sustainable wastewater treatment | Archna Dhasmana, Geeta Bhandari, Nupur Joshi, Vikas Singh Jadon, Sumira Malik, Sanjay Gupta | Afr J Bio Sci | 1907 | 2024 | Co-Author |
| 9 | Quantitative Determination and Source Variation of Rutin in Fagopyrum Tataricum. | Vikash S Jadon, Sandeep Kumar, Barkha Kamal, Geeta Bhandari, Nupur Joshi, Archna Dhasmana, Sanjay Gupta | Journal of Advanced Zoology | 225 | 2023 | Co-Author |
| 10 | Emergence of Lumpy Pox Virus and Their Preventive Measures: A Global Livestock Threat. | Archna Dhasmana, Geeta Bhandari, Nupur Joshi, Vikash Singh Jadon, Jyoti Rawat, Lavish Khatkar, Sanjay Gupta | Journal of Advanced Zoology | 232 | 2023 | Co-Author |
| 11 | Kinetic Characterization and Partial Purification of Peroxidase in Eucalyptus F1 Hybrids | Vikash S Jadon, Barkha Kamal, Geeta Bhandari, Nupur Joshi, Archna Dhasmana, Sanjay Gupta | Journal of Advanced Zoology | 217 | 2023 | Co-Author |

### Awards

| # | Award Name | Awarded by | Agency Type | Year |
|---|---|---|---|---|

### Project Carried out

| # | Name of Project | Sanction No. | Funding Agency | Funding Amount (Rs.) | Start Date | End Date | Remarks |
|---|---|---|---|---|---|---|---|
| 1 | Investigating the potential of fungal mycelium mats: Comparative analysis of various fungal species for future research advancement | SRHU/FA/RP/HSBS/2024-25/005 | Swami Rama Himalayan University | 200000.00 | 26-Jun-2024 | 26-Jun-2025 | |
| 2 | Bamboo Tea Cultivation of Rural Livelihood upliftment | SRHU/FA/RP/HSBS/2024-25/004 | Swami Rama Himalayan University | 200000.00 | 16-Nov-2024 | 20-Nov-2025 | |

## Proposal Technical Details

| | | | |
|---|---|---|---|
| **Title of training** | Bioinformatics and Artificial Intelligence in Healthcare and Disease Modelling | | |
| **Institute Type** | Private | **Valid DSIR Certificate** (Validity) | yes (31-03-2026) |
| **Area of Training** | Disease Modelling | **Subject Area** | BIOINFORMATICS |
| **Proposal Duration (in Years)** | 5 | **Detail Proposal** | View |

**Any prior experience / expertise in providing training courses / programmes (both conventional and online) in above areas of research: Please state the duration and the category of participants in the given tabular format**

| # | Area | Duration | Type of Program | Category of Participants |
|---|---|---|---|---|
| 1 | Modern Biology: Advanced Molecular Tools for Healthcare: A comprehensive Training Module | 60 | Conventional | Doctoral Faculty |
| 2 | Ganga Water in Eradication of Human Viruses Through Bioinformatics Tools | 1 | Conventional | Doctoral Faculty |

**THE TRAINING MODULES FORMAT**

| # | Topics | Schedule | Trainging Provided |
|---|---|---|---|
| 1 | Decoding disease with molecular tools | WEEK 1 | Day 1:Session 1: Introduction to Training Module Session 2: Introduction to Molecular Biology in Diagnostics Day 2 Session 1 (Hands On): Orientation to Molecular Lab Equipment & Safety Session 2: Hands on Nucleic Acid Extraction Day 3 Session1: Hands on Training on Nucleic acid quantification techniques Session 2: Agarose Gel Electrophoresis & Band Visualization and scoring Day 4: Session1: PCR – Principles, Components, and Thermal Cycling Session 2: Hands on Training on PCR setup and Amplification Day 5 Session 1: Hands-On Real-Time PCR Setup and Data Acquisition Session 2: Hands on Interpretation of Amplification Plots & Standard Curves Day 6 Session 1: Introduction to protein extraction, estimation and electrophoresis Session2: Hands on protein extraction, quantification and qualitative analysis Day 7 Assignment |
| 2 | Comprehensive Disease Bioinformatics | WEEK 2 | Day 8: Session 1: Introduction to Bioinformatics and Disease Database Session 2: Hands on: Retrieval of Disease Associated genes from DisGeNET Day 9: Session 1: Introduction to Genetic Variants, GWAS and SNP interpretation Session 2: Hands on: GWAS Catalog Exploration and Variant effect predictor Day 10: Session 1: Gene expression in Disease Basics of Transcriptomics Session 2: Hands on: Analyzing RNA Seq Data from GEO using Galaxy/ DESeq2 Day 11: Session 1: Functional Enrichment & Pathway Mapping Session 2: Hands On: KEGG/Reactome Pathway Analysis Day 12: Session 1: Network Medicine -Disease interactome Session 2: Handson building Gene disease network with STRING and Network visualization and clustering in Cytospace Day 13 Session 1: Basics of Machine learning in disease prediction Session 2: Hands-on: Predictive modelling using Orange Group Activity: Case based mini project Day 14: Assignment |
| 3 | AI-Powered Healthcare Analytics and Applications | WEEK3 | Day 15: Session 1: Setting up: Python, Jupyter, Notebook, Google colab Python Basics: Variables, Data types, Control flow Session 2: Working with libraries: NumPy, Pandas, Matplotlib Hands on: Analyzing simple health Datasets (CSV and JSON) Day 16: Session 1: Introduction to AI and Deep learning and its role in modern healthcare Session 2: Applications of AI in Healthcare Demonstration of available AI tools Day 17: Session 1: Data Collection, cleaning and pre-processing Supervised learning Algorithms Session 2: Exploratory data analysis (EDA) with Pandas and Matplotlib Handson: Predictive disease modelling and its evaluation Day 18: Session 1: Introduction to neural networks and CNNs AI in medical imaging Session 2: Handson: CNN medical image classification and model evaluation with explainability in imaging Day 19: Session 1: NLP concepts in healthcare Tokenization, Embeddings and Transformers Session 2: Application in Clinical text: NER, Classification and summarization Day 20: Session 1: Hands on: NLP, EMR text classification with hugging face Session 2: Conversational AI: Medical Chatbots and virtual assistants Day 21: Assignment |
| 4 | Data interpretation of NGS using R and Python | WEEK 4 | Day 22: Session 1: Introduction to R Session 2: Application of R in Disease Modelling Day 23: Session 1: Introduction to WLS/Linux Session 2: Hands on WLS/Linux Day 24: Session 1: Adapter removal with QC of data Session 2: Hands-on: Quality Control and Adapter Trimming of Raw Reads Day 25: Session 1: Introduction to Quality Control and Adapter Removal – Python Foundations Session 2: Hands on Quality Control and Adapter Removal using python Day 26: Session 1: Introduction Adapter Trimming and QC Analysis with Python Session 2: Hands-on: Adapter Trimming and QC Analysis with Python Day 27: Session 1: Comparative study on analysis of NGS data using R and Python Session 2: Case Study Day 28: Assignment |

**Existing faculty members, their details, positions, posts available with the institution for imparting proposal programme.**

| # | Faculty Name | Designation | Email Id | Contact Number | Biodata |
|---|---|---|---|---|---|
| 1 | Dr Sanjay Gupta | Dean, Professor | sanjaygupta@srhu.edu.in | 8077952637 | View |
| 2 | Dr Bindu Dey | Director Research and Development | director.research@srhu.edu.in | 9910781264 | View |
| 3 | Dr Nupur Joshi | Assistant Professor | nupurjoshi@srhu.edu.in | 7409446832 | View |
| 4 | Dr Geeta Bhandari | Assistant Professor | geetabhandari@srhu.edu.in | 8439020392 | View |
| 5 | Dr Vikash Singh Jadon | Associate Professor | vsjadon@srhu.edu.in | 7579283826 | View |
| 6 | Dr Anupama Mishra | Assistant Professor | anupamamishra@srhu.edu.in | 9639601234 | View |
| 7 | Dr Gourav Kumar | Associate Professor | gouravkumar@srhu.edu.in | 8957878274 | View |
| 8 | Dr Samiksha Joshi | Assistant Professor | samikshajoshi@srhu.edu.in | 7060725003 | View |
| 9 | Dr Megha Sharma | Assistant Professor | meghasharma@srhu.edu.in | 9816084794 | View |
| 10 | Dr Ruchi Juyal | Professor | ruchijuyal@srhu.edu.in | 9459813505 | View |
| 11 | Dr Nikku Yadav | Associate Professor | nikkuyadav@srhu.edu.in | 9711197679 | View |

| | |
|---|---|
| **No. of Participants** | 30 |
| **Mode of Selection** | Online registration followed by screening and confirmation |
| **Brief Justification** | By focusing on both bioinformatics (e.g., genomics, systems biology, network analysis) and AI applications (e.g., predictive modelling, image analysis, NLP in EMRs), the program offers a comprehensive, application-oriented approach to modern healthcare challenges. It will empower participants to become future-ready researchers, clinicians, and data-informed decision-makers. |
| **Available Infrastructure** | a. Existing laboratory facilities to be (Please attach a brief biodata used importing training)<br>b. Back-up existing internet facilities to provide online course<br>c. Hostel<br>d. Other (Guest House, Minimal budget rooms in Sarai, E block, Combined Therapy) |
| **Advertisement of the training programme** | 1750406717_1218006052.pdf View |

**Uploaded Documents**

| # | Proposal Id | Document Name | Uploaded Document | Remarks |
|---|---|---|---|---|
| 1 | DSIR Recognition Certificate | View | 20-06-2025 | "DSIR Certificate is uploaded to establish the institution's recognition as a Scientific and Industrial Research Organization (SIRO) for eligibility and compliance under the project guidelines." |
| 2 | Certificate by Head of Institute | View | 20-06-2025 | The project is endorsed by Head by Institute |
| 3 | Mandate Form | View | 20-06-2025 | Details of the bank account |
| 4 | Declaration & Attestation | View | 20-06-2025 | Declaration and Attestation by the Head of the Institution |
| 5 | Undertaking by Applicant | View | 20-06-2025 | Duly signed undertaking by the applicant |

**A: Grant for gap filling/up gradation of facilities (one time grant up to Rs.50.00 lakh)**

| # | Item | Budget (INR) | Description/Justification |
|---|---|---|---|
| 1 | Financial Assistance for Upgradation of facilities for conduction of workshop | 2500000.00 | The proposed budget covers FTIR for essential molecular characterization supporting disease modelling, Google Colab for accessible, cloud-based AI and bioinformatics training, Laboratory Kits and Reagents for hands-on molecular biology experiments critical to generating real data, and Training Material to provide structured, lasting resources that enable participants to effectively apply skills during and after the programme. These components are vital for delivering an integrated, practical, and impactful training experience. |
| **Total(INR)** | | **2,500,000.00** | |

**Total Budget details (in Rs.)**

| Year | Fellowship/Staff (Manpower) | Contingencies/Miscellaneous | Consumables | Equipment | Travel | Overhead | Total Budget |
|---|---|---|---|---|---|---|---|
| Year:1 | 0.00 | 500,000.00 | 400,000.00 | 0.00 | 100,000.00 | 0.00 | 1,000,000 |
| Year:2 | 0.00 | 500,000.00 | 400,000.00 | 0.00 | 100,000.00 | 0.00 | 1,000,000 |
| | | | | | | | **Total: 7,500,000** |

**Total Budget details (in Rs.)**

| Year | Fellowship/Staff (Manpower) | Contingencies/Miscellaneous | Consumables | Equipment | Travel | Overhead | Total Budget |
|---|---|---|---|---|---|---|---|
| Year:3 | 0.00 | 500,000.00 | 400,000.00 | 0.00 | 100,000.00 | 0.00 | 1,000,000 |
| Year:4 | 0.00 | 500,000.00 | 400,000.00 | 0.00 | 100,000.00 | 0.00 | 1,000,000 |
| Year:5 | 0.00 | 500,000.00 | 400,000.00 | 0.00 | 100,000.00 | 0.00 | 1,000,000 |
| | | | | | | | **Total: 7,500,000** |

**Total Consumables budget breakup (in Rs.)**

| Year | Particular | Justification | Amount (Rs.) |
|---|---|---|---|
| 1 | Chemical, glassware and plastic ware | For experimental Work | 50,000.00 |
| 1 | Molecular Kits and Reagents | The Molecular Kits and Reagents are essential for conducting the practical molecular biology components of the training programme, including nucleic acid extraction, PCR, real-time PCR, gel electrophoresis, and related diagnostic assays. These kits and reagents ensure accuracy, reproducibility, and safety during hands-on sessions, enabling participants to generate real biological data that will be further used for bioinformatics analysis and AI-based disease modelling | 350,000.00 |
| 2 | Chemical, glassware and plastic ware | For experimental Work during training | 50,000.00 |
| 2 | Molecular Kits and Reagents | he Molecular Kits and Reagents are essential for conducting the practical molecular biology components of the training programme, including nucleic acid extraction, PCR, real-time PCR, gel electrophoresis, and related diagnostic assays. These kits and reagents ensure accuracy, reproducibility, and safety during hands-on sessions, enabling participants to generate real biological data that will be further used for bioinformatics analysis and AI-based disease modelling | 350,000.00 |
| 3 | Chemical, glassware and plastic ware | For experimental Work during training | 50,000.00 |
| 3 | Molecular Kits and Reagents | he Molecular Kits and Reagents are essential for conducting the practical molecular biology components of the training programme, including nucleic acid extraction, PCR, real-time PCR, gel electrophoresis, and related diagnostic assays. These kits and reagents ensure accuracy, reproducibility, and safety during hands-on sessions, enabling participants to generate real biological data that will be further used for bioinformatics analysis and AI-based disease modelling | 350,000.00 |
| 4 | Chemical, glassware and plastic ware | For experimental Work during training | 50,000.00 |
| 4 | Molecular Kits and Reagents | he Molecular Kits and Reagents are essential for conducting the practical molecular biology components of the training programme, including nucleic acid extraction, PCR, real-time PCR, gel electrophoresis, and related diagnostic assays. These kits and reagents ensure accuracy, reproducibility, and safety during hands-on sessions, enabling participants to generate real biological data that will be further used for bioinformatics analysis and AI-based disease modelling | 350,000.00 |
| 5 | Chemical, glassware and plastic ware | For experimental Work during training | 50,000.00 |
| 5 | Molecular Kits and Reagents | he Molecular Kits and Reagents are essential for conducting the practical molecular biology components of the training programme, including nucleic acid extraction, PCR, real-time PCR, gel electrophoresis, and related diagnostic assays. These kits and reagents ensure accuracy, reproducibility, and safety during hands-on sessions, enabling participants to generate real biological data that will be further used for bioinformatics analysis and AI-based disease modelling | 350,000.00 |
| | | | **Total: 2,000,000.00** |

**Total Contingency budget breakup (in Rs.)**

| Year | Particular | Justification | Amount (Rs.) |
|---|---|---|---|
| 1 | Miscellaneous | Printing of training material, Venue and logistics, Boarding and lodging charges of the participants, Renumeration of experts and other expenses | 500,000.00 |
| 2 | Miscellaneous | Printing of training material, Venue and logistics, Boarding and lodging charges of the participants, Renumeration of experts and other expenses | 500,000.00 |
| 3 | Miscellaneous | Printing of training material, Venue and logistics, Boarding and lodging charges of the participants, Renumeration of experts and other expenses | 500,000.00 |
| | | | **Total: 2,500,000.00** |

**Total Contingency budget breakup (in Rs.)**

| Year | Particular | Justification | Amount (Rs.) |
|---|---|---|---|
| 4 | Miscellaneous | Printing of training material, Venue and logistics, Boarding and lodging charges of the participants, Renumeration of experts and other expenses | 500,000.00 |
| 5 | Miscellaneous | Printing of training material, Venue and logistics, Boarding and lodging charges of the participants, Renumeration of experts and other expenses | 500,000.00 |
| | | | **Total: 2,500,000.00** |

**Total Travel budget breakup (in Rs.)**

| Year | Travel | Justification | Amount (Rs.) |
|---|---|---|---|
| 1 | Travel for Resource person | The Travel for Resource Person is essential to facilitate the participation of subject matter experts and experienced trainers from different regions who will deliver specialized sessions in bioinformatics, artificial intelligence, and disease modelling. | 100,000.00 |
| 2 | Travel for Resource person | The Travel for Resource Person is essential to facilitate the participation of subject matter experts and experienced trainers from different regions who will deliver specialized sessions in bioinformatics, artificial intelligence, and disease modelling. | 100,000.00 |
| 3 | Travel for Resource person | The Travel for Resource Person is essential to facilitate the participation of subject matter experts and experienced trainers from different regions who will deliver specialized sessions in bioinformatics, artificial intelligence, and disease modelling. | 100,000.00 |
| 4 | Travel for Resource person | The Travel for Resource Person is essential to facilitate the participation of subject matter experts and experienced trainers from different regions who will deliver specialized sessions in bioinformatics, artificial intelligence, and disease modelling. | 100,000.00 |
| 5 | Travel for Resource person | The Travel for Resource Person is essential to facilitate the participation of subject matter experts and experienced trainers from different regions who will deliver specialized sessions in bioinformatics, artificial intelligence, and disease modelling. | 100,000.00 |
| | | | **Total: 500,000.00** |

**Mandate Form of the Institute**

| # | Name of Account Holder (As per bank record) | Email Id of Designated Authority | Designation of Head of Institute | Account Number | Bank Name | IFSC | Branch Name and Address |
|---|---|---|---|---|---|---|---|
| 1 | SRHU Scientific and Industrial Research | finance@srhu.edu.in | Vice Chancellor | 37200223663 | State Bank of India | SBIN0010580 | HIHT, Jollygrant, Dehradun |

**Declaration**

I hereby declare that the entries in this form and the additional particulars, if any, furnished herewith are true to the best of my knowledge and belief. I understand that in the event of my information being found false or incorrect at any stage, my project/proposal shall be liable to cancelation / termination without notice or any compensation in lieu thereof.

Swami Rama Himalayan University
Director Research