January 12, 2015

OUTPERFORM

Reason for report:

FLASH NOTE

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DICERNA PHARMACEUTICALS, INC.

Positive Preclinical and IP Updates

• **Bottom Line:** DRNA presented incrementally positive preclinical updates to the DCR-MYC program and a second Dicer substrate short interfering RNA (DsiRNA) targeting β-catenin today. DRNA also announced the issuance of a US patent providing coverage of extended Dicer substrate short interfering RNAs (DsiRNA-EX). We positively view DRNA's continuing efforts to evolve its platform, which we think is necessary to remain competitive in the RNAi therapeutics landscape. DCR-MYC development is on track with initial clinical data from the first trial expected by YE15. **Reiterate Outperform rating.**

• **Positive preclinical updates to DCR-MYC program and β-catenin (CTNNB1) targeting.** DRNA presented a poster at AACR MYC: From Biology to Therapy that highlighted several incremental advances in its DsiRNA programs for oncology. First, DRNA was able to show with a new assay that 90% of MYC mRNA fragments in the tumor match the predicted DsiRNA target site. This assay will be used in the clinic, along with FDG-PET as a more conventional radiology marker to determine if silencing the MYC oncogene results in a favorable reduction of tumor metabolic activity. Second, in a subcutaneous xenograft mouse model of colorectal cancer (CRC), a DsiRNA targeting β-catenin was able to silence the CTNNB1 gene, resulting in more than 75% tumor growth inhibition. Thirdly, DRNA demonstrated optimization of the envelope cationic lipid, part of its proprietary EnCore lipid nanoparticle (LNP) technology, increasing the potency of β-catenin silencing in CRC tumors.

• **DRNA announced the issuance of a US patent providing broad coverage of DsiRNA-EX payloads.** This patent provides broad composition of matter claims for DsiRNA-EX, which carry single-stranded extensions of variable length on their 5' and/or 3' ends. Importantly, the DsiRNA-EX platform can be configured for subcutaneous conjugate-mediated liver-targeted delivery. We view this patent issuance as positive. Recall that DCR-PH1 incorporates the DsiRNA-EX payload. DRNA is also optimizing DsiRNA-EX-conjugates for four undisclosed therapeutic liver targets, the first of which will enter the clinic in 2016. We view DRNA's continuing efforts to evolve its platform positively.

• **DCR-MYC development is on track with initial clinical data from the first trial expected by YE15.** We believe positive data from this first-in-man study could be a key derisking step. Recall, DCR-MYC-101 is a Phase I study in advanced solid tumors, myeloma, or lymphoma that initiated in 2Q14. DCR-MYC-102 is a Phase Ib/II study in hepatocellular carcinoma (HCC) patients and is being initiated. Additionally, DRNA plans to initiate a natural history study of primary hyperoxaluria type 1 (PH1) in 1Q15, which we view positively as it would provide guidance on the eventual pivotal trial study design and facilitate patient enrollment into future DCR-PH1 trials. The DCR-PH1 Phase 1 study is expected to initiate in 2H15, with data from the single ascending dose (SAD) portion of the study expected by YE15, and data from both the SAD and multiple ascending dose (MAD) portions available in 2016. Additionally, both the formulation and oligonucleotide payload are being optimized for clinical development of CTNNB1 DsiRNA.

Key Stats:	**(NASDAQ:DRNA)**
S&P 600 Health Care Index:	**1,444.85**
Price:	**$19.85**
52 Week High:	$46.00
52 Week Low:	$8.00
Shares Outstanding (mil):	17.7
Market Capitalization (mil):	$351.3

Please refer to pages 2 - 4 for Important Disclosures, Price Charts and Analyst Certification.

Disclosures Appendix

Analyst Certification

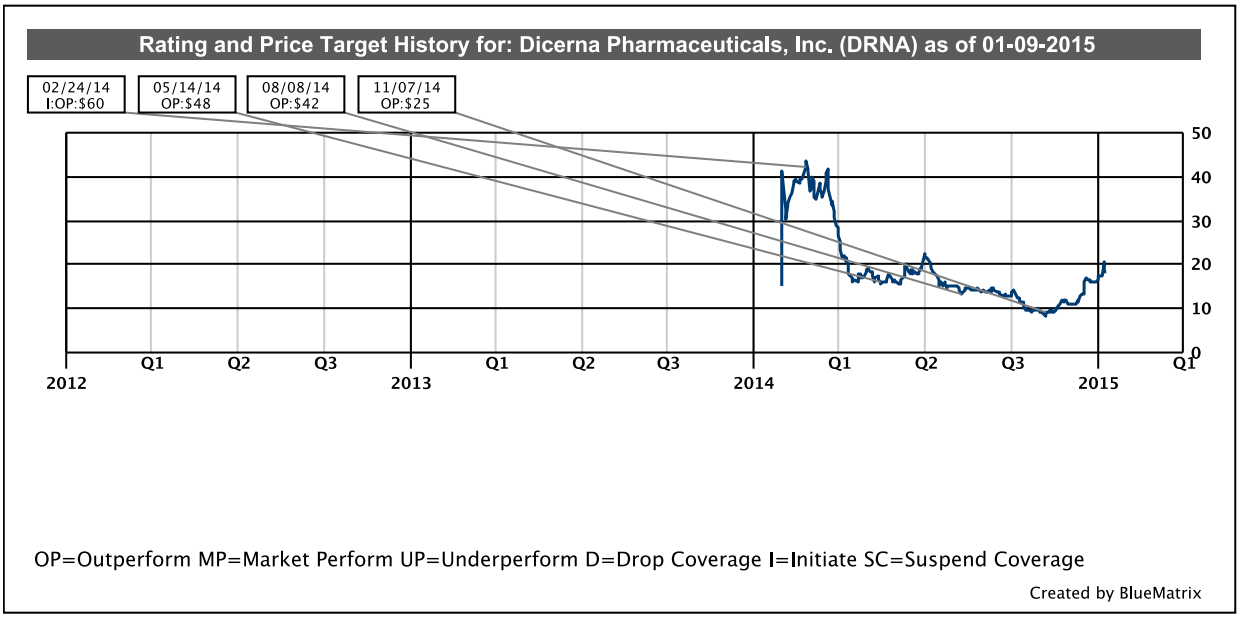
I, Michael Schmidt, Ph.D., certify that the views expressed in this report accurately reflect my views and that no part of my compensation was, is, or will be directly related to the specific recommendation or views contained in this report.

Valuation

Our $25 price target for DRNA shares in 12 months is based on a discounted cash flow (DCF) sum-of-parts analysis. Based on our DCF analysis, we attribute $18/share to the pipeline and the rest to net cash. We use a 15% discount rate for probability of success-weighted pipeline products. We probability-weight the MYC program at 20% and the PH1 program at 25% probability-of-success. The KRAS program partnered with KHK and additional product candidates generated by DRNA's platform are sources of upside to our valuation.

Risks to Valuation

DRNA faces significant clinical and regulatory risks since all of its product candidates are currently in development. DRNA specifically also faces clinical development risk since none of its products have been tested in humans, and the company is developing first-in-class RNAi-based drugs with a novel proprietary delivery mechanism. In addition to that, DRNA's product candidates address new, clinically invalidated targets. Similar to many other developmental stage Biopharma companies, DRNA also faces manufacturing, competitive, commercial, regulatory, and safety risks, as well as risks to its intellectual property. In addition, DRNA faces financing risk dilutive to shareholders since we don't believe the company will be profitable for the foreseeable future. We see additional risks for investors since the company is closely held and substantially all of DRNA's outstanding shares are not subject to lock-up agreements in connection with its IPO.



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Distribution of Ratings/Investment Banking Services (IB) as of 12/31/14				
			IB Serv./Past 12 Mos.	
Rating	Count	Percent	Count	Percent
BUY [OP]	150	70.00	61	41.00
HOLD [MP]	64	30.00	0	0.00
SELL [UP]	0	0.00	0	0.00

Explanation of Ratings

Outperform (Buy): We expect this stock to outperform its benchmark over the next 12 months.
Market Perform (Hold/Neutral): We expect this stock to perform in line with its benchmark over the next 12 months.
Underperform (Sell): We expect this stock to underperform its benchmark over the next 12 months.The degree of outperformance or underperformance required to warrant an Outperform or an Underperform rating should be commensurate with the risk profile of the company.
For the purposes of these definitions the relevant benchmark will be the S&P 600® Health Care Index for issuers with a market capitalization of less than $2 billion and the S&P 500® Health Care Index for issuers with a market capitalization over $2 billion.

Important Disclosures

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In the past 12 months, the Firm has received compensation for providing investment banking services to Dicerna Pharmaceuticals, Inc. .

Leerink Partners LLC makes a market in Dicerna Pharmaceuticals, Inc.

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Leerink Partners LLC has acted as the manager for a public offering of Dicerna Pharmaceuticals, Inc. in the past 12 months.

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