S.No.	Name of the PI	Title of the project	Funding agency	Duration
1.	**Dr. Shakti Sahi**	**Design synthesis and evaluation of potent aminopeptidase inhibitors for malarial therapy (Co-PI: Dr. Vikrant Nain)** Malaria remains a widespread and devastating disease. About 40% of the world's population live in countries where the disease is endemic and more than 247 million people suffer from the disease every year. In order to find novel and efficacious lead compounds The malarial neutral aminopeptidases that are involved in the terminal stages of hemoglobin digestion and are essential for the provision of amino acids used for Plasmodium growth and development within the erythrocyte have been taken as the targets. The release of aminoacids involves two metallo-exopeptidases: an alanyl aminopeptidase, PfA-M1, and a leucine aminopeptidase, PfA-M17. Aminopeptidase inhibitors, including bestatin, nitrobestatin, and amastatin, have antimalarial activity in culture and different combinations of endo- and aminopeptidase inhibitors show synergism. The major objectives of this project are: • Novel antimalarial compounds having better therapeutic index. • Insight into mode of action and binding interactions between aminopeptidases and the designed inhibitors will open up avenues for development of new antimalarial drugs.	**Department of Biotechnology, Govt. of India,**	2011-2014

		Design and evaluation of novel Beta-3 adrenoreceptor agonists for potential antidepressant activity Designing of β3-adrenergic receptor inhibitors: β3-adrenergic receptor (β3-AR) is known to mediate various pharmacological and physiological effects such as thermogenesis in brown tissue adipocytes, lipolysis in white adipocytes and intestinal smooth muscle relaxation. It also plays an important role in glucose homeostasis and energy balance. β3-ARs are also expressed in human heart, gall bladder, gastrointestinal tract, prostate and urinary bladder detrusor, brain as well as in near-term myometrium. Recently, reverse transcription PCR experiments have detected the existence of β3-AR mRNA indiscrete regions of rat and human brain, including hippocampus, hypothalamus, amygdala, and cerebral cortex, areas known to be involved in thought processes and possibly responsible for the negative thoughts associated with depressive episodes of bipolar disorder. These diverse functions make β3-adrenergic receptors important drug targets.	**Department of Science and Technology** (DST), Ministry of Science and Technology, Government of India.	2012-2015
2.	**Dr. Rekha Puria**	**Identification and validation of novel anticancer drug targets in target of rapamycin (TOR) signaling pathway. (Co-PI:** Dr. Shakti Sahi and Dr. Vikrant Nain**)**	Department of Biotechnology, Govt of India	2012-2015

		Genome scale fitness profiling of transposon mutant library for identification of novel components of Target of Rapamycin (TOR) signaling pathway. (Co-PI: Dr. Shakti Sahi and Dr. Vikrant Nain**)**	Department of Science and Technolgy, Govt of India	2012-2015
3.	**Dr. Jai Prakash Muyal**	**Identification of Molecular Pathways in Alveoli Regeneration in an Established Emphysematous Lung: All Trans Retinoic Acid - A Way to Novel Therapy Option** Pulmonary Emphysema is a chronic lung disease and one of the most important causes of morbidity and mortality in our modern society and is referred to as a pulmonary inflammatory disease in which destruction of the lung's gas-exchange structures leads to inadequate oxygenation, disability and frequently death. To date, there is no curative therapy available that can restore functional lung parenchyma that has been lost in an emphysematous lung. Recently, all-trans retinoic acid has been found to enhance epithelial repairs and improves survival of alveoli in rats after lung injury. However, the molecular mechanisms contributing to its potential regenerative effects in animal model for emphysema is not known. Therefore, the objective of this project is to identify those pathways which play crucial role in alveoli regeneration by using genomics and proteomics tools.	Department of Biotechnology (DBT), India	2013-2016
4.	**Dr. Savneet Kaur**	**Investigations on cell intrinsic and extrinsic factors involved in age- and disease- induced senescence of endothelial progenitor cells.**	Department of Science and Technolgy, Govt	3 yrs (Ongoing)

		The project proposes to study EPC senescence in aged and cardiovascular disease subjects. The study aims to reveal important cell intrinsic changes that occur in aged and diseased EPC stem cell pool, as well as the extrinsic cues occurring in their microenvironment that act in conjunction with the intrinsic factors. The study would also play a pioneering role in elucidating the role of important cell senescent pathways in affecting angiogenic functions of EPC.	of India	
		Investigations on the Contribution of Endothelial Progenitor Cells and Cancer Stem Cells towards Tumor Vascularization in Hepatocellular Carcinoma. (Co-PI: Dr. Deepali Singh**)** The current project aims to analyze the contribution of an important oncogenic protein of Hepatitis B virus, HBx, in the initiation and progression of hepatocellular carcinoma (HCC) via hepatic cancer stem cells. The study would shed light on HBx-associated molecular pathways responsible for the transformation of normal hepatic cells/stem cells into a tumorigenic phenotype of cancer stem cells (CSCs) that lead to the genesis and development of HCC in patients with chronic HBV infection. The study would provide insights into the underlying angiogenic mechanisms that further lead to the invasion and distal metastasis of this highly vascularized cancer. The project would help in	Department of Biotechnology, Govt of India (RGYI)	3 yrs (Ongoing)

		the identification of HBx-activated molecular markers and pathogenesis mechanisms that are specific to CSC pools in HBV-HCC. This understanding and identification of novel targets may thus lead to the development of innovative therapeutic molecules for the treatment of HCC, which is otherwise a poor prognosis tumor. **Contribution of angiogenesis and inflammation to fibrogenesis and regeneration in non-alcoholic fatty liver diseases (NAFLD):** The current project would comprehensively investigate specific angiogenic and inflammatory markers and mechanisms that are activated during different clinical stages of NAFLD and also study their correlation with liver fibrogenesis and regeneration. The project would address differential gene expression studies in different patient groups (blood samples and biopsies) and controls to analyze a correlation between different angiogenic markers and liver fibrogenesis and regeneration. The project would also undertake various in vitro studies using isolated rat liver cells under pathophysiological conditions to determine the relationship between angiogenesis and fibrogenesis/regeneration	Indian Council of Medical Research (ICMR)	Recently Approved
5.	**Dr. Vikrant Nain**	**Development of meganucleases for targeted genome engineering in rice (Co-PI:** Dr. Shakti Sahi**)** **Development of drought tolerant rice by expression of RNA chaperon gene (Co-PI:** Dr. Shakti Sahi	Department of Biotechnology, Govt of India Council of Scientific and Industrial	2012-2015 2012-2015

			Research (CSIR)	
6.	**Dr. Vishwas Tripathi**	**Molecular mechanisms of anti-cancer effect of Crocetin and its synergistic effect with Cisplatin in Smokeless Tobacco & Nicotine induced Head and Neck Cancer Cells** **Isolation and characterization of anti-tubercular principle from contaminating bacterial strain**. **(Co-PI)**	Department of Science and Technolgy, Govt of India Department of Biotechnology, Govt of India	2013-2016 2013-2015
7.	**Dr. Nagendra Singh**	**Characterization of RNA modifying enzymes from *Pseudomonas aeruginisa*. (Co-PI**: Dr. Imteyaz Qamar**)** RNA modification is an essential step for stability and function of rRNA and tRNA molecules, catalyzed by various RNA modifying enzymes. The objective is structural and functional characterization of these enzymes from P*seudomonas aeruginosa*, which can serve as new drug target for designing inhibitors with antimicrobial therapeutic values. **Structural basis of nickel transport in *Kleibsilella pneumonae*.** Nickel is an essential trace element for bacterial growth. The transportation of nickel is tightly regulated by an operon in bacteria as higher concentrations of nickel also cause cell death. The idea is to characterize the DNA binding elements, which are responsible for the expression of the nickel transporter operon in *K. pneumonae*.	Indian Council of Medical Research (ICMR) Indian Council of Medical Research (ICMR)	Approved 2014-2017 Approved 2014-2017

8.	**Dr. Deepali Singh**	**Characterization of a DexD/H family helicase towards stress response in plants**. **(Co-PI**: Dr. Sachin Teotia**)**	Department of Biotechnology, Govt of India	Approved