

CLAIMS:

1. A genetically modified microorganism wherein:
an endogenous cas3 nuclease is deleted or mutated;
a Cascade operon operatively linked to a promotor that permits conditional overexpression of the operon; and
a guide array in which at least one CRISPR/Cascade gRNA may be conditionally expressed, wherein expression of the guide array results in reduced expression of at least one gene,
wherein the genetically modified microorganism is characterized by increased stability of the guide array when compared to a genetically modified microorganism lacking an endogenous cas3 nuclease deletion or mutation or conditional expression of a Cascade operon.
2. The genetically modified microorganism of claim 1, wherein an endogenous cas1 gene is deleted or mutated.
3. The genetically modified microorganism of claim 1, wherein the Cascade operon is overexpressed under the control of a tightly repressed inducible promoter.
4. The genetically modified microorganism of claim 3, wherein the tightly repressed inducible promoter is PhoB activated.

5. The genetically modified microorganism of claim 1, wherein the genetically modified microorganism is an *E. coli* microorganism.

6. The genetically modified microorganism of claim 1, wherein the reduced expression gene is selected from the group consisting of: *fabI*, *gltA1*, *gltA2*, *udhA*, and *zwf*.

7. A method of conditionally silencing a gene in a genetically modified microorganism, comprising

providing a genetically modified microorganism characterized by:

deletion or mutation of an endogenous *cas3* nuclease;

a Cascade operon; and

at least one guide array comprising at least one CRISPR/Cascade

gRNA,

growing the genetically modified microorganism under conditions

wherein expression of the CRISPR/Cascade gRNA results in reduced expression of at least one gene of the genetically modified microorganism.

8. The method of claim 7 wherein the genetically modified microorganism further comprises deletion or mutation of an endogenous *cas1* gene.

9. The method of claim 7 wherein the genetically modified microorganism is further characterized by the Cascade operon under the control of an inducible promoter that is a PhoB activated.

10. The method of claim 7, wherein the genetically modified microorganism is an *E. coli* microorganism.

11. The method of claim 7, wherein the reduced expression gene is selected from the group consisting of: *fabI*, *gltA1*, *gltA2*, *udhA*, and *zwf*.