

Case Study: DxTerity Diagnostics, Inc.

The Company

DxTerity Diagnostics has developed the NEAT™ platform for nucleic acid-based testing applications in molecular diagnostics and personalized medicine. NEAT or Non-Enzymatic Amplification Technology is a robust and widely-applicable genomic testing platform that replaces expensive enzymatic amplification techniques, enabling the development of simple and affordable diagnostic tests.

Need for a Software Solution

The popularity of a nucleic acid amplification platform depends on its performance and ease of use. A technique that requires a significant investment in time and money has few takers. An easy to use software system that allows customers to design probes for specific targets can increase the market penetration of the technology.

However, the automatic design of probes that are highly efficient can be challenging. Designing probes for more complicated assays such as multiplex mRNA detection and in-situ/in-vitro imaging adds further challenges.

“We wanted to make this robust technology popular in companies and labs working on personalized medicine. An easy to use software system that efficiently designs NEAT and QUAL™ (Quenched Auto-Ligation) probes is essential for this. The NEAT software program developed in conjunction with Premier Biosoft allows users to quickly design probes which conform to the specific guidelines that we developed, without compromising on the flexibility that the users of this platform may need,” says Bob Terbruggen, President and CEO, DxTerity Diagnostics.

The Challenge

The client outlined a comprehensive set of criteria to be fulfilled. The possibility of a large user base necessitated a generic and stable design. At the same time, the design needed to be highly customizable to allow the user to control all their design parameters. This meant that the requirements must be understood correctly from the client’s perspective, and the product must be designed for the users' needs.

Expected Benefits

By providing a software solution to the probe design needs of NEAT, DxTerity expects to make the technology more popular by minimizing (or removing) the barriers for adopting a new platform for diagnosis. NEAT is an easy to use system developed to replace the traditional enzymatic amplification techniques that are key to most nucleic acid detection technologies. The software provides two primary benefits, increased assay success and ease of use.

The use of sophisticated algorithms ensures that each base is interrogated to find a suitable probe that passes all the set design parameters. The tags are checked for uniqueness and the designed probes must conform to all guidelines, increasing the probability of assay success.

Without a software system, customers would need to design probes manually by trial-and-error, or rely on DxTerity for all designs, even in cases where security of early-stage IP is critical. With the biologist designed interface and short learning curve, it is possible for customers to design assays in their own facility with just a click of a button, with a high probability of successful results.