CURRICULUM VITAE OF PROFESSOR BOLIN KUMAR KONWAR

Name : Prof. Bolin Kumar Konwar **Designation :** Vice-Chancellor (from 07.09.2011)

Present address: Nagaland University (Central), Lumami-798627, Dist.Zunheboto, Nagaland
(Mol. Biology & Biotechnology, School of Science & Technology
Tezpur University, Napaam, Tezpur-784028, Dist-Sonitpur, Assam)
Email: vicechancellornu@yahoo.com; bkkon@tezu.ernet.in

Date of birth : 01.09.1958 **Marital status :** Married with two children

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Educational qualification

Institute	***Place***	***Examination***	***Year***	***Div/Class & Marks/ OGPA***	***Prize/Scholarship***
BPBMHS School	Sonari	HSLC	1975	Ist Div 68.63%	**National/ICAR/ ITA** Scholarship
Assam Agril University	Jorhat	B.Sc(Agri)	1981	Ist Class, OGPA 3.34 in 4.0 scale(71.6%)	**Gold Medal** & **GR I Merit** Scholarship
Assam Agril University	Jorhat	B.Sc(Agri) in plant breed & genetics	1984	Ist Class,OGPA 3.79 in 4.0 scale(85.8%)	**Distinction** (above 80% marks)
***M Sc (Agri) thesis** – "Phenotypic stability for yield and morphophysiological traits of soybean [Glycine max (L) Merrill]"					
Imperial College of Sci, Tech & Medicine	London	DIC(Microb)	1992	-	Certificate
Imperial College, Univ. of London	London	Ph D(Plant Biotech)	1992	-	Certificate
***Ph D thesis** – "In vitro culture and genetic transformation of sugarbeet (Beta vulgaris L.)"					

Experience

Institute	*Place*	*Job*	*Duration*	*Nature of Work*
Assam Agril University	Jorhat	-	in 1977	NCC Camp at Toklai, Mariani
Towkok Gr of T Es	Sonari	Management Trainee	June-Sept, 1980	Tea garden & Factory management
Assam Agril University	Jorhat	SRA	April 84'-July 85'	Farmers field expts, ICAR Scheme
Assam Agril University	Jorhat	Lecturer	Aug 85'-Dec 85'	Teaching UG & PG courses, Res on pulse crops & mutation breed
Assam Agril University	Jorhat	Asst. Prof.	Jan 86'-Aug 94'	as above
Assam Agril University	Jorhat	Assoc. Prof.	Aug 94'-April 95'	Teaching UG & PG in Agril Biotech, Genet & Plant Breed, Res on blue green algae
Tocklai Expt Station Tea Res Association	Jorhat	Biotechnologist	April 95'-Dec 97'	Tea tissue & Protoplast cult, genome analysis, genet transformation, Microb degradation of tea litters etc to value added compost
Tocklai Expt Station	Jorhat	Dept. Incahrge	Dec 97'-Aug 2k	as above
Tocklai Expt Station	Jorhat	Head of Dept.	Sept 2000-March 02'	as above
Tezpur University	Tezpur	Prof and Head of mol biol & biotech	March 02'-April 08'	Teaching M Sc & Ph D Res on Petroleum Biotech, genomics & biochem of Medicinal Plants, yeast genomics. Dept Management
Tezpur University	Tezpur	Prof. & Dean of Sci & Tech	April 08'-Sept 2011	Same as above & School Management
Nagaland University	Lumami	Vice-Chancellor	7th Sept 2011 till date	Academic, Administration & Finance management of the University

Present position with the pay scale

Vice Chancellor of Nagaland University (Central), present basic pay Rs 75,000 + 5,000/-pm

Research Project carried out as Principal Investigator

	Project Title	*Funding Agency*	*Duration (yrs)*	*No. of sci./ associates*	*Fund(Rs in Lakh)*
01	Collection, evaluation and improvement of *Azolla-Anabaena* symbiosis	ICAR	3 (1994-97)	1 RA	3.70 (completed)
02	Embryo rescue and haploidy for cold tolerant rice improvement	AAU	5 (1993-98)	PG Student 1 Scientist	2.00 (left)
03	Breeding tomato for fruit size and resistance/tolerance to late blight	AAU	5 (1993-98)	PG Student 1 Scientist	1.20 (left)
04	Advanced work on Plant Bio-technology	Tea Board	5 (1995-00)	RFs 2 2 Sci.	130.00 (completed)
05	A study on the utilization of improved planting materials by the tea industry of NE India	Tea Board	1 (1999-00)	Sci. 1	1.80 (completed)
06	Recycling of tea and other organic wastes to value added compost	DBT	2 (1999-01)	RAs 2 Sci. 1	14.30 (completed)
07	Collection, conservation and evaluation of tea germplasm	Tea Board	5 (1999-04)	Scis. 3	40.40
08	Characterization and improvement of tea through biotechnological tools	DBT	3 (2001-04)	RFs 2 RAs 3	38.20(left completed)
09	Studies on functional genomics of tea, mentha and ashwagandha	CSIR (New Millennium Technology Initiative:NMITLI)	3 (2001-04)		42.00(left completed)
10	Petroleum Biotechnology	ONGCL	9 (1998-07)	SRFs 2	189.00 (completed)
11	Medicinal plants of NE India	NMPB	3 (2005-08)	PF 1	10.00 (completed)
12	Bioremediation of crude oil	ONGC	5 (2009-14)	RF 4	70.03 (completed)

Research achievements

1. Isolation and cloning of GUS gene into the pBin 19 plasmid; construction of the vector pBI 121 having the marker NPT II and reporter B-glucuronidase (GUS) genes.
2. Mobilisation of plasmid into *Eschericia coli* and *Agrobacterium tumefaciens* using electrical pulse.
3. *Agrobacterium tumefacie*n-mediated genetic transformation of sugar beet with NPT II and GUS genes.
4. Electroporation-mediated transient expression of GUS gene in sugar beet protoplasts.
5. Histochemical assaying of GUS gene expression.
6. Polyacrylamide gel electrophoretic determination of GUS protein.
7. Gene copy number determination.
8. Associated with the development of green gram varieties AAU 34 and AAU 39.
9. Standardized the rapid *in vitro* culture technique of sugar beet.
10. Standardized the tissue culture technique of tea with *in vitro* rooting, hardening, accilimatisation and establishment of plants in the field.
11. Isolation and culture of tea protoplasts.
12. Genetic trasformation of tea with *Agrobacterium rhizogenes* carrying the Ri plasmid for hairy root development.
13. Isolation and multiplication of 12 strains each of anaerobic bacteria and fungi involved in the degradation of tea pruning litters and tea garden weeds.
14. Fifteen TV clones were nationally registered at the NBPGR, New Delhi with detailed characterisation including RAPD-based genetic fingerprinting.
15. Developed a bacterial consortium which can degrade crude oil contaminant in 180 days.
16. Isolated bacterial bio-surfactant was found to be much superior (55% recovery) to commercial surfactant SDS in the recovery of crude oil from the saturated sand pack column. The bio-surfactant was found to be stable at 100oC and also in a wide range of pH from 4 – 12.
17. The flavoury compound anethole (86%) was isolated from the wild plant *Etlingera linguiformis*. The chemical can be potentially used in as food and medicine additives. The anti-microbial activity of the compound was assessed. The karyotype and genotype of the plant was determined.
18. Field application of the bioremediation technique by ONGC.
19. Bacterial metabolite biosurfactant in crude oil lifting and recovery.
20. Designing of iron and silver nanobiopolymer particles as drug delivery agent.
21. Extraction and energy characterization of biodiesel from microalgae.

Research management

Tocklai Expt Station, TRA: The institute was in great turmoil when I joined as the Biotechnologist (Sr. Scientist) in 1995 due to prolonged agitation by the employees. There was no work ethics; scientists lost interest to carry on research works. Moreover, the agitating office bearers were mostly from the department of Botany where I joined and took over the charge.

The situation called for our full time effort to get the support of all members to bring back the work culture, regular attendance and punctuality. Clone improvement work which was almost abandoned was brought back to the right track with the preparation for the release of clones TV31 and TV32. The result-less tea biotechnology (tissue culture) work of 12 years

was given a sound footing with the planting and cultivation of tissue culture-derived pants in the field.

With a step-by-step approach we were successful in introducing the daily work report by all employees of the department in-spite of the initial stiff resistance. Prior to moving out of the institute, we could manage to get three mega research projects from Tea Board, DBT and DST.

The result oriented efforts were well appreciated by all concerned including the management, scientists and staff members of the institute.

Tezpur University: At the time of my joining in the department of Molecular Biology & Biotechnology as the lone Professor in March 2002, there were three Lecturers, joined before me in Feb – March 2002. The Reader and HoD left the University; another Reader was removed owing to some legal verdict, the lone Reader left for the USA for Post-doctoral research. It was indeed a very difficult period to carry out teaching and research with fresh three lecturers. We were fortunate to garner support from departments like Chemical Sciences and Mathematics to impart teaching alongside our Lecturers to DBT-sponsored students. We could get full support and cooperation from our students admitted through CEEB. All throughout, scholars and students helped us to manage laboratories. They dedicatedly took part in the organization of various seminars, trainings and also in shifting the entire department to the present building from the temporary shed.

For gearing up the departmental laboratories, M Sc research project was successfully introduced in 2004, long before DBT's decision. At the time of joining, most of the equipment were out of order and few sophisticated ones were lying uninstalled. Necessary repairing and installations were done with full support of the University administration.

The Centre for Petroleum Biotechnology established for five years in 1999 with ONGC's funding lacked progress. With the support of all concerned, bioremediation of contaminant petroleum (microbial consortium) and enhanced oil recovery (bacterial biosurfactant) technologies were subsequently transferred to the funding agency.

From 2005-08, a total of eight scholars obtained Ph D degree from the department. Over sixty research papers so far were published and almost equal numbers presented by faculties in national/international journals and seminars. Almost all our students (95%) have been appointed and pursuing Ph D/Post Doc research in national and international institutes of the country and abroad.

The department succeeded in getting FIST level-I support. A BIF was established in the department with funding of the DBT. We were also assured of providing sizable funding for research and teaching by the DBT. The 11th plan visiting team highly appreciated the activities of the department. The department was assessed to be the 16th best in the country in biotechnology teaching.

Acted as Resource Person in

1. DBT sponsored popular lecture series for college and university students.
2. DBT sponsored national training and demonstration on tissue culture and genetic engineering
3. ICAR sponsored national training and demonstration on crop germplasm conservation and crop breeding.
4. Summer Institute of Central School, College and University teachers
5. TRA sponsored training of Sr. and Jr. Executives of the tea industry

6. TRA sponsored field management courses
7. To train state Government officials of Nagaland in tea cultivation and processing.
8. In refreshers/training courses of Assam University, Defense Research Laboratory, Assam Agril. University, Regional Research Laboratory etc.

Acted as Referee/Expert/Member in National bodies/research projects/journals

1. Expert member, Assessment Committee, All India Co-ordinated project on Albizzia species operated by the Indian Forest Research Institute.
2. Referee-Indian Journal of Genetics and Plant Breeding, IARI, New Delhi
3. UGC-Refresher Course Centre-Resource Person on Life Sciences in Assam University, Silchar.
4. Expert Member, Research Committee, National Research Centre on Yak, ICAR, Dirang, Arunachal Pradesh.
5. Organizing Secretary, National Seminar on 'Hydrocarbon degrading microbes", 22nd-23rd Dec., 2003.
6. Member, Organizing Committee of the National Workshop on 'Science & Technology for regional development: case for North east India'. Feb. 3rd – 6th, 2004, Indian Institute of Technology, Guwahati.
7. Expert, nominated by the Director General, ICAR, New Delhi to the DPC for the promotion of ARS scientists.
8. Chairman, Selection Committee for the appointment of Project Assistants/Fellows and Research Associates in RRL, CSIR, Jorhat in 2003, 2004 & 2005
9. External Expert for the appointment and promotion of scientists and others in National Research Institute on Rain Forests and Deciduous Trees, ICFR, Jorhat.
10. External expert for the appointment and promotion of scientists and others in DRL, DRDO, Jorhat.
11. Organizing Secretary, DNA double helix Golden Jubilee National Seminar-cum-Exhibition, Tezpur University (Central), Napaam on 31st October, 2003.
12. Member, National Organizing Committee, First National Symposium on "Muga Silkworm Biochem., Mol. Biol. & Biotech. to improve silk production", RRL, Jorhat on 11 – 12th Nov., 2004.
13. Expert Member of the Research Council of the Yak Research Centre, ICAR, Dirang, Arunachal Pradesh
14. Member, Board of PG Studies of North East Hill University, Shillong.
15. Member, Planning Board, Rajiv Gandhi University (Central), Itanagar, Arunachal Pradesh.
16. Executive Editor, International J. of Crop Science, India (2007-08)
17. Advisory Board Member, Institute of Biotech. and Allied Sci. Training, Sikar, Rajasthan
18. Reviewer of J of Genet & Plant Breed, Afr. J. of Envt. Sci. & Tech. (Permanent), Colloids and Surfaces B: Biointerfaces, J. of Hazard. Mat. and Chemosphere.
19. Project Evaluator, IGOU, New Delhi.
20. Planning board member of Rajib Gandhi University (Central University)
21. Member of Board of Post Graduate study, Biotechnology and Bioinformatics, NEHU, Shillong.

22. Guwahati Neurological Research Centre: Especially invited talk on Molecular Genetics (2008).
23. Invited talk on CEP on Biomass: Technology intervention for sustainable management (8-12th November, 2010) in Defense Research Laboratory, Tezpur.
24. Acted as an Organizing Secretary of the National Seminar on "Medicinal Plant and Microbe Diversity and their Pharmaceuticals, Dept of Mol Biol & Biotech, Tezpur University.
25. Chairman in Session IV of NATPAS, School of Sci. & Tech. 2011.
26. Member of Nomination Council, Infosis Awards.
27. Expert members of University of Tunkur Abdul Rahman, Dibrugarh University, Gauhati University, Agric. University of Raipur and Calcutta University.
28. Member of the Research Advisory Committee , Central Muga and Endi Research & Training Institute, Central Silk Board, Ministry of Textile, Lahdoigarh, Jorhat, Assam.
29. Member, Research Committee, North East Institute of Science & Technology (CSIR), Jorhat, Assam.
30. Member, Board of Directors, National Institute of Technology, Dimapur, Nagaland.
31. Member, Executive Council, Central University of Jharkhand, Ranchi.

Administrative Experience

1. Member, Board of Studies, Faculty of Agriculture, Assam Agricultural University, Jorhat from August, 1994 to April,1995.
2. Incharge, Botany Department, Tocklai Experimental Station, TRA, Jorhat from Dec.,1997 to August, 2000.
3. Head, Botany Department, Tocklai Experimental Station, TRA, Jorhat from Sept., 2000 to March, 2002.
4. Member, Scientific Advisory Committee, Tocklai Expt. Station, TRA, Jorhat from Dec., 1997 to March, 2002.
5. Member, Agricultural Sub-Committee, Tocklai Expt. Station, TRA, Jorhat from Dec., 1997 to March, 2002.
6. Head, Deptt, of Mol. Biology & Biotechnology, Tezpur University (Central), Napaam, Tezpur from April, 2002 to till date.
7. Member, Research Committee, Tezpur University (Central), Napaam, Tezpur from April, 2002 to 2004.
8. Chairman, Board of Studies, Deptt. of Mol. Biol. & Biotechnology, Tezpur University(Central), Napaam, Tezpur from April, 2002 to till date.
9. Chairman, Departmental Research Committee, Deptt. of Mol. Biol. & Biotechnology, Tezpur University(Central), Napaam, Tezpur from April, 2002 to till date.
10. Chairman, Training & Placement Committee, Tezpur University (Central), Napaam, Tezpur from 2003 to 2004.
11. Chairman, Quality Control Committee, Tezpur University (Central), Napaam, Tezpur from 2003 to till date.
12. Member, Security Committee, Tezpur University (Central), Napaam, Tezpur from 2003 to till date.

13. Chairman, Quarter Allottment Committee, Tezpur University (Central), Napaam, Tezpur from 2008 till date
14. Member, Review Committee, Act, Statutes and Ordnances of the Tezpur University (Central) in 2003.
15. Member, Library Committee, Tezpur University (Central), Napaam, Tezpur from April, 2002 to till date.
16. Presenting Officer, Tezpur University (Central), Napaam, Tezpur twice in 2003 and in 2004.
17. Member, Space Allottment Committee, Tezpur University (Central), Napaam, Tezpur for the year 2004-05.
18. Member, Insurance Investment Committee, Tezpur University (Central), Napaam, Tezpur from 2003 to till date.
19. Member, Purchase Improvement Committee, Tezpur University (Central), Napaam, Tezpur, 2003.
20. Head, ONGC-sponsored Centre for Petroleum Biotechnology, Tezpur University (Central), Napaam, Tezpur from April, 2002 to till date.
21. Secretary, Executive Committee, Centre for Petroleum Biotechnology, Tezpur University (Central), Napaam, Tezpur from April, 2002 to till date.
22. Chairman, Construction Monitoring Team, Tezpur University, Napaam from 2007.
23. Member, Panning and Academic Committee, TU, Napaam from 2002 - 06.
24. Member, Academic Council, Tezpur University, Napaam, from 2006.
25. Member, Board of Management, Tezpur University, Napaam from 2005 – 07 & 2010-11.
26. Dean, School of Science & Technology, TU, Napaam, Tezpur-784028, Assam from 200811.
27. Chairman, Grievance Redressal Committee, TU, Napaam.
28. Chairman, Campus Beautification Committee, TU, Napaam.
29. Coordinator cum Director, IQAC (NAAC), TU, Napaam (May 2005-2010).
30. Remained In-charge VC Office thrice during the station leave of the Permanent VC.

Industrial Research

1. Tocklai Experimental Station, Tea Research Association, Jorhat is the premier organization carrying out research exclusively on the Indian Tea Industry. I had the experience of working as a senior scientist and Head of the Botany Deptt. of the Organization for 7 years.
2. In Tezpur University, Napaam, Tezpur, Assam Headed the ONGC sponsored Centre for Petroleum Biotechnology for the last 8 years.
3. Establishment of the Centre for Petroleum Biotechnology as a permanent one from 2010 with ONGC and Tezpur University funding.
4. Secured an industry (ONGC) project as the PI with Rs 70.03 lakh in 2009 for five years**.**

Syllabus prepared

1. Agricultural Biotechnology at Assam Agril. University, Jorhat, Assam
2. Molecular Biology & Biotechnology in Tezpur University, Tezpur, Assam
3. Part of Food Processing & Technology (FPT): Microbiology, Food Microbiology and Food Biotechnology (for establishing the Dept of FPT in TU, Tezpur)
4. Nanotechnology course (in part)

5. Five year Integrated Biotechnology programme course syllabus.
6. Preparation M Sc Mol Biol & Biotechnology syllabus in line with DBT national syllabus.
7. M Sc in Forest Sciences, Nagaland University, Lumami
8. M Sc in Environment Sciences, Nagaland University, Lumami
9. Biotechnology, Nagaland University, Lumami
10. Centre for Earth Science, Nagaland University, Lumami
11. Centre of Advance Biosciences, Nagaland University, Lumami

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Courses taught

Genetics and Cytogenetics, Cytology, Plant Breeding (General and Advanced-Ph D), Genetic Engineering (M Sc and Ph D), Plant Tissue and Cell Culture, Plant Biotechnology (M Sc and Ph D), Management and Legal Issues in Biotechnology (IPR and Patenting), Nanotechnology, Bioelectronics (Biology part), *Food Microbiology, Food Biotechnology (teaching since the establishment of the Dept of FPT in TU in 2005).* Basic Biology and Environment Biotechnology.

Departmental achievements during the Headship

1. The Department of Mol Biol & Biotechnology, Tezpur University was adjudged to be the 16th best in the country in a nation-wide survey conducted by IIM on behalf of the DBT, Govt of India. In fact it is the best in East and North-East and 9th in North, East and NE India.
2. The Department was provided special assistance of Rs. 10.0 lakh by the UGC for limited infrastructure creation.
3. The Department was granted FIST-level 1 grant (*ca*. Rs. 2.0 crore) by the Department of Science & Technology, Govt. of India.
4. The Department was sanctioned an amount of Rs 3.00 crore by the Department of Biotechnology for infrastructure development under a special assistance program.
5. During the last seven years the Department generated about Rs. 4.50 crore external funding through various research projects granted by DBT, NMPB, DRL and the oil industry ONGC.
6. Faculties of the Department published about 50 research papers in good impact factor bearing national and international journals.
7. About 85% of the passed out students are pursuing higher studies securing various fellowships in some of the best national (CCMB, IISc, JNU, BARC, IITG etc) and international institutes in Germany, USA, Singapore etc; 12% in jobs in Universitiy, College and Industry.
8. Obtained the SAP programme of UGC.
9. More than 40 of 100 students cleared UGC/CSIR NET-JRF, DBT-JRF, ICMR-JRF,GAT during the period from 2002-2008.
10. On the basis of research progress and achievements on Petroleum Biotechnology, the permanent "Centre for Petroleum Biotechnology" was established in Dept of Mol Biol & Biotech, TU during 2009 - 10 with over Rs. 2.0 crore fund support from the ONGC.

Experience in Laboratory building layout
Tocklai Expt. Station, TRA, Jorhat – Designed the floor area and labs in the new Botany & Bio-technolgy (1,600 sq m) building, shifted the entire 90 year old dept to the new building in 1999.
Tezpur University, Tezpur, Assam – The Dept of Mol Biol & Biotech was shifted to the allotted administrative building from a temporary shed in 2004. The big halls were modified as per requirement of laboratories with glass walls. Construction New Biotech building and shifting of the Dept in to it. Preparation of 10th and 11th five year Plan budget.

Nagaland University, HQ; Lumami, Dist. Zunheboto, Nagaland
Planned all-round development of the University has been taken up in three major areas: (A) Infrastructure, (B) Academic, and (C) Administration

(A) Infrastructure creation and Construction

HQ: Lumami
The following works are taken up in the campus (constructed by NBCC during 2007-10 with very poor quality):
(01) Buildings for 25-seater Ph D Girls' hostel and conversion of Girls' Gym to Girls' hostel (capacity 60), Office and Residential quarters for KVK.
(02) Renovated/redesigned the auditorium, installed Sound and Video systems and named in honour of the Chief Land Donor at Lumami
(03) Construction of approach road, side drain at Girls' hostels and widening of approach road to the health centre
(04) Augmentation of water supply with installation of 17 km long second pipeline along with water tanks.
(05) Enlargement of play ground by cutting an entire hill (for men/women) and construction of play ground for women in a low lying area.
(06) Provided vitrified tiles in the departments of Economics, Political Science and Sociology. The same will continue to all other Departments and library.
(07) Procurement and installation of 250 KVA Generator along with extension of LT lines and
shifting of old-small generators
(08) Construction of approach road to Type-III Quarters, Children Park, Landscaping and establishment of flower gardens
(09) Construction of Instrumentation rooms in the Depts of Zoology and Botany, new Canteen as well as renovation of laboratories of the Dept of Chemistry, Health Centre, and the old Cafeteria.
(10) Installation of Bioinformatics laboratory with High and Medium End Servers, and 15 computer terminals as well as street lights and luminaries.

Kohima Campus, Meriema
Only a limited number of academic and administrative buildings were available in the campus prior to 2011. However, the campus has come up with the following works:

(01) Construction of 2 hostels, 4 Type A quarters are almost to be completed.
(02) Library building, 2 Block type staff quarters is under construction.
(03) Construction of 2 University gates with pucca road and dividers, side drains; campus boundary wall, Canteen and Women Common Room completed.
(04) Generators purchased and installed.
(05) Repairing/reconstruction of 41 quarters has been taken up in 2013-14

SASRD, Medziphema Campus
Academic, administrative, hostel, seminar, library and residential buildings acquired in 1997-98 from the State Dept of Agriculture were in dilapidated condition requiring repairing/reconstruction. The campus has come up with the following works:

(01) Two new hostels constructed.
(02) Irrigation to ICR farm and water supply to the campus arranged with installation of deep tube well.
(03) Construction of the Library building is almost complete, Depts of Plant Pathology and Entomology is ongoing.
(04) Approach road to residential area and hostels completed.
(05) Protection and sausage wall above Kitsa river to the main road.
(06) Purchase and installation of Generators.
(07) Repairing/reconstruction of 51 old quarters has been taken up from 2013

(B) Academics
(01) Departments are running externally funded research projects (from GBPIHED, DST, DBT, CSIR, UGC, ICAR, ICHR, MOEF, and NUEPA) with the financial outlay of about Rs. 6.0 crores. Along with their usual teachings, faculty members are engaged in research works with regular publication of research papers in National and International journals. Some of the good publications are from the disciplines of Botany, Zoology, Chemistry, Geology, Geography and Agricultural subjects.
(02) The University has been offering Community related trainings and short term training programmes like (i) Basic learning of computing, (ii) Bee keeping, (iii) Mushroom cultivation, (iv) Soya milk preparation, (v) Piggery, (vi) Poultry farming with Vanaraja breed, and (v) compost making.
(03) Introduction of semester system in all affiliated colleges ofr the University since 2012.
(04) Regular deputation of faculty members, officials and staff members for the refresher and orientation courses, seminars/workshops and various training programs in and outside the State.
(05) Conducted bioinformatics trainings were imparted to scholars and faculty members
(06) Organized 5 National, 4 Regional/State Workshops/Seminars

(07) Sophisticated equipment like PCR, GC-MS, High Speed Refrigerated Centrifuge, Gel Electrophoresis systems etc were procured for teaching and research.
(08) Framed separate Guidelines for 'Research Fellows' and ''Externally Funded Research Projects'
(09) Started five new academic departments, viz. Linguistics, Mathematics, Anthropology, Psychology and Physics
(10) NU Research Journal has been revived and published from 2013.
(11) Initiated M. Ed program (To begin from 2014 session)
(12) The Krishi Vigyan Kendra (KVK) at Lumami (Zunheboto) has been made functional with filling up of all positions of SMS and Technical Staffs.
(13) Signed MoU with CSIR-NEIST, Jorhat; ICAR and Mithun Breeding Station, Jhornapani for taking up collaborative research.
(14) The first Farmers' Fare (Naga Kheti Mela) was organized at SASRD in 2013 and initiated to organize it every year. Also participated twice in the organization of the North East Agri Expo.
(15) A Brain Storming Session on "Academic Development and Growth of Nagaland University" with Dr. S. C. Jamir, Governor, Orissa, Mr. I. K. Sema, former Deputy Chief Minister of Nagaland, and Mr. Niketu Iralu, Social Worker, and other noted personalities in Nagaland were conducted.
(16) Obtained UGC's approval in 2014 to start two new Departments (Forest Science and Environmental Sciences) and two Centres (South-East Asian Studies and Naga Tribal Language Studies) with total 15 faculty positions.

(C) Administration

(01) Nagaland University Ordinance is under finalization (awaited final approval of the MHRD for implementation). So far we are following NEHU's Ordinance.
(02) Conducted Executive Council meetings - 10, Academic Council meetings - 4, Finance Committee meetings - 4, and Building Committee meetings – 4.
(03) Appointed Pro Vice-chancellors with delegation of powers in Kohima Campus and SASRD, Medziphema Campus.
(04) Appointed new Registrar and also a Resident Medical Officer (on contract).
(05) Creation and appointment of Dean (Res., Dev. & Consultancy) to strengthen Research and consultation activities in the University.
(06) The result of 2009 faculty appointment and promotions was declared in 2012.
(07) Strengthened faculty positions of the University with appointment of 76 qualified candidates for the post of Professor 19 (14 CAS + 5 Direct), Associate Professor 23 (6 CAS + 17 Direct), and Assistant Professors 39 (Direct) vide interviews in 2012 and 2013.
(08) A total of 82 vacant officers and staff positions like Technical Assistant, Audio Visual Specialist, Farm Supervisor, Semi Professional Assistant, Museum Curator, Laboratory Assistant, Guest House Attendant, Jr. Stenographer, Computer Assistant, Section Officer, Hindi Officer, Assistant Registrar, Public Relations Officer, Information Scientist and Deputy Registrar were filled up vide interviews in 2012 and 2013.
(09) Prepared and implemented Service Rules for Non-Teaching Staff.
(10) 3rd Convocation was held wherein apart from other degrees, 2 Honoris Causa Degrees awarded by the Chief Guest, Shri Pranab Mukherjee the President of India.

(11) Procured 3 ambulances, 1 Scorpio and a Mini truck for the University.
(12) Created 'Inspired Teachers' Forum in pursuance of the recommendations made in the Vice-chancellors Conference held on 5.2.1013 at the Rashtrapati Bhavan.
(13) Established Planning Cell with appointment of a faculty as Planning Cell Incharge; established and operationalized IQAC. Preparation is in the final stage for fresh NAAC Assessment and Accreditation.
(14) Formed (a) NU Alumni Association, (b) Coordination Committee (Lumami) comprising of Chairmen/Head GBs of neighbouring 6 villages, faculty members, officers and students; conducted a number of meetings for goodwill and harmonious relationship, and (c) Self Help Group to make quality food products.
(15) Established (a) Training and Placement Cell and conducted placement trainings by various organizations, (b) Innovators Club and organized the first exhibition during 3rd Convocation, and (c) NU Education Technology Cell.
(16) Organized Summer camp for children of employees of the University.
(17) Deputed students to All India Inter University Shooting and Archery Championships; organized Shooting Camps; Archery, Rifle Shooting and Pistol Shooting Championships. Deputed students to national level festivals at different Universities (GU, TU, CJU), also to the East-Zone Youth Festival wherein they won third prize.
(18) A proposal for 250 KVA Solar Power Plant was submitted to GoI for funding.

Research Contribution
Pre – Doctoral Research
Since joining as a Lecturer in Assam Agricultural University (Deptt. of Plant Breeding & Genetics) I started working on pulse crops like soyabean and greengram alongwith my teaching assignments. The sole cause for the attraction towards pulse crops was 'dietary protein deficiency' in NE India.
Green gram: In collaboration with the Asian Vegetable Research and Development, Taiwan 120 breeding lines of green gram were assessed in the University. Two high yielding varieties were developed and released as AAU34 and AAU39.
Fruit size improvement and late blight tolerance in tomato
The wild tomato species *Lycopersicon pimpinellifolium*, resistant to late blight disease was hybridized with the variety VC 48-1 (*L. esculentum)*. Lines with large fruits and tolerance to the disease were selected.

(a) Doctoral Research (including DIC)

Genetic transformation of sugarbeet
A rapid and large scale multiplication through tissue culture of this crop was standardized. Suspension culture and leaf mesophyll protoplasts were successfully isolated and cultured with the development of macro-calli.
The marker NPT II and reporter GUS genes were cloned in to plasmids pBin 19 and pUC8: GUS using CaMV-35S promoter and NOS-terminator sequences. The recombinant plasmids were mobilized in to A. tumefaciens by tri-parental mating and finally genes were transferred in to sugar beet. A total of 40-50 copies were integrated in 6 different sites of the sugar beet genome and expressed.

(b) Post – Doctoral period

Embryo rescue and haploidy in cold tolerant rice improvement:

Boro season is the best for rice cultivation in Assam. But, most of the high yielding varieties can not be cultivated during this season due to their cold injury during tillering, flowering and grain filling resulting in low productivity. Japonica varieties are cold tolerant; but hybridization with indica varieties for the transfer of this trait leads to hybrid seed sterility and immature seed drop.

Japonica 4 varietis were crossed with five indica varieties. The immature hybrid embryos were cultured in suitable media. The F1 plants obtained were planted in pots and F2 plants were developed through selfing. The F2 plants exhibited tolerance to low temperature during winter.

Cytogenetic study of diploid and colchiploid tea

The karyotype of Assam tea (*Camellia assamica*), China tea (*C. sinensis)* and Cambod tea (*C. assamica* ssp lasio calyse) was established. Tetraploid shoots were developed by treating buds with 0.2% colchicine.

Externally funded projects

At AAU, Jorhat: ICAR Project: Study on morphogenetic variation in *Azolla pinnata* & *Anabaena azollae* (Rs 10.0 lakh)

Azolla strain collected from different parts of the region were studied for their growth and development. Their cultivation practices under laboratory condition throughout the year was standardized. A total of 19 strains were found to be fast growing. The BGA from leaf cells was isolated and the characteristics like cells and heterocysts per chain/per cell as well as their nitrogen fixing ability were studied. Two strains were found to be better nitrogen fixer. The plasmid DNA was isolated from each strain of BGA. Most of the strains were found to contain only one plasmid except one having two plasmids.Esterase and GOT isozymes were studied in Azolla strains; the strains were found to have 4 loci for the esterase and 2 loci for GOT.

At Tocklai

Tea Board 8th plan project – Application of biotechnology in tea (Rs 1.33 crores)

Tea tissue culture was standardized with the field establishment of plants. Three somaclonal variant clones were identified to be tolerant to the pest 'tea mosquito bug (*Helopeltis theivora)*'. The technique of genetic transformation by infecting *in vitro* tea shoots with *Agrobacterium rhizogenes* carrying the root hair inducing Ri plasmid. The transformed tea shoots produced roots not only from the base but also from all over the surface.

Tea Board project – Use of improved planting materials by the tea industry of NE India (Rs 2.0 lakh)

Since 1949 Tocklai developed 195 improved cultivars of tea (30 TV, 151 TRA/garden clones and 14 biclonal seed stocks). Commercial cultivation of improved cultivars began since 1955-60. In 1960, tea productivity in NE India was about 900 kg/ha MT. But; with the popularization of improved cultivars, productivity increased beyond 1,800 kg/ha MT by 1999-20000. The area under improved cultivars has increased from 0% in 1955-60 to 48.6% in 1999-2000.

DBT project – Recycling of tea and other organic wastes to value added compost (Rs 16.0 lakh)

Vermi-composting of tea pruning litter was found to be ineffective. On the basis of composting ability through weight reduction, nutrient (N:P:K) enrichment, cellulose and pectin degradation and production of cellulase enzyme 6 bacterial and 7 fungal strains were used to formulate a mixed microbial broth for the anaerobic composting of tea garden weeds and tea pruning litters. The compost produced contained 3-4 fold more nitrogen and phosphorous as compared to the raw material (N-0.8%, P2O5-0.1% and K2O-1.1%). However, there was a depletion of potassium.

Tea Board 9th Plan Project – Collection, conservation and evaluation of tea germ-plasm (Rs 39.0 lakh)

Establishment of Tea Field Gene Bank: Under the project we have established the largest Tea Field Gene Bank of the country in the station with 2,303 germplasm accessions. The bank has been developed as a National facility.

Categorization and characterization of accessions: Germplasm accessions have been categorized on the basis of their resemblance to Assam, China, Cambod and hybrid types and also on various branch and leaf characteristics. Metric and other morphological, physiological, anatomical and biochemical characters of the germplasm accessions were also studied. Characterization at molecular level, starting with TV and generative clones, has been taken up using 16 different oligo-primers. Banding profile of genomic DNA of the clones has been documented for registration purpose.

CSIR NMITLI coordinated project (New) – Functional genomics of tea, mentha and Aswagandha (Rs 40.0 lakh)

Under the project biochemical analysis of total catechins, EC, ECG, EGCG has been done from the shoots of extreme type clones. Owing to joining in Tezpur University, the PIship was handed over to the Head & Dy Director, Biochemistry, TES, TRA, Jorhat.

DBT-coordinated project –Characterization and Biotechnological improvement of tea (Rs 40.0 lakh)

Just after the receipt of the sanction letter of the project, the PIship was handed over to the Head & Dy Director, Biochemistry, TES, TRA, Jorhat.

At Tezpur University

ONGC sponsored project: Petroleum biotechnology (Rs 1.89+0.57crores, Industrial)

1. Developmental bacterial consortia to degrade petroleum hydrocarbon contamination

Under the ONGC-sponsored Petroleum biotechnology project, two bacterial consortia were developed which could degrade crude oil contamination from soil in 180 days. The bio-remediated soil was found to be suitable for the cultivation of rice crop. In field scale bio-remediation experiments, the bacterial consortia developed could reduce 10 and 20% crude oil contamination level to 3 - 5% in 180 days making it suitable for rice cultivation. The technology generated has been tried in a Group Gathering Station of ONGC, Jorhat, Assam.

2. Bio-surfactant in microbial enhanced oil recovery

Bio-surfactant producing 4 bacterial isolates was obtained from oil well sites of Assam and Assam-Arkan basin. The bio-surfactant was isolated, purified and dried for subsequent use. The microbial bio-surfactant was bio-chemically characterized and was found to be mostly rhamnolipids, C8–10 and C10-8. The bio-surfactant could recover 60% crude oil from saturated sand pack column, which was 4 – 5 times higher than the commercial surfactant sodium dodecyl sulphate (SDS).The requirement of the bio-surfactant was lower than that of SDS for the critical micelle concentration (CMC). The bio-surfactant was found to thermo-stable at 100oC and also stable over a wide range of pH 4 – 11. Bio-surfactant was also found to enhance bio-remediation of crude oil as well as solubility of polycyclic aromatic hydrocarbon component of crude oil, which are highly carcinogenic and hydrophobic in nature.

National Medicinal Plants Board sponsored project – Assessment of medicinal plants of North East India used in different ailments (Rs 10.0 lakh)

1. Isolation and structural elucidation of an aromatic compound from medicinal plant
The flavoury compound from the medicinal plant *Etlingera llinguiformis* f. assamica was isolated. The compound was identified to be anethole. The rhizome of the plant possesses the highest composition of anethole with 86% as compared to 82-84% in anise seed. The compound has the vast potentiality for the food and medicinal industries.
Chomosome number, Karyotype and genome size of the plant were determined. For genome size determination, a new method was developed and published.
2. Nutraceutical potentiality of *Spondias pinnata* (amara)
The mature Fruits of this perennial local plant of North East Indiawas found to be rich in crude protein, crude fiber, starch and reducing sugars. The fruits were also found to be rich in mineral compositions of phosphorous, iron, calcium and potassium.
3. Antimicrobial activity of fruit extracts of *Meyna spinosa* (kutkura)
The methanolic extract of the fruits of the medicinal plan *Meyna spinosa* possessed antimicrobial activity against the bacteria *Bacillus subtilis, Staphylococcus aureus, Klebsiella pneumoniae, Eschricia coli* and yeast *Candia albicans*.
4. Karyotype determination of *Schumannianthus dichotmus*, a traditional plant of Assam
The karyotype study of this perennial shrub revealed chromosome number to be 2n=20, with the total genome length of 12.7 μm. The length of chromosome was found to vary between 0.8 – 2.2 μm with the predominance of metacentric and sub-metacentric behaviour.

Genomics of yeasts used in the traditional beer industry of Assam

The starter culture used by the Ahom community of Asom for the preparation of homestead liquor contains a yeast load of 5.06x106 per g and fungal load of 5.92x106 per g. Three yeast isolated were identified as *Candida versatilis* and 2 fungal strains isolated were identified as *Mucor indicus* and *Amylomyces rouxii*. The fungal species hydrolyze starch to glucose prior to fermentation by yeast to alcohol.

Bioremediation of crude oil contaminated soils (ONGC funded, Rs. 70.03 lakh for 5 yrs)

The project has been started from April, 2009. We have could identify some bacterial products which could reduce the bioremediation time period from 180 days (generated under the ONGC-Petroleum biotechnology project). Moreover, we isolated a number of new bacterial isolates showing potential for the task.

Two very promising bacterial isolated were isolated and cultured for the production of biopolymer. The polymer was biochemically characterized to be one of the best.

Biosurfactant producing superior bacterial stains and culture media were formulated. The biosurfactants were found to be superior.

Carbon sequestering and biodisel producing micro algae were isolated and their culture conditions were standardized. Two strains were found to be very promising.

Metagenomic and Bioinformatics research

The stated research works have been carried out with three Ph D scholars since the last three years for the exploitation of industrial enzymes.

Supervision of Students/Scholars

Completed: M. Sc. research project supervision - 40 nos.
Ph D research - 09
On-going: Ph. D. research project supervision - 05

Ph D Scholars and title of thesis (completed)

1. Naba Bordoloi: Biochemical and molecular characterization of certain bacteria for application in bioremediation of petroleum contaminated soil.
2. Dhiren Chowdhury: Floral biology, karyotype, biochemical and genomic study of *Etlingera species* – A medicinal and aromatic plant.
3. Ranjan Kandali: Structural elucidation of major bioactive compounds and genome analysis of *Spondias pinnata* Kurz and *Streblus asper* Lour.
Associate Professor, Bishwanath College of Agriculture
4. Jitu Buragohain: Assessment on biodiversity of medicinal plants: cytological, biochemical and molecular characterization of a few major plants.
5. Khanindra Ratna Barman: Biochemical and molecular genetic assessment of yeast strains used by certain tribal communities of Assam in alcohol production".
6. Dr. Jyoti Prasad Saikia: Molecular and Biochemical characterization of four Araceae species.
7. Pinkee Phukan: Biochemical and molecular genetic assessment of bacterial biopolymer.
8. Pranjal Bharali: Bioremediation of Crude oil contaminated soil (viva-voce awaited)
9. Anggana Roy: Phytopharmaceuticals for Hair Growth (viva-voce awaited)

Ph.D. Scholars (Continue)/ Research Group

1. Mayur Mousum Phukon: Algal Biodisel.
2. Krishna Gogoi: Isolation of medicinal compound and use of waste for alcohol production.
3. Kalpana Sagar: Metagenomics.
4. Yasir Basir: Metagenomics.
5. Salam Pradeep Singh: Metagenimics through bioinformatics tools

Patents: Obtained
1. 'Bioremcons' No. 264/KOL/2010
2. 'Biosurf' No. 265/KOL/2010 (both withdrawn)

Patents filed: 03

DNA sequences deposited in Gene banks (total 10)
01. GenBank: JQ796859.1
Pseudomonas aeruginosa strain BP C1 16S ribosomal RNA gene, partial sequence
02. GenBank: JQ866912.1
Pseudomonas aeruginosa strain BP C2 16S ribosomal RNA gene, partial sequence
03. GenBank: JX843420
Pseudomonas aeruginosa strain BBK9 16S ribosomal RNA gene
04. GenBank: JX843421
Pseudomonas aeruginosa strain JBK7 16S ribosomal RNA gene
05. GenBank: JX843422
Pseudomonas aeruginosa strain JBK1 16S ribosomal RNA gene
06. GenBank: JX843423
Pseudomonas aeruginosa strain BBK1 16S ribosomal RNA gene
07. GenBank: KF743145.1
Uncultured bacterium clone KBS-plip1 lipase/esterase protein gene, complete cds
08. GenBank: KF279644.1
Scenedesmus sp. MPBK-2 internal transcribed spacer 1, partial sequence; 5.8S ribosomal RNA gene, complete sequence; and internal transcribed spacer 2, partial sequence
09. GenBank: KF163441.1
Parachlorella kessleri strain MMPBKK-1 5.8S ribosomal RNA gene, partial sequence; internal transcribed spacer 2, complete sequence; and 28S ribosomal RNA gene, partial sequence
10. GenBank: KF514428.1
Bacterium KBS-107 16S ribosomal RNA gene, partial sequence

Award and Recognitions
1. Dept. of Biotechnology, Govt of India: Biotechnology Associate ship (Foreign Country).
2. Distinguished Teacher Award for 2012 and 2013 by DMSBM.
3. Indira Gandhi Sadbhavana Gold Medal Award 2013 by GEPRA.

Publications of Prof. Bolin Kumar Konwar
Books
1. Prof. B. K. Konwar (2013). Medicinal Plant Repertoire: A Perspective of Biogeographical Gateway of India. ISBN No. 978-81759-6902-5.

Articles on Science topics - English 30 Assamese – 70 Book and chapters: 04
Popular articles (Assamese): 62 Project reports: 20 Scientific reports: 12

List of Research Publications/Presentations– 219 (a: 100 + b: 38 + c: 81)

(a) Publications in referred national/international journals (Citation index 494, Av. 5.0)

1. Environmental influence on the estimates of genetic parameters in soybean. **Konwar, B. K.** and Talukdar, P., *J. Res* 5 (2): 135-142, 1984.
2. Phenotypic stability of soybean genotypes for field germination. Talukdar, P. and **Konwar, B. K**., *Soybean Genetics Newsletter*, Iowa State University, USA 11: 38-41, 1984.
3. Stability analysis of yield and its components in soybean. **Konwar, B. K.** and Talukdar, P., *Crop Improvement* 13 (1): 172-175, 1986.
4. Environmental sensitiveness of genetic association of yield and yield attributing characters in soybean (*Glycine max* L. Merrill.). **Konwar, B. K.** and Talukdar, P., *J. Res*. 5 (2): 9-14, 1987.
5. Genetic variability in pigeon pea. **Konwar, B. K**. and Hazarika, M. H. *Crop Improvement* 15 (1): 100-104, 1988.
6. Environmental impact on different characteristics of soybean (*Glycine max* L Merrill.). **Konwar, B. K**. and Talukdar, P., *Soybean Genetics Newsletter*, Iowa State University, USA12: 28-32, 1988.
7. Pattern of genetic variability in soybean. **Konwar, B. K**., *J.Res*. 11 (1): 20-25, AAU, Jorhat, Assam, 1991.
8. Isolation and culture of leaf mesophyll protoplasts of sugar beet. **Konwar, B. K**., *Crop Improvement* 20 (1):69-77, 1993.
9. Plant regeneration in three genotypes of sugar beet. **Konwar, B.** K., *Crop Improvement*, 20 (1): 88-97, 1993
10. *Agrobacterium tumefaciens*-mediated genetic transformation of sugar beet (*Beta vulgaris* L.), **Konwar, B. K.**, *Plant Biochem. & Biotech*. 3: 37-41, 1994.
11. Genetic engineering in tea: I. molecular genetic markers. Bera, B., **Konwar, B. K**. and Singh, I. D. *Two and a Bud*, 42(1): 2-6, 1995.
12. Genetic engineering in tea: II. gene transfer. **Konwar, B. K**. *Two and a Bud*, 42(2):13-20, 1995.
13. Japonica x indica rice hybrids through embryo rescue technique. Sarma, D., **Konwar, B. K**. and Deka, P. C. (1996). *Rice Biotechnology Quaterly* Vol. 25, RBQ 9.
14. Patenting and its application for the legal protection of crop plants including tea. **Konwar, B. K**., *Two and a Bud* 45 (1): 5-7, 1998.
15. Hairy root development in tea through Agrobacterium rhizogenes-mediated genetic transformation**. Konwar, B. K.,** Das, S. C., Bordoloi, B. J. and Dutta, R. K., *Two and a Bud* 45 (2): 21-22, 1998.
16. Female fertility in clones KP 6/25 and Mornoi 30, Ahmed, N. and **Konwar, B. K.,** *Two and a Bud* 46 (2): 37-39, 1999.
17. Rooting of in vitro shoots and field establishment of tissue culture-derived tea plants in the field. **Konwar, B. K.**, Bordoloi, B. J., Dutta, R. K. and Das, S. C., *Two and a Bud* 46 (2): 26-32, 1999.
18. Biodiversity of tea in North East India and their conservation at Tocklai. **Konwar, B. K.**, *Two and a Bud* 46 (2): 7-12, 2001.
19. Transient expression of B-glucuronidase activity in electroporated sugar beet protoplasts. **Konwar, B. K.,** *JASS* 10(1):14-18, 2001.
20. Biodiversity and molecular characterization of tea genetic resources using DNA markers. Bera,B. **Konwar, B. K**., Saikia,H. and Mazumder,S.C. (2005). *Two and a Bud* 49: 30–37.

21. Morphophenology and karyotype study of *Patidoi* (*Schumannianthus dichotomus* (Roxb.) Gagnep. synonym *Clinogyne dichotoma* Salisb.) – a traditional plant of Assam. Dhiren Chowdhuri and **Bolin Kr. Konwar** (2006). *Curr. Sci,* Vol. 91 (5): 648.
22. A new less expensive method for genome size determination of plants. **B.K. Konwar**, D. Chowdhury, J. Buragohain & R. Kandali (2007). *Asian J. Plant Sci.* 6 (3): 565 – 567.
23. Ethnomedicinal plants used in skin diseases by some Indo-Mongoloid communities of Assam. Jitu Buragohain and **B. K. Konwar** (2007). *Asian J. Expt. Sci.* 21 (2): 283-290.
24. An efficient and reliable method of DNA extraction from *Meyna spinosa*: a traditional medicinal plant from North East India. Jitu Buragohain and **B. K. Konwar** (2008). *J of Biochem and Biotech* 17 (1): 103-105.
25. Microbial surfactant-enhanced mineral oil recovery under laboratory conditions. Bordoloi, N. K. and **Konwar, B. K.** (2008). *Colloids and Surfaces B: Biointerfaces* 63: 73 - 82.
26. Genome size determination of *Zanthozylum oxyphyllum* and *Meyna spinosa* by flow cytometry: A preliminary study. Jitu Buragohain and **B. K. Konwar** (2008). *J Cell Tissue Research* 8(1): 1249-1252.
27. Bacterial biosurfactant in enhancing solubility of petroleum hydrocarbons. **B. K. Konwar** and N. K. Bordoloi (2008). ***Jounal of Petrotech Society*** V: 45-52.
28. Genome size determination of Zanthoxylum oxyphyllum and Meyna spinosa by flow cytometry: a preliminary study. Buragohain, J. and **Konwar, B. K.** (2008). *Journal of Cell and Tissue Culture* 8: 1249-1252.
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30. Investigation of antioxidant property of iron oxide particles by 1/-1/ diphenylpicryl-hydrazyle (DPPH) method. S. Paul, J. P. Saikia, S. K Samdarshi and **B. K. Konwar** (2009). Journal of *Magnetizm and Magnetic Materials*, 321 (21): 3621-3623 (November).
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32. Antioxidant activity and haemolysis prevention efficiency of polyaniline nanofibers. Somik Banerjee, Jyoti P. saikia, A. Kumar, **B. K. Konwar** (2010) *Nanotechnology* 21 (4): 045101 (8pp).
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34. Swift heavy ion irradiation induced enhancement in the antioxidant activity and biocompatibility of polyaniline nanofibers. A Kumar, Somik Banerjee, Jyoti P saikia and **B K Konwar** (2010), *Nanotechnology* 21 (17): 175102 (8pp, cited by **Nature India**).
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36. Biodegradation of Epoxy/ MF Modified Polyurethane Films Derived From a Sustainable Resource. Suvangshu Dutta, Niranjan Karak, Jyoti Prasad Saikia and **Bolin Kumar Konwar**. (2010), *Journal of Polymer and the Environment*, 18 (3): 167 – 176 (Springer Netherlands).

37. Ultrasonication : enhances the antioxidant activity of metal oxide nanoparticles. Jyoti Prasad Saikia, Samrat Paul, **Bolin K Konwar** and Sanjoy K Samdarshi (2010). *Colloids and Surfaces B: Biointerfaces* 79: 521-523 (Elsevier).
38. Nickel oxide nanoparticles: A novel antioxidant. Jyoti Prasad Saikia, Samrat Paul, **Bolin K Konwar** and Sanjoy K Samdarshi (2010). *Colloids and Surfaces B: Biointerfaces* 78: 146–148 (Elsevier).
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45. Synthesis of silver – polystyrene nanocomposite particles using water in supercritical carbon dioxide medium and its antimicrobial activity. I.R. Kamrupi, P.Phukon, **B. K. Konwer** and S. K. Dolui (2011). *The Journal of Supercritical Fluids* 55 (3): 1089-1094.
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Any other information relating to bio-resource development and utilization programs:

1. Enriched the Tea Field Gene Bank to about 2,000 accessions from 1,000 at Tocklai Experimental Station, Tea Research Association, Jorhat by adding new genotypes. In fact, next to China with 2,500 accessions, this is the second largest collection of tea germplasms.

Declaration

I declare that the information presented above is true to the best of my knowledge and belief.

Place: Nagaland University (Central), HQ: Lumami (B. K. Konwar)
Date : 03.04.2014
