Epigenetic Screening Trends 2010

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Conditions Under Which This Market Report Is Sold

Executive Summary

- This market report summarizes the results of HTStec's industry-wide global web-based benchmarking survey on epigenetic enzyme screening assays carried out in June 2010.
- The survey was initiated by HTStec as part of its tracking of emerging life science marketplaces. The questionnaire was compiled to meet the needs, requirements and interests of the epigenetic vendor community. The objectives were to comprehensively document current practices and preferences in epigenetic enzyme screening assays, and to understand future user requirements. Equal emphasis was given to soliciting opinion from Pharma, Biotech and Academic Screening/Research market segments in both North America and Europe.
- The survey looked at the following aspects of epigenetic enzyme screening assays, as practiced today (2010) and in many cases as predicted for the future (2012). Specifically the following were investigated: level of enthusiasm for epigenetic target biology; current perception of epigenetic screening; key diseases/therapeutic area(s) using epigenetic enzyme assay; key epigenetic enzyme classes/proteins of greatest interest, where assay feasibility has been investigated and primary screens run; main source/origin of epigenetic enzymes/proteins; where current commercial assays and tools are adequate; assay formats/detection technologies that have proven useful and most associated with assay advantages; types of substrates most commonly used; the challenges of assay development of epigenetic enzyme targets; new tools required to drive the investigation of epigenetic enzyme assays; what limits epigenetic enzyme screening; number of FTE devoted to epigenetic research and different targets supported; epigenetic enzyme assay reagent budget; source the reagents and tools used to assay epigenetic enzymes; breakdown of epigenetic enzyme assay reagent budget into components purchased; interest in purchasing new epigenetic products and services; number of epigenetic primary screens and wells per screen; approach to the primary screening (HTS) of epigenetic enzymes; proportion of epigenetic primary screens that are biochemical assays; average cost per well of epigenetic screening assays; use of epigenetic cell-based modification assays; interest in outsourcing epigenetic research; proportion of epigenetic enzyme testing outsourced and number of wells outsourced; preferred fee-for-service providers; main drivers for outsourcing epigenetic enzyme assays; interest in purchasing external compounds or libraries to test against epigenetic enzyme targets and information required to aid selection of those compounds; and unmet needs in epigenetic enzyme assays and screening today.
- The main questionnaire consisted of 28 multi-choice questions and 3 open-ended questions. In addition, there were 6 questions related solely to survey demographics.
- The survey collected 86 validated responses, of these 52% provided comprehensive input.
- Responses were geographically split: 37% North America; 37% Europe; 16% Asia (Excluding Japan); 6% Japan, and 4% Rest of World.
- Survey respondents were drawn from persons or groups undertaking epigenetic enzyme screening assays or planning future investigation in this area.
- Respondents came from 49 University/Research Institute/Government Lab (Not-for-Profit) Facilities; 21 Small/Medium Pharma & All Biotechs; and 16 Large Pharma.
- Most survey respondents had a senior job role or position which was in descending order: 14 research scientists; 12 professors/assistant professors; 11 section/group leaders; 10 principal investigators; 8 senior scientist/researchers; 8 directors; 7 post-docs; 7 others; 5 vice presidents; 3 department heads; and 1 lab manager.
- Respondents represented: 18 life science research labs; 19 basic research labs; 16 assay development labs; 11 labs with a combination of drug discovery roles; 10 primary screening (HTS) labs; 5 therapeutic areas (target identification/validation) labs; 3 other labs; 1 safety assessment lab; 1 preclinical research lab; 1 compound profiling lab; 1 hits-to-leads (lead optimization) lab; and 1 secondary screening lab.
- 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) Large Pharma; 2) Medium/Small Pharma & All Biotech; 3) University, Research Institute & Government Lab (Not-for-Profit); 4) Europe; and 5) North America.
- 44% of respondents were currently undertaking epigenetic enzyme screening assays. The remaining 56% were interested in epigenetic target biology and planning future investigation.
- The majority of respondents had a high level of enthusiasm for epigenetic target biology.

- The majority of respondents perceived epigenetic screening as was 'one of today's most exciting biological target areas, somewhat comparable to kinase situation, just time is needed to develop'.
- The majority of respondents were targeting epigenetic assays within the oncology therapeutic area.
- The epigenetic enzyme class/protein ranked of greatest interest, most investigated, plus already done most primary screening against was histone deacetylases (HDAC & Sirtuins).
- The main source/origin of the epigenetic enzyme proteins used today (in 2010) was in house.
- The adequacy of commercial assays and tools available for the main epigenetic enzyme classes/proteins was ranked highest for histone deacetylases, but overall the ranking for all enzyme classes/proteins did not exceed moderately adequate.
- The assay format/detection technology that had proven most useful to date in epigenetic enzyme assays was fluorimetric (fluorescent intensity).
- The assay formats/detection technologies respondents most want to deploy in the future for epigenetic enzyme assays were TR-FRET (HTRF) and target gene readouts.
- Based on a list of desirable assay advantages TR-FRET was the most preferred assay format/detection technology for epigenetic enzyme assays, it was followed by mass-spec.
- Respondents most commonly used peptides as substrates for their epigenetic enzyme assays.
- Specificity was ranked as the most important challenge of epigenetic enzyme assay development.
- Only 35% of respondents had encountered assay challenges when working with epigenetic enzymes.
- Availability of good antibodies was ranked the most limiting (major obstacle) in the exploitation of epigenetic enzyme targets today.
- A median of 1 FTE's was allocated to enable/support in house epigenetic enzyme research (investigation and screening) in 2010.
- A median of 2 different epigenetic targets/projects/programs were undertaken in house in 2010.
- A median budget of $25K-$50K/lab was allocated for epigenetic enzyme assay reagents in 2010.
- >50% of this budget was shared between PerkinElmer, Abcam, Sigma Aldrich and Life Technologies, and was mainly used for the purchase of assay specific probes.
- The new product offering respondents would most like to purchase, if they were available to match their epigenetic targets, were tool box of reagents for in house assay development.
- A median of 1-5 epigenetic enzyme primary screens, each with 50K-100K wells were done in 2010.
- The preferred approach to the primary screening of epigenetic enzymes was to screen small focused compound sets or decks.
- A median of 45% of all epigenetic primary screens were enzyme/biochemical assays in 2010.
- The epigenetic cellular modification assays most investigated in 2010 were methylation.
- The median cost per single well for epigenetic screening assays undertaken in house was $0.1-$0.25 for biochemical assays versus $0.75-$1 for cell-based assays.
- Profiling against cell-based assays was rated the aspect of epigenetic research respondents were most interested to outsource to a fee-for-service provider.
- The median proportion of all epigenetic enzyme testing that is outsourced today (in 2010) was 'none'.
- Previous use of fee-for-service providers of epigenetic enzyme was greatest for Reaction Biology.
- A median total of 100-250 single wells were outsourced in 2010 for epigenetic enzyme testing.
- Access to an assay/screening technology not available or used in house was ranked the main reason for outsourcing epigenetic enzyme assays.
- The majority of respondents were not interested in purchasing external compounds or libraries to test against epigenetic enzyme targets.
- Biological data to demonstrate activity was ranked as the information that would be of greatest influence when selecting external compounds or libraries for testing against epigenetic enzymes.
- Respondent's feedback on the improvements they think are required and the unmet needs that exist today in epigenetic enzyme screening assays were documented.
- A bottom-up model was developed around the respondent's annual budget for epigenetic screening assay reagents to calculate the global market. The epigenetic screening assay reagents market was estimated to be around $65M in 2010. The market was segmented by organization and geography. CAGR estimates for 2012 were made for the market segments.
- The full report provides the data, details of the breakdown of the responses for each question, its segmentation and the estimates for the future (2012). It also highlights some interesting differences, particularly between Large Pharma 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.
- HTStec aims to be the premier global provider of highly focused market research on enabling technologies in drug discovery.
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