Rapid Generation Of A Droplet Compound Library

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BRIEF DESCRIPTION

The present invention features a device for rapidly formatting a chemical compound library into microfluidic droplets, addressing the challenge of interfacing between the macroscale and the microscale regimes of the production of reagent libraries of chemical compounds.

FULL DESCRIPTION

Droplet microfluidics has been recognized as a potential means for employing smaller reaction volumes than possible on microtiter plates to reduce the cost of reagent experimentation and drug discoveries. However, to increase the frequency of such chemical testing through high-throughput screening, a critical hurdle is the challenge of efficiently converting a compound library from a microliter plate format to a microfluidic droplet format.

The present invention features a device for rapidly formatting a chemical compound library into microfluidic droplets by employing an array of reservoirs that can be filled with a reagent library, including but not limited to a drug compound library. Once filled, each reservoir can dispense microfluidic droplets on demand. After the initial filling process, the massively parallel array can rapidly dispense a complete library of compounds in droplet format, and each reservoir stores enough reagent to allow many droplet libraries to be generated before the reservoirs need to be refilled. Each droplet library can then be employed for high-throughput screening in drug development.

SUGGESTED USES

- Drug discovery
- Creating microfluidic droplets
- High-throughput screening
- Reagent experimentation

Production of reagent library

ADVANTAGES

- When screening large libraries of compounds in early stages of drug discovery, the present invention can reduce reagent consumption, cost, and allow for more reactions to occur.
  With this invention, performing high throughput screening with a droplet library can be much faster and less expensive than current practice.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	11,754,579	09/12/2023	2017-818

CONTACT

Alvin Viray
aviray@uci.edu
tel: 949-824-3104.

OTHER INFORMATION

CATEGORIZED AS

- » **Biotechnology**
  - » Health
- » **Medical**
  - » Research Tools

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5270 California Avenue / Irvine,CA
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