CLAIMS

What is claimed is:

1. Use of an infant formula in the manufacture of a composition for accelerating myelination in a formula-fed infant, the infant formula comprising a carbohydrate source; a protein equivalent source; a fat or lipid source; and dietary butyrate in an amount of from 0.1 mg/100 kcal to 300 mg/100 kcal.

2. Use of an infant formula in the manufacture of a composition for promoting brain development in a formula-fed infant, the infant formula comprising a carbohydrate source; a protein equivalent source; a fat or lipid source; and dietary butyrate in an amount of from 0.1 mg/100 kcal to 300 mg/100 kcal.

~~2~~3. The use of claim 1 or claim 2, wherein the infant formula further comprises a probiotic.

~~3~~4. The use of any of the previous claims~~claim 1 or claim 2~~, wherein the infant formula further comprises inositol.

~~4~~5. The use of any of the previous claims, wherein the infant formula comprises dietary butyrate that is provided by an enriched lipid fraction derived from bovine milk.

~~5~~6. The use of any of the previous claims, wherein the protein equivalent source includes a peptide component comprising SEQ ID NO 4, SEQ ID NO 13, SEQ ID NO 17, SEQ ID NO 21, SEQ ID NO 24, SEQ ID NO 30, SEQ ID NO 31, SEQ ID NO 32, SEQ ID NO 51, SEQ ID NO 57, SEQ ID NO 60, and SEQ ID NO 63.

~~6~~7. The use of any of the previous claims, wherein the infant formula further comprises one or more long chain polyunsaturated fatty acids comprising docosahexaenoic acid, arachidonic acid, and combinations thereof.

~~7~~8. The use of any of the previous claims, wherein the infant formula comprises *Lactobacillus rhamnosus* GG.

~~8~~9. A non-therapeutic method of accelerating myelination in a formula-fed infant, the non-therapeutic method comprising the step of administering to the formula-fed infant an infant

formula comprising a carbohydrate source; a protein equivalent source; a fat or lipid source; and dietary butyrate in an amount of from 0.1 mg/100 kcal to 300 mg/100 kcal.

~~9~~10. The non-therapeutic method of claim ~~8~~9, wherein the infant formula further comprises a probiotic.

~~10~~11. The non-therapeutic method of claim ~~8~~ 9 or claim ~~9~~10, wherein the infant formula further comprises inositol.

~~11~~12. The non-therapeutic method of any of claims ~~8~~ 9 to ~~10~~11, wherein the infant formula comprises dietary butyrate that is provided by an enriched lipid fraction derived from bovine milk.

~~12~~13. The non-therapeutic method of any of claims ~~8~~ 9 to ~~11~~12, wherein the protein equivalent source includes a peptide component comprising SEQ ID NO 4, SEQ ID NO 13, SEQ ID NO 17, SEQ ID NO 21, SEQ ID NO 24, SEQ ID NO 30, SEQ ID NO 31, SEQ ID NO 32, SEQ ID NO 51, SEQ ID NO 57, SEQ ID NO 60, and SEQ ID NO 63.

~~13~~14. The non-therapeutic method of any of claims ~~8~~ 9 to ~~12~~13, wherein the infant formula further comprises one or more long chain polyunsaturated fatty acids comprising docosahexaenoic acid, arachidonic acid, and combinations thereof.

~~14~~15. The non-therapeutic method of any of claims ~~8~~ 9 to ~~13~~14, wherein the infant formula comprises *Lactobacillus rhamnosus* GG.

~~15~~16. A staged feeding regimen for an infant or child, comprising the steps of:

A) administering a first infant formula comprising from 4 µg/mL to 36 µg/mL of dietary butyrate to the infant from birth to 3 months of age;

B) administering a second infant formula comprising from 6 µg/mL to 33 µg/mL of butyrate to the infant from 3 months of age to 6 months of age; and

C) administering a third infant formula comprising from 8 µg/mL to 40 µg/mL of butyrate to the infant from 6 months of age to 12 months of age,

wherein each of the first infant formula, the second infant formula and the third infant formula are different from each other.

~~16~~17. The staged feeding regimen of claim ~~15~~16, wherein the first infant formula comprises from 7 µg/mL to 22 µg/mL of dietary butyrate; the second infant formula comprises from 17 µg/mL

to 24 µg/mL of butyrate; and the third infant formula comprises from 17 µg/mL to 22 µg/mL of butyrate.

~~17~~18. The staged feeding regimen of claim ~~15~~ 16 or ~~16~~17, wherein the first infant formula further comprises at least one of the following selected from the group consisting of: i) up to 0.2 mg/100 kcal of iron; ii) up to 0.7 mg/100 kcal of zinc; iii) up to 2 g/100 kcal of protein; iv) a protein source comprising a whey:casein ratio of at least 72:28; v) up to 35 mg/100 kcal of inositol; and vii) from 1.8 µg/100 kcal to 2.0 µg/100 kcal of vitamin D.

~~18~~19. The staged feeding regimen of claim ~~15~~ 16 or ~~16~~17, wherein the second infant formula further comprises at least one of the following selected from the group consisting of: i) from 0.3 mg/100 kcal to 0.6 mg/100 kcal of iron; ii) up to 0.9 mg/100 kcal of zinc; iii) up to 1.9 g/100 kcal of protein; iv) a protein source comprising a whey:casein ratio of 56:44 to 68:32; v) up to 25 mg/100 kcal of inositol; vi) up to 9.0 mg/100 kcal of butyrate; and vii) from 1.8 µg/100 kcal to 2.0 µg/100 kcal of vitamin D.

~~19~~20. The staged feeding regimen of claim ~~15~~ 16 or ~~16~~17, wherein the third infant formula further comprises at least one of the following selected from the group consisting of: i) from 0.3 mg/100 kcal to 1.2 mg/100 kcal of iron; ii) up to 1 mg/100 kcal of zinc; iii) up to 1.5 g/100 kcal of protein; iv) a protein source comprising a whey:casein ratio of 45:55 to 56:44; v) up to 20 mg/100 kcal of inositol; vi) up to 9.0 mg/100 kcal of butyrate; and vii) from 1.8 µg/100 kcal to 2.0 µg/100 kcal of vitamin D.

~~20~~21. The staged feeding regimen of any one of claims ~~15~~ 16 to ~~19~~20, wherein the first infant formula, second infant formula, and third infant formula each further comprise docosahexaenoic acid.

~~21~~22. The staged feeding regimen of any one of claims ~~15~~ 16 to ~~20~~21, wherein the first infant formula, second infant formula, and third infant formula each further comprise a carbohydrate source, a fat source, and a protein source.

~~22~~23. The staged feeding regimen of any one of claims ~~15~~ 16 to ~~21~~22, wherein the first infant formula, second infant formula, and third infant formula each further comprise prebiotics.

~~23~~24. The staged feeding regimen of any one of claims ~~15~~ 16 to ~~22~~23, wherein the first infant formula, second infant formula, and third infant formula each further comprise *Lactobacillus rhamnosus* GG.

~~24~~25. The staged feeding regimen of any one of claims ~~15~~ 16 to ~~23~~24, wherein the first infant formula, second infant formula, and third infant formula each further comprise β-glucan.