CLAIMS

1. A mutant, non-naturally occurring or transgenic tobacco plant cell comprising:

(i) a polynucleotide comprising, consisting or consisting essentially of a sequence encoding a member of the CLC family of chloride channels and having at least 60% sequence identity to SEQ ID NO:4 or SEQ ID NO:11;

(ii) a polypeptide encoded by the polynucleotide set forth in (i);

(iii) a polypeptide comprising, consisting or consisting essentially of a sequence encoding a member of the CLC family of chloride channels and having at least 60% sequence identity to SEQ ID NO:13 or SEQ ID NO:14; or

(iv) a construct, vector or expression vector comprising the isolated polynucleotide set forth in (i),

and wherein the expression or activity of the polynucleotide or the polypeptide is modulated as compared to a control plant containing a control plant cell and wherein the biomass levels in the mutant, non-naturally occurring or transgenic plant containing the mutant, non-naturally occurring or transgenic plant cell are modulated as compared to the control plant containing the control plant cell.

2. The mutant plant cell according to claim 1, wherein said mutant, non-naturally occurring or transgenic plant cell comprises one or more mutations that increase the level of biomass in the mutant, non-naturally occurring or transgenic plant containing the mutant, non-naturally occurring or transgenic plant cell as compared to the control plant containing the control plant cell.

3. The mutant plant cell according to claim 1 or claim 2 wherein the mutation(s) comprise a deletion, insertion, substitution or missense mutation at position P184 of SEQ ID NO:13.

4. The mutant plant cell according to claim 3 wherein the mutation is a substitution mutation.

5. The mutant plant cell according to claim 4 wherein the substitution mutation is P184S, as shown in SEQ ID NO:15.

6. The mutant plant cell according to any of claims 1 to 5 wherein the mutation is heterozygous.

7. The mutant plant cell according to any of claims 1 to 5 wherein the mutation is homozygous.

8. A mutant, non-naturally occurring or transgenic plant or component thereof comprising the plant cell according to any of claims 1 to 7.

9. A mutant, non-naturally occurring or transgenic plant, plant component or plant cell according to any of claims 1 to 8 wherein additionally the nitrate content is modulated.

10. A mutant, non-naturally occurring or transgenic plant, plant component, or plant cell according to any of claims 1 to 9 wherein additionally, the 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone (NNK) content is modulated.

11. A mutant, non-naturally occurring or transgenic plant, plant component, or plant cell according to claim 9 or 10 wherein the mutation(s) further comprise deletion, insertion, substitution or missense mutation at position P143 of SEQ ID NO:13.

12. A mutant, non-naturally occurring or transgenic plant, plant component, or plant cell according to claim 11 wherein the mutation at position P143 of SEQ ID NO:13 is substitution mutation P143L.

13. A method for modulating at least the biomass content of a tobacco plant or a component thereof, comprising the steps of:

(a) modulating the expression or activity of:

(i) a polynucleotide comprising, consisting or consisting essentially of a sequence encoding a member of the CLC family of chloride channels and having at least 60%

sequence identity to SEQ ID NO:4 or SEQ ID NO:11;

(ii) a polypeptide encoded by the polynucleotide set forth in (i); or

(iii) a polypeptide comprising, consisting or consisting essentially of a sequence encoding a member of the CLC family of chloride channels and having at least 60% sequence identity to SEQ ID NO:13 or SEQ ID NO:14;
and measuring the biomass yield of the mutant;

(b) optionally measuring at least the nitrate content in at least a part of the mutant, non-naturally occurring or transgenic tobacco plant obtained in step (a); and

(c) identifying a mutant, non-naturally occurring or transgenic tobacco plant in which at least the biomass has changed in comparison to a control plant in which the expression or activity of the polynucleotide or the polypeptide set forth in (a) has not been modulated.

14. The method according to claim 13, wherein additionally the nitrate content in the plant is modulated.

15. The method according to claim 13 or claim 14, wherein additionally the 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone (NNK) content is modulated in the plant.

16. The method according to any of claims 13 to 15 wherein additionally the nicotine content is modulated in the plant.

17. The method according to any of claims 13 to 16 wherein at least the N-nitrosonicotine (NNN) content is substantially the same as the control plant.

18. The method according to any of claims 13 to 17, wherein the component of the plant is a leaf, suitably, a cured leaf.

19. A tobacco plant or a component thereof that is obtained or obtainable by the method according to any of claims 13 to 18.

20. Plant material including biomass, seed, stem or leaves from the plant of any of claims 8 or 19.

21. A tobacco product comprising the plant cell of claim 1, at least a part of the plant of any one of claims 8 or 19, plant material according to claim 20, or suitably processed plant material according to claim 20.

22. An isolated polynucleotide comprising, consisting, or consisting essentially of a sequence encoding a member of the CLC family of chloride channels and having at least 60% sequence identity to SEQ ID NO:4 or SEQ ID NO:11.

23. A polynucleotide construct, vector, or expression vector comprising a polynucleotide according to claim 22.

24. An isolated polypeptide encoded by a polynucleotide according to claim 22.

25. An isolated polypeptide according to claim 23, comprising, consisting or consisting essentially of a sequence having at least 60% sequence identity to SEQ ID NO:13 or SEQ ID NO:14.

26. A tobacco plant or a part thereof comprising a suitably homozygous mutation in a CLC gene as set forth in SEQ ID No. 15.