CLAIMS

1. A method for the detection of the presence of at least one of *Staphylococcus aureus* (SA), the antibiotic resistant forms thereof, and the antibiotic resistant forms of other bacteria, wherein the method is for the detection of the presence of at least one of non-methicillin resistant SA, the methicillin resistant form thereof, and the methicillin resistant forms of the other bacteria, the method comprising:

providing a sample;

extraction of nucleic acids from the sample;

bringing the extracted nucleic acids into contact with a first primer pair complementary to a targeted segment of the attBscc gene, a second primer pair complementary to a targeted segment of the mecA gene, and a third primer pair complementary to a targeted segment of the OrfX gene;

amplifying the targeted segment in each of the attBscc, mecA and OrfX genes for detection of a presence of the targeted segment if at least one of the three genes are present in the extracted nucleic acids from said sample; and

detecting the presence of the amplified targeted segments of nucleic acids to substantially simultaneously identify the presence of each of SA, the antibiotic resistant forms thereof, and the antibiotic resistant forms of other bacteria in the sample, wherein the SA is non-methicillin resistant SA, the antibiotic resistant form of SA is methicillin resistant *Staphylococcus aureus* (MRSA) and the antibiotic resistant forms of the other bacteria are methicillin resistant forms of the other bacteria.

2. The method of claim 1, wherein the sample can be obtained from any source comprising biological cells.

3. The method of claim 1, wherein the nucleic acids comprise deoxyribonucleic acids (DNA).

~~4. The method of claim 1, wherein the antibiotic resistant form of SA comprise methicillin resistant *Staphylococcus aureus* (MRSA).~~

45. The method of claim 1, wherein the amplification of a targeted region in each of the attBscc, mecA and OrfX genes comprise running a real-time polymerase chain reaction procedure (real-time PCR).

56. The method of claim 54, wherein the real-time RT-PCR running conditions comprise 95^{0}C for 3 min, 35 cycles of 95^{0}C for 15 s and 60^{0}C for 30 s.

67. The method of claim 1 wherein prior to the step of amplifying the targeted segment in each of the attBscc, mecA and orfX genes-, the method further comprises bringing the extracted nucleic acids into contact with a first labeled probe complementary to a targeted segment of the attBscc gene, a second labeled probe complementary to a targeted segment of the mecA gene, and a third labeled probe complementary to a targeted segment of the orfX gene.

78. The method of claim 76, wherein the first, second and third probes comprise the sequences SEQ ID NO. 4, SEQ ID NO. 7 and SEQ ID NO. 10 respectively.

89. The method of claim 87, wherein the detection of a targeted segment comprises detecting the presence of the respective probe's label.

910. The method of claim 98, wherein a fluorometer is used to detect the fluorescence emitted by the probe's label.

1011. The method of claim 2, wherein the first primer pair comprises the sequences SEQ ID NO.1 and SEQ ID NO. 2 or the sequences SEQ ID NO.1 and SEQ ID NO. 3, the second primer pair comprises the sequences SEQ ID NO. 5 and SEQ ID NO. 6, and the third primer pair comprises the sequences SEQ ID NO. 8 and SEQ ID NO. 9.

1112. A kit for the detection of the presence of at least one of SA, the antibiotic resistant forms thereof, and the antibiotic resistant forms of other bacteria in nucleic acids extracted from a sample, wherein the kit is for the detection of the presence of at least one of non-methicillin resistant SA, the methicillin resistant form thereof, and the

methicillin resistant forms of the other bacteria in the nucleic acids extracted from the sample, the kit comprising:

means for exposing the extracted nucleic acids with a first primer pair complementary to a targeted segment of the attBscc gene, a second primer pair complementary to a targeted segment of the mecA gene, and a third primer pair complementary to a targeted segment of the orfX gene.

12~~13~~. The kit of claim ~~12~~11, wherein the kit further comprises:

means for amplifying the targeted segment in each of the attBscc, mecA and orfX genes for detection of a presence of the targeted segment if at least one of the three genes are present in the extracted nucleic acids from said sample; and

means for detecting the presence of the amplified targeted segments of nucleic acids to substantially simultaneously identify the presence of each of non-methicillin resistant SA, the methicillin~~antibiotic~~ resistant form~~s~~ thereof, and the methicillin~~antibiotic~~ resistant forms of other bacteria in the sample.

13~~14~~. The kit of claim ~~12~~11, wherein the sample can be obtained from any source comprising biological cells.

14~~15~~. The kit of claim ~~12~~11, wherein the nucleic acids comprise deoxyribonucleic acids (DNA).

~~16. The kit of claim 12, wherein the antibiotic resistant form of SA comprise MRSA.~~

15~~17~~. The kit of claim ~~12~~11, wherein the first primer pair comprises the sequences SEQ ID NO.1 and SEQ ID NO. 2 or the sequences SEQ ID NO.1 and SEQ ID NO. 3, the second primer pair comprises the sequences SEQ ID NO.5 and SEQ ID NO. 6, and the third primer pair comprises the sequences SEQ ID NO.8 and SEQ ID NO. 9.

16~~18~~. The kit of claim ~~12~~11, wherein the kit further comprises means for bringing the extracted nucleic acids into contact with a first labeled probe complementary to a targeted segment of the attBscc gene, second labeled probe complementary to a targeted

segment of the mecA gene, and a third labeled probe complementary to a targeted segment of the orfX gene, prior to amplifying the targeted segment in each of the attBscc, mecA and orfX genes~~;~~.

1719. The kit of claim ~~17~~15, wherein the first, second and third probes comprise the sequences SEQ ID NO. 4, SEQ ID NO. 7 and SEQ ID NO. 10 respectively.