

**BIOTECHNOLOGY
DIVISION**

1. Establishment of Biotechnology Research and Application Centre at Sajong, Rumtek

Biotechnology Research and Application Centre has been established at Sajong, Rumtek. Single storied building to house the laboratory and office has been constructed and furnished with laboratory designs. The instruments procured under various project is housed in this laboratory and R&D activities is being carried out. 01 hi-tech

green house fully automated is constructed along with the five normal polyhouse and two shade house. Field for development of herbal garden, trial/experimental field is under preparation. Junior Research Fellows and other technical staffs are deputed to the centre to carry out the R&D and field related works.

2. Establishment of State Biotech hub project:

The project is being funded by Department of Biotechnology (DBT), Govt. of India for a period of three years commencing from December 2010.

The main objective of the project is the establishment of major biotechnology facility and trains the coordinators of the institutional hubs as well as providing support to research and training.

Dr. B. C. Basistha, Additional Director is the Coordinator and Shri. K. B. Subba, A.S.O. is the Co-coordinator of the project. The project is being coordinated by Biotech Consortium India Ltd (BCIL), a company promoted by DBT, Govt. of India. The state council has received first years' budget for the project.



A



B

Figure A. Structure of State Biotechnology Research and Application Centre (BRAC) at Sajong, Rumtek (E. Sikkim)

Figure B. High-tech (automated system) Green-house for raising seedlings of economically and medicinally important plant species at Biotechnology Research and Application Centre, Sajong, Rumtek (E. Sikkim) (B).



Figure. Work-space inside the laboratory of Biotechnology Research and Application Centre at Sajong, Rumtek (East Sikkim) established through State Biotech Hub project in Sikkim.

- I. In order to give advice, suggestions and overall monitoring the progress of the project a Scientific Advisory Committee (SAC) consisting members from different scientific institutions like North Bengal University, ICAR, G.B. Pant institute, Sikkim University, Government College, NRC Orchids was constituted with the Member Secretary, Sikkim State Council of Science & Technology as Chairman. The meeting of the SAC has been conducted to achieve the objectives of the project successfully.

Dr. Arnab Sen, Head, Botany Department, North Bengal University has been appointed

as consultant for a period of two years to guide, suggest and advice on the overall progress of the project.

- II. A workshop has been conducted on “Biodiversity of Sikkim Himalayas” at Science Centre, Marchak on 22nd Sept. 2012. The Junior Research fellows (JRF), technical assistant and lab attendant in the project are actively involved in Research and Development (R&D) activities.

Bioinformatics Centre

Introduction

During the seventh five year plan, the Department of Biotechnology (DBT), Government of India started a National Network on Biotechnology called Biotechnology Information System Network (BTISNet). Under this network, the DBT has established different Bioinformatics Centres including the Bioinformatics SUB DISC (Distributed Information Sub-Centre) in the public sector institutions across the country. Bioinformatics SUB DISC, Sikkim was established under the aegis of Sikkim State Council of Science & Technology (SSCS&T), Department of Science & Technology and Climate Change, Govt. of Sikkim with the support of DBT with the following objectives:

Objectives

The Bioinformatics SUB DISC, Sikkim has been assigned to work on Bioinformatics and its related activities with the following objectives;

- i. To provide a national bio-information network designed to bridge the interdisciplinary gaps in biotechnology information.
- ii. To build up information resources, prepare database on biotechnology and develop relevant information handling tools and techniques.
- iii. To continuously evaluate information requirements, organize creation of necessary information and to provide information and computer support services to users of Sikkim state.

- iv. To establish linkages with international resources in biotechnology information, e.g., Databanks, published literature, patents and other information of scientific and commercial values.
- v. To evolve and implement programs on education and training of information scientists responsible for biotechnology information and its application to biotechnology, research and development.
- vi. To develop, support and enhance public information resources for biotechnology, e.g., Genebanks, molecular biology data and related research information resources.
- vii. To undertake, prepare and publish survey, reports and forecasts on several branches of biotechnology.

The Bioinformatics Centre organized a training on “Documentation of Ethno-traditional knowledge using Bioinformatics tools” on 07th December, 2012. The Resource persons of the training programme were Shri. L.K. Rai, Scientist, GBPHEd, Pangthang, Dr. Bharat Kumar Pradhan, Survey Expert, JICA and Shri. Laydong Lepcha, Information Officer, Bioinformatics Centre, Sikkim State Council of Science & Technology, During the training

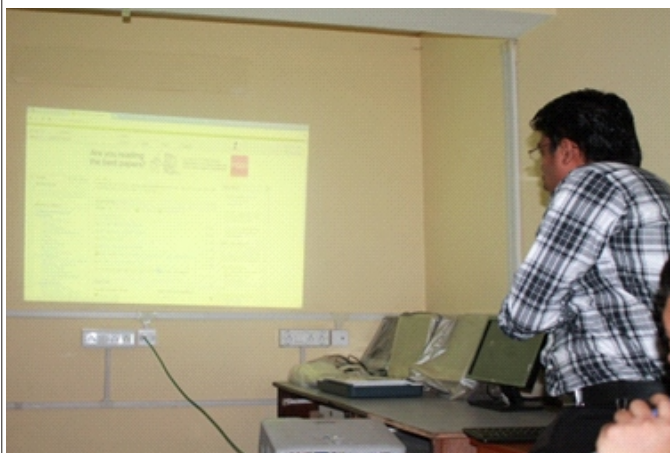


Figure. Science Direct training under progress at Bioinformatics web laboratory.

programme the Resource Persons delivered lectures and demonstration on the Ethno-botany, its major studying phases, importance of documentation of Ethno-traditional knowledge, role of Bioinformatics for the documentation of Ethno-traditional Knowledge, threat and conservative aspects of Ethno-traditional knowledge and roles of Bioinformatics software. In the conclusion session, Dr. B.C. Basistha, Additional Director and Coordinator, Bioinformatics Centre, SSCS&T, distributed certificates to the participants of the training programme.



Figure. The trainees of the programme along with Resource persons of the training programme. Dr. B.C. Basistha, Additional Director

- I. The Centre has prepared a database on economically important Agro-horticultural crops diseases of Sikkim. The database shall be very useful for the researchers in studying crop diseases and its mitigative aspects.
- II. On 9th September 2012, the Centre conducted a training programme on techniques and methodologies of online research journals from Science Direct. The training was attended by Scientists, Senior Research Fellows, Junior Research Fellows, Research Assistants and other relevant researchers, working in the Council. During the training

programme Mr. Tanumoy Misra, Product Trainer, Elsevier Science & Technology, New Delhi, gave hands on training to the trainees.

III. The Bioinformatics Centre has published its Vth Volume of the News Letter "BIOGYAN" which is also been made online at centre's website: <http://www.bioinformaticssikkim.gov.in>.

IV. The Bioinformatics Centre has developed a Biological animation on Plant Physiology and Genetics. The animation software will be very helpful, both to the teachers and the students to understand Biology in much convenient way. The animation CDs shall be distributed among the various Colleges and schools of Sikkim.

V. Bioinformatics Centre, Sikkim State Council of Science & Technology is preparing Videographic Documentation of *Rhododendron* species of Sikkim. The videographic documentation of *Rhododendron* species will promote sustainable research and conservation of *Rhododendron species* of Sikkim Himalayas and can be preserved as authentic database.

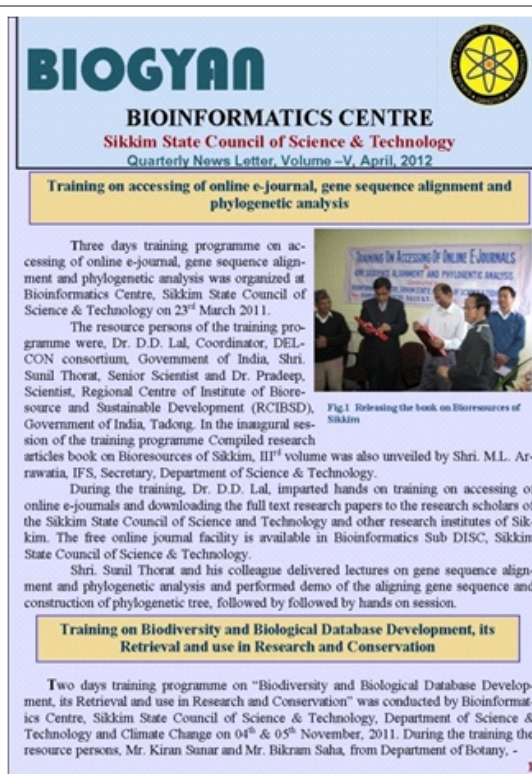


Figure. Vth Volume of the News Letter BIOGYAN.

Publications:

- A reckon on the conservation and sustainability of *Abroma augusta* Linn. of Sikkim Himalaya: A review report in *Journal of Medical Science and Research*. (Accepted)
- Pradhan. Sushen, Basistha.B.C., Handique.J.Pratap (2012). Determination of genetic fidelity of Micropropagated plants of *Zingiber officinale* cv-*Majhauley* of Sikkim Himalaya using RAPD markers. *Int. J. Fundamental Applied Sci.* Vol. 1, No. 2, 21-24.
- Laydong Lepcha, B.C.Basistha and ML Arrawati (2012). Landslides: A threat to Bioresource of Sikkim Himalaya. *Sikkim Biodiversity: Significance and Sustainability*. Pp. 271-276.
- Laydong Lepcha & B.C. Basistha (2013). *Proteomics in Bioinformatics*. Biogyan News Letter, Bioinformatics Centre, Sikkim State Council of Science & Technology. Vol.6, p3.
- Smrita Pradhan & B.C. Basistha (2013). Stinging Nettle (*Urtica dioca* L). Biogyan News Letter, Bioinformatics Centre, Sikkim State Council of Science & Technology. Vol.6,p3.
- Sushen Pradhan (2013). Ginger, *Zingiber officinale* (Variety,*Sanuaduwa*). Biogyan News Letter, Bioinformatics Centre, Sikkim State Council of Science & Technology. Vol.6,p4.
- *Rajdeep Gurung & B.C. Basistha (2013). Patenting of Biotechnology in India*. Biogyan News Letter, Bioinformatics Centre, Sikkim State Council of Science & Technology. Vol.6, p4.

3. Patent Information Centre

Introduction

The Patent Information Centre (PIC) was established under the aegis of Sikkim State Council of Science & Technology (SSCS&T), Department of Science & Technology and Climate Change, Govt. of Sikkim in the year 2007 and it is the eighth youngest centre in India. Technology Information and Assessment Council (TIFAC), New Delhi funded the centre until 2010. Presently, the PIC is supported and funded by the Department of Science and Technology (DST), Govt. of India (GoI). The centre is a one of the main parts of TDT (Technology D T) of DST, (GoI), and has been financially supported as a grant-in-aid scheme of Council. Recently, the Government of Sikkim accorded the PIC, SSCS&T as the State Nodal Agency for Intellectual Property Rights and its related activities in the State of Sikkim vide notification no.05/DST/2013 dated 20.03.2013.

- ii. To carry out research activities in the field of IPRs.
- iii. To identify potential Intellectual Properties (IPs) of Sikkim state.
- iv. To facilitate registration of IPRs.
- v. To facilitate commercially exploitation of the IPR registered assets.
- vi. Continuous awareness activities of IPR in the Science Centre through displaying of permanent flex.

II. Patent Search Activity.

Patent search activity is going on for proving support for patent filing from the state. PIC is providing patent search facilities to all the research institutes and the colleges and universities. The centre has also created awareness and sensitized about patent search,



Figure: Display at Sikkim Science Centre Marchak

Objectives

The Patent Information Centre is engaged to work on the Intellectual Property Rights (IPRs) with the following objectives;

- i. For sensitization and awareness about IPR in Sikkim.

patent drafting and filing activities of the PIC during different programs of the Council. The PIC, Sikkim has procured 30 years patent database with bimonthly renewable version from Patent Infos Chennai. The work is under process (ongoing activity).

III. IPR Cell created by PIC, SSCS & T

Total five numbers of IPR cell has been created in the state by PIC, Sikkim State Council of science & Technology in the year 2012-13. Name of the IPR cell created are :

- a. Sikkim University
6th Mile, Tadong, Gangtok, East Sikkim
- b. College of Engineering & Post Harvest Technology (Central Agriculture University) Ranipool, East Sikkim
- c. Sikkim Government College,
Tadong, East Sikkim.
- d. Sikkim Government College,
Gayzing, West Sikkim.
- e. Sikkim Government College,
Rhenock, East Sikkim

IV. Geographical Indication (GI) registration

Geographical Indication registration and award of certificate from GI registry Chennai is under process. The two local items of Sikkim has been filed for Geographical Indication (GI) Registration under Geographical Indication Registration & Protection Act, 1999 & Geographical Indication Registration & Protection Rule, 2002. GI is one of the IPR, it helps to protect from other elite infringement and also help to get high value in the market commercially. (State like Sikkim has great scope for GI registration from the Agricultural and Horticultural field along in the field of Handicraft and Handlooms, etc). Presently, the GI filled following two items for registration is working with its legal formalities by Technology

Information and Forecasting Assessment Council (TIFAC), New Delhi.

The names of the two items are:-

- i. Sikkim Mandarin (*Sikkim Soontala*) &
- ii. Sikkim Temi Tea (*Sikkim Temi Chiyapati*)

IV. Copyright filed.

The following two copyright has been filled by the centre:-

- i. Gyapo (A story)
- ii. Kathaa (A story)

V. Plant Protection Variety & Farmers Right (PPV & FR) filed.

One local variety of rice, *Kalo Nunia* has been applied for the registration of Farmers Variety with denomination *Kailash Rana* under Plant Protection Variety & Farmers Right has (PPV & FR) Act, 2001 and Plant Protection Variety & Farmers Right, Rule 2003. This rice variety was developed by one of the progressive farmer of Sikkim. The registration has been applied to the Plant authority, PPV & FR registry, Govt. of India through Deputy Registrar, Guwahati, Branch office, PPV & FR. The seed of rice (*Oryza sativa*) has been submitted to Gene Bank, NBPGR for Genetic testing.

VI. Website maintained.

The centre has maintained its own website www.picsikkim.gov.in. The website is also ready for relaunching with new design and latest updates of PIC activities (VPN and Digital Certificated has been procured and gov.in domain is also renewed from New Delhi Govt. of India).

PIC Publications:

- The PIC has published brochure with latest updates of PIC activities.
- Publication of IPR article in the Journal of "Sikkim Biodiversity- Significance and sustainability.
- A future prospective; intellectual property rights (IPR) in Sikkim himalaya- Rajdeep Gurung, Sonam R. Lepcha, Bharat C. Basistha & Murari L. Arrawatia.
- Traditional *Lepcha* craft *Sumok-thyaktuk* (*Lepcha* Hat) and its conservation in Dzongu Tribal Reserved Area (DTRA), Sikkim, INDIA. S.R Lepcha*, R. Gurung & B. C Basistha, M.L Arrawatia.
- Concept of Geographical Indication (GI)" in the local paper of the state 'Sikkim Mail'.
- Patent an Intellectual Property Rights (IPR) in the local paper of the state 'Sikkim Mail'.
- Booklet of IPR questionnaire in local language (Nepali version) is in the press for final editing.
- IPR posters for awareness and sensitization about different legal rights in Indian IPR forum.