

HCS Assays, Reagents & Consumables Trends 2011



October 2011
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Executive Summary

- This market report summarizes the results of HTStec's industry-wide global web-based benchmarking survey on high content screening (HCS) assays, reagents and consumables carried out in October 2011.
- The study was initiated by HTStec as part of its ongoing tracking of emerging life science marketplaces. The questionnaire was compiled to meet the needs and interests of the cellular assay reagent and microplate vendor communities. The main objectives of this global benchmarking study were to comprehensively document current end user opinions, practices and preferences in HCS assays, reagents and consumables, and to understand future requirements.
- The survey looked at the following aspects of HCS assays, reagents and consumables as practiced today (2011) and in a few cases as predicted for the future (2013): what HCS assays are used for; major research areas applying HCS assays; relative interest in broad HCS assay categories; interest in specific HCS assay types; stages of drug discovery currently investigating HCS; number of different HCS assays undertaken per year and how many wells processed per assay; percentage of HCS assays that are homebrew; main drivers to purchase HCS reagents in assay kit form; interest in pre-configured analysis routines with HCS assay kits; HCS assay categories most likely to use reagents purchased in assay kit form; main drivers to develop homebrew assays; where the majority of reagents/antibodies used in homebrew assays are purchased from; interest in validated antibodies with an assay protocol for HCS; if GFP reporter cell lines are purchased; microplate types mainly used for HCS assay applications; monthly usage of microplates for HCS; main suppliers of microplates used for HCS assays; interest in specialty plates for HCS assays; opinion on some statements about microplates and HCS; main cell types used for HCS assays; how many different dyes/stains are multiplexed in the same HCS assay and the number of different parameters evaluated; use of 3D scaffolds and microfluidic devices in HCS cell culture; HCS tasks requiring confocal imaging; aspects of HCS that are most limiting; and where improvements in HCS would make the greatest impact; what is most needed to grow the market for HCS assays; the biggest barriers to the adoption of new technologies in HCS; annual budget for HCS assays, reagents and consumables and its component breakdown; most purchased from commercial suppliers of HCS assays, reagents and consumables; and finally what is still needed to make HCS assays more accessible or easier to perform.
- The main questionnaire consisted of 30 multi-choice questions and 1 open-ended question. In addition, there were 7 questions related solely to survey demographics.
- The survey collected 73 validated responses, of these 82% provided comprehensive input.
- Survey responses were geographically split: 48% Europe; 44% North America; 6% Asia (excluding Japan); 1% Rest of World and 1% Japan.
- Survey respondents were drawn from persons or groups investigating HCS assays who made or influenced purchasing decisions for HCS reagents, assay kits, microplates or related consumables.
- Respondents came from 18 Large Pharma; 18 University/Research Institute/Government Lab (Not-for-Profit) Facilities; 11 Biotech; 11 Academic Screening Centers; 7 Medium-Small Pharma; 5 Contract Research Organizations; 2 Others; and 1 Agrochemical Company.
- Most survey respondents had a senior job role or position which was in descending order: 14 section/group leaders; 12 senior scientists/researchers; 9 research scientists; 9 directors; 8 professors/assistant professors; 6 lab managers; 5 principal investigators; 4 post-docs; 3 vice presidents; 2 department heads; and 1 other.
- Respondents represented the following lab types: 18 with a combination of drug discovery roles; 13 primary screening (HTS); 7 assay development; 6 applied research; 6 therapeutic area (target identification/validation); 5 other; 5 basic research; 3 compound profiling; 3 hits-to-leads (lead optimization); 3 siRNA screening; 2 leads-to-candidate (ADME Tox/preclinical research); and 2 secondary screening.
- Survey results were expressed as an average of all survey respondents. In addition, where appropriate the data was fully reanalyzed after sub-division into the following 5 survey groups: 1) Pharma; 2) Biotech; 3) Academic Research; 4) Europe; and 5) North America.
- The main use of HCS was drug discovery.
- The major research area making most use of HCS assays was oncology.
- Cell viability/toxicity was the broad HCS category ranked of greatest interest.
- The specific HCS assay type of greatest interest today (2011) was toxicity – cell health.
- The stage in the drug discovery process most applying HCS assays was assay development.

- A median of 4–5 different HCS assays were reported run per year.
- The median average number of wells analyzed per HCS assay was 5K–10K microplate wells.
- The majority of HCS assays were developed homebrew versus reagents purchased in assay kit form.
- Validated protocol was rated the most important reason to purchase reagents in assay kit form.
- The majority of respondents were interested in preconfigured analysis routines with HCS assay kits.
- The HCS assay categories most likely to be purchased as reagents in assay kit form were cell viability/toxicity.
- Not available in kit form was rated the main driver to purchase HCS reagents separately and to develop homebrew assays.
- The main supplier of reagents and antibodies used in homebrew HCS assays was Life Technologies.
- The majority of respondents were interested in a range of validated antibodies with protocols for HCS.
- The majority of respondents were not purchasing GFP reporter cell lines today.
- The types of microplates most used for HCS applications were: plate density – 384–wells; plate bottom type – plastic–film; HCS engineered – yes; plate surface – tissue cultured treated.
- The median monthly usage of 384–well microplates for HCS was 10 to 50 plates.
- The main supplier of microplates used for HCS assays was Greiner Bio–One.
- The specialty plate for HCS assays rated most interesting were those that supported 3D cell environments.
- Respondents level of agreement with several statements about microplates & HCS were documented.
- The cell type most used today (2011) for HCS assays was transformed or recombinant cell lines.
- A median of 3 dyes (stains) were multiplexed and 4 different parameters evaluated per HCS assay.
- The majority of respondents were not using 3D cell culture scaffolds or microfluidic devices prior to or directly in their HCS assays today.
- 3D cell culture was the HCS task rated most in need of confocal imaging.
- Physiological relevance of assays was ranked the most limiting aspect of HCS (preventing the use of more applications).
- The main use of HCS that would be impacted most if the problems/limitations experienced in HCS today were resolved was drug discovery.
- Physiologically relevant cell culture methods was rated the area of development most needed to grow the market (increase use and adoption) for HCS assays.
- Budget constraints were ranked as the biggest barrier to the adoption of new technologies in HCS.
- The median budget allocated for spending on HCS assays, reagents and consumables today (2011) was \$50K–\$100K. The biggest proportion of this budget was allocated to accessory reagents (i.e. toolbox components, stains, antibodies, fixatives, buffers etc.).
- A bottom–up model was developed around the respondent’s spending on HCS assays, reagents and consumables to estimate the global market. In 2011 this market was estimated to be around \$75M. Segmentation and CAGR estimates are given in the full report.
- The most used commercial suppliers/vendors of HCS assays, reagents and consumable products (excluding microplates) were Life Technologies, Thermo Scientific, Sigma Aldrich, Cell Signaling Technology and BD Biosciences. Together these companies were estimated to share around 2/3rds of this market.
- Respondent feedback on what is still needed to make HCS assays more accessible or easier to perform was documented.
- The full report provides the data, details of the breakdown of the responses for each question, its segmentation and the estimates for the future (2013). It also highlights a few interesting differences between the survey groups.
- PLEASE NOTE: In the survey we have used the term HCS to encompass both High Content Screening and also what is also synonymously referred to as High Content Analysis (HCA).

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General Information on HTStec and HTStec's Trends Market Reports

- HTStec Limited an independent market research consultancy founded in September 2003 whose focus is on assisting clients delivering novel enabling platform technologies (liquid handling, laboratory automation, detection instrumentation and assay reagent technologies) to drug discovery. Over the past 8 years HTStec has published more than 50 market reports on drug discovery technologies and authored over 30 review articles in Drug Discovery World (at least one article per issue).
 - HTStec's Trends reports owe their origins to the need by developers and vendors of new enabling technologies in drug discovery to get up-to-date relevant market metrics on which to base informed business decisions.
 - Typically focused on a specific market niche or segment, in many cases overlooked or frequently misunderstood by broader market studies.
 - Investigations are mainly initiated in response to a sponsor's specific requests.
 - HTStec's extensive experience of the market, both as a Pharma End-User and working for a major Life Science Tool Provider ensures the industry relevance of the market research collected.
 - Based entirely on web-based feedback from potential customers drawn mainly from Pharma and Biotechs, although increasingly University and Research Institute labs are also being researched.
 - Produced extremely rapidly and typically published within 3 weeks of starting the collection phase.
 - Reports are short, concise and focused on giving readers the basic data, analyzed in several different ways.
 - Limited to reporting the main findings alone, without exhaustive discussion on the relevance of the results.
 - Market estimates are mainly based on bottom-up calculations and usually avoid attempts to forecast widely beyond the next 2-3 years. Full details on the derivation of market estimates are given so readers can apply their own factors and easily make alternative estimates if they prefer.
 - Owing to the sensitivity of some of the data collected, all reference to the origin of participating companies is removed, data is pooled to get an industry average and the anonymity of all respondents fully preserved and guaranteed.
 - Critically HTStec's Trends reports have generated much interest and acclaim amongst survey respondents, to whom they are made available free of charge (subject to acceptance of HTStec's copyright terms) so they can benchmark their internal processes.
 - Unlike alternatives HTStec's Market Surveys and Report are aimed at giving readers, information they want and can rely on, not information they don't need, cannot easily discern or is of dubious authenticity.
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