

Application: 6066

Target Analysis Solution

Page: General Information
Provide information about the company to be considered for the award. If you will be nominating an individual, specify the nominee's employer.
Name of Organization/Company BostonGene
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Additional Contacts I do not wish to list additional contacts
Page: Entry Information
Entry Title Target Analysis Solution
Category G04. Technology Breakthrough of the Year - Biotechnology
Technology Breakthrough of the Year Submission Format Written Answers

a. Briefly describe the organization that achieved the nominated technology breakthrough: its history and past performance (up to 200 words). Required

BostonGene helps drug developers de-risk and accelerate research and development using a clinically validated AI platform purpose-built for oncology and supported by a CLIA-certified and CAP-accredited clinical laboratory. By integrating advanced molecular and immune profiling with clinical data, we uncover actionable insights that inform trial design, optimize patient selection and improve clinical outcomes. Our diagnostic and treatment recommendation solutions are used in clinical settings to personalize care and guide therapy decisions for patients.

BostonGene's AI-driven platform transforms oncology drug development by enabling precision biomarker discovery, patient stratification and identification of novel therapeutic targets. Our advanced analytics support smarter trial design, real-time adaptive strategies and faster decision-making. By deeply characterizing tumors, their microenvironments and the patient's immune system, we predict therapeutic response and identify potential adverse events, reducing trial risk and increasing the likelihood of regulatory success. Our integrated data capabilities provide deep insights into patient populations and treatment dynamics, guiding strategic drug development. BostonGene bridges the gap between discovery and delivery, empowering drug developers to accelerate innovation, personalize therapies at scale and redefine the future of cancer care.

b. Outline the nominated technology breakthrough. Be sure to describe it in terms that someone with limited knowledge of the technology can understand and appreciate (up to 250 words). Required

Antibody-drug conjugates (ADCs), bi-specific antibodies and other targeted therapies offer powerful, precise cancer treatment by binding to tumor-specific antigens. However, identifying optimal targets remains a major challenge in drug development.

Since early 2023, BostonGene has launched a novel target analysis solution that enhances both known and novel drug target discovery across cancer types.

For known drug targets, BostonGene leverages a proprietary database of over 100,000 transcriptomic profiles to identify cancer expressing the therapeutic target, supporting early drug development and strategic label expansion. It also assesses expression in normal tissues to predict and mitigate adverse events.

To identify novel target candidates, BostonGene applies an AI-driven, multi-stage RNA sequencing analysis pipeline. The process begins by reviewing genes previously explored as ADC targets, filtering out those with high expression in normal tissue to minimize toxicity. Additional filters ensure candidates have high, diagnosis-specific expression, strong tumor association, minimal correlation with non-tumor cells and no linkage to immune infiltration –ensuring true tumor specificity.

By combining an unmatched transcriptomic database, advanced analytics and expert curation, BostonGene's platform improves the precision success rate of targeted therapy development, driving safer, more effective cancer treatment.

c. Explain why the technology breakthrough you have highlighted is unique or significant (up to 250 words). Required

BostonGene’s achievements are significant because BostonGene transcends conventional target discovery approaches that rely primarily on bulk tissue expression data. Instead, BostonGene integrates transcriptomic profiles from cancer cell lines, purified tumor and tumor microenvironment (TME) cells and normal tissues, providing a much more nuanced view of target expression—critical for maximizing therapeutic efficacy and minimizing off-target effects.

For example, when evaluating potential ADC targets in sarcoma and breast cancer, BostonGene combined external literature and clinical trial data with its multi-layered transcriptomic analysis. Out of 86 initial candidates identified through external sources, BostonGene’s rigorous filtering—assessing tumor specificity, TME expression and safety through normal tissue profiling—refined the list to just 36 viable sarcoma targets and 18 breast cancer targets. This deep prioritization enables a more focused, safer and faster path to clinical translation.

Most industry solutions can detect whether a target is expressed in a cancer type, but few can differentiate expression between tumor cells and the TME or assess safety risks based on normal tissue data. BostonGene addresses this critical gap, providing unprecedented precision in indication selection and de-risking early drug development.

Further distinguishing BostonGene is its ability to inform rational combination strategies. Beyond assessing targets for ADC monotherapy, BostonGene evaluates the potential benefit of combining ADCs with immunotherapy biomarkers such as tertiary lymphoid structure (TLS) and immune checkpoint inhibition (ICI) signatures to identify patients most likely to benefit from combination therapies (ADC + immunotherapy)—delivering a fully integrated, evidence-based solution that has not been achieved by any other platform in the industry.

d. Reference any attachments of supporting materials throughout this nomination and how they provide evidence of the claims you have made in this nomination (up to 250 words). Optional

BostonGene webpage describing target identification across different cancer types. Contains a case example of target population discovery: <https://bostongene.com/biopharma/target-analysis>

BostonGene poster presented at SABCS 2024 showcasing a comprehensive analysis of ADC target expression in breast cancer: <https://bostongene.com/news-and-publications/publications/comprehensive-analysis-of-adc-target-expression-in-invasive-lobular-carcinoma>

BostonGene poster presented at SITC 2024 showcasing a comprehensive analysis of ADC target expression in sarcoma: <https://bostongene.com/news-and-publications/publications/identifying-novel-targets-for-antibody-drug-conjugates-in-sarcomas-using-rna-sequencing>

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