

What is claimed is:

1. A nutritional composition comprising human milk oligosaccharides (HMOs),
wherein:
 - (a) about 60-80% of the HMOs are sialylated, about 0-20% are fucosylated, and
5 about 10-30% are neither sialylated or fucosylated; or
 - (b) about 20-40% of the HMOs are sialylated, about 40-60% are fucosylated, and
about 10-30% are neither sialylated or fucosylated; or
 - (c) about 10-30% of the HMOs are sialylated, about 10-30% are fucosylated, and
about 50-70% are neither sialylated or fucosylated.
- 10 2. The composition of claim 1, wherein:
 - (a) about 70% of the HMOs are sialylated, about 10% are fucosylated, and about
20% are neither sialylated or fucosylated; or
 - (b) about 30% of the HMOs are sialylated, about 50% are fucosylated, and about
20% are neither sialylated or fucosylated; or
 - 15 (c) about 20% of the HMOs are sialylated, about 20% are fucosylated, and about
60% are neither sialylated or fucosylated.
3. The composition of claims 1 or 2, wherein
 - (1) the sialylated HMOs comprise 3'-sialyllactose (3SL) and/or 6'-sialyllactose
(6SL);
 - 20 (2) the fucosylated HMOs comprise 2'-fucosyllactose (2FL) and/or 3'-
fucosyllactose (3FL); and
 - (3) the HMOs that are neither sialylated or fucosylated comprise lacto-N-
biose (LNB), lacto-N-neotetraose (LnNT) and/or lacto-N-tetraose.
4. The composition of any of claims 1-3, further comprising:
 - 25 (i) a protein source,
 - (ii) a lipid source,
 - (iii) a carbohydrate source,
 - (iv) a prebiotic comprising polydextrose and/or galacto-oligosaccharides, and/or
 - (vi) a probiotic.
- 30 5. The composition of any of the preceding claims, wherein the HMOs are present at a
concentration ranging from about 0.005 g/100 kcal to about 1 g/100 kcal.

6. The composition of any of claims 4-5, wherein the probiotic comprises *Lactobacillus rhamnosus* GG.
7. The composition of any of claims 4-6, further comprising a long chain polyunsaturated fatty acid comprising docosahexaenoic acid and/or arachidonic acid.
- 5 8. The composition of any of claims 4-7, wherein the composition comprises per 100 kcal:
- (i) between about 1 g and about 7 g of a protein source,
- (ii) between about 1 g and about 10 g of a lipid source,
- (iii) between about 6 g and about 22 g of a carbohydrate source, and
- 10 (iv) between about 0.005 g and about 1 g of the HMOs.
9. The composition of claim 8, wherein the composition further comprises:
- (v) between about 0.1 g and 1.0 g of a galacto-oligosaccharide,
- (vi) between about 0.1 g and about 0.5 g of a polydextrose, and/or
- (vii) between about 1×10^5 cfu to about 1.5×10^9 cfu of *Lactobacillus rhamnosus* GG.
- 15 10. A method of providing a nutritional composition comprising HMOs to a pediatric subject, comprising:
- providing to the pediatric subject a nutritional composition comprising HMOs that correspond to the HMOs that are present in or would be present in the breast milk of the mother of the pediatric subject as determined by at least one of the secretor status
- 20 and Lewis blood group of the mother of the pediatric subject.
11. A method of providing a nutritional composition comprising HMOs to a pediatric subject, the method comprising:
- (1) determining the composition of HMOs that are present in or would be present in the breast milk of the mother of the pediatric subject as determined by the
- 25 mother's secretor status and/or Lewis blood group, and
- (2) providing to the pediatric subject a nutritional composition comprising an HMO profile most similar to the composition of HMOs as determined in step (1), wherein the HMO profile is selected from the group consisting of:
- (a) about 60-80% of the HMOs are sialylated, about 0-20% are fucosylated, and
- 30 about 10-30% are neither sialylated or fucosylated;

(b) about 20-40% of the HMOs are sialylated, about 40-60% are fucosylated, and about 10-30% are neither sialylated or fucosylated; and

(c) about 10-30% of the HMOs are sialylated, about 10-30% are fucosylated, and about 50-70% are neither sialylated or fucosylated.

5 12. The method of claim 11, wherein:

when the pediatric subject's mother is determined to have blood type Le(a+ b-) and/or the subject's mother's breast milk is determined to contain HMOs having α 1-2, α 1-3, and α 1-4-linked fucosyl residues, the nutritional composition provided to the pediatric subject comprises an HMO profile wherein about 60-80% of the HMOs are
10 sialylated, about 0-20% are fucosylated, and about 10-30% are neither sialylated or fucosylated.

13. The method of claim 11, wherein:

when the pediatric subject's mother is determined to have blood type Le(a- b-) and/or the subject's mother's breast milk is determined to contain HMOs having α 1-3
15 and α 1-4-linked fucosyl residues, but determined to lack HMOs having α 1-2-linked fucosyl residues, the nutritional composition provided to the pediatric subject comprises an HMO profile wherein about 20-40% of the HMOs are sialylated, about 40-60% are fucosylated, and about 10-30% are neither sialylated or fucosylated.

14. The method of claim 11, wherein:

20 when the pediatric subject's mother is determined to have blood type Le(a- b-) and/or the subject's mother's breast milk is determined to contain HMOs having α 1-2 and α 1-3-linked fucosyl residues, but determined to lack HMOs having α 1-4-linked fucosyl residues, the nutritional composition provided to the pediatric subject comprises an HMO profile wherein about 10-30% of the HMOs are sialylated, about 10-30% are
25 fucosylated, and about 50-70% are neither sialylated or fucosylated.