



A Device and Method for Screening Molecular Diversity for Specific Compounds Which Bind Macromolecules

Technology Reference CP28

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Key Word(s)

- high throughput screening
- chemical library
- macromolecule
- compound
- drug

Stage of Development

- The technology has been demonstrated and proven effective
- Patent pending.

Description

The invention relates to a novel method for screening molecularly diverse chemical mixtures (chemical libraries, natural products, etc.) for substances which bind with affinity and specificity for a macromolecule. Small organic molecules can possess unique spatial and thermodynamic properties that allow them to bind specifically to particular proteins, DNA, RNA and other biologically related macromolecules (receptor). The binding of these compounds to a given receptor can transiently or permanently eliminate or activate its function. For example, a compound which binds to and eliminates the function of a coat protein of a virus could serve as an effective pharmacologic agent against that virus. Such a compound can lead to a new drug. This invention provides a means for selecting, concentrating, releasing and analyzing the structure of a compound having affinity for a given receptor.

Advantages

In the classical approach to drug development, single compounds are individually synthesized and tested for a given biological activity. Consequently, a one-to-one correlation between the single chemical structure and biological activity is maintained. However, because both the synthesis and bioassays are very labor intensive, this approach is inefficient and expensive. Numerous methods have been developed for the preparation of complex chemical libraries, whereas its screening method is still under development. The invention meets the need for the screening of a large mixture of chemical compounds. It selects from the mixture those that bind to a given receptor in a single assay and with both the compounds and receptor in solution, isolating the specific compound from all the others and then releasing it for special, biological or other analyses.