Visions to Products

Digital nucleic acid assays
Centrifugal micro droplet generation

Digital nucleic acid analysis offer absolute quantification with high precision. With digital droplet RPA (ddRPA) results are available in less than 30 minutes.

Most existing digital amplification techniques are time consuming, requiring large and costly instruments and multiple handling steps.

The use of centrifugal droplet generation for the first time allows for dead volume free droplet generation of the sample. The droplet chemistry is compatible with multiple amplification techniques, such as RPA, HDA, LAMP or PCR. Only minimal hands-on time is needed for the droplet generation and amplification (2 pipetting steps). The droplet generation proceeds within <15 s producing >10,000 individual homogeneous droplets. While droplet generation and amplification take place in the same instrument, a fluorescence scanner is needed for the readout.

This enables fast and easy processing of digital assays. The main advantage is the possibility to quantify without the need for external standards. Moreover, digital reactions are less prone to inhibition.

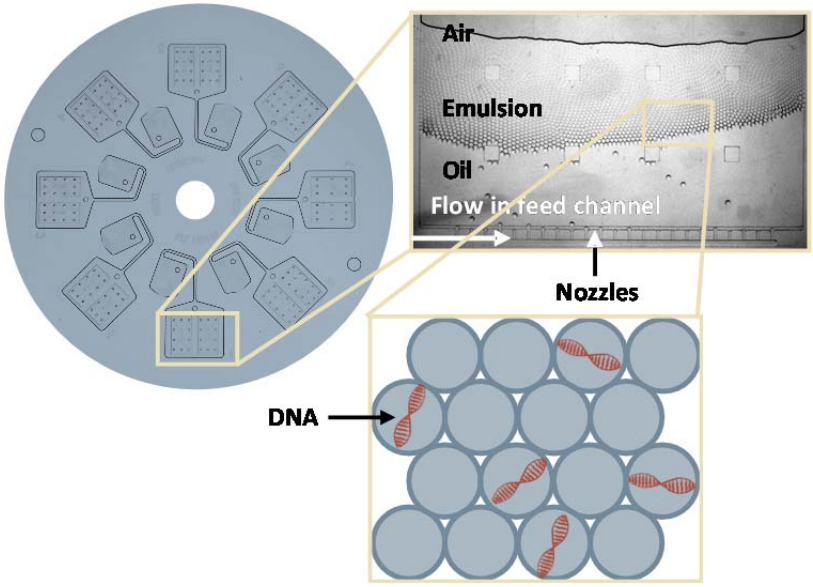

Fig. 1 Left: Photograph of LabDisk for centrifugal droplet generation. **Top right:** Microscopic image of emulsification process. Sample comes from the left flowing through the feed channel. When it is pushed through the nozzles, droplets are being generated which rise in the surrounding oil due to their lower density. **Bottom right:** Illustration of droplets, some of which contain target DNA for subsequent amplification.

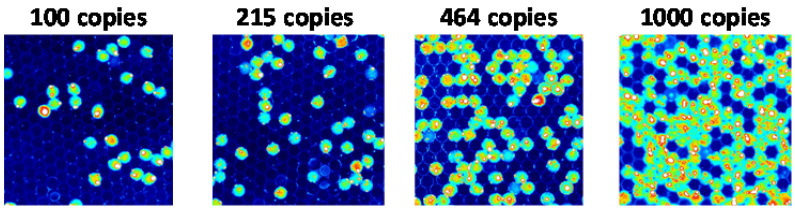

Fig. 2: Result of ddRPA with different DNA concentrations. Positive droplets are green.

Innovation

- Compatible with RPA, LAMP, HDA and PCR
- Absolute quantification in <30 minutes
- Amplification at constant temperature of 39 °C
- Minimal dead volume
  Can be fully integrated with sample preparation on centrifugal setup

Possible applications

- Cancer diagnostics and monitoring
- Single cell applications
- Non-invasive prenatal diagnostics
- Sepsis diagnostics
- HIV diagnostics and monitoring

Hahn-Schickard
Georges-Koehler-Allee 103
79110 Freiburg
Germany

Phone: +49 761 203-73242
Fax: +49 761 203-73299
E-mail: Info@Hahn-Schickard.de
Website: www.Hahn-Schickard.de

Contact
Dr. Nadine Borst
Phone: +49 761 203-73208
E-mail: Nadine.Borst@Hahn-Schickard.de