

# Kinase Screening & Profiling Trends 2010



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## Executive Summary

- This market report summarizes the results of HTStec's 4<sup>th</sup> industry-wide global web-based benchmarking survey on kinase screening and profiling carried out in April 2010.
- The study was initiated by HTStec to meet the specific needs, interests and focus of the survey sponsors.
- The objective was to document current practices and preferences in kinase screening and profiling, and to understand future user requirements, particularly with respect to the need for outsourced services. The aim was to compile a reference document on kinase screening and profiling metrics, which could be compared relative to previous HTStec kinase reports. Equal emphasis was given to soliciting opinion from Pharma, Biotech and Academic/Research market segments in both North America and Europe.
- The survey looked at in house and outsourced kinase screening and profiling, as practiced today (2010) and in many cases as predicted for the future (2012). Specifically the following were investigated: therapeutic areas using kinase assays; proportion of kinase profiling activity outsourced; preferred kinase panel profiling format, technology supplier and outsourced fee-for-service provider; interest in binding assays; satisfaction with data quality generated; typical turn-around time; most used fee-for-service providers; main criteria for selecting a service provider; what outsourced providers should implement to drive decision making; kinase panel profiling budgets; supplier market share for in house and outsourced profiling; unit(s) of measure used when comparing different fee-for-service providers; number of full time equivalents (FTE's) required to enable/support in house kinase panel profiling operations; average cost per single well of the kinase profiling assays; number of wells generated; data breakdown between single vs. replicate testing and dose response curves; number of kinase primary screens and wells per screen; proportion of kinase primary screening activity outsourced; interest and requirements for outsourcing kinase primary screening; size of kinase panels used; representation in panels of disease-relevant mutant kinases; types of mode of action studies undertaken; use and usefulness of multi-species variants of kinases; satisfaction with data generated; outsourced offerings of greatest interest; interest in a panel of cell-based kinases; features of an ideal kinase platform of greatest interest to respondents; and where kinase service providers should prioritize going forward.
- The main questionnaire consisted of 30 multi-choice questions, focused mainly on assay, technology and budget metrics, and 1 open-ended question. In addition, there were 8 questions related solely to survey demographics.
- The survey collected 60 validated responses.
- Responses were geographically split: 45% North America; 40% Europe; 13% Asia (excluding Japan); and 2% Japan.
- Survey respondents were drawn from persons or groups involved in kinase primary screening, kinase selectivity profiling and the outsourcing of all types of kinase testing to fee-for-service providers.
- Respondents came from 27 University/Research Institute/Government Lab (Not-for-Profit) Facilities; 18 Small/Medium Pharma & Biotechs; 12 Large Pharma & Biotechs; and 3 Other Organizations.
- Most survey respondents had a senior job role or position which was in descending order: 11 research scientists; 10 principal investigators; 9 others; 8 section/group leaders; 5 senior scientist/researchers; 4 post-docs; 4 department heads; 4 directors; 3 professor/assistant professors; and 2 lab managers.
- The research discipline of the majority of survey respondents was biochemistry.
- Survey respondents represented: 11 assay development labs; 9 basic research labs; 9 labs with a combination of drug discovery roles; 7 primary screening/HTS labs; 6 life science research labs; 5 compound profiling labs; 4 target identification/validation labs; 3 other labs; 3 preclinical research labs; 2 lead optimization labs; and 1 safety assessment lab.
- 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 & Biotech; 2) Medium/Small Pharma & Biotech; 3) University, Research Institute & Government Lab (Not-for-Profit); 4) Europe; and 5) North America.
- The majority of respondent's kinase assays were undertaken to support the oncology therapeutic area.
- A median of <20% of all kinase profiling activities were outsourced today (2010).
- The preferred in house kinase panel profiling assay format was activity assays and Life Technologies was the preferred profiling technology supplier.

- The preferred outsourced kinase panel profiling assay format was activity assays, and Millipore was the preferred fee-for-service provider.
- Millipore and Life Technologies were the most used fee-for service providers over the past year.
- The majority of respondents think that activity kinase assays are preferable to binding assays.
- Most respondents are satisfied with the data quality generated by kinase profiling assay methods used in house and outsourced.
- The typical turn-around time from compound submission to kinase profiling data delivery was a median of <5 days in house and a median of <10 days outsourced.
- High-quality reproducible data was rated the key decision-making criteria in selecting an outsourced kinase profiling supplier, and more cell-based kinase assays will help drive decision making.
- The median kinase panel profiling budget allocations in 2010 were <\$25K/lab in house and \$25K-\$50K/lab outsourced. Life Technologies had greatest market share of the in house profiling budget (i.e. for reagents and kits). Millipore had greatest market share of the outsourcing profiling budget.
- Cost/well and cost/compound were equally important measures when comparing profiling services from different fee-for-service providers.
- The median number of FTE's allocated to support in house kinase profiling in 2010 was 2.
- The median cost per single well for kinase panel profiling undertaken was \$0.50-\$0.75/well in house versus \$2-\$5/well outsourced.
- The median total number of single wells tested both in house and outsourced in 2010 for kinase panel profiling was 500-1,000 wells/year. The majority of outsourced kinase profiling wells were duplicate or replicate point (% inhibition) tests (n>1).
- The median number of kinase primary screens undertaken in 2010 was 6-10, each with a median of 5K-10K wells/primary screen.
- A median of none (zero) kinase primary screening activities were outsourced today (2010). Current interest in outsourcing kinase primary screening (HTS) or focussed library screening was limited. Respondent's requirements for outsourcing primary screening activities were ascertained.
- The median size of kinase panels being used by respondents in 2010 was 11-25 kinases in house, versus 51-75 kinases outsourced.
- The median preferred size of a kinase panel offered by an outsourced provider was 101-150 kinases.
- The outsourced offering of greatest interest to respondents was to cherry-pick individual kinase assays from all available, to create a custom panel.
- Some disease-relevant kinase representation in an outsourced panel is wanted.
- ATP competition was the type of investigation most undertaken during in house MOA studies.
- Most respondents are not using multi-species kinase assays in house or outsourced. The majority regard the usefulness of outsourcing multi-species kinase assays as only somewhat important.
- From a list of several outsourced kinase screening and profiling services respondents were most interested in regular profiling of 10-100 compounds weekly/monthly against a custom panel of kinases.
- The majority of respondents thought that an outsourced panel of individual cell-based kinase assays maybe useful i.e. dependent upon assay availability.
- High-quality, reproducible data was rated as the feature of an ideal kinase screening platform of greatest interest to respondents.
- Going forward respondents want kinase service providers to prioritize their future effort primarily on lowering the price, improving data quality and then focussing on cell-based assays.
- Respondent's feedback on the improvements they think are required and the unmet needs that exist today in kinase panel profiling and related services are documented.
- Several bottom-up models were developed to estimate the global market for kinase profiling and screening. The kinase profiling market was estimated to be around \$50Million for in house reagents and \$45Million for outsourcing in 2010. The in house kinase primary screening reagent market was estimated to be around \$100Million in 2010. The markets were segmented by organization and geography. CAGR estimates were made for the market segments.
- The full report provides the data, details of the breakdown of the responses for each question and its segmentation, the mean and median values, and estimates for the future (2012). It also highlights some interesting differences, particularly between Large Pharma & Biotech versus the other 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. Over the past 7 years HTStec has published more than 50 market reports on drug discovery technologies and authored over 30 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 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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