News Release

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Dicerna Pharmaceuticals Awarded Notice of Allowance by U.S. Patent and Trademark Office for Patent Claims Broadly Covering Dicer Substrate siRNA Molecules

New Allowance for City of Hope/Integrated DNA Technologies, Inc.-Owned Patent Includes In Vivo *and* In Vitro *Methods of Reducing Target Gene Expression Using Dicer Substrates*

WATERTOWN, Mass., Nov. 1, 2011 – Dicerna Pharmaceuticals, Inc. (Dicerna), a second generation RNA interference (RNAi) company developing novel therapeutics utilizing its proprietary Dicer Substrate Technology™ and Dicer Substrate siRNA (DsiRNA) molecules, today announced that the U.S. Patent and Trademark Office (USPTO) has issued a Notice of Allowance in the "Rossi" patent family, which broadly covers Dicer Substrate RNA-containing therapeutics. This new allowance applies to 148 claims and provides exclusivity around both *in vivo* therapeutic and *in vitro* uses of Dicer Substrates for reducing mammalian target gene expression, regardless of their specific sequence. These claims include the broadest therapeutic use claims allowed to date in the RNAi field, and solidify Dicerna's unparalleled intellectual property position in the area of Dicer Substrate therapeutics.

"We are very pleased that the U.S. Patent Office has approved these patent claims in recognition of the inventive nature of 25-30mer DsiRNA molecules, which represent Dicerna's proprietary founding technology," said Douglas M. Fambrough, Ph.D., chief executive officer of Dicerna. "These claims provide broad protection for use of Dicer Substrates as therapeutics for disease treatment. We have continued to innovate and advance our Dicer Substrate Technology, which will allow us to continue to extend patent exclusivity on our drugs and our technologies. The allowance of these claims in the Rossi patent estate further strengthens our efforts and those of our partners to bring DsiRNA therapeutics to patients."

The Rossi patent family stems from groundbreaking research of John Rossi, Ph.D., Mark Behlke, M.D., Ph.D., and Dongho Kim, Ph.D., at City of Hope and Integrated DNA Technologies, Inc., which identified double-stranded RNA molecules having a length longer than first generation 19-23 base pair siRNAs as surprisingly active in mammalian cells. The remarkable activity observed for these 25-30mer double-stranded RNA molecules derives from their engagement of the Dicer enzyme, one step upstream of where the first generation siRNAs enter the RNAi pathway. For

this reason, Dicerna believes that its Dicer Substrate Technology offers significant advantages over other RNAi technologies.

The Rossi patent estate was licensed to Dicerna for human therapeutics under an agreement formed in 2007.

About Dicer Substrate RNAi
Dicer is a critical enzyme involved in the RNAi gene silencing cascade and acts as the natural initiation point for this pathway by processing double-stranded RNA so that it can be used for gene silencing. Dicer then delivers these modified small RNA molecules to the mature gene silencing complex. Dicerna's synthetic Dicer Substrate siRNA (DsiRNA) molecules are 25 or more base pairs in length and are processed by Dicer. By utilizing this distinct early entry point into the pathway, DsiRNA molecules have greater potency and longer duration of action than other RNAi approaches. In addition, DsiRNA molecules have enhanced delivery potential because their structure creates a natural conjugation point for cellular targeting agents.

About Dicerna Pharmaceuticals
Dicerna Pharmaceuticals is a private, venture-backed RNAi-focused biopharmaceutical company developing novel therapeutic agents and related drug delivery systems in oncology and other disease areas based on its proprietary Dicer Substrate Technology™ platform and Dicer Substrate siRNA (DsiRNA) molecules. Dicer Substrate Technology™ is a second generation RNAi approach that results in greater potency, longer duration of action and enhanced delivery potential, differentiating it from other RNAi approaches. Dicerna has a major alliance with Kyowa Hakko Kirin for DsiRNA pharmaceuticals and drug delivery systems focused in oncology, immunology and inflammation. The company also has a partnership with Ipsen to research and develop novel DsiRNA therapeutics with targeted delivery in oncology and endocrinology. Dicerna is based in Watertown, Massachusetts. For more information, please visit www.dicerna.com.

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