

**GOVERNMENT OF INDIA  
SCIENCE AND TECHNOLOGY  
LOK SABHA**

STARRED QUESTION NO:188  
ANSWERED ON:22.08.2013  
RESEARCH IN GENETIC ENGINEERING  
Chitthan Shri N.S.V.

**Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:**

- (a) whether Genetic Engineering has been increasingly attracting attention of the scientific community across the world including India;
- (b) if so, the details thereof and the reasons therefor;
- (c) the steps taken by the Government to encourage research in Genetic Engineering particularly with a view to enabling development in the fields of agriculture, floriculture, fisheries and animal husbandry; and
- (d) the details of genetic engineering research facilities available as well as projects presently under implementation in the country particularly in Tamil Nadu?

**Answer**

MINISTER OF SCIENCE & TECHNOLOGY AND EARTH SCIENCES (S. JAIPAL REDDY)

(a) to (d) A Statement is laid on the Table of the House.

STATEMENT IN RESPECT OF LOK SABHA STARRED QUESTION NO. 188 TO BE ANSWERED ON 22/08/2013 REGARDING "RESEARCH IN GENETIC ENGINEERING"

(a) Yes. Madam.

(b) Genetic engineering (GE) or recombinant DNA (rDNA) technology is one of the most promising of all the life sciences technologies. The main advantage this technology over the conventional ones is that, through GE target genes from one life form can be precisely identified, isolated and transferred to another and altogether even to a different species. Since its development in 1970's, wide range of products derived from this technology have been developed globally and commercially used. In medicine, GE has been used to mass-produce insulin, human growth hormones including fertility control factors, human albumin, monoclonal antibodies, blood products like clotting factor, vaccines and many other drugs for treatment of human and animal diseases. In agriculture, genetically engineered crops with resistance to insects, drought, salinity, pests and diseases have been developed. In industry and environment, GE microorganisms are used to produce large quantities of enzymes and molecules/ protein used in processing industry, making bio-fuels, cleaning up oil spills, carbon and other toxic wastes.

(c) The Research and development in genetic engineering is supported by Department of Biotechnology, Department of Science and Technology and Council for Scientific and Industrial research (CSIR) of Ministry of Science Technology; Indian Council of Agriculture Research, Ministry of Agriculture and University Grants commission. Various schemes are implemented to develop skilled human resource and teaching aids; support laboratory infrastructure, technology platforms and bio-clusters and international cooperation for training abroad and undertake bilateral joint projects. These efforts are made to develop new generation and safe diagnostics and vaccines for diseases of humans, animals and fish and breeding improved crop varieties for pest and disease resistance, drought and salinity tolerance; oil composition and quality.

(d) In India, all R&D centres at Institutions, Industries, Universities/, and any other organization which intend to carry out or engaged in research activities involving genetic engineering of genetic materials, microorganisms, plants or animals are required to be registered under the Rules (1989) of Environment (Protection) Act (1986). Currently, there are 450 such institutions, which have research facilities for handling genetic engineering activities. Projects implemented by these institutions include 187 in Medical biotechnology, 263 Agricultural Biotechnology including aquaculture and animal health. In Tamil Nadu, there are 24 such centres with facilities and are engaged in implementing 13 Medical and 11 Agricultural projects. Some major facilities include Transitional Platforms for Veterinary Biologicals at Tamil Nadu Veterinary and Animal Sciences University, Chennai; Centre for Plant Molecular Biology at Tamil Nadu Agricultural University, Coimbatore and Centre for Excellence in Genomic Sciences at Madurai Kamraj University, Madurai and 13 under graduates teaching programs.