

# Diseased Primary Cells Trends 2010



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## Executive Summary

- This market report summarizes the results of HTStec's industry-wide global web-based benchmarking survey on diseased primary cells and in vitro models of disease carried out in November 2010.
- 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 primary cell vendor community. The main objectives were to comprehensively document current end user opinions, practices, and preferences for the use of diseased primary cells in drug discovery applications and to understand future requirements.
- The survey looked at the following aspects of diseased primary cells as practiced today (2010) and in some cases as predicted for the future (2013): the main advantages of using a diseased primary cells; the limitations of using primary cells; the key disease/therapeutic areas targeted and the most relevant primary cell types; current use of in vitro and in vivo models of disease; level of use of diseased primary cells; diseased primary cell types respondents would most like to use; main drug discovery applications targeted with diseased primary cells; obstacles related to the supply/generation of diseased primary cells; the source of diseased primary cells; companies most recognized as suppliers/providers of diseased primary cells; pattern of spending on primary cells; factors influencing the purchase of primary cells; interest in accessing primary cancer/tumor cells; preferred format to access diseased primary cells; in vitro characterization of diseased primary cells and clinical information required to ensure that isolated cells are suitable for use as a disease cell model; current use of induced pluripotent stem (iPS) cells; source of iPS cells; preferred stem cells lines; use of 3D-cell culture; main benefits of 3D-cell culture; awareness of any additional unmet needs in the area of diseased primary cells; and interest in receiving more information and beta-testing diseased primary or stem cells.
- The main questionnaire consisted of 24 multi-choice questions and 5 open-ended questions. In addition, there were 5 questions related solely to survey demographics.
- The survey collected 167 validated responses, of these 77% provided comprehensive input.
- Survey responses were geographically split: 44% North America; 38% Europe; 14% Asia (excluding Japan); 3% Japan and 1% Rest of World.
- Survey respondents were drawn from persons or groups interested in and/or using primary cells in drug discovery applications or planning future investigation of diseased primary cells.
- Respondents came from 118 University/Research Institute/Government Lab (Not-for-Profit) Facilities; 23 Large Pharma; 10 Biotechs; 9 Medium-Small Pharma; 4 Contract Research Organizations; 2 Other; and 1 Academic Screening Center.
- Most survey respondents had a senior job role or position which was in descending order: 28 senior scientists/researchers; 28 professors/assistant professors; 25 research scientists; 24 principal investigators; 18 post-docs; 15 department heads; 8 directors; 7 other roles; 7 section/group leaders; 5 lab managers; and 2 vice presidents.
- Respondents represented the following labs: 50 basic research; 43 life science research; 18 labs with a combination of drug discovery roles; 17 therapeutic area; 13 assay development; 9 primary screening (HTS) ; 7 other; 5 leads-to-candidate; 2 hits-to-leads; 2 compound profiling; and 1 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) Large Pharma; 2) Smaller Screening Labs; 3) Academic Research Labs; 4) Europe; and 5) North America.
- More relevant to disease research was ranked the greatest advantage for using a diseased primary cell versus a cell line disease model.
- Availability of relevant cells was ranked as most limiting the use of primary cells.
- The majority of respondents were targeting or planning to use diseased primary cells in the oncology/cancer disease therapeutic area.
- Feedback on the three primary cell types of greatest relevance to respondent's disease focus is summarised. For each disease/therapeutic area the primary cells types most targeted were ranked.
- 36% of respondents are currently using in vitro models of disease.
- 48% of respondent's current work involves using in vivo models of disease.

- The current (2010) level of use of diseased primary cells by the majority of respondents was minimal (i.e. considering using, still investigating possibilities, with <5% use).
- The diseased primary cell types of greatest interest to respondents were immune and epithelial cells.
- The main drug discovery application of diseased primary cells used or evaluated to date (2010) was gene expression assays.
- Sourcing diseased tissue was ranked as the main obstacle faced regarding the supply/generation of diseased primary cells.
- Most of the diseased primary cells used by respondents were isolated by their group.
- The three companies that immediately come most to the minds of respondent's as suppliers/providers of diseased primary cells were Lonza, ATCC and Life Technologies.
- The pattern of spending on primary cells today (2010) by the majority of respondents was predominantly in house.
- The frequency of spending on primary cells today (2010) by the majority of respondents was rarely i.e. once or twice per year.
- The median budget allocated by respondents for commercial spending on primary cell purchases in 2010 was \$1K – \$10K/year.
- A bottom-up model was developed around the respondent's commercial spending on primary cells to estimate the global Pharma, Biotech & Screening market for primary cells. The global 2010 market for primary cells was estimated to be around \$70M. CAGR estimates for 2013 are given in the full report.
- Availability of specific primary cell types was ranked the most important reason that would influence respondents purchasing of primary cells.
- 42% of respondents are interested in accessing primary cancer/tumor cells. Some details of the type primary cancer/tumor cells of interest to respondents were documented.
- The preferred format to access diseased primary cells was cryopreserved in vials.
- The in vitro characterization of diseased primary cells most needed for them to be suitable for use in a disease cell model was in vitro confirmation of function or lack of function.
- The clinical information most needed to ensure isolated cells are suitable for use in a disease cell model was donor patient data (e.g. age, sex, ethnicity, body mass index etc.).
- 18% of respondents are currently working with iPS cells.
- Only 8% of respondents use disease-patient derived iPS cell lines.
- Of those respondents using iPS cells the majority produce the cells themselves versus obtain externally.
- 60% of respondents plan work with stem cells.
- Of those respondents who plan to work with stem cells the majority have no preference between an iPS versus an ES cell line. The reasons given by respondents for their preference are documented.
- Only 19% of respondents are using 3D-cell culture systems today for primary cells. Some of the 3D scaffolds/formats or other commercial approaches investigated were documented.
- Mimics the in vivo environment and morphology was ranked by as the main benefit of using 3D-cell culture.
- Only 10% of respondents were aware of any additional unmet needs in the area of diseased primary cells. There suggestions for unmet needs were documented.
- 82% of respondents were interested to receive more information about diseased primary or stem cells.
- 48% of respondents were interested to in beta-testing diseased primary or stem cells.
- 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 some interesting differences between the survey groups, particularly Large Pharma and Smaller Screening Labs versus Academic Research Labs.

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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 (at least article one 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.
- HTStec aims to be the premier global provider of highly focused market research on enabling technologies in drug discovery.
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