Sangamo Therapeutics Logo

Sangamo Therapeutics Announces Publication Of Data Demonstrating New Zinc Finger Nuclease Architectures Enabling High-Precision Genome Editing

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-- Data published in Nature Communications show new architectures increase targeting capabilities by 64-fold

-- Highly precise editing demonstrated at multiple genomic loci

BRISBANE, Calif., March 8, 2019 /PRNewswire/ -- Sangamo Therapeutics, Inc. (Nasdaq: SGMO), a genomic medicines company, announced today the publication in *Nature Communications* of improvements to its zinc finger nuclease (ZFN) platform technology, which yield a 64-fold increase in the diversity of ZFNs available for targeting any DNA segment. As demonstrated in the manuscript, this improved targeting capability enables highly precise editing of chosen genomic loci. ZFN technology is an engineerable gene editing platform that is currently being evaluated in clinical trials for Mucopolysaccharidosis Type I (MPS I), MPS II, hemophilia B, beta thalassemia and sickle cell disease.

The manuscript, "Diversifying the Structure of Zinc Finger Nucleases for High-Precision Genome Editing", describes protein engineering work by Dr. David Paschon and colleagues at Sangamo that has led to the development of new ZFN architectures. The modifications include the reversal of the order of the DNA binding and nuclease domains, as well as the incorporation of new linkers that enable base skipping between otherwise adjacent fingers within each ZFN.

"In developing nucleases for any therapeutic application, a critical requirement is the ability to position the double-stranded break for maximal clinical efficacy," said Ed Rebar, Ph.D., Sangamo's Chief Technology Officer. "In many cases, this consideration restricts the optimal cleavage target to a narrow sequence window, and for this reason, increasing targeting precision has been a longstanding concern in the field. The new architectures, which have substantially improved our targeting capabilities, will help ensure that we can target the optimal window for any therapeutic application. This speaks to the versatility of our ZFN genome editing technology."

Sangamo researchers developed new linkers that attach the FokI nuclease domain to the amino terminus of the DNA-binding zinc finger array, as opposed to the carboxy terminal attachment used in canonical ZFNs. This modification allows the design of nucleases in which each ZFN of a dimer is able to recognize either DNA strand, yielding three alternative ZFN dimer configurations, effectively increasing the number of design options for any target sequence by a factor of four. New linkers were also developed that allow base-skipping between adjacent fingers within a zinc finger array. These new linkers enable an engineered ZFN to bind alternative, partially frame-shifted DNA sequences with new zinc finger designs while maintaining the same cleavage site, thereby increasing the number of design options by an additional factor of 16. Incorporating both improvements into our ZFN platform resulted in an overall 64-fold increase in the number of ZFN design options available for efficient genome editing at any target cleavage site.

The manuscript also highlights preclinical studies performed using the new ZFN architectures, which demonstrate a high degree of precision, efficiency, and specificity across three therapeutic applications.

These modifications along with several other improvements have been incorporated into Sangamo's second generation ZFN platform technology.

About Sangamo

Sangamo Therapeutics, Inc. is focused on translating ground-breaking science into genomic medicines with the potential to transform patients' lives using the Company's platform technologies in genome editing, gene therapy, gene regulation and cell therapy. For more information about Sangamo, visit the Company's website at www.sangamo.com.

Forward-Looking Statements

This press release may contain forward-looking statements based on Sangamo's current expectations. These forward-looking statements include, without limitation, the improved targeting capabilities that enable highly precise editing of chosen genomic loci, improved ZFN technology will result in greater clinical efficacy or safety in clinical trials, the ability to target more diseases as a result of the improvements, and the ability of the new ZFN architectures to demonstrate a high degree of precision, efficiency and specificity across three therapeutic applications. Actual results may differ materially from these forward-looking statements due to a number of factors, including uncertainties relating to the initiation and completion of our clinical trials, whether the clinical trials will validate the safety and efficacy of our product candidates, whether later stage studies or clinical trials will validate the results from the preclinical studies on the new ZFN architectures; and whether the new ZFN technology will result in the opportunity to pursue new targets or improved safety or efficacy in clinical trials; Sangamo's ability to develop commercially viable products; and the potential for technological developments by our competitors that will be better than our ZFN technology. For a more detailed discussion of these and other risks, please see Sangamo's SEC filings, including the risk factors described in its Annual Report on Form 10-K for the year ended December 31, 2018. Sangamo Therapeutics, Inc. assumes no obligation to update the forward-looking information contained in this press release.

SOURCE Sangamo Therapeutics, Inc.

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