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(54) Title: PHARMACOLOGICALLY INDUCED TRANSGENE ABLATION SYSTEM

(57) Abstract: The present invention relates to gene therapy systems designed for the delivery of a therapeutic product to a subject using replication-defective virus composition(s) engineered with a built-in safety mechanism for ablating the therapeutic gene product, either permanently or temporarily, in response to a pharmacological agent - preferably an oral formulation, e.g., a pill. The invention is based, in part, on the applicants' development of an integrated approach, referred to herein as "PITA" (Pharmacologically Induced Transgene Ablation), for ablating a transgene or negatively regulating transgene expression. In this approach, replication-deficient viruses are used to deliver a transgene encoding a therapeutic product (an RNA or a protein) so that it is expressed in the subject, but can be reversibly or irreversibly turned off by administering the pharmacological agent; e.g., by administration of a small molecule that induces expression of an ablator specific for the transgene or its RNA transcript.