Title: DIAGONSTIC KITS AND METHODS FOR SCD OR SCA THERAPY SELECTION

Abstract: Variations in certain genomic sequences useful as genetic markers of Sudden Cardiac Death (SCD), or Sudden Cardiac Arrest (SCA) risk, are described. Novel diagnostic kits and methods employing these genetic markers are used in assessing the risk of SCD, or SCA. Methods of distinguishing patients having an increased susceptibility to SCD, or SCA, through use of these markers, alone or in combination with other markers, are also provided. Further, methods of assessing the need for an Implantable Cardio Defibrillator (ICD) in a patient are taught.
AMENDED CLAIMS
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CLAIMS

We claim:

1. A diagnostic kit for detecting one or more Sudden Cardiac Arrest (SCA)-
   associated polymorphisms in a genetic sample, comprising at least one probe for assessing
   the presence of a Single Nucleotide Polymorphism (SNP) in any one of SEQ ID NO.'s 1-849.

2. The diagnostic kit of Claim 1, said at least one probe ranging from about 3
   base pairs at positions 50 to 52 in any one of SEQ ID NO.'s 1-849 where position 51 is
   flanked on either the 5' and 3' side by a single base pair, to any number of base pairs flanking
   the 5' and 3' side of position 51 sufficient to identify the SNP or result in a hybridization.

3. The diagnostic kit of Claim 2, said at least one probe being from 3 to 101
   nucleotides in length.

4. The diagnostic kit of Claim 3, said at least one probe being a length selected
   from the group of from about 5 to 101, from about 7 to 101, from about 9 to 101, from about
   15 to 101, from about 20 to 101, from about 25 to 101, from about 30 to 101, from about 40
   to 101, from about 50 to 101, from about 60 to 101, from about 70 to 101, from about 80 to
   101, from about 90 to 101, and from about 99 to 101 nucleotides in length.

5. The diagnostic kit of Claim 3, said at least one probe being a length selected
   from the group of from 25 to 35, 18 to 30, and 17 to 24 nucleotides

6. The diagnostic kit of Claim 1, further comprising a Polymerase Chain
   Reaction (PCR) primer set for amplifying nucleic acid fragments corresponding to any one of
   SEQ ID NO.'s 1-849.

7. The diagnostic kit of Claim 1, wherein said at least one probe has a label
   capable of being detected.
8. The diagnostic kit of Claim 6, wherein the label is detected by electrical, fluorescent or radioactive means.

9. The diagnostic kit of Claim 1, wherein said at least one probe is affixed to a substrate.

10. The diagnostic kit of Claim 1, further comprising software to extract information of a hybridization of said at least one probe in the diagnostic kit.

11. The diagnostic kit of Claim 1, wherein said at least one probe is an Allele Specific Oligomer (ASO).

12. The diagnostic kit of Claim 1, wherein the SNP is selected from the group of SEQ ID NO.'s 844, 831, 825, 839, and 833.

13. The diagnostic kit of Claim 1, wherein the SNP is selected from the group of SEQ ID NO.'s 535, 505, and 515.

14. The diagnostic kit of Claim 1, wherein the SNP is selected from the group of SEQ ID NO.'s 835, 832, 844, 846, 838, 848, 829, 842, 827, 828, 824, 836, 840, 845, 826, 837, 841, 843, 117, 535, 823, 834, 830, 847, and 849.

15. The diagnostic kit of Claim 1, wherein the SNP is bi-allellic.

16. The diagnostic kit of Claim 1, wherein the SNP is multi-allellic.

17. The diagnostic kit of Claim 1, wherein said at least one probe is selected from the group of sense, anti-sense, and naturally occurring mutants, of any one of SEQ ID NO.'s 1-849.

18. A DNA microarray for detecting one or more Sudden Cardiac Arrest (SCA)-associated polymorphisms in a genetic sample, comprising at least one probe for assessing the presence of a Single Nucleotide Polymorphism (SNP) in any one of SEQ ID NO.'s 1-849.
19. The DNA microarray of Claim 18 being comprised of *in situ* synthesized oligonucleotides.

20. The DNA microarray of Claim 18 is a randomly or non-randomly assembled bead-based array.

21. The DNA microarray of Claim 18 being comprised of mechanically assembled arrays of spotted material, said spotted material selected from the group of an oligonucleotide, a cDNA clone, and a Polymerase Chain Reaction (PCR) amplicon.

22. A method of distinguishing patients having an increased susceptibility to SCA using the DNA microarray of Claim 18, comprising the steps of: providing a nucleic acid sample; performing a hybridization to form a double-stranded nucleic acid between the nucleic acid sample and a probe; and detecting the hybridization.

23. The method of Claim 22, wherein hybridization is detected radioactively.

24. The method of Claim 22, wherein hybridization is detected by fluorescence.

25. The method of Claim 22, wherein hybridization is detected electrically.

26. The method of Claim 22, wherein the nucleic acid sample comprises DNA.

27. The method of Claim 22, wherein the nucleic acid sample comprises RNA.

28. The method of Claim 22, wherein the nucleic acid sample is amplified.

29. The method of Claim 28, wherein the nucleic acid sample is amplified by a Polymerase Chain Reaction (PCR).

30. The method of Claim 22, wherein hybridization occurs under stringent conditions.
Statement Under Article 19(1)

Sir:

Applicants respectfully submit an amendment to the claims under Article 19. Applicants request that the amendments be taken into account during international preliminary examination. Accordingly, a copy of the Article 19 amendment is also being filed with the IPEA concurrently with the Demand.

Amendments to the specification, drawings, and Sequence Listing under Article 34 are also submitted with the Demand. The Article 19 amendments amend the recited “rs numbers” into SEQ ID NOs. The Article 34 amendments conform the description, drawings, and Sequence Listing to the Article 19 claim amendments.

Respectfully submitted,

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