(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :20/07/2025
(21) Application No.202511069165 A
(43) Publication Date : 08/08/2025

(54) Title of the invention : A MODULAR CRISPR-BASED GENE EDITING TOOLKIT WITH REAL-TIME EDITING VALIDATION INTERFACE

(51) International classification	:C12N0009220000, C12N0015900000, B01L0003000000, G01N0021640000, C12N0015113000
(86) International Application No Filing Date	:NA :NA
(87) International Publication No	: NA
(61) Patent of Addition to Application Number Filing Date	:NA :NA
(62) Divisional to Application Number Filing Date	:NA :NA

(71)**Name of Applicant :**
1)NOIDA INSTITUTE OF ENGINEERING & TECHNOLOGY
Address of Applicant :19, Knowledge Park-II, Institutional Area, Greater Noida – 201306, Uttar Pradesh, India. ---------- ----------
Name of Applicant : NA
Address of Applicant : NA
(72)**Name of Inventor :**
1)Dr. ARVIND KUMAR
Address of Applicant :Department of Biotechnology, Noida Institute of Engineering & Technology, Greater Noida. Greater Noida ---------- ----------

(57) Abstract :
The present invention relates to a modular CRISPR-based gene editing toolkit (1) with an integrated real-time validation interface. The system comprises a microfluidic chamber (4), fluorescence detection module (3), guide RNA synthesis unit (2), and AI-enabled user interface (6). Interchangeable Cas modules (8), reagent cartridges (14), and cloud connectivity (12) enable customizable, precise, and rapid gene edits. Real-time fluorescence monitoring ensures accurate verification, while AI-driven off-target analysis enhances editing reliability. The invention reduces time, cost, and complexity associated with conventional validation processes.

No. of Pages : 16 No. of Claims : 5