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(54) Title: ELECTROCHEMICAL METHOD TO MEASURE DNA ATTACHMENT TO AN ELECTRODE SURFACE IN THE PRESENCE OF MOLECULAR OXYGEN

(57) Abstract: The present disclosure provides methods and compositions for conducting an assay to detect nucleic acid hybridization in the presence of oxygen. In particular, ruthenium complexes having a reduction potential that does not coincide with the reduction potential of molecular oxygen are disclosed and amperometric techniques for their use are described. In preferred embodiments, the ruthenium complex is ruthenium (III) pentaamine pyridine and the nucleic acid hybridization event that is detected is DNA hybridization. Further, techniques for enhancing detectable contrast between hybridized and unhybridized nucleic acids are disclosed. In particular, the use of elongated target strands as well as the use of uncharged probe strands are discussed.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/13514

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : C12Q 1/68
US CL : 435/6

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 435/6

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---------------|--|---|
| X --- Y | STEEL A.B. Electrochemical Quantitation of DNA Immobilized on Gold Anal. Chem. 1998, Vol 70. pages 4670-4677 | 1-3, 6-10, 13-16, 28-30, 34, 37, 43-45 ----- 11, 12, 31-32, 35-36, 38, 39 |
| Y | STRATAGENE Catalog. Gene Characterization Kits 1988 page 39 | 39 |

Further documents are listed in the continuation of Box C.

See patent family annex.

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|---|-----|--|
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INTERNATIONAL SEARCH REPORT

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Continuation of B. FIELDS SEARCHED Item 3:
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