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(54) **ORGANIC SEMICONDUCTOR
RECOGNITION COMPLEX AND SYSTEM**

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(51) Int. Cl.⁷ **C12Q 1/68; C12P 19/34; C07H 21/04**
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(58) Field of Search **435/6, 91.2, 7.1; 536/23.1; 436/94**

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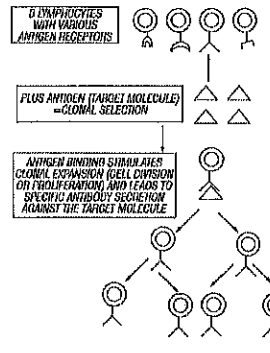
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(57) **ABSTRACT**

In a recognition complex system, nucleic acid ligands comprising random DNA sequences are operatively coupled to an organic semiconductor and distributed so as to form an array of recognition complexes. When an unknown chemical or biological analyte is applied to the array, the electrical and/or photochemical properties of one or more of the recognition complexes are altered upon binding of the nucleic acid ligand to the analyte. The degree to which the electrical and/or photochemical properties change is a function of the affinity of the nucleic acid ligand sequence for the analyte. The electrical and photochemical changes associated with the array, as a whole, can be used as a unique signature to identify the analyte. In certain embodiments, an iterative process of selection and amplification of nucleic acid ligands that bind to the analyte can be used to generate a new array with greater affinity and specificity for a target analyte, or to produce one or more nucleic acid ligands with high binding affinity for an analyte. The present invention also provides methods for preparing nucleic acid ligands that bind with high affinity to an analyte and using such nucleic acid ligands to neutralize the analyte.

62 Claims, 15 Drawing Sheets

IMMUNOLOGICAL SYSTEM (IN VIVO)



RECOGNITION COMPLEX SYSTEM (IN VITRO)

