

target nucleic acid sequence having the relatively highest detection temperature is a signal-generating means by cleavage of a detection oligonucleotide, and the signal-generating means for the other target nucleic acid sequences are a signal-generating means by the formation of a duplex.

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48. The method according to claim 41, wherein the signal-generating means for the target nucleic acid sequence having the relatively highest detection temperature is a signal-generating means by cleavage of a detection oligonucleotide, and the signal-generating means for the other target nucleic acid sequences are signal-generating means by formation of a duplex in a dependent manner on cleavage of a mediation oligonucleotide specifically hybridized with the target nucleic acid sequence.

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49. The method according to claim 41, wherein the target nucleic acid sequences comprise a nucleotide variation.

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50. A computer readable storage medium containing instructions to configure a processor to perform a method for determining the presence of two target nucleic acid sequences in a sample using different detection temperatures, the method comprising:

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(a) receiving both a signal detected at a relatively high detection temperature and a signal detected at a relatively low detection temperature, wherein each of the target nucleic acid sequences is detected by a corresponding signal-generating means; wherein a generated signal is detected by using a single type of detector; wherein one of the two target nucleic acid sequences has the relatively high detection temperature and the other has the relatively low detection temperature determined by the corresponding signal-generating means; wherein the relatively high detection temperature is a temperature capable of generating a signal for the target nucleic acid sequence having the relatively high detection temperature and the relatively low detection temperature is a temperature capable of generating both of a signal for the

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target nucleic acid sequence having the relatively low detection temperature and a signal for the target nucleic acid sequence having the relatively high detection temperature; and

(b) determining the presence of the two target nucleic acid sequences by the signal received; wherein (i) the presence of the target nucleic acid sequence having the relatively high detection temperature is determined by the signal detected at the relatively high detection temperature and (ii) the presence of the target nucleic acid sequence having the relatively low detection temperature is determined by a difference between the signal detected at the relatively high detection temperature and the signal detected at the relatively low detection temperature.

51. A device for detecting a target nucleic acid sequence in a sample using different detection temperatures, comprising (a) a computer processor and (b) the computer readable storage medium of claim 50 coupled to the computer processor.

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52. A computer program to be stored on a computer readable storage medium to configure a processor to perform a method for determining the presence of two target nucleic acid sequences in a sample, the method comprising:

(a) receiving both a signal detected at a relatively high detection temperature and a signal detected at a relatively low detection temperature, wherein each of the target nucleic acid sequences is detected by a corresponding signal-generating means; wherein a generated signal is detected by using a single type of detector; wherein one of the two target nucleic acid sequences has the relatively high detection temperature and the other has the relatively low detection temperature determined by the corresponding signal-generating means; wherein the relatively high detection temperature is a temperature capable of generating a signal for the target nucleic acid sequence having the relatively high detection temperature and the relatively low detection temperature is a temperature capable of generating both of a signal for the target nucleic acid sequence having the relatively low detection temperature and a

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signal for the target nucleic acid sequence having the relatively high detection temperature; and

(b) determining the presence of the two target nucleic acid sequences by the signal received; wherein (i) the presence of the target nucleic acid sequence having the relatively high detection temperature is determined by the signal detected at the relatively high detection temperature and (ii) the presence of the target nucleic acid sequence having the relatively low detection temperature is determined by a difference between the signal detected at the relatively high detection temperature and the signal detected at the relatively low detection temperature.

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53. A computer readable storage medium containing instructions to configure a processor to perform a method for SNP genotyping of a nucleic acid sequence in a sample using different detection temperatures, the method comprising:

(a) receiving both a signal detected at a relatively high detection temperature and a signal detected at a relatively low detection temperature, wherein each of the SNP alleles is detected by a corresponding signal-generating means; wherein one of the SNP alleles has a relatively high detection temperature and the other has a relatively low detection temperature determined by the corresponding signal-generating means; wherein the relatively high detection temperature is a temperature capable of generating a signal for the SNP allele having the relatively high detection temperature and the relatively low detection temperature is a temperature capable of generating both of a signal for the SNP allele having the relatively low detection temperature and a signal for the SNP allele having the relatively high detection temperature;

(b) determining a SNP genotype by a difference between the signals received.

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54. A computer readable storage medium containing instructions to configure a processor to perform a method for determining the presence of at least three target

nucleic acid sequences in a sample using different detection temperatures, the method comprising:

(a) receiving signals detected at at least three detection temperatures; wherein each of the at least three target nucleic acid sequences is detected by a corresponding signal-generating means; wherein each of the at least three target nucleic acid sequences has a different detection temperature determined by the corresponding signal-generating means; wherein a detection temperature is a temperature capable of generating not only a signal for a target nucleic acid sequence having the detection temperature but also a signal for a target nucleic acid sequence having a higher detection temperature than the detection temperature; wherein signals to be generated by the signal-generating means are not differentiated by the single type of detector; wherein the detection is performed at each of the different detection temperatures; and

(b) determining the presence of the at least three target nucleic acid sequences by the signal received; wherein when the presence of a target nucleic acid sequence having a certain detection temperature among the at least three target nucleic acid sequences is determined, the presence of the target nucleic acid sequence having the certain detection temperature is determined by a difference between the signal detected at one or more detection temperatures higher than the certain detection temperature and the signal detected at the certain detection temperature; wherein when the certain detection temperature is a relatively highest detection temperature among the detection temperatures, the presence of a target nucleic acid sequence is determined by the signal detected at the certain detection temperature.

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