WE CLAIM

1. An engineered plant comprising at least four genes of interest, wherein the genes of interest comprise a gene that encodes a plasma membrane ion transporter and a gene that encodes a vacuolar ion transporter, wherein the genes of interest further comprise two genes selected from the group consisting of: a gene that encodes a potassium transporter, a hydrogen exporting ATPase, a protein kinase and/or an antioxidant, wherein each gene of interest is operatively linked to an enhancer element and wherein the enhancer elements alter the expression level of the genes of interest compared to the expression level of the genes of interest in a wild-type plant.

2. The engineered plant of claim 1, wherein:
(a) the at least four genes of interest encode OsSOS1, OsNHX1, OsHKT1 and OsSODA1; optionally wherein the OsSOS1 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 95 and/or 96; wherein the OsNHX1 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 97 and/or 98; wherein the OsHKT1 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 99; wherein the OsSODA1 gene comprises a polynucleotide sequence that encodes a polypeptide comprising an amino acid sequence that has at least 95% sequence identity to SEQ ID NO: 92; or

(b) the at least four genes of interest encode OsSOS1, OsNHX1, OsHKT1 and OsAHA3, optionally wherein the OsSOS1 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 95 and/or 96; wherein the OsNHX1 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 97 and/or 98; wherein the OsHKT1 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 99; wherein the OsAHA3 gene comprises a polynucleotide sequence that encodes a polypeptide comprising an amino acid sequence that has at least 95% sequence identity to SEQ ID NO: 101, or

(c) the at least four genes of interest encode OsSOS1, OsNHX1, OsSOS2 and OsVHA-A, optionally wherein the OsSOS1 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 95 and/or 96; wherein the OsNHX1 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 97 and/or 98; wherein the OsSOS2 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 100; wherein the OsVHA-A gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 102.

3. The engineered plant according to claim 1 or claim 2, wherein the engineered plant comprises at least seven genes of interest, wherein the at least seven genes of interest comprise

(a) a gene that encodes a plasma membrane ion transporter and wherein the gene that encodes a plasma membrane ion transporter is operatively linked to an enhancer element;

(b) a gene that encodes a plasma membrane hydrogen exporting ATPase and wherein the gene that encodes a plasma membrane hydrogen exporting ATPase is operatively linked to an enhancer element;
(c) a gene that encodes a protein kinase and wherein the gene that encodes a protein kinase is operatively linked to an enhancer element;
(d) a gene that encodes a vacuolar hydrogen exporting ATPase and wherein the gene that encodes a vacuolar hydrogen exporting ATPase is operatively linked to an enhancer element;
(e) a gene that encodes a vacuolar sodium/proton transporter and wherein the gene that encodes a vacuolar sodium/proton transporter is operatively linked to an enhancer element;
(f) a gene that encodes a potassium transporter and wherein the gene that encodes a potassium transporter is operatively linked to an enhancer element; and
(g) a gene that encodes an antioxidant and the gene that encodes an antioxidant is operatively linked to an enhancer element.

4. The engineered plant according to any one of claims 1-3, wherein the engineered plant comprises at least eight genes of interest, wherein the at least eight genes of interest comprise
(a) a gene that encodes a plasma membrane ion transporter and wherein the gene that encodes a plasma membrane ion transporter is operatively linked to an enhancer element;
(b) a gene that encodes a plasma membrane hydrogen exporting ATPase and wherein the gene that encodes a plasma membrane hydrogen exporting ATPase is operatively linked to an enhancer element;
(c) a gene that encodes a protein kinase and wherein the gene that encodes a protein kinase is operatively linked to an enhancer element;
(d) a gene that encodes a vacuolar hydrogen exporting ATPase and wherein the gene that encodes a vacuolar hydrogen exporting ATPase is operatively linked to an enhancer element;
(e) a gene that encodes a vacuolar sodium/proton transporter and wherein the gene that encodes a vacuolar sodium/proton transporter is operatively linked to an enhancer element;
(f) a gene that encodes a potassium transporter and wherein the gene that encodes a potassium transporter is operatively linked to an enhancer element;
(g) a gene that encodes a first antioxidant and the gene that encodes a first antioxidant is operatively linked to an enhancer element; and
(h) a gene that encodes a second antioxidant and the gene that encodes a second antioxidant is operatively linked to an enhancer element.

5. The engineered plant according to claim 3 or claim 4, wherein:
(a) the plasma membrane ion transporter is SOS1; and/or
(b) the plasma membrane hydrogen exporting ATPase is AHA3; and/or
(c) the protein kinase is SOS2; and/or
(d) the vacuolar hydrogen exporting ATPase is VHA-A; and/or
(e) the vacuolar ion transporter is NHX1; and/or
(f) the potassium transporter is HKT1; and/or
(g) the antioxidant(s) is (are) SODA1, SOD2 and/or SODCC1.

optionally wherein:

(a) the SOS1 is OsSOS1, optionally wherein the OsSOS1 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 95 and/or 96; and/or

(b) the AHA3 is OsAHA3, optionally wherein the OsAHA3 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 101; and/or

(c) the SOS2 is OsSOS2, optionally wherein the OsSOS2 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 100; and/or

(d) the VHA-A is OsVHA-A, optionally wherein the OsVHA-A gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 102; and/or

(e) the NHX1 is OsNHX1, optionally wherein the OsNHX1 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 97 and/or 98; and/or

(f) the HKT1 is OsHKT1, optionally wherein the OsHKT1 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 99;

(g) the SODA1 is OsSODA1, optionally wherein the OsSODA1 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 92; and/or

(h) the SOD2 is OsSOD2, optionally wherein the OsSOD2 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 93; and/or

(i) the SODCC1 is OsSODCC1, optionally wherein the OsSODCC1 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 94.

6. An engineered rice plant comprises at least eight genes of interest, wherein the at least eight genes of interest encode OsSOS1, OsSOS2, OsAHA3, OsVHA-A, OsNHX1, OsHKT1, OsSODA1 and OsSOD2/OsSODCC1;wherein the gene that encodes OsSOS1 is operatively linked to an enhancer element; wherein the gene that encodes OsSOS2 is operatively linked to an enhancer element; wherein the gene that encodes OsAHA3 is operatively linked to an enhancer element; wherein the gene that encodes OsVHA-A is operatively linked to an enhancer element; wherein the gene that encodes OsNHX1 is operatively linked to an enhancer element; wherein the gene that encodes OsHKT1 is operatively linked to an enhancer element; wherein the gene that encodes OsSODA1 is operatively linked to an enhancer element and wherein the gene that encodes OsSOD2/OsSODCC1 is operatively linked to an enhancer element;

optionally wherein the OsSOS1 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 95 and/or 96; wherein the OsSOS2 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 100; wherein the OsAHA3 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 101; wherein the OsVHA-A gene comprises a polynucleotide sequence

that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 102; wherein the OsNHX1 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 97 and/or 98; wherein the OsHKT1 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 99; wherein the OsSODA1 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 92; and wherein the OsSOD2 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 93 or the OsSODCC1 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 94.

7. The engineered plant according to any one of the preceding claims, wherein:

(a) the enhancer elements have the same polynucleotide sequence or wherein the enhancer elements have different polynucleotide sequences;

(b) the enhancer element increases or decreases the expression level of the gene of interest compared to the expression level of the gene of interest in a wild-type plant, optionally wherein the enhancer element increases the expression level of the gene of interest, compared to the expression level of the gene of interest in a wild-type plant, in at least one part of the plant during at least one developmental stage of the plant;

(c) the enhancer element alters the expression level of the gene of interest in the root, shoot, leaf, seed or stem, optionally wherein the enhancer element alters the expression level of the gene of interest in the root;

(d) the enhancer element alters the expression level of the gene of interest during germination, when the plant is growing, when the plant is flowering and/or when the plant is developing fruit;

(e) the enhancer element comprises at least 10, at least 20, or at least 30 nucleotides;

(f) the enhancer element is within 150-500 nucleotides of the 5′ end of an open reading frame of the gene of interest;

(g) the enhancer element comprises a root-specific promoter;

(h) all of the genes of interest are operably linked to enhancer elements comprising a root-specific promoter;

(i) the enhancer element comprises a DREB2A, gibberellin, ethylene or auxin promoter sequence or a combination thereof, optionally wherein all of the genes of interest are operably linked to enhancer elements comprising a DREB2A, gibberellin, ethylene or auxin promoter sequence or a combination thereof;

(j) the enhancer element comprises at least 6 nucleotides from a promoter element from a DREB2A, gibberellin, ethylene or auxin promoter sequence or a combination thereof, optionally wherein all of the genes of interest are operably linked to an enhancer element comprising a promoter element from a DREB2A, gibberellin, ethylene or auxin promoter sequence;

(k) the enhancer element comprises a TAF-1, TATA, E2F, G-BOX, or CAAT promoter sequence or a combination thereof;

(l) all of the genes of interest are operably linked to an enhancer element comprising a TAF-1, TATA, E2F, G-BOX, or CAAT promoter sequence;

(m) the enhancer element comprises a sequence having at least 95% sequence identity to any one of SEQ ID NO: 10-18;

(n) each gene of interest encodes a separate protein; and/or

(o) the engineered plant is an angiosperm, optionally wherein the engineered plant is monocotyledonous or dicotyledonous, further optionally wherein:

(i) the engineered plant is a cereal crop, optionally wherein the engineered plant is maize, rice, soybean, sugar cane, mung bean, quinoa, barley, oat, rye, sorghum, or wheat, further optionally wherein engineered plant is an engineered rice plant; or

(ii) the engineered plant is a vegetable crop, optionally wherein the engineered plant is from the genus a *Brassica*, *Glycine*, or *Soja*.

8. The engineered plant according to any one of the preceding claims, wherein:

(a) the OsSOS1 gene is operably linked to an enhancer element comprising SEQ ID NO: 12, and/or

(b) the OsSOS2 gene is operably linked to an enhancer element comprising SEQ ID NO: 13, and/or

(c) the OsAHA3 gene is operably linked to an enhancer element comprising SEQ ID NO: 14, and/or

(d) the OsVHA-A gene is operably linked to an enhancer element comprising SEQ ID NO: 11, and/or

(e) the OsNHX1 gene is operably linked to an enhancer element comprising SEQ ID NO: 10, and/or

(f) the OsHKT1 gene is operably linked to an enhancer element comprising SEQ ID NO: 15, and/or

(g) the OsSODA1 gene is operably linked to an enhancer element comprising SEQ ID NO: 16, and/or

(h) the OsSODCC1 gene is operably linked to an enhancer element comprising SEQ ID NO: 17, and/or

(i) the OsSOD2 gene is operably linked to an enhancer element comprising SEQ ID NO: 18.

9. An engineered rice plant comprising at least eight genes of interest, wherein the eight genes of interest encode OsSOS1, OsSOS2, OsAHA3, OsVHA-A, OsNHX1, OsHKT1, OsSODA1 and OsSOD2;

wherein the OsSOS1 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 95 and/or 96; wherein the OsSOS2 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 100; wherein the OsAHA3 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 101; wherein the OsVHA-A gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 102; wherein the OsNHX1 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 97 and/or 98; wherein the OsHKT1 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 99; wherein the OsSODA1 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 92; wherein the OsSOD2 gene comprises a polynucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 93;

wherein the OsSOS1 gene is operably linked to an enhancer element comprising SEQ ID NO: 12, the OsSOS2 gene is operably linked to an enhancer element comprising SEQ ID NO: 13, the OsAHA3 gene is operably linked to an enhancer element comprising SEQ ID NO: 14, the OsVHA-A gene is operably linked to an enhancer element comprising SEQ ID NO: 11, the OsNHX1 gene is operably linked to an enhancer element comprising SEQ ID NO: 10, the OsHKT1 gene is operably linked to an enhancer element comprising SEQ ID NO: 15, the OsSODA1 gene is operably linked to an enhancer element comprising SEQ ID NO: 16 and the OsSOD2 gene is operably linked to an enhancer element comprising SEQ ID NO: 18.

10. A plant part of the engineered plant according to any one of claims 1-9, optionally wherein the plant part is a cell, a seed, a leaf, a shoot, a stem or a root, optionally wherein the plant part is a seed or a cell.

11. A multicellular structure comprising one or more plant cells according to claim 10, optionally wherein the multicellular structure is a callus.

12. A method of making the engineered plant, the plant part or the multicellular structure according to claims 1-11, the method comprising the steps of

i) introducing at least two enhancer elements as defined in the engineered plants according to claims 1-9 into a cell of a plant, wherein the enhancer elements integrate into the genome of the cell of the plant such that they are operatively linked to the genes of interest, and

ii) regenerating the cell to form an engineered plant, a plant part or a multicellular structure from the cell.

optionally wherein the enhancer elements are introduced into the cell by particle bombardment, *Agrobacterium* mediated transformation or by protoplast transfection.

13. The method according to claim 12, wherein the methods involves:

(a) inducing callus formation from a seed;

(b) precipitating the enhancer elements as defined in the engineered plants according to claims 1-9, two or more guide RNAs and one or more nucleases onto a microcarrier;

(c) transforming the callus with the microcarriers using particle bombardment to generate a transformed callus wherein the enhancer elements integrate into the genome of the engineered plant, the plant part or the multicellular structure such that they are operatively linked to the genes of interest;

(d) recovering the transformed callus to generate a multicellular structure according to claim 11;

optionally wherein:

(i) the multicellular structure is regenerated into an engineered plant;

(ii) the polynucleotide sequence is stably integrated into the genome of the plant; and/or

(iii) the nuclease is a Cas nuclease, Cpf1 nuclease, a TALEN or a zinc finger nucleases, optionally wherein the nuclease is Cas9 or Cpf1.

14. The engineered plant, plant part or multicellular structure according to claims 1-11, wherein the engineered plant, the plant part or the multicellular structure is not produced by a process that involves homologous recombination and/or is not produced by an essentially biological process.

15. Use of an engineered plant according to any one of claims 1 to 9, plant part according to claim 10 or multicellular structure according to claim 11, as animal feed, or to produce feed for animal consumption or food for human consumption.