Caribou Biosciences Develops New Method to Profile CRISPR-Cas9 Gene Editing Outcomes

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- **NEW METHOD REVEALS THAT REPAIR OUTCOMES ARE NONRANDOM AT CAS9 CUT SITES**
- **DNA REPAIR OUTCOMES CAN BE MANIPULATED VIA MODULATION OF THE CELLULAR DNA REPAIR MACHINERY**

BERKELEY, CA – August 18, 2016 – Caribou Biosciences, Inc., a developer of CRISPR-Cas technologies for genome engineering, today announced that members of its scientific team have discovered that DNA repair outcomes following Cas9 cleavage of DNA are nonrandom and follow highly reproducible patterns for each target site. The ability to control DNA repair outcomes has significant implications for the use of CRISPR-Cas9 in product development.

The study is published in the current edition of *Molecular Cell* and entitled *DNA Repair Profiling Reveals Non-random Outcomes at Cas9-Mediated Breaks*. As discussed therein, Caribou researchers cut 223 sites in the human genome with Cas9 and analyzed the DNA repair profiles at each site. They discovered that the DNA repair outcomes, namely the collection of insertions and deletions that are produced by the cellular repair machinery following DNA cutting, generate reproducible patterns at each target site. The research also demonstrated how these non-random outcomes can be harnessed to produce a desired effect, such as a gene knockout or the reading frame restoration of a disease-causing allele.

“This discovery represents a fundamental advance in the development of CRISPR-Cas9 technology. Through careful measurement of the outcomes of the DNA repair machinery, we can understand the specific patterns of editing that occur within a cell population with a high degree of certainty,” said Andrew May, D.Phil., Chief Scientific Officer of Caribou. “Caribou is at the forefront of cutting-edge research in genome engineering, and I am delighted that our world class scientific team continues to make significant contributions to develop the potential of CRISPR-Cas9 gene editing technology.”

The findings of this study have potential applications across a range of industries. For example, these findings can accelerate the progress of gene-editing research because DNA repair profiling in one cell type may accurately predict repair outcomes in other cell types, including human primary cells. This can allow scientists to conduct research in standard, easy-to-use cell lines that can then be applied to more challenging cell types. Future studies are expected to explore these patterns of predictability outside of human cells and with a range of enzymes, with potential relevance to fields such as agriculture, industrial biotechnology and beyond.

About Caribou Biosciences, Inc.

Caribou is a developer of cellular engineering and analysis solutions based on CRISPR technologies. The company was founded by pioneers of CRISPR-Cas biology based on research carried out in the Doudna Laboratory at the University of California, Berkeley. Caribou's tools and technologies provide transformative capabilities to therapeutic development, agricultural biotechnology, industrial biotechnology, and basic and applied biological research. For more information, visit www.cariboubio.com and follow the company @CaribouBio. “Caribou Biosciences” and the Caribou logo are trademarks of Caribou Biosciences, Inc.

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