What is claimed is:

1. A modified recombinant host cell for producing a phenolic compound, comprising
i) a first expression system that comprises at least one nucleotide sequence that encodes an aromatic polyketide synthase (PKS) for 6-methylsalicylic acid (6-MSAS), capable of being expressed, and
ii) a second expression system that comprises at least one nucleotide sequence that encodes a holo acyl carrier protein (ACP) synthase, wherein the ACP synthase pantetheinylates said PKS, and
iii) a third expression system that comprises at least one nucleotide sequence that encodes a decarboxylase,
such that the product isolated from said cell is a phenolic compound.
2. The host cell of claim 1, wherein the phenolic compound is meta-cresol.
3. The host cell of claim 1, wherein the phenolic compound is orcinol.
4. The host cell of claim 3, wherein the aromatic PKS comprises an inactivated ketoreductase (KR) domain.
5. The modified cell of claim 1 wherein said aromatic PKS is the synthase for 6-methylsalicylic acid from a fungus.
6. The modified cell of claim 1 wherein said aromatic PKS is the synthase for 6-methylsalicylic acid from a prokaryote.
7. The modified cell of claim 6 wherein said aromatic PKS is encoded by the *ChlB1* gene from *S. antibioticus* in wild-type form.
8. The modified cell of claim 3 wherein said aromatic PKS is the orsellinic acid synthase (OSAS) encoded by the *AviM* gene from *Streptomyces viridochromogenes*.
9. The modified cell of any one of claims 1-6, wherein the nucleotide sequence encoding the decarboxylase is selected from the group consisting of the 6-MSA decarboxylase gene from *P. patulum,* the *PatG* gene from *Aspergillus clavatus,* the OSA decarboxylase gene from *Gliocladium roseum*, the 2,3-dihydroxybenzoic acid decarboxylase genes from Aspergillus species, and the 5-carboxyvanillate decarboxylase gene from *Sphingomonas paucimobilis* SYK-6.
10. The modified cell of claim 1 wherein said expression system for said PKS and said expression system for said holo ACP synthase are present on the same vector.
11. The modified cell of claim 1 wherein said expression system for said PKS and said expression system for said holo ACP synthase are present on separate vectors.

12. The modified cell of claim 1 wherein said PKS and said holo ACP synthase are expressed from a dicistronic messenger RNA.

13. The modified cell of claim 6 wherein an expression system for a functional decarboxylase is present on the same vector, or on a separate vector.

14. The modified cell of claim 7 wherein an expression system for a functional decarboxylase is present on the same vector as either expression system for said minimal PKS or said expression system for said holo ACP synthase, or on a separate vector.

15. The modified cell of claim 1 wherein said expression system for said minimal PKS and said expression system for said holo ACP synthase and said expression system for a functional decarboxylase are present on the same vector.

16. The modified cell of claim 1 wherein one, two or all three of said expression systems are integrated into the host cell chromosome or expressed from yeast artificial chromosomes (YACs).

17. The modified cell of claim 1 wherein at least two of the expressed PKS, holo ACP synthase and decarboxylase are derived from a multicistronic messenger RNA.

18. The modified cell of claim 1 wherein the host organism is selected from the group consisting of *Pichia pastoris*, and an *Aspergillus* species.

19. The modified cell of claim 1 wherein the host organism is *Aspergillus niger*.

20. The modified cell of claim 19, which does not contain a heterologous expression system for a holo ACP synthase.

21. A method of producing a phenolic compound, the method comprising

a) providing a modified recombinant host cell comprising

i) a first expression system that comprises at least one nucleotide sequence encoding an aromatic polyketide synthase (PKS) for 6-methylsalicylic acid (6-MSAS), capable of being expressed;

ii) a second expression system that comprises at least one nucleotide sequence encoding a holo acyl carrier protein (ACP) synthase, wherein the ACP synthase pantetheinylates said PKS; and

iii) a third expression system that comprises at least one nucleotide sequence that encodes a decarboxylase;

b) producing a phenolic compound intermediate in the recombinant host cell; and

c) synthesizing a phenolic compound from the phenolic compound intermediate, wherein recombinant decarboxylase catalyzes decarboxylation of the phenolic compound intermediate to form the phenolic compound.

22. The method of claim 21, wherein the phenolic compound intermediate is 6-MSA.

23. The method of claim 21, wherein the phenolic compound is meta-cresol.

24. The method of claim 21, wherein the phenolic compound intermediate is orsellinic acid (OSA).

25. The method of claim 21, wherein the phenolic compound is orcinol.

26. The method of claim 24 or 25, wherein the aromatic PKS comprises an inactivated ketoreductase (KR) domain.

27. The method of claim 24 or 25, wherein the aromatic PKS is an orsellinic acid synthase (OSAS) encoded by the *AviM* gene from *Streptomyces viridochromogenes*.

28. A method of producing a phenolic compound, the method comprising

a) providing a modified recombinant host cell comprising

i) a first expression system that comprises at least one nucleotide sequence encoding an aromatic polyketide synthase (PKS) for 6-methyl salicylic acid (6-MSAS), capable of being expressed; and

ii) a second expression system that comprises at least one nucleotide sequence encoding a holo acyl carrier protein (ACP) synthase, wherein the ACP synthase pantetheinylates said PKS; and

b) isolating a phenolic compound intermediate produced in the recombinant host cell; and

c) decarboxylating the phenolic compound intermediate of step b) to form the phenolic compound by heating with a metal catalyst followed by distillation.

29. The method of claim 28, wherein the phenolic compound intermediate is 6-MSA.

30. The method of claim 28, wherein the phenolic compound is meta-cresol.

31. The method of claim 28, wherein the metal catalyst is in a powdered form.

32. The method of claim 28 or 31, wherein the metal catalyst is a zinc catalyst.

33. A modified recombinant host cell for producing an alkylated phenolic compound, comprising

i) a first expression system that comprises at least one nucleotide sequence that encodes an aromatic polyketide synthase (PKS) for 6-methylsalicylic acid (6-MSAS), capable of being expressed, and

ii) a second expression system that comprises at least one nucleotide sequence that encodes a holo acyl carrier protein (ACP) synthase, wherein the ACP synthase pantetheinylates said PKS,

iii) a third expression system that comprises at least one nucleotide sequence that encodes a decarboxylase, and

(iv) a fourth expression system that comprises at least one nucleotide sequence that encodes an *O*-methyltransferase (OOMT),

such that the product isolated from said cell is an alkylated phenolic compound.

34. The modified cell of claim 33, wherein the alkylated phenolic compound is 3-methylanisole.

35. The modified cell of claim 33, wherein the alkylated phenolic compound is 3,5-dimethoxytoluene.

36. The modified cell of claim 35, wherein the aromatic PKS comprises an inactivated ketoreductase (KR) domain.

37. The modified cell of claim 35 wherein said aromatic PKS is the orsellinic acid synthase (OSAS) encoded by the *AviM* gene from *Streptomyces viridochromogenes*.

38. The modified cell of claim 33, wherein the OOMT is encoded by a *R. chinensis* gene selected from the group consisting of *OOMT1, OOMT2, OOMT3, OOMT4, COMT1*.

39. A method of producing an alkylated phenolic compound, the method comprising

a) providing a modified recombinant host cell comprising

i) a first expression system that comprises at least one nucleotide sequence encoding an aromatic polyketide synthase (PKS) for 6-methyl salicylic acid (6-MSAS), capable of being expressed;

ii) a second expression system that comprises at least one nucleotide sequence encoding a holo acyl carrier protein (ACP) synthase, wherein the ACP synthase pantetheinylates said PKS; and

iii) a third expression system that comprises at least one nucleotide sequence that encodes a decarboxylase, and

b) isolating a phenolic compound intermediate produced in the recombinant host cell; and

c) alkylating the phenolic compound intermediate of step b) to form the alkylated phenolic compound by treating with a alkylating agent.

40. The method of claim 39, wherein the phenolic compound intermediate is m-cresol.

41. The method of claim 39, wherein the phenolic compound intermediate is orcinol.

42. The method of claim 41, wherein the aromatic PKS comprises an inactivated ketoreductase (KR) domain.

43. The method of claim 41, wherein said aromatic PKS is the orsellinic acid synthase (OSAS) encoded by the *AviM* gene from *Streptomyces viridochromogenes*.

44. The method of claim 39 or 40, wherein the alkylated phenolic compound is 3-methylanisole.

45. The method of claim 39 or 41, wherein the alkylated phenolic compound is 3,5-dimethoxytoluene.

46. The method of claim 39, wherein alkylating agent is methanol.

47. A method of producing a phthalic anhydride compound, the method comprising

a) providing a modified recombinant host cell comprising

i) a first expression system that comprises at least one nucleotide sequence encoding an aromatic polyketide synthase (PKS) for 6-methyl salicylic acid (6-MSAS), capable of being expressed;

ii) a second expression system that comprises at least one nucleotide sequence encoding a holo acyl carrier protein (ACP) synthase, wherein the ACP synthase pantetheinylates said PKS; and

b) isolating a phthalic anhydride intermediate compound produced in the recombinant host cell; and

c) oxidizing the phthalic anhydride intermediate compound of step b) to form the phthalic anhydride compound by treating with an oxidizing agent.

48. The method of claim 40, wherein the phthalic anhydride intermediate compound is 6-MSA.

49. The method of claim 40, wherein the phthalic anhydride is 3-hydroxyphthalic anhydride.

What is claimed is:

1. A modified recombinant host cell for producing a phenolic compound, comprising
i) a first expression system that comprises at least one nucleotide sequence that encodes an aromatic polyketide synthase (PKS) comprising 6-methylsalicylic acid synthase (6-MSAS) or an orsellinic acid synthase (OSAS), capable of being expressed, and
ii) a second expression system that comprises at least one nucleotide sequence that encodes a holo acyl carrier protein (ACP) synthase, wherein the ACP synthase pantetheinylates said PKS, and
iii) a third expression system that comprises at least one nucleotide sequence that encodes a functional decarboxylase which catalyzes decarboxylation to form said phenolic compound, such that the product isolated from said cell is a phenolic compound, wherein either:
the first expression system for PKS and the second expression system for ACP synthase are present on a single vector or on separate vectors, and wherein the third expression system for a functional decarboxylase is either present on the same vector as the PKS and/or holo ACP synthase, or is present on a separate vector, or;
wherein the first, second or third expression systems are integrated into the host cell chromosome or expressed from yeast artificial chromosomes (YACs).

2. The host cell of claim 1, wherein the phenolic compound is meta-cresol or orcinol.

3. The modified cell of claim 1 wherein said aromatic PKS is the synthase for 6-methylsalicylic acid from a fungus or from a prokaryote.

4. The modified cell of any one of claims 1-3, wherein the nucleotide sequence encoding the decarboxylase is selected from the group consisting of the 6-MSA decarboxylase gene from *P. patulum,* the *PatG* gene from *Aspergillus clavatus,* the OSA decarboxylase gene from *Gliocladium roseum,* the 2,3-dihydroxybenzoic acid decarboxylase genes from Aspergillus species, and the 5-carboxyvanillate decarboxylase gene from *Sphingomonas paucimobilis* SYK-6.

5. The modified cell of claim 1 wherein said PKS and said holo ACP synthase are expressed from a dicistronic messenger RNA.

6. The modified cell of claim 1 wherein the host organism is selected from the group consisting of *Saccharomyces cerevisiae, Pichia pastoris*, and an *Aspergillus* species.

7. A method of producing a phenolic compound, the method comprising

a) providing a modified recombinant host cell comprising

i) a first expression system that comprises at least one nucleotide sequence encoding an aromatic polyketide synthase (PKS) comprising 6-methylsalicylic acid synthase (6-MSAS) or an orsellinic acid synthase (OSAS), capable of being expressed;

ii) a second expression system that comprises at least one nucleotide sequence encoding a holo acyl carrier protein (ACP) synthase, wherein the ACP synthase pantetheinylates said PKS; and

iii) a third expression system that comprises at least one nucleotide sequence that encodes a functional decarboxylase;

b) producing a first phenolic compound intermediate in the recombinant host cell; and

c) synthesizing a second phenolic compound from the first phenolic compound intermediate, wherein recombinant decarboxylase catalyzes decarboxylation of the first phenolic compound to form the second phenolic compound, wherein either:

the first expression system for PKS and the second expression system for ACP synthase are present on a single vector or on separate vectors, and wherein the third expression system for a functional decarboxylase is either present on the same vector as the PKS and/or holo ACP synthase, or is present on a separate vector, or;

wherein the first, second or third expression systems are integrated into the host cell chromosome or expressed from yeast artificial chromosomes (YACs).

8. The method of claim 7, wherein the first phenolic compound is 6-MSA or is orsellinic acid (OSA) and wherein the second phenolic compound is meta-cresol or orcinol.

9. A method of producing a phenolic compound, the method comprising

a) providing a modified recombinant host cell comprising

i) a first expression system that comprises at least one nucleotide sequence encoding an aromatic polyketide synthase (PKS) comprising 6-methyl salicylic acid synthase (6-MSAS) or an orsellinic acid synthase (OSAS), capable of being expressed; and

ii) a second expression system that comprises at least one nucleotide sequence encoding a holo acyl carrier protein (ACP) synthase, wherein the ACP synthase pantetheinylates said PKS; and

b) isolating a first phenolic compound produced in the recombinant host cell; and

c) decarboxylating the first phenolic compound of step b) to form the second phenolic compound by heating with a metal catalyst followed by distillation.

10. The method of claim 9, wherein the first phenolic compound is 6-MSA and wherein the second phenolic compound is meta-cresol.

11. The method of claim 9 or claim 10, wherein the metal catalyst is a zinc catalyst.

12. The modified cell of claim 1 wherein the phenolic compound is an alkylated phenolic compound, and wherein the modified cell further comprises (iv) a fourth expression system that comprises at least one nucleotide sequence that encodes an *O*-methyltransferase (OOMT), such that the product isolated from said cell is an alkylated phenolic compound.

13. The modified cell of claim 12, wherein the alkylated phenolic compound is 3-methylanisole or 3,5-dimethoxytoluene.

14. The modified cell of claim 12, wherein the OOMT is encoded by a *R. chinensis* gene selected from the group consisting of *OOMT1, OOMT2, OOMT3, OOMT4 and COMT1.*

15. The method of claim 7, which is for producing an alkylated phenolic compound, the method further comprising

d) isolating the second phenolic compound produced in the recombinant host cell; and

e) alkylating the second phenolic compound of step b) to form the alkylated phenolic compound by treating with a alkylating agent.

16. The method of claim 15, wherein the second phenolic compound is meta-cresol or orcinol.

17. A modified recombinant host cell as claimed in any one of claims 1 to 6 or 12 to 14, substantially as herein described with reference to any example thereof.

18. A method as claimed in any one of claims 7 to 11, 15 or 16, substantially as herein described with reference to any example thereof.