

**No. BT/PR33059/AGIII/103/1195/2020**  
**GOVERNMENT OF INDIA**  
**MINISTRY OF SCIENCE & TECHNOLOGY**  
**DEPARTMENT OF BIOTECHNOLOGY**

Block 2, 6-8th Floors  
 CGO Complex, Lodhi Road,  
 New Delhi- 110 003  
 Dated:20/10/2021.

**ORDER**

Sanction of the President is hereby accorded, under Rule 18 of the Delegation of Financial Powers Rules, 1978, for the implementation of the project entitled "**Deciphering the role of SIX genes in virulence and host-specificity of *Fusarium oxysporum* f. sp. *carthami***" for a period of 5 Year 0 Month at a total cost of Rs.7349520 (Rupees Seventy Three Lakhs Fourty Nine Thousand Five Hundred and Twenty Only) on the terms and conditions detailed here under:-

**2 The Project :**

**2.1 Title :** Deciphering the role of SIX genes in virulence and host-specificity of *Fusarium oxysporum* f. sp. *carthami*

**2.2 Details of the Investigators:** Prof. Rupam Kapoor, Professor, Department of Botany, University of Delhi, North Campus, Chattra Marg, North Delhi-110007, Delhi (UT),

**2.3 CO-PI:** Prof. Shailendra Goel, Professor, Department of Botany, University of Delhi, North Campus, Lab Number 7, North Delhi - 110007, Delhi (UT)

**2.4 Objectives:**

1. To determine the presence of SIX genes (SIX1 – SIX14) in the isolates belonging to all the six races of Foc, and assess their expression at saprophytic as well as pathogenic phase of the pathogen.
2. To confirm the role of selected SIX genes in pathogenicity by targeted deletion and complementation of gene using CRISPR-Cas.
3. To ascertain the role of the putative pathogenicity gene in host-specificity of Foc.

**2.5 Time Schedule:** The duration of the project is 5 Year 0 Month from the date of this sanction order.

**2.6 Activities & Timelines:**

S.No.	Activities	Startmonth	Endmonth	Deliverables
<b>Objective1</b>				
1.	Generation of Genome Sequence of <i>Foc</i> races	0	18	Genome sequence of six isolates each are presentative of six races of <i>Foc</i>
2.	Detection of SIX genes (SIX1-SIX14) in <i>Foc</i> genome.	0	8	The variation in array of SIX genes in all races of <i>Foc</i>
3.	Expression analysis of SIX genes using RT-PCR	6	14	Expression pattern of SIX genes in <i>Foc</i> during infection.
4.	Determine copy number of individual SIX genes in <i>Foc</i> genome	12	18	The copy number of individual SIX genes in <i>Foc</i> genome
	Bioinformatics analysis	18	30	A high-quality complete genome assembly of <i>Foc</i>
<b>Objective2</b>				
6.	Retrieve complete sequence of the desired SIX genes in <i>Foc</i>	12	22	The complete sequence of target SIX genes
7.	Designing of guide RNAs and RNP complex for targeted SIX genes for CRISPR-Cas9 mediated transformation.	18	30	sgRNA, RNP complex (Cas9-sgRNA), HDR-HygB repair template for transformation

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