

**dScreen: Pooling “best in class” partners for breakthrough innovation in drug screening technologies.**  
 Patrick Tricoli / sanofi-aventis / Head of ‘European Access’ - ‘External Innovations’ group

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<b>Executive Summary of the presentation</b>	<p>The dScreen consortium is developing a droplet-based microfluidic system for quantitative high-throughput screening (HTS) of bio-active compounds using both purified targets and cell-based assays. Using the RainStorm™ technology platform, microdroplets can be made and manipulated at a frequency of up to 10,000 s<sup>-1</sup> (10 kHz), which is 10,000-times faster than existing HTS technologies (up to 100,000 assays <i>per</i> day, or ~1 s<sup>-1</sup>). Each droplet is the functional equivalent of a well in a microtiter plate and can contain a single molecule, reaction, or cell. The volume of each assay (1-5 pl) is reduced by up to one million-fold compared to a conventional assay in a 1536-well plate (with a capacity of 1-2 µl). The small volumes and high throughputs result in significant cost savings and provide completely new screening capabilities, including: measurement of dose-response curves for every compound in a library (quantitative HTS), simultaneous screening against multiple targets (e.g. a panel of protein kinases) to determine specificity and, assays on small numbers of cells, allowing, for example, the use of primary cells of human origin, rather than transformed cell lines. Innovation in such a field is a challenge as it requires the assembly of widely different capabilities and competencies, from biology, chemistry, fluidics, microfabrication, electrical, mechanical and optical engineering and programming. By bringing together one of the world's leading pharma companies (sanofi-aventis), a world class academic laboratory (the <i>Institut de Science et d'Ingénierie Supramoléculaires</i> - ISIS) and the leading provider of droplet-based microfluidics systems (RainDance Technologies Ltd), the partners have developed a unique project, supported by the regional biocluster (<i>Pôle de compétitivité</i> Alsace-Biovalley). This presentation will address the scientific aspects of applying droplet microfluidics to drug screening, and both the technical and business challenges the partners face.</p> <p>The objectives of our presentation is <b>i)</b> to inform and educate attendees on droplet-based microfluidics and its potential in drug screening applications, <b>ii)</b> to illustrate how to pull together widely different competencies and organizations into a functional consortium and <b>iii)</b> to identify the key business challenges in building such a consortium, and key success factors.</p>
<b>Actors and Partners</b>	Sanofi-aventis

<b>(including international)</b>	University Louis Pasteur of Strasbourg (France) Raindance Technologies Ltd (USA)
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<b>Funding</b>	0.300 M°€