prise smaller oligonucleotides (having from about 15 to about 250 nucleotide residues, and more preferably, about 15 to about 30 nucleotide residues).

[0026] A subset of the nucleic acid molecules of the present invention includes nucleic acid molecules that are marker molecules. Another subset of the nucleic acid molecules of the present invention include nucleic acid molecules that encode a protein or fragment thereof. Another subset of the nucleic acid molecules of the present invention are EST molecules.

[0027] In a preferred embodiment the nucleic acid molecules of the present invention are derived from leaf beetles belonging to the genus *Diabrotica* (Coleoptera:Chrysomelidae) and in an even more preferred embodiment the nucleic acid molecules of the present invention are derived from species in the *virgifera* group. In a particularly preferred embodiment the nucleic acid molecules of the present invention are derived from *Diabrotica virgifera virgifera* LeConte.

[0028] The term "nucleic acid molecule" or "nucleic acid" refers to a single or double-stranded polymer of deoxyribonucleotide or ribonucleotide bases read from the 5' to the 3' end. Nucleic acid molecules may also optionally contain synthetic, non-natural or altered nucleotide bases that permit correct read through by a polymerase and do not alter expression of a polypeptide encoded by that nucleic acid molecule.

[0029] As used herein, an agent, be it a naturally occurring molecule or otherwise may be "substantially purified" or "isolated", if desired, referring to a molecule separated from substantially all other molecules normally associated with it in its native state. More preferably a substantially purified molecule is the predominant species present in a preparation. A substantially purified molecule may be greater than 60% free, preferably 75% free, more preferably 90% free, and most preferably 95% free from the other molecules (exclusive of solvent) present in the natural mixture. The term "substantially purified" is not intended to encompass molecules present in their native state.

[0030] As used herein "a substantially purified nucleic acid" or "an isolated nucleic acid" refers to a nucleic acid that is no longer accompanied by some of materials with which it is associated in its natural state or to a nucleic acid the structure of which is not identical to that of any of naturally occurring nucleic acid. Examples of a substantially purified nucleic acid include: (1) DNAs which have the sequence of part of a naturally occurring genomic DNA molecules but are not flanked by two coding sequences that flank that part of the molecule in the genome of the organism in which it naturally occurs; (2) a nucleic acid incorporated into a vector or into the genomic DNA of a prokaryote or eukaryote in a manner such that the resulting molecule is not identical to any naturally occurring vector or genomic DNA; (3) a separate molecule such as a cDNA, a genomic fragment, a fragment produced by polymerase chain reaction (PCR), or a restriction fragment; (4) recombinant DNAs; and (5) synthetic DNAs. A substantially purified nucleic acid may also be comprised of one or more segments of cDNA, genomic DNA or synthetic DNA.

[0031] It is also contemplated by the inventors that the substantially purified (or isolated) nucleic acids of the present invention also include known types of modifications, for example, labels which are known in the art, methylation, "caps", substitution of one or more of the naturally occurring nucleotides with an analog. Other known modifications include internucleotide modifications, for example, those with uncharged linkages (methyl phosphonates, phosphotriesters, phosphoamidates, carbamates, etc.) and with charged linkages (phosphorothioates, phosphorodithioates, etc.), those containing pendant moieties, such as, proteins (including nucleases, toxins, antibodies, signal peptides, poly-L-lysine, etc.), those with intercalators (acridine, psoralen, etc.), those containing chelators (metals, radioactive metals, boron, oxidative metals, etc.), those containing alkylators, and those with modified linkages.

[0032] It is understood that the agents of the present invention may be labeled with reagents that facilitate detection of the agent (e.g. fluorescent labels (Prober, et al., *Science* 238: 336-340 (1987), Albarella et al., EP 144914), chemical labels (Sheldon et al., U.S. Pat. No. 4,582,789; Albarella et al., U.S. Pat. No. 4,563,417), modified bases (Miyoshi et al., EP 119448).

[0033] The term "nucleotide sequence" or "nucleic acid sequence" refers to both the sense and antisense strands of a nucleic acid as either individual single strands or in the duplex. It includes, but is not limited to, self-replicating plasmids, chromosomal sequences, and infectious polymers of DNA or RNA.

[0034] A "coding sequence", "structural nucleotide sequence" or "structural nucleic acid molecule" is a nucleotide sequence which is translated into a polypeptide, usually via mRNA, when placed under the control of appropriate regulatory sequences. The boundaries of the coding sequence are determined by a translation start codon at the 5'-terminus and a translation stop codon at the 3'-terminus. A coding sequence can include, but is not limited to, genomic DNA, cDNA, and recombinant nucleotide sequences.

[0035] The term "recombinant DNAs" refers to DNAs that contains a genetically engineered modification through manipulation via mutagenesis, restriction enzymes, and the like.

[0036] The term "synthetic DNAs" refers to DNAs assembled from oligonucleotide building blocks that are chemically synthesized using procedures known to those skilled in the art. These building blocks are ligated and annealed to form DNA segments which are then enzymatically assembled to construct the entire DNA. "Chemically synthesized", as related to a sequence of DNA, means that the component nucleotides were assembled in vitro. Manual chemical synthesis of DNA may be accomplished using well established procedures, or automated chemical synthesis can be performed using one of a number of commercially available machines.

[0037] The agents of the present invention will preferably be "biologically active" with respect to either a structural attribute, such as the capacity of a nucleic acid to hybridize to another nucleic acid molecule, or the ability of a protein to be bound by antibody (or to compete with another molecule for such binding). Alternatively, such an attribute may be catalytic, and thus involve the capacity of the agent to mediate a chemical reaction or response.

[0038] It is further understood, that the present invention provides bacterial, insect, mammalian, viral, microbial, and plant cells comprising the agents of the present invention.

[0039] EST nucleic acid molecules or fragment EST nucleic acid molecules or other nucleic acid molecules of the present invention are capable of specifically hybridizing to other nucleic acid molecules under certain circumstances. As used herein, two nucleic acid molecules are said to be capable of specifically hybridizing to one another if the two molecules are capable of forming an anti-parallel, double-stranded