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Dicerna Pharmaceuticals Announces New Data That Show Dicer-substrate RNA Molecules Produce More Potent, Longer-lasting Gene Silencing Than Shorter siRNA Molecules; Results Published in *Journal of Biomolecular Techniques*

WATERTOWN, Mass., November 20, 2008 – Dicerna Pharmaceuticals, Inc. (www.dicerna.com), a second generation RNA interference company developing novel therapeutics utilizing its proprietary Dicer Substrate Technology™, today announced new data published in the current issue of *Journal of Biomolecular Techniques* (Volume 19, Issue 4), which highlight the significant therapeutic potential of Dicer-substrate 27mers when directly compared with traditional synthetic 21mers.

Chemically synthesized small interfering RNAs (siRNAs) are compounds used for silencing the expression of targeted genes of interest. Longer double-stranded RNAs, such as Dicer-substrate 27mers (DsiRNAs), bind to an enzyme called Dicer, which cleaves the Dicer-substrates into the appropriate length fragment for incorporation into RISC (RNA-induced silencing complex), triggering RNA interference.

In this paper, the authors compared the potency and longevity of gene silencing by Dicer-substrate 27mers to synthetic 21mers with the identical functional guide-strand sequence in five therapeutically relevant genes. The Dicer-substrate 27mers showed substantially greater potency in silencing four of the five target genes tested and equivalency against the fifth. This effect was especially pronounced at the lowest concentrations examined, suggesting that meaningful activity can be achieved with lower dosages. In addition, the Dicer-substrate 27mers demonstrated a longer duration of action compared to 21mers in four of the five genes, and equivalency against the fifth, again suggesting the potential benefit of reduced dosing frequency.

“Traditional synthetic siRNAs can be unpredictable and are often less effective at gene silencing, possibly because they enter the RISC complex without any specific orientation,” stated co-author and Dicerna scientific co-founder Mark Behlke, M.D., Ph.D., chief scientific officer at Integrated DNA Technologies. “These new findings underscore the value of utilizing Dicer Substrate Technology to achieve more potent, longer-lasting inhibition of gene expression with improved

predictability, which has the potential to dramatically impact further research around therapeutic applications of RNAi technology.”

Dicerna’s pipeline of RNAi-targeted drugs and delivery systems is focused in the therapeutic areas of oncology, metabolic diseases and hepatitis C virus (HCV) infection. In addition to these internal focus areas, Dicerna expects to broadly utilize its Dicer Substrate Technology in several other therapeutic areas, such as inflammation, immunology, cardiovascular diseases, and others, through collaborations with pharmaceutical and biotechnology companies.

“The potent gene silencing achieved through application of our Dicer Substrate Technology is compelling, particularly when one considers that we were able to achieve these results at lower concentrations, potentially allowing for advantages in dosage levels and frequency of administration,” said James Jenson, Ph.D., chief executive officer of Dicerna. “We at Dicerna are excited by the potential therapeutic benefit of this unique silencing approach, and look forward to furthering DsiRNA development efforts for the advancement of RNAi research and for the benefit of patients facing life-threatening diseases.”

About RNAi

First described in plants and then in worms, flies and higher organisms, RNAi works differently in mammals because of the activity of Dicer, a key enzyme involved in the processing of double-stranded RNA into siRNA. In humans, Dicer optimally processes double-stranded RNA oligonucleotides of 25 to 30 base pairs, resulting in a five-to-10-fold more potent activity and longer duration of action.

About Dicerna

Dicerna Pharmaceuticals is a private, venture-backed RNAi-focused biopharmaceutical company developing novel therapeutic agents in multiple disease areas based on its proprietary Dicer Substrate Technology platform. Dicerna is developing novel RNAi-based therapies, and related drug delivery systems, that use an earlier step in the gene silencing process, namely the engagement of the enzyme Dicer, which is a natural initiation point for the RNAi cascade. This approach results in the knockdown of expression of a targeted gene in a way that is highly selective and specific, and demonstrates greater potency and longer duration of action than other RNAi approaches. The Dicer Substrate Technology is based on intellectual property that is both broadly enabling and distinct from other IP in the field. Dicerna is based in Watertown, Massachusetts. For more information, please visit www.dicerna.com.

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