CLAIMS

We claim:

1. Seed of inbred canola line NS-B50027-4, representative seed of said inbred canola line having been deposited under ATCC Accession No. PTA-123186.

2. A canola plant, or a part thereof, produced by growing the seed of claim 1.

3. The canola plant or a part thereof of claim 2, wherein said part is at least one of seed, leaf, pollen, embryo, root, root tip, pod, flower, ovule, stalk, cell, protoplast, tissue culture, protein, oil, lipid, fatty acid, or nucleic acid.

4. A method of producing canola oil, comprising obtaining seed of the plant of claim 2 and processing the seed to obtain canola oil.

5. A canola plant, or part thereof, having the physiological and morphological characteristics of the plant or part thereof of claim 2, wherein the genetic material of said plant or part thereof contains one or more transgenes or expresses one or more desired traits, in addition to the transgenes present and traits expressed in canola line NS-B50027-4.

6. The plant or plant part of claim 5, wherein the additional transgene or desired trait confers herbicide resistance, insect resistance, bacterial disease resistance, fungal disease resistance, viral disease resistance, or sterility.

7. A method for producing a canola line NS-B50027-4-derived canola plant, comprising:

(a) crossing the plant of claim 2 with a second canola plant to yield progeny canola seed; and

(b) growing said progeny canola seed under plant growth conditions to yield said canola line NS-B50027-4-derived canola plant.

8. The method of claim 7, further comprising:

(a) crossing said canola NS-B50027-4-derived canola plant with itself or another canola plant to yield additional canola NS-B50027-4-derived progeny canola seed;

(b) growing said progeny canola seed of step (a) under plant growth conditions, to yield additional canola NS-B50027-4-derived canola plants; and

(c) repeating the crossing and growing steps of (a) and (b) from 0 to 7 times to generate further canola NS-B50027-4-derived canola plants, said NS-B50027-4-derived canola plants expressing a combination of at least two NS B50027-4-traits selected from docosahexaenoic acid (DHA) production and at least one additional agronomically desirable trait.

9. A canola line NS-B50027-4-derived canola plant, or parts thereof, produced by the method of claim 7.

10. A method of detecting the presence of event NS-B50027-4 in a sample comprising plant DNA, wherein said method comprises

(1) contacting said sample with:

(a) a first primer that binds to a flanking junction region of the *Brassica* genome selected from the group of primers consisting of SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, SEQ ID NO:24, SEQ ID NO:25, SEQ ID NO:26, SEQ ID NO:27, SEQ ID NO:28, SEQ ID NO:29, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:32, SEQ ID NO:33, SEQ ID NO:34, SEQ ID NO:35, SEQ ID NO:36, SEQ ID NO:37, at least ten contiguous nucleotides of any of the preceding primers, and complements thereof; and

(b) a second primer that binds to an insert sequence selected from the group of primers consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10,

SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:14, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:53, SEQ ID NO:54, SEQ ID NO:55, SEQ ID NO:56, SEQ ID NO:57, SEQ ID NO:58, SEQ ID NO:59, SEQ ID NO:60, SEQ ID NO:61, SEQ ID NO:62, SEQ ID NO:63, SEQ ID NO:64, SEQ ID NO:65, and SEQ ID NO:66;

(c) at least ten contiguous nucleotides of any of the preceding primers of (a) and (b), and

(d) complements thereof;

(2) subjecting said sample to polymerase chain reaction; and

(3) assaying for amplicons generated between said primers;

wherein said assay is, optionally, a KASP™ genotyping assay.

11. A plant, plant material, or plant-derived material identified by the method of claim 10.

12. A kit comprising components to carry out the method of claim 10, wherein said kit, optionally, comprises a forward primer AATTGTTGGAGGTGTTCAAACACT (SEQ ID NO:51) and a reverse primer CGGAATCACAATCCCTGAATGATT (SEQ ID NO:52), or the complements thereof, and wherein said primers provide an amplicon of about 250 nucleotides diagnostic of elite event NS-B50027-4.

13. A method of producing docosahexaenoic acid in the seeds of a plant, comprising cultivating a plant that has in its genome at least two copies of transgenes encoding each of Δ6-desaturase, Δ5-elongase, Δ5-desaturase, and Δ15/ω3-desaturase, wherein said transgenes are expressed in the seeds of said plant.

14. The seed of the plant cultivated as in claim 13.

15. The plant or plant part of claim 2, or a derivative or hybrid of said plant, comprising at least one pair of nucleic acid molecules selected from:

(a) SEQ ID NO:43 (TGGAGGTGTTCAAACACT) and SEQ ID NO:44 (ATAGTATTAGTATACAGA), sequences at least 95% identical to either of these, or complements thereof;

(b) SEQ ID NO:45 (GGCTAAGGTAACACTGAT) and SEQ ID NO:46 (CAGTGTTTGAAGGACAGA), sequences at least 95% identical to either or both of these, or complements thereof;

(c) SEQ ID NO:47 and SEQ ID NO:48, sequences at least 95% identical to either or both these, or complements thereof; or

(d) SEQ ID NO:49 and SEQ ID NO:50, sequences at least 95% identical to either or both these, or complements thereof.

16. The method of claim 7, wherein the canola line NS-B50027-4-derived canola plant comprises (a) SEQ ID NO:40; (b) SEQ ID NO:41; or (c) both (a) and (b).

17. A collection of seed comprising at least 95% seed of the plant of claim 2, or a derivative or hybrid thereof, wherein said seed comprises about 5% to about 16% docosahexaenoic acid (DHA), inclusive (wt.% of total fatty acids in seed), or about 5% to 17%, inclusive, long-chain polyunsaturated fatty acids (sum eicosapentaenoic acid, docosapentaenoic acid, and DHA as wt.% of total fatty acids in seed).

18. A composition comprising the seed of the plant of claim 2 or a derivative or hybrid thereof, wherein the seed has been crushed to provide seed oil and seed meal.

19. The method of claim 4, wherein the fatty acid content of said canola oil has a ratio of Omega-3:Omega-6 fatty acid in the range of about 3 to about 20, inclusive, and wherein said canola oil is seed oil, crude oil, refined oil, enriched oil, or edible oil.

20. The composition of claim 18, wherein the composition is a foodstuff, an animal feed, a cooking oil, a salad oil, an emulsion, a dry ingredient, a source of aquaculture nutrition, or a pharmaceutical composition.

21. Oil obtained from the seed of the plant of claim 2, or progeny thereof, wherein the lipid of the oil has been treated to enrich the fraction of docosahexaenoic acid (DHA) and the enriched lipid comprises at least 40%, at least 50%, at least 60%, at least 70%, at least 80%, or at least 90% DHA.