Claims:

1. A method to produce microorganisms which resist the phenomenon of lactose killing when grown in an environment in which lactose is combined with another carbon source, wherein said method comprises:

a. reducing or increasing the expression of a lactose transporter within microorganisms,
b. growing said mutated microorganisms on a medium comprising a carbon-source which is not lactose,
c. adding lactose to said medium during growth of said mutated microorganisms, and
d. selecting the microorganisms which resist the phenomenon of lactose killing growing on said medium comprising lactose and which retain at least 50% of the lactose influx obtained with the wild type expression cassette of said lactose transporter.

2. A method according to claim 1, wherein step a) is undertaken by introducing a heterologous promoter in front of an endogenous or exogenous lactose transporter gene, and/or, by mutating the untranslated region in front of the coding sequence that contains the ribosome binding or Kozak sequences and/or by modifying the codon usage of the endogenous lactose transporter gene.

3. A method according to claim 2 wherein said introduction of a heterologous promoter in front of an endogenous or exogenous lactose transporter gene is undertaken by: a) deleting the endogenous lactose transporters from the genome and reintroducing them at another location within the genome of said microorganism, or, b) by introducing a heterologous promoter in front of the endogenous lactose transporters, or, c) by knocking out the endogenous lactose promoter and introducing a heterologous promoter at the same location in the genome of said microorganism.

4. A method according to claims 1-3 wherein said expressed lactose transporter is detected via translational coupling with a reporter gene and/or via aptamer coupling.

5. A method according to claims 1-4 wherein said expressed lactose transporter is detected via genetic constructs as given by SEQ ID no 2, 3, 4 and /or 5.

6. A method according to claims 1-5 wherein said lactose transporter is a lactose permease.

7. A method according to claims 1-6 wherein said microorganism is a bacterium, a yeast or a fungus cell.

8. Promoter sequences, untranslated region sequences in front of the coding sequence that contain ribosome binding sequences or Kozak sequences, and/or lactose permease sequences that lead to the expression of a lactose transporter, that does not result into lactose killing phenotype, and, that are obtainable by the a method according to claims 1-7.

9. A microorganism wherein the expression of a lactose transporter has been reduced or increased within said microorganism, which microorganism resists the phenomenon of lactose killing when grown in an environment in which lactose is combined with (an)other carbon source(s) and which retains at least 50% of the lactose influx obtained with the wild type expression cassette of said lactose transporter, and, is obtainable by a method according to claims 1-7.

10. A microorganism according to claim 9, and, having a heterologous sequence in front of a lactose transporter gene as given by SEQ ID no 1, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19,20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56 or 57.

11. A microorganism according to claims 9 – 10 in which the genes coding for the enzymes from the lactose and/or galactose degradation pathways are rendered less functional or non-functional.

12. Use of a microorganism and/or sequence according to claims 9-11 and/or claim 8, respectively for the production of lactose- and/or galactose-based specialty products.

13. Use of a microorganism and/or sequence according to claim 12 wherein said lactose-based specialty products are specialty carbohydrates, glycolipids and galactosylated compounds.

14. Use of a microorganism according to claim 13 wherein said specialty carbohydrates are 2-fucosyllactose or 2'-fucosyllactose or 3-fucosyllactose or 2',3-difucosyllactose or lacto*N*triose or lacto-N-tetraose, or lacto-nN-tetraose or 3'sialyllactose or 6'sialyllactose.