According to one embodiment, the nuclease (e.g. endonuclease) and the DNA recognition unit (e.g. gRNA) are encoded from different expression vectors whereby each is operably linked to a cis-acting regulatory element active in plant cells (e.g., promoter).

As used herein the phrase "plant-expressible" or “active in plant cells” refers to a promoter sequence, including any additional regulatory elements added thereto or contained therein, that is at least capable of inducing, conferring, activating or enhancing expression in a plant cell, tissue or organ, preferably a monocotyledonous or dicotyledonous plant cell, tissue, or organ.

The plant promoter employed can be a constitutive promoter, a tissue specific promoter, an inducible promoter, a chimeric promoter or a developmentally regulated promoter.

Examples of preferred promoters useful for the methods of some embodiments of the invention are presented in Table I, II, III and IV.

***Table I: Exemplary constitutive promoters for use in the performance of some embodiments of the invention***

| ***Gene Source*** | ***Expression Pattern*** | ***Reference*** |
|---|---|---|
| Actin | constitutive | McElroy et al, Plant Cell, 2: 163-171, 1990 |
| CAMV 35S | constitutive | Odell et al, Nature, 313: 810-812, 1985 |
| CaMV 19S | constitutive | Nilsson et al., Physiol. Plant 100:456-462, 1997 |
| GOS2 | constitutive | de Pater et al, Plant J Nov;2(6):837-44, 1992 |
| ubiquitin | constitutive | Christensen et al, Plant Mol. Biol. 18: 675-689, 1992 |
| Rice cyclophilin | constitutive | Bucholz et al, Plant Mol Biol. 25(5):837-43, 1994 |
| Maize H3 histone | constitutive | Lepetit et al, Mol. Gen. Genet. 231: 276-285, 1992 |
| Actin 2 | constitutive | An et al, Plant J. 10(1);107121, 1996 |
| CVMV (Cassava Vein Mosaic Virus) | constitutive | Lawrenson et al, Gen Biol 16:258, 2015 |
| U6 (AtU626; TaU6) | constitutive | Lawrenson et al, Gen Biol 16:258, 2015 |

***Table II***

***Exemplary seed-preferred promoters for use in the performance of some embodiments of the invention***

| ***Gene Source*** | ***Expression Pattern*** | ***Reference*** |
|---|---|---|
| Seed specific genes | seed | Simon, et al., Plant Mol. Biol. 5. 191, 1985; Scofield, et al., J. Biol. Chem. 262: 12202, 1987; Baszczynski, et al., Plant Mol. Biol. 14: 633, 1990. |
| Brazil Nut albumin | seed | Pearson' et al., Plant Mol. Biol. 18: 235-245, 1992. |
| legumin | seed | Ellis, et al.Plant Mol. Biol. 10: 203-214, |

| | | |
|---|---|---|
| | | 1988 |
| Glutelin (rice) | seed | Takaiwa, et al., Mol. Gen. Genet. 208: 15-22, 1986; Takaiwa, et al., FEBS Letts. 221: 43-47, 1987 |
| Zein | seed | Matzke et al Plant Mol Biol, 14(3):323-32 1990 |
| napA | seed | Stalberg, et al, Planta 199: 515-519, 1996 |
| wheat LMW and HMW, glutenin-1 | endosperm | Mol Gen Genet 216:81-90, 1989; NAR 17: 461-2, |
| Wheat SPA | seed | Albanietal, Plant Cell, 9: 171- 184, 1997 |
| wheat a, b and g gliadins | endosperm | EMBO3:1409-15, 1984 |
| Barley ltrl promoter | endosperm | |
| barley B1, C, D hordein | endosperm | Theor Appl Gen 98:1253-62, 1999; Plant J 4:343-55, 1993; Mol Gen Genet 250:750-60, 1996 |
| Barley DOF | endosperm | Mena et al, The Plant Journal, 116(1): 53-62, 1998 |
| Biz2 | endosperm | EP99106056.7 |
| Synthetic promoter | endosperm | Vicente-Carbajosa et al., Plant J. 13: 629-640, 1998 |
| rice prolamin NRP33 | endosperm | Wu et al, Plant Cell Physiology 39(8) 885-889, 1998 |
| rice -globulin Glb-1 | endosperm | Wu et al, Plant Cell Physiology 398) 885-889, 1998 |
| rice OSH1 | emryo | Sato et al, Proc. Nati. Acad. Sci. USA, 93: 8117-8122 |
| rice alpha-globulin REB/OHP-1 | endosperm | Nakase et al. Plant Mol. Biol. 33: 513-S22, 1997 |
| rice ADP-glucose PP | endosperm | Trans Res 6:157-68, 1997 |
| maize ESR gene family | endosperm | Plant J 12:235-46, 1997 |
| sorgum gamma- kafirin | endosperm | PMB 32:1029-35, 1996 |
| KNOX | emryo | Postma-Haarsma et al, Plant Mol. Biol. 39: 257-71, 1999 |
| rice oleosin | Embryo and aleuton | Wu et at, J. Biochem., 123:386, 1998 |
| sunflower oleosin | Seed (embryo and dry seed) | Cummins, et al., Plant Mol. Biol. 19: 873-876, 1992 |

***Table III***

***Exemplary flower-specific promoters for use in the performance of the invention***

| ***Gene Source*** | ***Expression Pattern*** | ***Reference*** |
|---|---|---|
| AtPRP4 | flowers | www(dot)salus(dot) medium(dot)edu/m mg/tierney/html |
| chalene synthase (chsA) | flowers | Van der Meer, et al., Plant Mol. Biol. 15, 95-109, 1990. |
| LAT52 | anther | Twell et al Mol. Gen Genet. 217:240-245 (1989) |
| apetala- 3 | flowers | |

***Table IV***

***Alternative rice promoters for use in the performance of the invention***

| ***PRO #*** | ***Gene*** | ***Expression*** |
|---|---|---|
| PR00001 | Metallothionein Mte | transfer layer of embryo + calli |
| PR00005 | putative beta-amylase | transfer layer of embryo |
| PR00009 | Putative cellulose synthase | Weak in roots |
| PR00012 | lipase (putative) | |
| PR00014 | Transferase (putative) | |
| PR00016 | peptidyl prolyl cis-trans isomerase (putative) | |
| PR00019 | unknown | |
| PR00020 | prp protein (putative) | |
| PR00029 | noduline (putative) | |
| PR00058 | Proteinase inhibitor Rgpi9 | seed |
| PR00061 | beta expansine EXPB9 | Weak in young flowers |
| PR00063 | Structural protein | young tissues+calli+embryo |
| PR00069 | xylosidase (putative) | |
| PR00075 | Prolamine 10Kda | strong in endosperm |
| PR00076 | allergen RA2 | strong in endosperm |
| PR00077 | prolamine RP7 | strong in endosperm |
| PR00078 | CBP80 | |
| PR00079 | starch branching enzyme I | |
| PR00080 | Metallothioneine-like ML2 | transfer layer of embryo + calli |
| PR00081 | putative caffeoyl- CoA 3-0 methyltransferase | shoot |
| PR00087 | prolamine RM9 | strong in endosperm |
| PR00090 | prolamine RP6 | strong in endosperm |
| PR00091 | prolamine RP5 | strong in endosperm |
| PR00092 | allergen RA5 | |
| PR00095 | putative methionine aminopeptidase | embryo |
| PR00098 | ras-related GTP binding protein | |
| PR00104 | beta expansine EXPB1 | |
| PR00105 | Glycine rich protein | |
| PR00108 | metallothionein like protein (putative) | |
| PR00110 | RCc3 strong root | |
| PR00111 | uclacyanin 3-like protein | weak discrimination center / shoot meristem |
| PR00116 | 26S proteasome regulatory particle non-ATPase subunit 11 | very weak meristem specific |
| PR00117 | putative 40S ribosomal protein | weak in endosperm |
| PR00122 | chlorophyll a/lo-binding protein precursor (Cab27) | very weak in shoot |
| PR00123 | putative protochlorophyllide reductase | Strong leaves |
| PR00126 | metallothionein RiCMT | strong discrimination center / shoot meristem |

***Table 2: Sequences and oligos used in the experiments***

| **SEQ ID NO:** | **Aim** |
|---|---|
| 39 | miR173 |
| 40 | miR390 |
| 41 | sgRNA sequence used for miR173 targeting in CRISPR/CAS9 system-GEiGS#4 |
| 42 | sgRNA sequence used for miR173 targeting in CRISPR/CAS9 system-GEiGS#5 |
| 43 | sgRNA sequence used for miR390 targeting in CRISPR/CAS9 system-GEiGS#1 |
| 44 | sgRNA sequence used for miR390 targeting in CRISPR/CAS9 system-GEiGS#3 |
| 45 | mature GEiGS-siRNA targeting GFP- used in SWAP5 (based on miR390) and in SWAP1 (based on miR173) |
| 46 | Complementary strand of mature GEiGS-siRNA targeting GFP- used in SWAP5 (based on miR390) and in SWAP1 (based on miR173) |
| 47 | mature GEiGS-siRNA targeting GFP- used in SWAP6 (based on miR390) and in SWAP2 (based on miR173) |
| 48 | Complementary strand of mature GEiGS-siRNA targeting GFP- used in SWAP6 (based on miR390) and in SWAP2 (based on miR173) |
| 49 | mature GEiGS-siRNA targeting AtPDS3- used in SWAP7 (based on miR390) and in SWAP3 (based on miR173) |
| 50 | Complementary strand of mature GEiGS-siRNA targeting AtPDS3- used in SWAP7 (based on miR390) and in SWAP3 (based on miR173) |
| 51 | mature GEiGS-siRNA targeting AtPDS3- used in SWAP8 (based on miR390) and in SWAP4 (based on miR173) |
| 52 | Complementary strand of mature GEiGS-siRNA targeting AtPDS3- used in SWAP8 (based on miR390) and in SWAP4 (based on miR173) |
| 53 | mature GEiGS-siRNA targeting AtADH1- used in SWAP11 (based on miR390) and in SWAP9 (based on miR173) |
| 54 | Complementary strand of mature GEiGS-siRNA targeting AtADH1- used in SWAP11 (based on miR390) and in SWAP9 (based on miR173) |
| 55 | mature GEiGS-siRNA targeting AtADH1- used in SWAP12 (based on miR390) and in SWAP10 (based on miR173) |

WHAT IS CLAIMED IS:

1. A method of modifying a gene encoding or processed into an RNA silencing molecule to a target RNA in a plant cell, the method comprising introducing into the plant cell a DNA editing agent which redirects a silencing specificity of said RNA silencing molecule towards a second target RNA, said target RNA and said second target RNA being distinct, thereby modifying the gene encoding the RNA silencing molecule.

2. The method of claim 1, wherein the gene encoding the RNA silencing molecule is endogenous to the plant cell.

3. The method of any one of claims 1 or 2, wherein said modifying said gene encoding said RNA silencing molecule comprises imparting said RNA silencing molecule with at least 45 % complementarity towards said second target RNA.

4. The method of any one of claims 1-3, wherein said silencing specificity of said RNA silencing molecule is determined by measuring a RNA level of said second target RNA and/or is determined phenotypically and/or is determined genotypically.

5. A method of modifying a gene encoding or processed into a non-coding RNA molecule having no RNA silencing activity in a plant cell, the method comprising introducing into the plant cell a DNA editing agent conferring a silencing specificity of said non-coding RNA molecule towards a target RNA of interest, thereby modifying the gene encoding or processed into the non-coding RNA molecule.

6. The method of any one of claims 1-5, wherein said RNA silencing molecule or said non-coding RNA molecule is processed from a precursor,

optionally wherein said RNA silencing molecule is a RNA interference (RNAi) molecule selected from the group consisting of a small interfering RNA (siRNA), a short hairpin RNA (shRNA), a microRNA (miRNA), a Piwi-interacting RNA (piRNA) and trans-acting siRNA (tasiRNA),

optionally wherein said RNAi molecule is designed such that a sequence of said RNAi molecule is modified to preserve secondary RNA structure and to be recognized by cellular

RNAi factors.

7. The method of any one of claims 1-6, wherein said modifying said gene is effected by a modification selected from the group consisting of a deletion, an insertion, a point mutation and a combination thereof,

optionally wherein said modification is in a stem region; in a loop region; in a stem region and a loop region; in a non-structured region; or in a stem region, a loop region and a non-structured region of said RNA silencing molecule or said non-coding RNA molecule,

optionally wherein said modification comprises a modification of at most 200 nucleotides.

8. The method of claim 7, wherein said method further comprises introducing into the plant cell a donor oligonucleotide sequence.

9. The method of any one of claims 1-8, wherein said DNA editing agent comprises at least one gRNA operatively linked to a plant expressible promoter,

optionally wherein said DNA editing agent comprises an endonuclease

optionally wherein said DNA editing agent is of a DNA editing system selected from the group consisting of a meganuclease, a zinc finger nucleases (ZFN), a transcription-activator like effector nuclease (TALEN) and CRISPR,

optionally wherein said endonuclease comprises Cas9.

10. The method of any one of claims 1-9, wherein said target RNA of interest or said second target RNA is exogenous to the plant cell.

11. A method of producing a plant with reduced expression of a target gene, the method comprising:

(a) breeding a plant comprising a plant cell generated according to the method of any one of claims 1-10; and

(b) selecting for progeny plants that have reduced expression of said target RNA of interest or said second target RNA, or progeny that comprises a silencing specificity in said non-coding RNA molecule towards a target RNA of interest, and which do not comprise said DNA editing agent,

thereby producing said plant with reduced expression of a target gene.

12. A method of generating a pathogen or pest tolerant or resistant plant, the method comprising modifying a gene encoding or processed into a non-coding RNA molecule or into a RNA silencing molecule in a plant cell according to any one of claims 1-10, wherein said second target RNA or said target RNA of interest is of a gene of the plant conferring sensitivity to said pathogen or said pest, or wherein the second target RNA or said target RNA of interest is a gene of said pathogen or said pest, thereby generating the pathogen or pest tolerant or resistant plant.

13. A plant cell generated according to the method of any one of claims 1-10.

14. A plant comprising the plant cell of claim 13 or generated according to the method of any one of claims 11-12, and optionally wherein said plant is non-genetically modified (non-GMO).

15. A seed of the plant of claim 14.