Multi-Mode Microplate Reader Trends 2009

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Conditions Under Which This Market Report Is Sold

Executive Summary

- This market report summarizes the results of HTStec's second global web-based benchmarking survey on multi-mode microplate readers carried out in March 2009.
- The study was initiated by HTStec to meet the needs of the survey sponsors and was part of HTStec's ongoing tracking of emerging life science technologies and marketplaces.
- The main objectives were to comprehensively document current practices, preferences and trends in the use of multi-mode microplate readers (MMPR) and to understand future user requirements.
- The study, although mainly targeted at the academic/research market segment, also obtained feedback from Pharma and Biotech, primarily in North America and Europe.
- For the purposes of this report MMPR does NOT include plate imagers such as the LEADseeker, ViewLux, Evotec::plate vision, etc. or Fluorometric Plate Readers such as FLIPR or Hamamatsu FDSS.
- The survey looked at the following aspects of MMPR as practiced today (2009) and in some cases as predicted for the future (2011): readers most used today; throughput requirements; plate formats used; main application areas; use of multiplexed assay technology; factors influencing a purchasing decision; use of different detection modalities; use of TR-FRET reagents; main target types or classes and preferred reagent vendor; type of reader mainly used; reader type most suited to drug discovery or life science areas; reasons why a particular reader type is the best option; monochromator limitations; interest in an on board multi-channel dispenser; areas where software needs to be improved most; software tools preferred for processing raw data; reasons for changing reader operating conditions; budget allocated to buy new readers; interest in purchasing new readers; vendor service and support experience; requirements for new reader functions; & most effective way to communicate product info to customers.
- The main questionnaire consisted of 29 multi-choice questions and 2 open-ended questions. In addition, there were 5 questions related solely to the administration and demographics of survey.
- The survey collected 73 responses (46 complete and 27 partially filled out) from 67 different organizations.
- Survey responses were geographically split: 48% North America, 40% Europe, & 12% Asia (Exc. Japan).
- Respondents came from 37 University/Research Institute/Government Lab; 15 Large Pharma; 12 Biotechnology Company; 5 Medium-Small Pharma; 2 Other; 1 Hospital/Clinical Research; and 1 Biochemical/Chemical Manufacturer.
- Respondents main group activity was: 30% Life Science Research; 17% Primary Screening (HTS); 15% Assay Development; 15% A Combination of Drug Discovery Areas; 11% Basic Academic Research; 7% Other Activity; 2% Therapeutic Areas; 1% Secondary Screening; 1% Hits-To-Leads; and 1% Compound Profiling.
- Survey respondents had the following job roles or positions which were in descending order: 14 Lab Manager; 12 Senior Scientist/ Researcher; 10 Professor; 9 Section/ Group Leader; 6 Department Head; 5 Director; 4 Other; 3 Principal Investigator; and 2 Post-Doc.
- Survey results were expressed as an average of all survey respondents. In addition, the data was fully reanalyzed after sub-division into the following 5 survey groups: 1) Large Pharma; 2) Small-Medium Pharma & All Biotech; 3) University, Research Institute or Government Lab; 4) Europe; & 5) North America.
- PerkinElmer was the MMPR manufacturer and Envision the MMPR brand most used by respondents.
- The median sample throughput required in 2009 on respondents MMPR was 0.1K to 1K wells/day.
- The main microplate format read on respondents MMPR was the 96-well plate.
- The main application area investigated using respondents MMPR was small molecule primary screening.
- The median use of multiplexed assay technology in 2009 on respondents MMPR was none (0% of assays).
- Sensitivity/limit of detection and quality of service and support were rated as the most important factors that will influence a decision to purchase a new MMPR.
- Some hardware or software limitations that have prevented respondents from running a desired assay on their current MMPR are documented.
- Current (2009) use of MMPR detection modalities was greatest for absorbance (28% use), followed by fluorescence intensity (FI) (24% use), glow luminescence (12% use) and then time resolved FRET (TR-FRET or HTRF) (9% use). In the future (2011) the greatest increases in use of modalities are expected for TR-FRET, AlphaScreen/AlphaLISA, FRET and label-free.

- Of the different commercial TR-FRET reagent offerings greatest use was made of Cisbio HTRF.
- The target type or class most investigated using respondents MMPR was enzyme assays, with the assay reagents sourced mainly by homebrew.
- The current (2009) lab makeup of respondents MMPR types was 67% filter-based, 24% monochromator only and 9% hybrid readers (with both filters and monochromators).
- The preferred MMPR type most suited to drug discovery and life science areas were: filter-based only for primary screening (HTS), secondary screening and immunoassays; mainly filter-based for compound profiling; and 50:50 filter-based:monochromator (hybrid readers) preferred for all other areas.
- Filter-based MMPR were most favoured on the basis of capital (Capex) costs, speed (fast read times per plate) and sensitivity/limit of detection; whereas wavelength scanning capability, ability to run wide diversity of assay types (i.e. flexibility) and ability to differentiate a fluor with a small stokes shift most favoured the choice of monochromators.
- The areas were respondents felt most limited in their use of a monochromator reader were sensitivity/dynamic range - FI/FRET bottom measurement; wavelength switching speed; lack of AlphaScreen/AlphaLISA; and reader control functions.
- The majority were interested in having an onboard 8 or 16-channel dispenser within a MMPR.
- Reader control (ability to run complex processes) was rated as the area where current MMPR software needs most improvement.
- The majority preferred to process the raw data from their MMPR using common office software.
- 30% have changed their MMPR operating conditions to facilitate greater reader control.
- Opinion on HTS and assay technologies migrating to Academic labs, and the effect of the current economic situation on their budget and purchasing decisions/preferences was obtained.
- Details of how respondents rated their vendor service and support experience for 73 MMPR they currently have or use are documented. PerkinElmer and BioTek overall received the highest ratings.
- PerkinElmer was MMPR manufacturer/vendor most associated with nearly all the preferred characteristics/attributes respondents ranked, apart value for money where BioTek was ranked first choice; responsive to customer needs where PerkinElmer and BMG were equal first choice; and software tools for data analysis where no company met expectations.
- From a long list of possible functionalities/applications that could be added to a new MMPR greatest requirement was to have the option of using either monochromators or filters in the same reader.
- Colleague recommendation was rated the most important sources of information when purchasing a new MMPR.
- An on-site demonstration was rated the most important information or material that supports a new MMPR purchasing decision.
- Email was ranked the preferred way to receive information about a new MMPR development.
- Respondent's feedback on their unmet needs with existing multi-mode plate readers was documented.
- The survey identified 41 MMPR purchases planned over the next 3 years with 34% of respondents planning to purchase a new reader. Tecan was the most popular MMPR vendor mentioned in these purchasing plans, followed by PerkinElmer, ThermoFisher, and then BioTek.
- The main reasons given for purchasing a new MMPR was to access a new assay or technology.
- The median target price range for these planned MMPR purchases was $35K-$65K.
- The majority of MMPR purchase plans were for hybrid or filter-based multi-mode readers.
- The median budget allocated for the purchase of a MMPR in 2009 was $75K-$100K per lab. With 1.4 systems to be purchased/lab. Estimates for the growth of this reader budget in 2010 & 2011 were made.
- A bottom up model was developed to estimate the global market for MMPR in the academic/research segment. This market was estimated to be around $33M in 2009 with sales of at least 925 units per year. This market was split 60% filter-based readers, 28% monochromator only readers and 12% hybrid readers.
- Based on MMPR used today by survey respondents PerkinElmer has the greatest share (30%), followed by MDS (22%), then Tecan (19%), BMG (13%) and BioTek (5%). All other vendors have less than 5% share.
- The full report provides the data, details of the breakdown of the responses to each question and the estimates for the future (2011). It also highlights some interesting differences between the survey groups.

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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 and the life sciences. Over the past 5 years HTStec has published 42 market reports mainly on drug discovery technologies and authored 27 review articles in Drug Discovery World.
- 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 typically 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, where done, 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 or know better.
- 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.
- 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.
- HTStec aims to be the premier global provider of highly focused market research on enabling technologies in drug discovery.
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