CLAIMS

1. A method for producing a heterologous peptide or protein of interest comprising:

a) contacting a whole and intact plant, or a part of a whole and intact plant, with Agrobacterium cells suspended in a fluid, wherein the Agrobacterium cells comprise an expressible construct encoding the heterologous peptide or protein of interest;

b) treating the whole and intact plant or a part of the whole and intact plant and the Agrobacterium cells with one or more pressure cycle(s) whereby the Agrobacterium cells infiltrate the whole plant, or the plant part,

wherein at least one of the pressure cycle(s) comprises an increase in pressure relative to atmospheric pressure and is maintained for a period of between 0.5 seconds and 60 seconds.

2. A method for infiltrating Agrobacterium cells into a whole and intact plant, or a part of a whole intact plant comprising:

a) contacting a whole and intact plant, or a part of a whole and intact plant, with Agrobacterium cells suspended in a fluid;

b) treating the whole plant or a part of the whole and intact plant and the Agrobacterium cells with one or more pressure cycle(s),

wherein at least one of the pressure cycle(s) comprises an increase in pressure relative to atmospheric pressure and is maintained for a period of between 0.5 seconds and 60 seconds.

3. The method of ~~any one of the preceding claims~~claim 1, wherein the expressible construct is a plant expressible construct and is selected to provide transient expression of the heterologous peptide or protein of interest.

4. The method of any one of claims 1 to 3, wherein the infiltration of the whole plant or a part of the whole and intact plant and the Agrobacterium cells is carried out in the presence of a surfactant.

5. The method of any one of claims 1 to 4, wherein the one or more pressure cycle(s) do not comprise a target pressure that is a negative pressure.

6. The method of any one of claims 1 to 4, wherein the one or more pressure cycle(s) comprise a first target pressure that is a positive pressure, as well as a second target pressure that is a negative pressure.

7. The method of any one of claims 1 to 4, wherein the one or more pressure cycle(s) comprise a first target pressure that is a negative pressure, as well as a second target pressure that is a positive pressure.

~~4~~8. The method of any one of the preceding claims, wherein the pressure is maintained for a period of between 0.5 seconds and 60 seconds.

~~5~~9. The method of any one of the preceding claims, wherein the pressure is applied to the whole and intact plant or a part of the whole and intact plant, while said plant or plant part is in contact with the Agrobacterium cells in the bacterial cell suspension.

~~6~~10. The method of any one of the preceding claims, wherein the suspension of Agrobacterium cells comprises an OD600 of at least 1.0.

~~7~~11. The method of any one of the preceding claims, wherein the whole plant or the plant part and the Agrobacterium cells are treated with one or more pressure cycle(s) within a closed system, particularly a system comprising a chamber configured for receiving a whole plant, or a plant part, and a means for adjustably increasing air and/or fluid pressure in the chamber.

~~8~~12. The method of claim ~~7~~11, wherein the chamber is configured such that the entire plant body including its aerial and underground parts is submerged in the infiltration medium containing the Argobacterium cells and subjected to the pressure applied during the one or more pressure cycle(s).

~~9~~13. The method of claim ~~7~~11, wherein the chamber is configured such that only all or part of the aerial parts of the plant is submerged in the infiltration medium containing the Argobacterium cells, but the entire plant including the aerial parts as well as the underground parts of the plant is subjected to the pressure applied during the one or more pressure cycle(s).

~~10~~14. The method of claim ~~7~~11, wherein the chamber is configured such that all or part of the aerial parts of the plant are submerged in the infiltration medium containing the Argobacterium cells and exposed to pressure in the one or more pressure cycles, whereas the underground parts of the plant, particularly the plant root, are positioned outside of the chamber such that they are not submerged in the

infiltration medium containing the Agrobacterium cells and not subjected to the pressure applied during the one or more pressure cycle(s).

~~14~~15. The method of any one of the preceding claims, wherein the step of treating the whole plant or the plant part comprises

a) at least 2 cycles; or
b) at least 3 cycles; or
c) at least 4 cycles; or
d) at least 8 cycles.

~~15~~16. The method of any one of the preceding claims, wherein at least one of the pressure cycles comprises treating the whole plant or the plant part with a pressure of

a) at least 3.5 bar; or
b) at least 4.5 bar; or
c) at least 6.5 bar; or
d) at least 8 bar; or
e) at least 12 bar.

~~16~~17. The method of any one of the preceding claims, wherein the pressure is applied for between

a) 0.5 seconds/cycle and 10 seconds/cycle; or
b) 1 second/cycle and 5 seconds/cycle; or
c) 0.5 seconds/cycle and 1 second/cycle.

~~17~~18. The method of any one of the preceding claims, wherein the step of treating the whole plant or the plant part with a pressure that is increased relative to atmospheric pressure comprises

a) at least 1 cycle, at a pressure of at least 8 bar, for at least 0.5 seconds/cycle; or
b) at least 2 cycles, at a pressure of at least 6 bar, for at least 0.5 seconds/cycle; or

c) at least 8 cycles, at a pressure of at least 4.5 bar, for at least 1 second/cycle.

~~15~~19. The method any one of the preceding claims, wherein the step of treating the whole plant or the plant part with a pressure that is increased relative to atmospheric pressure comprises at least 8 cycles, at a pressure of at least 4.5 bar, for at least 1 second/cycle.

~~16~~20. The method of any one of the preceding claims, wherein the step of contacting the whole plant, or the plant part with Agrobacterium cells comprises

a) dipping the plant or a part thereof in a suspension of Agrobacterium cells, wherein the suspension comprises an OD600 of at least 2.5,

b) exposing the plant or a part thereof to an aerosol generated by using a suspension of Agrobacterium cells comprising an OD600 of at least 2.5.

~~17~~21. The method of any one of the preceding claims, wherein the steps comprise

a) submerging the plant or a part thereof in a suspension of Agrobacterium cells in an enclosed chamber, and

b) applying liquid fluid pressure to the suspension of Agrobacterium cells comprising the submerged plant or part thereof.

~~18~~22. The method of any one of the preceding claims, wherein the plant is a Nicotiana species, particularly a *Nicotiana tabacum* species, at a development stage of 8, 9, or 10, wherein the plants have an average height of between about 6.5 cm and about 16.5 cm.

~~19~~23. The method of any one of the preceding claims, wherein all the pressure cycles applied comprise an increase in pressure relative to atmospheric pressure.

~~20~~24. The method of any of the preceding claims, wherein the pressure treatment comprising one or more pressure cycle(s) is applied while the whole and intact

plant or a part of the whole and intact plant are submerged in the bacterial cell suspension.

~~21~~25. The method of any one of the preceding claims, wherein a plurality of plants or plant parts is contacted with Agrobacterium cells suspended in a fluid and treated with one or more pressure cycles.

~~22. A system for infiltrating Agrobacterium bacteria into a whole and intact plant or a part of a whole and intact plant and/or for producing a heterologous peptide or protein in a whole and intact plant or a part of a whole and intact plant comprising a chamber configured for receiving the whole plant or the plant part, and a means configured for adjustably increasing air and/or fluid pressure in the chamber.~~

~~23. The system of claim 22, comprising a compressor and a pressure reducer.~~

~~24. The system of claim 22, comprising a plurality of inlets, outlets and conduits for providing a fluid path between the interior and exterior of the chamber, wherein the flow of fluid is regulated.~~

~~25. The system of any one of claims 22 or 24, wherein the chamber comprises, in the interior, a plurality of nozzles that are dimensioned for atomizing or aerosolizing a liquid.~~

~~26. The system of any one of claims 22 to 25, wherein the chamber is configured such that the entire plant body including its aerial and underground parts is submerged in the infiltration medium containing the Argobacterium cells and subjected to the pressure applied during the one or more pressure cycle(s).~~

~~27. The system of any one of claims 22 to 25, wherein the chamber is configured such that only all or part of the aerial parts of the plant are submerged in the infiltration medium containing the Argobacterium cells, but the entire plant~~

~~including the aerial parts as well as the underground parts of the plant is~~ subjected to the pressure applied during the one or more pressure cycle(s).

28. The system of any one of claims 22 to 25, wherein the chamber is configured such that all or part of the aerial parts of the plant are submerged in the infiltration medium containing the Argobacterium cells and exposed to pressure in the one or more pressure cycles, whereas the underground parts of the plant, particularly the plant root, are positioned outside of the chamber such that they are not submerged in the infiltration medium containing the Agrobacterium cells and not subjected to the pressure applied during the one or more pressure cycle(s).

29. The system of claim 28, wherein the chamber comprises one or more openings to allow passage of the aerial parts of the plant during insertion or removal, which openings are lined with elastic seals.

30. The system of claim 29, wherein said elastic seal is an elastic pneumatic or hydraulic seal.

31. Use of a system according any of claims 22 to 30 for infiltrating Agrobacterium bacteria into a whole plant or a plant part and/or for producing a ~~heterologous peptide or protein in a whole plant or a plant part.~~