THE CLAIMS

1. A polynucleotide encoding a Myd variant polypeptide the amino acid sequence of which is modified from the amino acid sequence of SEQ ID NO:3 by substitution of 1-3 amino acids; wherein the sequence position of the substitution and the substituted amino acids (AA) are selected from the following:

AA Position in SEQ ID NO: 3	AA in SEQ ID NO: 3	Possible AA Substitutions
3	D	A, F, H, I, K, L, N, R, V, W, Y
4	L	F, H, K, N, Q, R, W, Y
5	S	T
6	S	T
7	F	I, Q, W, Y
8	I	F, N, Q, V, Y
9	T	S
10	I	F, l, N, Q, V, Y
11	K	A, D, E, F, H, I, L, N, Q, V, W, Y
12	N	A, Q, V
13	N	Q, V
15	N	A, D, E, F, H, I, K, L, Q, R, V, W Y
16	H	A, D, E, F, I, K, L, N, Q, R, V, W, Y
17	V	D, E, F, H, K, N, Q, R, W, Y
18	F	I, L, Q, W
19	T	S
20	R	H
21	T	S
22	A	D, E, F, H, K, N, Q, R, W, Y
23	I	D, E, F, H, K, L, N, Q, R, V, W, Y
24	Y	C, F, Q, W
25	S	T
26	K	A
33	S	C
34	P	W, Y

35	E	A, F, H, I, K, L, N, Q, R, V, W, Y
37	Q	A, D, F, H, I, L, R, V, W, Y
38	L	D, E, F, H, K, N, Q, R, W, Y
39	S	M, T
40	I	F, L, N, Q, V, Y
41	S	T
43	G	A, E, F, H, I, K, N, Q, R, V, W, Y
44	K	A, D, E, F, H, I, L, N, Q, R, V, W, Y
45	W	F, Y
46	D	F, H, I , K, L, N, Q, R, V, W, Y
47	L	F, N, Q, Y
48	F	I, Q, W
49	I	C, D, F, N, Q, Y
50	L	F, N, Q, V, Y
51	K	A, D, E, F, H, I, L, N, Q, V, W, Y
52	D	F, H, I, K, L, N, Q, R, V, W, Y
53	I	F, H, K, N, Q, R, W, Y
54	L	F, H, K, N, Q, R, Y, W
55	S	M, T
56	I	F, H, K, N, Q, R, W, Y
57	R	A, F, H, I, L, N, Q, V, W, Y
59	T	S
60	S	T
62	Y	C, F, Q, W
63	Q	Q
64	Q	F, N, V, Y
65	Y	F, Q, W
66	R	H
67	V	F, N, Q
68	G	A, D, E, F, H, I, K, L, N, Q, R, V, W, Y
69	D	A, F, H, I, K, L, N, Q, R, V, W, Y
70	G	A, D, E, F, H, I, K, L, N, Q, R, V, W, Y
72	G	A, D, E, F, H, I, K, L, N, Q, R, W, Y
73	W	F, Q, Y

74	V	I, N, Q
75	R	H, K
76	V	I, N, Q,
77	T	S
78	F	I, Q, W
80	S	T
81	L	F, I, N, , V, Y
82	V	D, E, F, H, K, N, Q, R, Y, W
83	G	A, F, H, I, K, L, N, Q, R, V,W, Y
84	A	F, H, K, N, Q, R, W, Y
85	D	A, I, K, L, N, Q, R, V, W, Y
86	E	A, F, H, I, K, L, N, Q, R, V, W, Y
87	V	I, L, N, Q
88	A	N, V
89	E	A, F, H, I, K, L, N, Q, R,V, W, Y
90	W	F, Y
91	S	T
92	S	T
93	G	A
94	D	A, E, F, H, I, K, L, N, Q, R,V, W, Y
95	L	A, D, E, F, H, I, K, N, Q, R, V, W, Y
97	D	A, F, H, I, K, L, N, Q, R, V, W, Y
98	G	E, F, H, I, K, L, N, Q, R, V, W, Y
99	F	D, E, H, I, K, L, N, Q, R, V, W, Y
100	V	D, E, F, H, I, K, L, N, Q, R, W, Y
101	L	A, D, E, F, H, I, K, N, Q, R, V, W, Y
102	Q	A, D, F, H, I, L, R, V, W, Y
103	K	D, E, F, H, I, L, N, Q, V, W, Y
104	P	V
105	V	E, F, H, K, N, Q, R, W, Y
106	R	F, H, L, Q, Y
108	G	A, F, H, K, N, R, V, W, Y
110	R	E, F, H, I, L, N, Q, V, W, Y
111	P	A, F, H, I, K, L, N, Q, R, V, W, Y

112	L	F, N, Q. Y
113	Q	F, N, V, Y
114	A	N, V
116	F	I, Q, W, Y
117	E	A, F, H, I, K, L, N, Q, R, V, W, Y
118	A	N
120	K	F, H, L, N, Q, V, Y
121	Q	F, H, I, K, L, N, R, V, W, Y

wherein the methionine at position 1 of the amino acid sequence is optionally absent;

wherein the encoded polypeptide optionally has a protein tag; and

wherein the encoded polypeptide has sweet-taste modulation activity or optionally has sweet taste.

2. The polynucleotide of claim 1, operably linked to one or more heterologous regulatory element.

3. The polynucleotide of claim 1, wherein the variant polypeptide has 1-3 of the following amino acid substitutions:

D3K; D3N; D3Q; L4F; L4Y; F6I; I8V; I10L; K11H; N13Q; N14Q; H16R; V17F; F18L; A22F; I23L; Y24W; E35N; Q37N; L38F; S39T; I40L; G43A; K44R; W45Y; L47F; F48I; K51D; D52H; D52K; I53K; I53Y; S55T; I56F; Y62W; Q64N; Y65W; V67F; G68A; G72A; W73Q; V74I; R75K; L81V; V82D; V82E; V82F; G83A; G83H; A84F; D85N; V87L; E89D; G93A; D94E; L95V; G97L; F99I; V100L; L101V; P104V; V105F; G108A; R110E; R110K; L112F; Q113N; or Q121N.

4. The polynucleotide of any one of claims 1-3 wherein the variant polypeptide has 1 of the amino acid substitutions.

5. The polynucleotide of any one of claims 1-3, which has a first substitution of S33C or Y24C and a second substitution of I49C or Y62C.

6. The polynucleotide of claim 1, wherein the variant polypeptide has the amino acid sequence of SEQ ID NO: 143, SEQ ID NO: 145; SEQ ID NO: 146 or SEQ ID NO: 147.

7. An expression cassette or vector comprising the polynucleotide of any one of claims 1-6.

8. A host cell transformed with the expression cassette or vector of claim 7.

9. A method of producing a protein having sweet-taste modulation activity and/or having sweet taste comprising:

culturing a host cell of claim 8 in a medium under conditions for protein expression.

10. The method of claim 9, wherein the host cell is selected from the group consisting of gram-positive non-spore forming bacteria, gram-positive spore forming bacteria, gram negative bacteria, yeast, protists/algae and a plant cell.

11. A Myd variant polypeptide wherein:

the polypeptide has the amino acid sequence of SEQ ID NO: 3 with 1-3 amino acid substitutions;

wherein the methionine at position 1 of the amino acid sequence is optionally absent;

wherein the polypeptide optionally has a protein tag;

wherein the polypeptide has sweet-taste modulation activity or optionally has sweet taste and

wherein the positions of and the amino acid (AA) substitutions are selected from the following:

AA Position in SEQ ID NO: 3	AA in SEQ ID NO: 3	Possible AA Substitutions
3	D	A, F, H, I, K, L, N, R, V, W, Y
4	L	F, H, K, N, Q, R, W, Y
5	S	T
6	S	T
7	F	I, Q, W, Y
8	I	F, N, Q, V, Y
9	T	S
10	I	F, l, N, Q, V, Y
11	K	A, D, E, F, H, I, L, N, Q, V, W, Y
12	N	A, Q, V
13	N	Q, V
15	N	A, D, E, F, H, I, K, L, Q, R, V, W Y
16	H	A, D, E, F, I, K, L, N, Q, R, V, W, Y
17	V	D, E, F, H, K, N, Q, R, W, Y
18	F	I, L, Q, W
19	T	S
20	R	H
21	T	S
22	A	D, E, F, H, K, N, Q, R, W, Y
23	I	D, E, F, H, K, L, N, Q, R, V, W, Y
24	Y	C, F, Q, W
25	S	T
26	K	A
33	S	C
34	P	W, Y

35	E	A, F, H, I, K, L, N, Q, R, V, W, Y
37	Q	A, D, F, H, I, L, R, V, W, Y
38	L	D, E, F, H, K, N, Q, R, W, Y
39	S	M, T
40	I	F, L, N, Q, V, Y
41	S	T
43	G	A, E, F, H, I, K, N, Q, R, V, W, Y
44	K	A, D, E, F, H, I, L, N, Q, R, V, W, Y
45	W	F, Y
46	D	F, H, I , K, L, N, Q, R, V, W, Y
47	L	F, N, Q, Y
48	F	I, Q, W
49	I	C, D, F, N, Q, Y
50	L	F, N, Q, V, Y
51	K	A, D, E, F, H, I, L, N, Q, V, W, Y
52	D	F, H, I, K, L, N, Q, R, V, W, Y
53	I	F, H, K, N, Q, R, W, Y
54	L	F, H, K, N, Q, R, Y, W
55	S	M, T
56	I	F, H, K, N, Q, R, W, Y
57	R	A, F, H, I, L, N, Q, V, W, Y
59	T	S
60	S	T
62	Y	C, F, Q, W
63	Q	Q
64	Q	F, N, V, Y
65	Y	F, Q, W
66	R	H
67	V	F, N, Q
68	G	A, D, E, F, H, I, K, L, N, Q, R, V, W, Y
69	D	A, F, H, I, K, L, N, Q, R, V, W, Y
70	G	A, D, E, F, H, I, K, L, N, Q, R, V, W, Y
72	G	A, D, E, F, H, I, K, L, N, Q, R, W, Y
73	W	F, Q, Y

74	V	I, N, Q
75	R	H, K
76	V	I, N, Q,
77	T	S
78	F	I, Q, W
80	S	T
81	L	F, I, N, , V, Y
82	V	D, E, F, H, K, N, Q, R, Y, W
83	G	A, F, H, I, K, L, N, Q, R, V,W, Y
84	A	F, H, K, N, Q, R, W, Y
85	D	A, I, K, L, N, Q, R, V, W, Y
86	E	A, F, H, I, K, L, N, Q, R, V, W, Y
87	V	I, L, N, Q
88	A	N, V
89	E	A, F, H, I, K, L, N, Q, R,V, W, Y
90	W	F, Y
91	S	T
92	S	T
93	G	A
94	D	A, E, F, H, I, K, L, N, Q, R,V, W, Y
95	L	A, D, E, F, H, I, K, N, Q, R, V, W, Y
97	D	A, F, H, I, K, L, N, Q, R, V, W, Y
98	G	E, F, H, I, K, L, N, Q, R, V, W, Y
99	F	D, E, H, I, K, L, N, Q, R, V, W, Y
100	V	D, E, F, H, I, K, L, N, Q, R, W, Y
101	L	A, D, E, F, H, I, K, N, Q, R, V, W, Y
102	Q	A, D, F, H, I, L, R, V, W, Y
103	K	D, E, F, H, I, L, N, Q, V, W, Y
104	P	V
105	V	E, F, H, K, N, Q, R, W, Y
106	R	F, H, L, Q, Y
108	G	A, F, H, K, N, R, V, W, Y
110	R	E, F, H, I, L, N, Q, V, W, Y
111	P	A, F, H, I, K, L, N, Q, R, V, W, Y

112	L	F, N, Q. Y
113	Q	F, N, V, Y
114	A	N, V
116	F	I, Q, W, Y
117	E	A, F, H, I, K, L, N, Q, R, V, W, Y
118	A	N
120	K	F, H, L, N, Q, V, Y
121	Q	F, H, I, K, L, N, R, V, W, Y

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12. The polypeptide of claim 11, wherein the variant polypeptide has 1 of the amino acid substitutions.

13. The polypeptide of claim 11 or 12, which has a first substitution of S33C or Y24C and a second substitution of I49C or Y62C.

14. The polypeptide of claim 11, wherein the variant polypeptide has the amino acid sequence of SEQ ID NO: 143, SEQ ID NO: 145; SEQ ID NO: 146 or SEQ ID NO: 147.

15. A Myd variant polypeptide expressed in a host cell of claim 13.

16. A composition, comprising a combination of:

(a) a product for oral administration, wherein the product differs from Mattirolomyces terfezioides truffle, and

(b) a flavor modulating composition comprising one or more variant Myd polypeptide of any one of claims 11-15;

wherein the combination exhibits flavor modulation compared to the product for oral administration.

17. The composition of claim 16, which comprises at least one additional sweetener other than a Myd sweet protein.

18. A method for modulating the taste of a product for oral administration, comprising: combining a product for oral administration with an effective amount of one or more Myd variant polypeptides of any one of claims 11-15, wherein the product for oral administration differs from *Mattirolomyces terfezioides* truffle, and wherein the combination has flavor modulation compared to the product for oral administration.

19. A method of modifying/changing at least one organoleptic property of a product for oral administration, comprising combining a product for oral administration with an effective amount of one or more Myd variant polypeptides of any one of claims 11-15, wherein the product for oral administration differs from *Mattirolomyces terfezioides* truffle, and wherein the combination exhibits an organoleptic property different from the product for oral administration.

20. The method of claim 19, wherein the organoleptic property is selected from the group consisting of aroma, flavor, basic taste (sweetness, sour, saltiness, bitterness or umami), aftertaste or linger, temporal profile, mouthfeel or a combination thereof.