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Xencor Receives Two Patents For Ultra-Fast Optimization Technology To Create A New Generation Of Biotechnology Products

Xencor Receives Two Patents For Ultra-Fast Optimization Technology To Create A New Generation Of Biotechnology Products (BW Healthwire)—August 06, 2001—Protein Design Automation™ technology optimizes properties of proteins Xencor today announced that it has obtained two patents from the United States Patent and Trademark Office (#6,188,965 & #6,269,312) both entitled, "Apparatus and Method for Automated Protein Design," expanding the Company's patent estate for its proprietary Protein Design Automation™ (PDA™) technology. The PDA™ technology is the first and only protein optimization method combine advanced computational methods, the power of high performance computing and experimental screening, according to Bassil Dahiyat, Ph.D., president and chief executive officer of Xencor. "The issuance of these patents is an important milestone for Xencor as they are the first issued patents for in silico protein sequence screening, the fastest method for protein optimization. These patents also validate our exclusive license agreement with Caltech, one of the world's premier scientific research institutions," Dr. Dahiyat said. "Using protein structure modeling, PDA technology screens 70 orders of magnitude more protein sequence diversity than directed evolution methods. We are using this enormous screening capacity to optimize protein properties, including activity, binding affinity and specificity, stability, expression level, and potency. This in silico prescreening will allow Xencor to create focused libraries to aid in the development of a new generation of biotechnology products tuned for specific applications, such as more effective and robust proteins for chemical processing, new agricultural products and more potent and specific biopharmaceuticals." Xencor's PDA technology overcomes the limitations of natural and directed evolution by elegantly merging supercomputing with experimental screening to search the entire range of potential protein sequences for improved proteins. The vast, unmatched scale of the in silico sequence search gives access to new protein features and intellectual property. The PDA technology's ultra-high throughput in silico prescreening reduces the number of candidate proteins that require experimental testing, saving significant time and cost compared to solely experimental, directed evolution techniques. The PDA technology can also be used to create improved, second-generation therapeutic proteins for life-cycle management or competitive market penetration. Protein Design Automation™ Technology Protein Design Automation uses three-dimensional structure information to screen protein sequences. A structural model of a protein is computationally determined, from public database information or created by modeling from homologous proteins. A structural region for design is selected based on the protein properties to be optimized. Because the amino acid sequence of the protein is defined by the structures of the amino acid side chains, the PDA technology is then used to accurately model the atomic interactions among the side chains to screen for the best sequence of amino acids for this protein structure. The optimal sequence for the design region is determined, as well as from thousands to millions of other nearly optimal sequences. Highly efficient computational search methods allow the screening of over 1080 sequences, exploiting protein diversity unreachable by non-computational methods. Following this in silico pre-screen, the predicted sequences are then experimentally tested in vitro, either singly or as small libraries, for improved performance. By testing only those sequences that are compatible with the protein structure, the PDA technology eliminates deleterious changes that are created by directed evolution, creating focused libraries that require far less effort and cost to screen for optimized proteins. Xencor, a privately-held company, is focused on using its cutting edge protein analysis and optimization technologies to accelerate the discovery of therapeutic proteins and novel compounds. With its proprietary ProCode™ and Protein Design Automation™ (PDA™) technologies, Xencor scientists can rapidly determine the interactions and functions of a cell's entire protein complement, identify proteins of interest, and then optimize key properties of these proteins to fit commercial applications. The use of these technologies alone or in combination will accelerate the compound identification and development programs of Xencor's strategic partners in the pharmaceutical, biotechnology, agricultural and chemical industries. Xencor is headquartered in Monrovia, California.