



Department of Biotechnology
Ministry of Science and Technology
Block-2, CGO Complex, Lodhi Road, New Delhi 110 003

Call for Pre-Proposal on Application of Molecular Markers for Crop Improvement under Accelerated Crop Improvement Programme

Molecular breeding has become a major approach to supplement conventional plant breeding for augmenting yield and quality in all major crops. For this purpose, DNA-based molecular markers have been developed for a variety of traits through marker-trait association (MTA) studies in all major crops. In several crops, including common bean, rice, wheat, barley, soybean, pearl-millet and maize product development has also been possible. In India also, products using MAS have been produced in pearl-millet, maize and rice, and released to the farmers.

In order to develop the area of plant breeding research involving MAS, the Department of Biotechnology, Government of India has already taken steps to facilitate validation and utilization of already identified markers available in public domain. In the first phase, proposals were invited more than four years ago, and a number of projects were approved for funding, which will be completed in 2014 with some desirable products for the farmers.

In order to encourage the plant breeders further to adopt the molecular breeding approach as a component of conventional plant breeding, the Department of Biotechnology once again invites pre-proposals from universities, public and private research institutes and non-profit organizations in the country for funding research projects covering the following areas: (i) Simple MAS involving forward breeding for improvement of traits, where markers are available (using either forward or background selection or both); (ii) Marker-assisted recurrent selection (MARS) for improvement of complex traits like tolerance to abiotic stresses or nutrient-use efficiency; (iii) QTL analysis for genetic dissection of multiple and complex quantitative traits using biparental populations and multiparental populations (e.g. NAM, MAGIC); (iv) Genetical genomics and eQTL analysis for detection of regulatory/expression QTLs (e.g. transcription factors); (v) Use of advanced breeding populations derived from multiple crosses for development and use of markers for crop improvement (as recommended by Melchinger's group in Germany); (vi) AB-QTL analysis involving simultaneous detection and introgression of desirable QTL from related alien species for crop improvement; (vii) Genomic Selection in some important crops.

Concept notes (pre-proposals), each giving a brief outline of the project not exceeding 5–7 pages in any of the above areas are invited. The pre-proposal elaborating the current problem and the proposed plan of work for 3–5 years period may be submitted. Priority will be given to the projects focused at the delivery of product(s) in the form of a variety or improved genetic stock having potential as a breeding material. Those having expertise in respective areas as evident from the publications in high-impact factor journals or product development may apply.

Five copies of the duly signed pre-proposal (forwarded by the competent authority) may be submitted positively by **30 June 2013** to **Dr R. R. Sinha**, Advisor, Department of Biotechnology, Block 2, 6th Floor, CGO Complex, Lodhi Road, New Delhi 110 003. The pre-proposal should include the following information: (1) title of the concept; (2) its preliminary proof; (3) major objectives/milestones; (4) expected deliverables/outcomes; (5) proof of expertise in the form of publications in high impact factor journals; (6) the budget required; (7) projects in hand and (8) association with industry (if any). The Department of Biotechnology encourages joint proposals from competent persons from multiple institutions with clear complementation of activities.

Pre-proposals with scientific merit, only in the desired area as mentioned above will be short-listed by a screening committee for discussion and development of detailed research proposals. Screening committee will meet in the middle of July 2013.