

FIST PROGRAM

PROJECT No.

SR/FIST/LSI-384/2008

PROJECT COMPLETION REPORT

Submitted to

Department of Science & Technology

Department of Biotechnology
University of Kashmir
Srinagar-190006
Jammu and Kashmir

DST – Fund for Improvement in S&T Infrastructure (FIST 2008)
Project Completion Report
Department of Biotechnology, University of Kashmir
(Project No. SR/FST/LSI-384/2008)

Brief Outline Department

The Department of Biotechnology was established in the year 2000, with the objective of attracting talented and well-trained faculty from diverse disciplines of Biology to impart quality training in biotech education and research. Presently the department has nine faculty members, several research scientists, few Post doctoral students and about forty five doctoral students. The faculty is highly talented and trained from the best laboratories of the USA and Europe, two faculty members are recipients of Ramanujan and Ramalingaswami fellowships. Dr Ajaz ul Hamid Wani has recently returned from Harvard and joined as Ramalingaswami Fellow. The Department offers quality teaching and research training to the students. It has generated extra-mural grant worth corers of rupees from various funding sources (DBT, DST, ICMR, SAP, FIST) and quality publication with an average impact-factor of 4.0

Teaching & Research Activities (not more than 5 lines)

Department provided quality teaching to the Masters students, whose curriculum is based on the Department of Biotechnology, Govt. of India. The department has recently adopted the Choice based Credit System and offers a wide and diverse range of specializations to its Post-graduate students. The department has an intake capacity of enrolling 15 students per semester and admission to the program is highly competitive and the students are screened through a two tier entrance examinations (one MCQ and other subjective).. Besides, Department also offers integrated Ph.D program, and for admission the students needs to qualify the entrance examination.

Facilities Created



Infrared scanner:

It is used for Western blotting based on fluorescent antibodies. Moreover, in-cell Western is also routinely performed on the machine



Laminar Flow Hood: It provided sterile condition while doing animal cell culture.



Fluorescent microscope: It is used for studying protein co-localization, immunohistochemistry and immunocytochemistry studies



Spectrofluorimeter: This is used to record the fluorescence emission and absorption spectra and the spectrum of secondarily emitted fluorescent light is used to identify chemical compounds.



Real time PCR: A real-time polymerase chain reaction is used to amplify and simultaneously detect or quantify a targeted DNA molecule. The key feature of the techniques is that the amplified DNA is quantified in real time as the reaction proceeds.



High-speed centrifuge



Cold room



Networking

Funding

<i>Budget Heads</i>	<i>Amount Sanctioned with Date</i>	<i>Amount Received with Date</i>
<i>a. Equipment</i>	<i>Rs75,00,000/- 23/02/2009</i>	<i>Rs 75,00,000/- 3/03/2009</i>
<i>b. Infrastructure</i>	<i>Rs5,00,000/- 23/02/2009</i>	<i>Rs 5,00,000/- 3/03/2009</i>
<i>c. Networking</i>	<i>Rs4,50,000/- 23/02/2009</i>	<i>Rs 4,50,000/- 3/03/2009</i>
<i>d. Maintenance</i>	<i>1,00,000/- 23/02/2009</i>	<i>Rs 1,00,000/- 3/03/2009</i>
<i>e. Total</i>	<i>Rs85,50,000/- 23/02/2009</i>	<i>Rs 85,50,000/- 3/03/2009</i>

1. Equipment ordered/purchased/installed:

Name (with Model & Make)	Order Date	Installation date	Cost in INR
<i>1. Odssey Infra red Scanner; Licor Inc, USA</i>	<i>27/01/2009</i>	<i>11/09/2009</i>	<i>` 29,38,533/-</i>
<i>2. High Speed centrifuge; Sorvall</i>	<i>25/01/2010</i>	<i>15/ 7/2010</i>	<i>` 42,98,532</i>
<i>3. Laminar flow Hood, Thermofisher</i>	<i>25/01/2010</i>	<i>15/7/2010</i>	
<i>4. Spectroflurometer; thermofisher</i>	<i>25/01/2010</i>	<i>15/07/2010</i>	
<i>5. Fluorescent microscope; Leica</i>	<i>25/01/2010</i>	<i>15/07/2010</i>	<i>` 6,37,905</i>
<i>Real time PCR</i>	<i>25/01/2010</i>	<i>15/07/2010</i>	<i>` 14,89,884</i>
<i>Total Expenditure</i>			<i>` 93,64,854</i>
<i>Excess amount Paid by University of Kashmir</i>			<i>` 18,64,854</i>

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Pro-forma for Report for utilization of FIST support

1. Name of Department and University

Department of Biotechnology, University of Kashmir, Srinagar

2. Address for communication (Name and address of the Head of the Department with e-mail and telephone/fax numbers)

Khalid Majid Fazili

Professor & Head

Department of Biotechnology,

University of Kashmir, Srinagar -190006

Jammu & Kashmir

e-mail: fazili@kashmiruniversity.ac.in / biotech@uok.edu.in

Cell: 9419003881

3. Date and ref. No. of DST Sanction letter:

SR/FIST/LSI-384/2008; 23/02/2009

4. Details of the Grants

<i>Budget Heads</i>	<i>Amount Sanctioned with Date</i>	<i>Amount Received with Date</i>
<i>a. Equipment</i>	<i>Rs75,00,000/- 23/02/2009</i>	<i>Rs75,00,000/- 3/03/2009</i>
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<i>c. Networking</i>	<i>Rs4,50,000/- 23/02/2009</i>	<i>Rs4,50,000/- 3/03/2009</i>
<i>d. Maintenance</i>	<i>1,00,000/- 23/02/2009</i>	<i>1,00,000/- 3/03/2009</i>
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5. Equipment ordered/purchased/installed:

Name (with Model & Make)	Order Date	Installation date	Cost in INR
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<i>5. Fluorescent microscope; Leica</i>	<i>25/01/2010</i>	<i>15/07/2010</i>	<i>` 6,37,905</i>
<i>Real time PCR</i>	<i>25/01/2010</i>	<i>15/07/2010</i>	<i>` 14,89,884</i>
<i>Total Expenditure</i>			<i>` 93,64,854</i>
<i>Excess amount Paid by University of Kashmir</i>			<i>` 18,64,854</i>

6. Details of Infrastructure developed:

Cold room (5'9"× 5'9"×6'10") puf panel with light and door accessories (cost Rs6,86,252/-)

7. Details of Networking:

Computer lab with 10 pcs with UPS with internet facility (cost: Rs4,74,870/-). Out of the FIST grant department has created a new Internet facility, which is freely used by the post-graduate and Research scholars

8. Utilization of the facilities created under FIST support:**a. For teaching: List the Classroom use of equipment and new experiments introduced, if any.**

1. Computer Lab is used to teach students Biostatistics and Bioinformatics related content.
2. Cell culture experiments were introduced for M. Sc 3rd Semester students
3. The M Sc students in their Project training during the third and fourth semesters are involved in research based short term projects running for full six months, during which they are utilizing the infrastructural facilities generated due to FIST that include the equipment support like LICAR infra red scanner, Laminar flow,

microscope and PCR besides the computational facilities. In-house project training was greatly facilitated by FIST support.

b. For research: **Identify the research programs, including names of groups or individual faculty members, who are using the major equipment (> 5 lakhs) acquired with the FIST support**

The outcome of FIST grant was significant in boosting the research activities of the department. The infrastructure facilities paved way to carry out Western blotting techniques in a more accurate way and the use of fluorescent antibodies enhanced the overall sensitivity of these techniques. Moreover, In-cell western was also possible using infrared scanner, which otherwise was impossible to do. FIST grant was instrumental in studying the role of micro RNAs in various cancers and also in regulating protein translation. The preliminary data obtained from these studies are being used to generate more funds for the department. Use of laminar flow hood helped us greatly in doing cell culture in more sterile conditions. Moreover, fluorescent microscopy was successfully used to study co-localization and immune-histo chemistry studies.

9. Details of full length research publications (in peer-reviewed journals) during the period under report

- 1) P Kaiser, Hussain M, Jan N, Verma V, Qazi GN, Andrabi KI (2009) Functional cloning and predictive structural modelling of a novel lipolytic enzyme from Bacillus strain. J Gen Appl Microbiol 55:317-321
- 2) Jan N, Hussain M, Andrabi KI (2009) Cold resistance in plants: A mystery unresolved. Elect J Biotechnology 12: Issue of July 15
- 3) Hameed M, Ahmad B, Khan RH, Andrabi KI, Fazili KM (2009). Tertiary butanol induced amyloidogenesis of Hen Egg White Lysozyme (HEWL) is facilitated by aggregation prone alkali induced molten globule like conformational state. Prot peptide lett 16 : 56-60
- 4) Bashir M, Kirmani D, Bhat HF, Baba RA, Hamza R, Naqash S, Andrabi KI, Zargar MA, Khanday FA. P66shc and its associate targets are upregulated in esophageal cancers. Cell Comm and Signaling 2010;1;8;13. IF:5.50
- 5) Bashir SA, Pandith AA, Yousuf A, Parveen N, Siddiqui MA, Mudassar S, Andrabi KI, Malik ZA (2010) Study of P16 gene mutation in Gastric cancer in Kashmiri Population. Asian Pacific J cancer prev. 11:1-6
- 6) Bashir M, Kirmani D, Bhat HF, Baba RA, Hamza R, Naqash S, Wani NA, Andrabi KI, Zargar M A, Khanday FA (2010) P66shc and its downstream Eps8 and Rac1 proteins are up regulated in esophageal cancers. Cell Comm Signaling 8:13-17

- 7) Ganie SA, Haq E, Masood A & Zargar MA. Antioxidant activities of methanolic rhizome extract of *Podophyllum hexandrum* against CCl₄-induced kidney & lung injury in rats. *J Pharm & Toxicol.* (2010) 5(7) 334-342
- 8) Ganie SA, Zaragar MA, Masood A & Haq E. In vitro and in vivo evaluation of free radical scavenging potential of ethanolic extract of *Podophyllum hexandrum*. *Afr J of Biochem Res.* (2010) 4(8) 196-203
- 9) Ganie SA, Haq E, Masood A & Zargar MA. Amelioration of carbon tetrachloride induced oxidative stress in kidney and lung tissues by ethanolic rhizome extract of *Podophyllum hexandrum* in Wistar rats. *J Med Plant Res.* (2010) 4(16) 1673-77
- 10) Ganie SA, Haq E, Masood A & Zargar MA. *Podophyllum hexandrum* rhizome methanolic extract ameliorates carbon tetrachloride induced hepatotoxicity in Albino rats *Pharmacology online.* (2010) 2 496-506
- 11) Ganie SA, Haq E, Masood A, Hamid A & Zargar MA. Antioxidant and protective effect of ethyl acetate extract of *Podophyllum hexandrum* rhizome on carbon tetrachloride induced rat liver injury. *Evidence-based Complement and Alter Medicine.* (2010) 2011, 1-12.
- 12) Altaf M, Auger A, Monnet-Saksouk J, Brodeur J, Piquet S, Cramet M, Bouchard N, Lacoste N, Utlei RT, Gaudreau L, Côté J.(2010) NuA4-dependent acetylation of nucleosomal histones H4 and H2A directly stimulates incorporation of H2A.Z by the SWR1 complex, *Journal of Biological Chemistry.* 285(21): 15966-77
- 13) Qurashi A, Jin P (2010) Small RNA mediated Gene Regulation in Neurodevelopmental Disorders. *Current Psychiatry Reports*, 12(2): 154-161.
- 14) Bashir A & Haq E. Effect of psychosine on inducible nitric-oxide synthase expression under different culture conditions: implications for Krabbe Disease. *Eur Rev Med Pharmacol Sci* (2011) 15(11) 1282-1287.
- 15) Ganie SA, Haq E, Hamid A, Masood A, Zargar MA. Long dose exposure of hydrogen peroxide (H₂O₂) in albino rats and effect of *Podophyllum hexandrum* on oxidative stress. *Eur Rev Med Pharmacol Sci.* (2011) Aug;15(8):906-15.
- 16) Ganie SA, Zaragar MA, Masood A & Haq E. DNA sugar damage induced by different oxidants and effect of aqueous and alcoholic extracts of *malva sylvestris*.. *Adv. Plant Sci.* (2011) 24(11) 417-19.
- 17) Ganie SA, Haq E, Hamid A, Qurishi Y, Mahmood Z, Zargar BA, Masood A, Zargar MA. Carbon tetrachloride induced kidney and lung tissue damages and antioxidant activities of the aqueous rhizome extract of *Podophyllum hexandrum*. *BMC Complement Altern Med.* (2011) Feb 28; 11:17. doi: 10.1186/1472-6882-11-17.
- 18) Khali Majid Fazili, Yousuf Ali, Syed Sajjad Hussain, Arshid Andrab, Bashir Ahmad Wafai (2011) Karyotype of apomictic Dandelion (*Taraxacum officinale*), a wild plant with high medicinal value. *Recent Research in Science and Technology*, 3(10): 118-121. ISSN: 2076-5061, KRFD Society Scholar Journals

- 19) Ayub SG, Ayub T, Khan SN, Rasool S, Mahboob-ul-Hussain, Wani KA, Kuchay S, Lone MM, Andrabi KI. Epidemiological distribution and incidence of different cancers in Kashmir valley--2002-2006. *Asian Pac J Cancer Prev.* (2011)12(7):1867-72. (0.659)
- 20) Nighat P. Khan, Arshad A. Pandith, Mahboob U. Hussain, AdfarYousuf, Mosin S. Khan, Mushtaq A. Siddiqi, Khrusheed A. Wani and Syed Mudassar. Loss of heterozygosity (LOH) of deleted in colorectal cancer (DCC) gene and predisposition to colorectal cancer: Significant association in colorectal cancer patients of Kashmir. *Journal of Cancer Research and Experimental Oncology* (2011), 3(8): 88-94
- 21) Khan NP, Pandith AA, Hussain MU, Yousuf A, Khan MS, Wani KA, Mudassar S. Novelty of Axin 2 and lack of Axin 1 gene mutation in colorectal cancer: a study in Kashmiri population. *Mol Cell Biochem.* (2011) 355(1-2):149-55. (2.075)
- 22) Parveen N, Mahboob Ul Hussain, Pandith AA, Mudassar S. Diversity of axin in signaling pathways and its relation to colorectal cancer. *Med Oncol.* (2011) 28 Suppl 1:S259-67. (2.14)
- 23) Ayub SG, Ayub T, Khan SN, Dar R, Andrabi KI (2011) Reduced nitrate levels in individuals with hypertension and diabetes. *J Cardiovasc. Dis Res.* 2: 172-176
- 24) Bhat HF , Baba RA, Bashir M, Saieed S, Kirmani D, Wani MM, Wani NA , Wani KI, Khanday FA. Alpha- 1-Syntrophin protein is differentially expressed in human cancers. *Biomarkers.* 2011; Feb;16(1):31-6.
- 25) Javid Ahmad Parray, Azra N. Kamili, Rehana Hamid , Bashir A Ganai , Khalid Ghazanfar Mustafa and Raies A. Qadri (2011) Phytochemicalscreening,antifungal and antioxidant activity of Euryale ferox- SALISB. a threatened aquatic plant of Kashmir. *Himalaya Journal of Pharmacy Research*, 4(7),2170-2174
- 26) Galy A, Schenck A, Sahin HB, Qurashi A, Sahel J, Diebold C, Giangrande A. (2011): The Role of CYFIP Mediated Actin Remodeling in Drosophila Eye Morphogenesis, *Developmental Biology*, 1;359(1):37-46
- 27) Huma Habib, Mohammad Afzal Zargar, Khalid Majid Fazili (2012), Cloning and Expression of Trypsin Inhibitor Gene ti from Pea (*Pisum sativum* L.) cv. Arkel. in *Escherichia coli* DH5 α Cells. *Functional Plant Science and Biotechnology*, Special issue on protease inhibitors, Vol. 6 (In Press) ISSN 1749-0472 Global Science Publishers, Japan
- 28) Baba RA, Bhat HF, Wani LA, Bashir M, Wani MM, Qadri SK, Khanday FA. E3B1/ABI-1 isoforms are downregulated in cancers of human gastrointestinal tract. *Disease Markers.* 2012;32(4):273-9. IF:2.02
- 29) E.E. Mehanaa, AbdelRaheim M. A. Meki, and Khalid Majid Fazili (2012), Ameliorated effects of green tea extract on lead induced liver toxicity in rats. *Exp Toxicol Pathol* 64, 291-295.
- 30) Ul-Hussain M, Dermietzel R, Zoidl G. Connexins and Cap-independent translation: Role of internal ribosome entry sites. *Brain Res.* 2012 Jul 6. [Epub ahead of print] (2.728)
- 31) Mahboob Ul Hussain. Micro-RNAs (miRNAs): genomic organisation, biogenesis and mode of action. *Cell Tissue Res* (2012) Aug;349(2):405-13. (3.114)

- 32) Beigh MA, Showkat M, Ul Hussain M, Latoo SA, Majeed ST, Andrabi KI.(2012) Rapamycin inhibition of baculovirus recombinant (BVR) ribosomal protein S6 kinase (S6K1) is mediated by an event other than phosphorylation. *Cell Commun Signal*.1;10:4.
- 33) Rasool S, Jan T, Andrabi KI (2012) Intronic variants of TGIF1(variant-0008) have a potential to associate with high myopia in ethnic Kashmiri population. *Asian J Biosci* 7(2):947-953
- 34) Ahmad WA, Andrabi KI, Hussain MU (2012) Adenosine Triphosphate sensitive K(+)channel (Kir6.1): A novel phosphospecific interaction partner of connexin 43 (Cx43).*Experimental cell research* 318(20):2559-66
- 35) Qureshi MA, Jan N, Hussain MU, Dar NA, Andrabi KI (2012) A novel p16^{INK4A} mutation associated with esophageal squamous cell carcinoma in a high risk population. *Biomarkers* 17: 552-556
- 36) Sajad H Wani, Asif Amin, Manzoor A Rather, Javid A Parray, Qazi Parvaiz and Raies A Qadri 2012. Antibacterial and phytochemical screening of different extracts of five Iris Plant species growing in Kashmir. *Journal of Pharmacy Research*. 5(6),3376-3378
- 37) J. I. Mir, N. Ahmed, A. H. Wafai & Raies A. Qadri (2012). Relative expression of CsZCD gene and apocarotenoid biosynthesis during stigma development in *Crocus sativus*. *PMBP*. 18(4): 371- 375
- 38) J. I. Mir, N. Ahmed, A. H. Wafai & Raies A. Qadri (2012). Variability in stigma length and apocarotenoid content in *Crocus sativus* L. selections of Kashmir. *JOSAC*. Vol. 21 (2) : 162–166 (2012)
- 39) Sabina A, Taseem A Mokhdoomi , Malik F, Trag A R, Qadri R. A. (2012). Comparative silk protein expression of different hybrid varieties of *Bombyx mori* L. *Trends in Life Sciences*. 1(1):2319-5037.
- 40) Qurashi A, Liu H, Ray L, Nelson David L, Duan Ranhui, and Jin (2012), Chemical Screen reveals small molecules suppressing fragile X permutation rCGG repeat mediated neurodegeneration in *Drosophila*. *Human Molecular Genetics*, 1;21(9):2068-75.
- 41) Tan H, Qurashi A, Poidevin M, Nelson DL, Li H, Jin P. (2012) Retrotransposon activation contributes to fragile X permutation rCGG□mediated neurodegeneration, *Human Molecular Genetics*, 1;21(1):57-65
- 42) Mohd Irfan Naik, Rajesh Kumar Tenguria, Bashir Ahmad Fomda & Ehtisham-ul Haq. Detection of Serum Cytokines Before and After Pharmacological and Surgical Treatment in Patients with Cystic Echinococcosis. *J Pioneering Med Sci* (2013) 3(4):167-170.
- 43) Amreen Nazir, S. M. Wani, Adil Gani, F. A. Masoodi, E. Haq, S. A, Mir, Umayya Riyaz (2013). Nutritional, antioxidant and antiproliferative properties of persimmon (*Diospyros kaki*) -a minor fruit of J&K India. *Int J Adv Res* 1(7). 545-554
- 44) Raihana Maqbool and Mahboob-ul-Hussain. (2013). MicroRNAs and human diseases: diagnostic and therapeutic potential. *Cell Tissue Res* DOI 10.1007/s00441-013-1787-3

- 45) Khan NP, Pandith AA, Yousuf A, Khan NS, Khan MS, Bhat IA, Nazir ZW, Wani KA, Hussain MU, Mudassar S. The XRCC1 Arg399Gln Gene Polymorphism and Risk of Colorectal Cancer: a Study in Kashmir. *Asian Pac J Cancer Prev*. 2013;14(11):6779-82.
- 46) Raihana Maqbool, Rehana Ismail and Mahboob-ul-Hussain. Mutations in MicroRNA Genes and Their Binding Sites are Infrequently Associated with Human Colorectal Cancer in the Kashmiri Population. *MicroRNA* 2013, 2.
- 47) Mushtaq Ahmad Beigh, Mehvish Showkat, Basharat Bashir, Asma Bashir, Mahboob ul Hussain and Khurshid Iqbal Andrabi. Growth inhibition by bupivacaine is associated with inactivation of ribosomal protein S6 kinase 1. *Biomed research international*.
- 48) Khan MS, Pandith AA, Ul Hussain M, Iqbal M, Khan NP, Wani KA, Masoodi SR, Mudassar S. Lack of mutational events of RAS genes in sporadic thyroid cancer but high risk associated with HRAS T81C single nucleotide polymorphism (case-control study). *Tumour Biol*. 2013 Feb;34(1):521-9.
- 49) Bhat HF, Adams ME, Khanday FA. Syntrophin proteins as Santa Claus: role(s) in cell signal transduction. *Cell Mol Life Sci*. 2013 Jul;70(14):2533-54. IF: 6.57
- 50) Kirmani D, Bhat HF, Bashir M, Zargar MA, Khanday FA. P66Shc-rac1 pathway-mediated ROS production and cell migration is downregulated by ascorbic acid. *J Recept Signal Transduct Res*. 2013;33(2):107-13. IF: 1.58
- 51) Beigh MA, Showkat M, Hussain MU, Andrabi KI. (2013). Loss of hydrophobic motif and activation loop phosphorylation is a consequence and not mechanism of S6 kinase inhibition by Rapamycin. *J Biol Regul Homeost Agents* 27(2) 399-408
- 52) Qureshi MA, Jan N, Andrabi KI (2013) Functional implications of a cancer associated p16INK4A mutation insilico *J comp Intel Bioinformatics* 6 (1) 35-48
- 53) Jan N, Qureshi MA, Shaikh TM, Andrabi KI (2013) In silico attributes of cold resistance protein 1(crp1) from Brassica oleraceae. *Int J Eng Sci* 2(2) 5-12
- 54) Rasool S, Ahmad I, Dar R, Ayub SG, Rashid S, Jan T, Ahmad T, Naikoo NA, Andrabi KI (2013) Contribution of TGFβ1 codon 10 polymorphism to high myopia in an ethnic Kashmiri population from India. *Biochem Genet*. 51(3-4)323-333
- 55) Asif Amin, Sajad H. Wani, Taseem A. Mokhdomi, Shoiab Bukhari, Asrar H. Wafai, Javid Iqbal Mir, Qazi Parvaiz Hassan, Raies A. Qadri (2013) Investigating the pharmacological potential of Iris kashmiriana in limiting growth of Epithelial tumors *Pharmacognosy Journal* 5(4): 170-175.
- 56) Javid Iqbal Mir, Nazeeer Ahmad, Taseem A. Mokhdomi, Asrar H. Wafai, Sajad H Wani, Shoiab Bukhari, Asif Amin, Raies A. Qadri (2013). Relative expression of Apocotenoid biosynthesis genes in Developing Stigmas of Crocus Saqtivus L. *J. Crop Sci. Biotech* 16(3): 183-188.
- 57) Sajad H. Wani, Asif Amin, Shahnawaz N. Sofi, Taseem A. Mokhdomi, Shoiab Bukhari, Qazi Parvaiz Hassan and Raies A. Qadri (2013) RP- HPLC facilitated Quantitative analysis of Tectorigenin in the different species of Iris plant and evaluation of its invitro anticancer potential. *International Journal of Current Research* 5(2): 206-211

- 58) Syed Tanveer Iqbal, Khurshid Iqbal Andrabi, Khalid Majid Fazli, And Azmat A Khan (2013): Coding variations in bovine α -lactalbumin in Kashmiri cattle vis-a-vis exotic breeds, *Indian Journal of Animal Sciences* 83(8)
- 59) Wang F, Li G, Altaf M, Lu C, Currie MA, Johnson A, Moazed D..(2013) Heterochromatin protein Sir3 induces contacts between the amino terminus of histone H4 and nucleosomal DNA, *Proc Natl Acad Sci U S A.*;110 (21):8, 495-500.
- 60) Zeenat Hamid, Insha Zahoor and Ehtishamul Haq (2014). Arnebia benthamii aggravates potassium dichromate induced hepatotoxicity in Wistar rats. *Int J Pharm Chem & Biol Sci* 4(2), 234-240
- 61) Zahoor I, Hamid Z, Asimi R & Haq E (2014). Novel mutations identified in EIF2B5 gene in Kashmiri patients as susceptibility factor for multiple sclerosis. *Ind J Biochem Biophys* 51, 115-120.
- 62) Zahoor I, Hamid Z and E Haq (2014). Multiple Sclerosis: Searching a link between Eukaryotic Translation Initiation Factor-2B and Multiple Sclerosis. *Int J App Biotech & Biochem.* 4(1) 1-7.
- 63) Bhat HF, Baba RA, Adams ME, Khanday FA. SNTA1 mediated Rac1 Activation Modulates ROS generation and Migratory potential in Human Breast Cancer Cells. *British Journal of Cancer.* (Nature Publication Group Journal) 2014 Feb 4;110(3):706-14. IF:5.03
- 64) Akhtar N, Andrabi KI, Nissar A, Ganaie S, Chandan BK, Gupta AP, Khushwant M, Sultana S, Shawl AS (2014) Hepatoprotective activity of LC-ESI-MS standardized *Iris spuria* rhizome extract on its main bioactive constituents. *Phytomedicine* (In Press)
- 65) Beigh MA, Showkat M, Bashir B, Bashir A, Hussain MU, Andrabi KI. (2014). Growth inhibition by bupivacaine is associated with inactivation of ribosomal protein S6 kinase 1. *Biomed Res Int* (In Press)
- 66) Khan MS, Pandith AA, Azad N, Hussain MU, Masoodi SR, Wani KA, Andrabi KI, Mudassar S (2014) Impact of molecular alterations of BRAF in the pathogenesis of thyroid cancer *Mutagenesis* 29(2) 131-137
- 67) Ayub SG, Rasool S, Ayub T, Khan SN, Wani KA, Andrabi KI. (2014) Mutational spectrum of BRCA2 gene in breast carcinoma in Kashmiri population. *Mol Med Reports* 9(2):749-53
- 68) Bashir M, Parray AA, Baba RA, Bhat HF, Bhat SS, Mushtaq U, Andrabi KI, Khanday FA (2014) β -Amyloid-evoked Apoptotic Cell Death is Mediated Through MKK6-p66shc Pathway. *Neuromolecular Med* 16 (1) 137-49
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- 70) Mudassar S, Khan MS, Khan NP, Hussain MU, Andrabi KI (2014) Possible Role of Proto- Oncogenes in Colorectal Cancer — A Population Based Study, *Colorectal cancer Surgery, Diagnostics and Treatment*, Dr. Jim S Khan (Edit.): ISBN 978-953-51-1231-0, Intech DOI 10.5772/5738

10. Sponsored research projects in operation during the period under report (please provide name/s of PI/Co-PIs, title of the project, funding agency and total quantum of external support

Investigator	Title	Amount	Agency
Khurshid I Andrabi	Molecular genetics of High Myopia in Kashmir: Polymorphic analysis of potential candidate gene	Rs.19,00,500	Department of Biotechnology (DBT), Govt. of India
Khurshid I Andrabi	Functional evaluation of novel 15 kDa mutation associated with Esophageal Squamous cell Carcinoma (ESCC)	Rs 22,50,000	Department of science and Technology (DST), Govt. of J&K
Raies.A. Qadri	Identification of Bronchogenic cancer markers through proteomic analysis of bronchial alveolar lavages and sera.	Rs.65,00,000	Department of science and Technology (DST), Govt. of India
Raies.A. Qadri	Identification of Bronchogenic cancer marker(s) through proteomic analysis of model human cancer cell lines	Rs. 43,00,000	Department of science and Technology (DST), Govt. of India
Raies.A. Qadri	Functional genomics approaches in understanding the regulation of flowering and synthesis, and accumulation of Apocarotenoid in saffron crocus (<i>Crocus sativus</i> L.	Rs 75,00,000	Department of Biotechnology (DBT), Govt. of India
Raies.A. Qadri	Identification and characterization of nuclear proteins specific to floral homeotic genes in <i>Crocus sativus</i>	Rs. 28,00,000	CSIR, New Delhi
Firdous.A. Khanday	To understand the signal transduction pathway involving the role of P66shc, and Rho GTPase rac1 in neuronal cells.	Rs.37,02,000	Department of science and Technology (DST), Govt. of India
Firdous.A. Khanday	Comparative expression analysis of α -1 Syntrophin (SNTA1) protein and its role in cell Signalling transduction	Rs.50,62,000	Department of Biotechnology (DBT), Govt. of India
Mahboob-Ul-Hussain	Increased glycolytic capacity of astrocytes during hypoxia: Role of Cap-independent translational of glycolytic enzyme.	Rs.46,29,000	Department of Biotechnology (DBT), Govt. of India
Ehtishamul Haq	Potential of Rheum emodi & Achillea millefolium to Ameliorate (Lipo-Polysaccharide) Induced Endotoxemia in Mice Model of Sepsis	Rs.9,68,400	Department of science and Technology (DST), Govt. of India
Khalid Majid Fazili / Ehtishamul Haq (Co-PI)	Effect of polyamines and ionic liquids on folding intermediates and solvent induced aggregation in Hen egg white lysozyme	Rs. 13,800,00	University Grants Commission, New Delhi
Khalid Majid Fazili/ Khurshid I Andrabi / Dr Tasleem Ganiai (Co-PI)	Genetic Analysis of Lactose Synthase Complex of Exotic High Milk Yielding and Indigenous Low Milk Producing Bovine Breeds	Rs. 48,000,00	Department of science and Technology (DST), Govt. of India

11. Utilization of Equipment from outside the department:

Infrared Scanner, Deep-freezers, sorval centrifuge are frequently used by the Post graduate students and research scholars from the departments of Biochemistry, Clinical Biochemistry, Botany, Zoology and Environmental sciences.

12. SELF-ASSESSMENT OF THE IMPACT OF FIST SUPPORT: Please specifies if any of the following activity emerged/ improved as a consequence of the FIST support:

a. New class-room experiments at B.Sc./ M.Sc. or other levels:

The Lab support improved upon the Practical Course work of our Post graduate students. New practicals were introduced, and students get exposed to advanced techniques and methods. The Project work which runs for a full semester and extends up to six months is now completely in-house. FIST support has a clear and remarkable contribution in that context.

b. Success of students at national level tests (various PG/Ph.D. entrance tests and tests for JRF etc)

The FIST support had a positive bearing upon students and gave them the required confidence to take up research assignments at advanced institutions of the country and outside.

c. Any new research project that emerged on the basis of the FIST support

In general the FIST support has significantly contributed in the emergence of new projects as shown in the list of ongoing projects above.

d. Did the newly created facility lead to betterment of quality of research publications

Yes, The infrastructural advances have a clear bearing upon the quality of publications as is reflected in the impact factor of the published papers.

e. Any training program/ workshop organized by the department during the period of report, specially those involving the newly created facility)

NIL

13. Is any problem faced in utilization of the grant/facilities?

NO

A report highlighting the research activities of the department during the period under review may also be provided.

Research Activity:

The outcome of FIST grant was significant in boosting the research activities of the department. The infrastructure facilities paved way to carry out Western blotting techniques in a more accurate way and the use of fluorescent antibodies enhanced the overall sensitivity of these techniques. Moreover, In-cell western was also possible using infrared scanner, which otherwise was impossible to do. FIST grant was instrumental in studying the role of micro RNAs in various cancers and also in regulating protein translation. The preliminary data obtained from these studies are being used to generate more funds for the department. Use of laminar flow hood helped us greatly in doing cell culture in more sterile conditions. Moreover, fluorescent microscopy was successfully used to study co-localization and immune-histochemistry studies.

One of the groups is focused on elucidating the role of p66shc in Alzheimer's. This group has previously shown the role of p66shc in regulating cell growth (Bashir et al 2010). Now the focus over the last few years has been to look for the role of MKK6 in mediating beta amyloid evoked-activation of p66shc by carrying out phosphorylation at crucial serine 36 residue. This beta amyloid evoked and MKK6 mediated activation of p66shc has been shown by the group to be involved in mediating reactive oxygen species production and eventual death of neuronal cells (Bashir et al 2013).

Another group is involved in drug therapeutics particularly for inflammatory related pathways (using LPS as inducer & inducible nitric oxide synthase, iNOS as target) in sepsis (Bashir et al, 2011a) and krabbe disease. This group has recently shown the inherent dangers in extrapolating *in vitro* results obtained using individual brain cell lines into more complex cellular milieu inside the brain (Bashir et al, 2011b). The group appreciates the FIST grant and overall positive effects it had in shaping the research environment in the department.

Another group is involved in studying genetic polymorphism of the Bovine Lactose synthase complex. The folding and aggregation of ZAT (z-alpha antitrypsin) and its role in AAT induced Liver cirrhosis is also being studied. This group is also involved in studying the folding mechanism of p70S6 Kinase.

Another group is studying mTOR signalling pathway along with its downstream effectors S6 kinase and translational initiation factor 4E binding protein 1 (4EBP1). mTOR is a nutrient sensor protein which is a key player in cellular proliferation and is aberrantly activated leading to cancerous phenotype. It has recently shown that S6 kinase inhibition by an mTOR inhibitor and anticancer drug rapamycin is mediated by events other than phosphorylation. Further we went on to show that loss of critical phosphorylations I S6 kinase following rapamycin inhibition follow an all or none pattern in contrast to site specific dephosphorylation as proposed previously by some workers

One group is working on Inflammation associated with tumors, a result of interaction of immune cells with tumor cells, plays a major role in tumor initiation, progression and even metastasis. Monocytes, in particular, are thought to generate a cytokine milieu in the microenvironment favourable to tumor. Such a crosstalk and the pathways involved therein are not well established, especially in human models. Our findings have important implications for understanding Cancer related Inflammation.

Dr. Altaf Bhat's group who recently joined the department as a Ramanujan Fellow focuses on understanding the mechanism of epigenetic inheritance. Epigenetic mechanisms ensure that correct gene expression patterns are inherited during cell division so that stable cell identities can be maintained throughout development. Epigenetics is still an emerging field in biology, and is exerting an increasingly profound impact on medicine because of its potential explanatory power in development and disease.

FIST PROGRAMME
Consolidated Utilization Certificate (UC)
(2009 - 2014)

1	Name of the Department & Institute/ University	Department of Biotechnology University of Kashmir, Srinaga
2	Name of the Head of Department/Project coordinator	Prof. Khalid Majid Fazili
3	Sanction order & Date:	SR/FST/LSI-384/2008 dated 23/02/2009
4	Head of Account as given in original Sanction order	
5	Amount brought forward from Previous financial year: (order No.Date,& Amount in Rs)	NIL
6	Amount received during the financial year	RS 85,50,000.00
7	Funded by university (Loan)	Rs20,53,857.00
8	Total amount available for expenditure(excluding commitments): (S1.No5+6+7)	Rs 1,06,03,857.00
9	Actual expenditure(excluding commitments): incurred during Financial year(Up to 31 st March)	Rs1,06,03,857.00
10	Balance amount available at the end of the fianacial year	(20,53,857.00)
11	Unspent balance refunded if any(give details of cheques/drafts etc)	NIL
12	Amount to be carried forward to the financial year (if applicable)	(20,53,857.00)

Certificate

Certificate that out of Rs 85,50,000.00 of grant-in-aid sanctioned during the year 2010 11 in favor of Department of Biotechnology, University of Kashmir under the Ministry/Department order No.SR/FST/LSI-384/2008:dated: 23/02/2009, a sum of Rs1,06,03,857.00 has been utilized for the purpose of FIST Program for which it was sanctioned and the balance amount of (20,53,857.00) funded by university of Kashmir will be adjusted towards the grant-in-aids payable during the next installment.

Signature of the Head of
department/project
Coordinator
Date

Signature of Finance /Accounts
Officer
Date

Signature of the Head
of Institute/ University
Date

(To be filled in at DST)

Certified that I have satisfied myself that the conditions on which the grant-in-aid was sanctioned has been fulfilled/are being fulfilled and I have exercises the following checks to see that the money was actually utilized for the purpose for which it was sanctioned:-

Kinds of Checks exercised:

- 1.
- 2.

Signature/Designation/Date

FIST Program
CONSOLIDATED STATEMENT OF EXPENDITURE (SE)
(for the year of project starting to project completion)

1. Sanction Order No.& date:No.SR/FST/LSI-384/2008: 23/02/2009
2. Total Sanctioned Project Cost: 123.00Lakhs
3. Date of commencement of the project: March 2009
4. Grant received in each year (in Rs):

1 st Year	2 nd year	3 rd year	4 th year	5 th year	Interest, if any	Total
85.50Lakh	Nil	Nil	Nil	Nil	NIL	85.50Lakhs

5. Statement of expenditure

#	Sanctioned Budget Heads	Allocation of Funds (in Rs)	Expenditure incurred (in Rs)	Balance (in Rs) Excess / saving	Remarks,if any
1	Equipment(E)	7,500,000.00	9,364,854.00	(1,864,854.00)	The excess expenditure has been met loan given by the university to the department of Biotechnology to meet excess expenditure in anticipation of the release of next instalment.
2	Net Working &Computational Facilities (NW)	500,000.00	686,252.00	(186,252.00)	
3	Infrastructure Facilities (IF)	450,000.00	474,870.00	(24,870.00)	
4	Maintenance (M)	100,000.00	77,881.00	22,119.00	
5	Total	8,550,000.00	10,603,857.00	(2,053,857.00)	

Name & signature of
Head of Department/
project coordinator

Name & signature of competent
financial authority

Date:

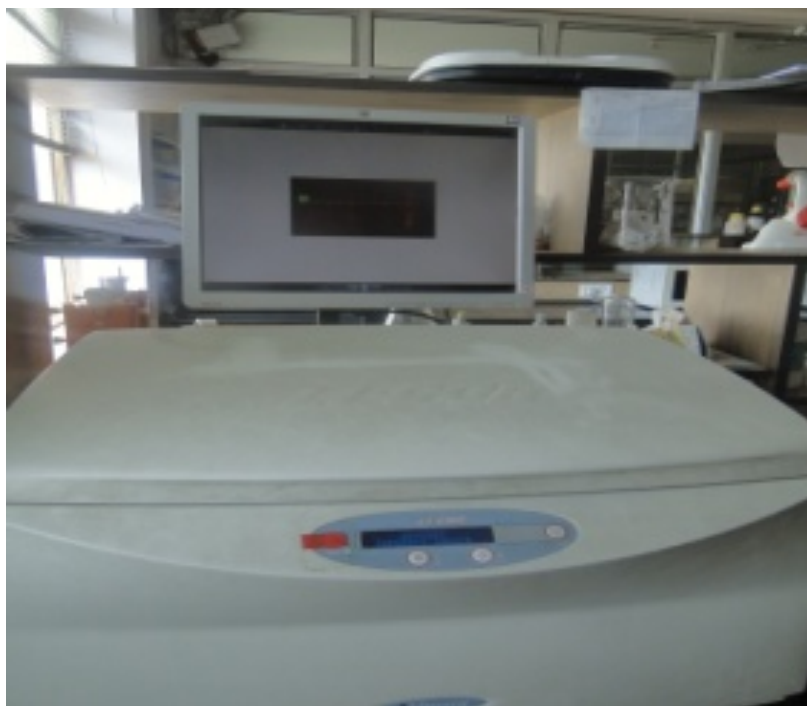
Date:

Note:

1. Expenditure under the sanctioned Heads,at any point of time should not exceed funds allocated under that Head,without prior approval of DST.
2. Utilization certificate for each financial year ending 31st March has to be enclosed along with request for carry forward permission to next year.

Details of Equipment acquired under FIST Program

Name of the equipment	Odyssey infrared scanner(Licor)
Model Number	9201-00
Complete Specifications	Odyssey infrared imager, odyssey accessory pack, odyssey software, odyicu module
Details of Manufacturer	Licor
Name	Licor Inc, USA
Address	4647 Superior Street
City	Lincoln, NE 68504 USA
State	USA
Actual cost (in Foreign Rupees)	60000\$
Actual cost (in Indian Rupees)	2,800,000.00
Used for	



Details of Equipment acquired under FIST Program

Name of the equipment	High speed centrifuge
Model Number	46910RC-6plus
Complete Specifications	Speed 22,000RPM,temp range-20 to 40 rotor capacity 41ltr,max force 55,200 x g
Details of Manufacturer	sorvalUSA
Name	Thermo Fisher Scientific
Address	New Delhi
City	New Delhi
Details of local Agent/supplier	Thermo Fisher Scientific
Name	Thermo Fisher Scientific
Address	New Delhi
City	New Delhi
Actual cost(in Foreign Rupees)	92333\$
Actual cost (in Indian Rupees)	2,200,000.00
Used for	For research use



Details of Equipment acquired under FIST Program

Name of the equipment	Laminar flow hood
Model Number	51025411
Complete Specifications	Size 1300x2200x95: heap filter,exhaust inflow air,particle retention 0.2microns
Details of Manufacturer	Thermo Forma
Name	Thermofisher scientific
Address	Noida
City	Noida
State	Noida india
Actual cost (in Indian Rupees)	600,000.00
Used for	Research use



Details of Equipment acquired under FIST Program

Name of the equipment	Spectrum Flourimeter
Model Number	Fluorokam 521460
Complete Specifications	Luminescence and fluorescence,30w halogen lamp 8slot excitation wheel,sensitivity 0.075 pmoles Dispenser 5-1000µl.
Details of Manufacturer	Thermo electron
Name	Thermofisher scientific
Address	Noida
City	Noida
State	Noida india
Actual cost (in Indian Rupees)	1,200,000.00
Used for	Research use



Details of Equipment acquired under FIST Program

Name of the equipment	Fluorescent Microscope with accessories
Model Number	DM1L-LED
Complete Specifications	Trinocular tube with 45 degree view,phase contrast condenser S 80/03.Lamp housing 106Z objective:H14x10x,20x,40x Four fold resolving nose piece
Details of Manufacturer	Leica
Name	Lab india instrument
Address	New Delhi
State	New Delhi
Actual cost(in Foreign Rupees)	9,898\$
Actual cost (in Indian Rupees)	6,37,905.00
Used for	For Research Use



Details of Equipment acquired under FIST Program

Name of the equipment	Real Time PCR
Model Number	7500
Complete Specifications	Five Color System
Details of Manufacturer	Applied Biosystem
Name	Applied Biosystem
Details of local Agent/supplier	Biomed System
Name	Biomed System
Address	Budshah Chowk
City	Srinagar
PIN	190001
State	Jammu and Kashmir
Actual cost (in Indian Rupees)	14,89,884.00
Used for	Research Use



Details of Assets Acquired Under FIST Program

Sr. No	Name of the equipment/item	Cost in FE	Cost in INR
01.	Odyssey infrared Scanner (Licor)	60000\$	2,916,600+Bank and handling charges (10,713+11,220) 2,938,533
02.	High speed centrifuge, Laminar flow hood, Spectrofluorimeter	92333\$	4,211,661.00 + freight and transportation charges (86,871.00)4,298,532.00
03.	Fluorescent Microscope with accessories	9,898\$	5,95,286.00(Freight and transportation charges 42,619) 6,37,905.00
04.	Real Time PCR		14,89,884.00

Head wise Expenditure Details:**1. Equipment Head (E):**

Sr. No	Name of the Equipment/item	Total cost(total cost of equipment after paying all charges)	Date of installation
1.	Odyssey infrared scanner (Licor)	2,938,533	
2.	High speed centrifuge, Laminar flow hood, Spectrofluorimeter	4,298,532.00	4 th August, 2010
3.	Fluorescent Microscope with accessories	6,37,905.00	7 th May ,2010
4.	Real Time PCR	14,89,884.00	21 st May, 2010

*Note: the total cost mentioned here should tally with total expenditure shown in statement of expenditures (SE) under Equipment Head.

2. Networking Head (NW):

Sr. No	Name of the item procured for the lab	Total cost (total cost of equipment after paying all charges)	Date of installation
1.	Godrej, Achiever 2 seater SDBC	1,30,936.00	1 st March 2011
2.	Contractor Library work	1,51,504.00	January, 2010
3.	Sony Vaio Laptops	1,92,430.00	15 th February, 2010

*Note: the total cost mentioned here should tally with total expenditure shown in statement of expenditures (SE) under Networking Head

3. Infrastructure Head (IF)

Sr. No	Name of the item procured/activities carried out including Books acquired	Total cost (total payment towards renovation, upgradation of labs, books acquired, etc)	Date of completion of work/Date of acquiring of items, Books etc.
1.	Cold room Puf panela with light & Door Accessories included	5,02,875.00	15 th February, 2010
2.	Dustguard Blinds	1,83,377.00	27 th June, 2011

*Note: the total cost mentioned here should tally with total expenditure shown in statement of expenditures (SE) under Infrastructure Head. Separate List of Books acquired also to be provided.

4. Maintenance Head (M):

Sr. No	Name of the items	Total cost	Date on which expenditure was made
01.	Repairs & renovation library	77,881.00	January 2010

*Note: the total cost mentioned here should tally with total expenditure shown in statement of expenditures (SE) under Maintenance Head.