

## Medicenna Therapeutics Corp.

(MDNA-NASDAQ)

### **MDNA: MDNA11 in Combination with Anti-PD-1 Shows Anti-Tumor Activity in Preclinical Study...**

Based on our probability adjusted DCF model that takes into account potential future revenues of MDNA55 and MDNA11, MDNA is valued at \$12/share. This model is highly dependent upon continued clinical success of those compounds and will be adjusted accordingly based upon future clinical results.

Current Price (04/08/21) **\$3.96**  
Valuation **\$12.00**

### OUTLOOK

On March 25, 2021, Medicenna Therapeutics Corp. announced an oral presentation, "Designer Cytokines", was given by CEO Dr. Fahar Merchant at the Cytokine-Based Cancer Immunotherapies Summit. Highlights from the presentation include 1) treatment with MDNA11 either alone or in combination with anti-PD-1 therapy resulted in tumor growth inhibition and complete responses in a mouse MC38 tumor model; 2) MDNA413 (an IL-13 super-antagonist) is able to suppress myeloid derived suppressor cells (MDSCs) and M2a polarization of tumor associated macrophages; and 3) data on an IL-2/IL-13 Dual Cytokine Asset will be presented at AACR 2021. While MDNA11 is the company's lead superkine development product, Medicenna is currently building an extensive pipeline of superkine assets, including those with bi-functional capability.

### SUMMARY DATA

52-Week High **\$5.97**  
52-Week Low **\$2.34**  
One-Year Return (%) **58.40**  
Beta **1.42**  
Average Daily Volume (sh) **116,393**

Shares Outstanding (mil) **53**  
Market Capitalization (C\$mil) **\$210**  
Short Interest Ratio (days) **N/A**  
Institutional Ownership (%) **25**  
Insider Ownership (%) **33**

Annual Cash Dividend **\$0.00**  
Dividend Yield (%) **0.00**

5-Yr. Historical Growth Rates  
Sales (%) **N/A**  
Earnings Per Share (%) **N/A**  
Dividend (%) **N/A**

P/E using TTM EPS **N/A**  
P/E using 2018 Estimate **N/A**  
P/E using 2019 Estimate **N/A**

### Risk Level

Type of Stock  
Industry

Average  
Small-Growth  
Med-Biomed/Gene

### ZACKS ESTIMATES

#### Revenue

(In millions of \$CAD)

	Q1	Q2	Q3	Q4	Year
	(Jun)	(Sep)	(Dec)	(Mar)	(Mar)
2020	0 A	0 A	0 A	0 A	0 A
2021	0 A	0 A	0 A	0 E	0 E
2022					0 E
2023					0 E

#### Earnings per Share

(in \$CAD)

	Q1	Q2	Q3	Q4	Year
	(Jun)	(Sep)	(Dec)	(Mar)	(Mar)
2020	-\$0.05 A	-\$0.07 A	-\$0.07 A	-\$0.07 A	-\$0.26 A
2021	-\$0.05 A	-\$0.08 A	-\$0.11 A	-\$0.06 E	-\$0.32 E
2022					-\$0.42 E
2023					-\$0.54 E

## WHAT'S NEW

### Business Update

#### *Anti-Tumor Activity of MDNA11 in MC38 Model*

On March 25, 2021, Medicenna Therapeutics Corp. (MDNA) announced an oral presentation by CEO Dr. Fahar Merchant at the Cytokine-Baed Cancer Immunotherapies Summit. The [presentation](#) featured new preclinical data for MDNA11, the company's lead IL-2 Superkine, along with an overview of the company's **Bi-functional SuperKine ImmunoTherapies (BiSKITs™)** program.

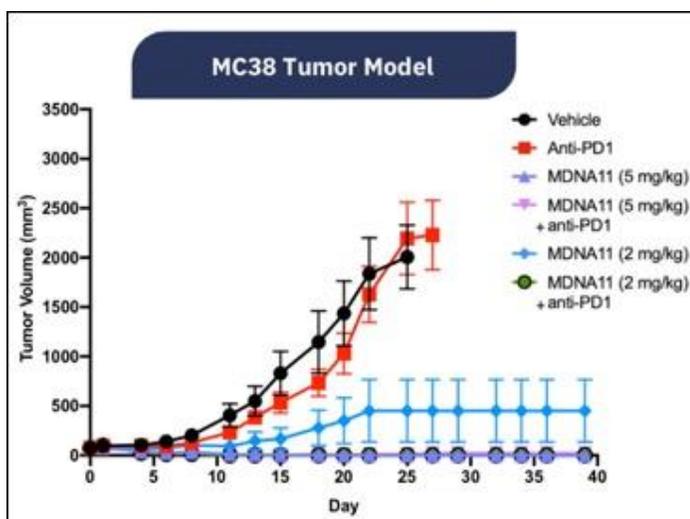
MDNA11 is a long-acting variant of IL-2 that is engineered to have enhanced binding to CD122 and no affinity for CD25. IL-2 is a 16 kDa protein that activates a wide range of leukocytes, including T cells and natural killer (NK) cells through binding IL-2 receptors (IL-2R $\alpha$  [CD25], IL-2R $\beta$  [CD122], and IL-2R $\gamma$  [CD132]), with the arrangement of these receptors dictating the response seen. Binding of IL-2 to a heterodimer consisting of CD122 and CD132 is of "intermediate affinity", whereas a heterotrimer consisting of all three IL-2Rs is a 'high affinity' complex. The heterotrimer is typically found on activated T cells (including regulatory T cells) while naïve T cells and NK cells only express the heterodimer. Thus, modifying IL-2 signaling to enhance binding to the CD122/CD132 complex could enhance T cell activation while diminishing the effect of regulatory T cells.

The following table shows that MDNA11 (and MDNA19, the company's other long-acting IL-2 variant) binds to CD122 with enhanced affinity compared to native IL-2 (as shown by the lower  $K_D$  value), and that neither compound binds to CD25, thus preferentially activating immune effector cells but not T regulatory cells.

	$K_D$ [CD25 (IL-2R $\alpha$ )]	$K_D$ [CD122 (IL-2R $\beta$ )]
IL-2 <sup>a</sup>	24 nM	210 nM
MDNA109 (1 <sup>st</sup> Gen.) <sup>a</sup>	26 nM	1.8 nM
MDNA109-Fc (2 <sup>nd</sup> Gen.) <sup>b</sup>	14 nM	2.7 nM
MDNA109-Alb (2 <sup>nd</sup> Gen.) <sup>a</sup>	56 nM	3.5 nM
<b>MDNA19 (3<sup>rd</sup> Gen.)<sup>b</sup></b>	<b>No binding</b>	<b>2.1 nM</b>
<b>MDNA11 (3<sup>rd</sup> Gen.)<sup>a</sup></b>	<b>No binding</b>	<b>6.6 nM</b>

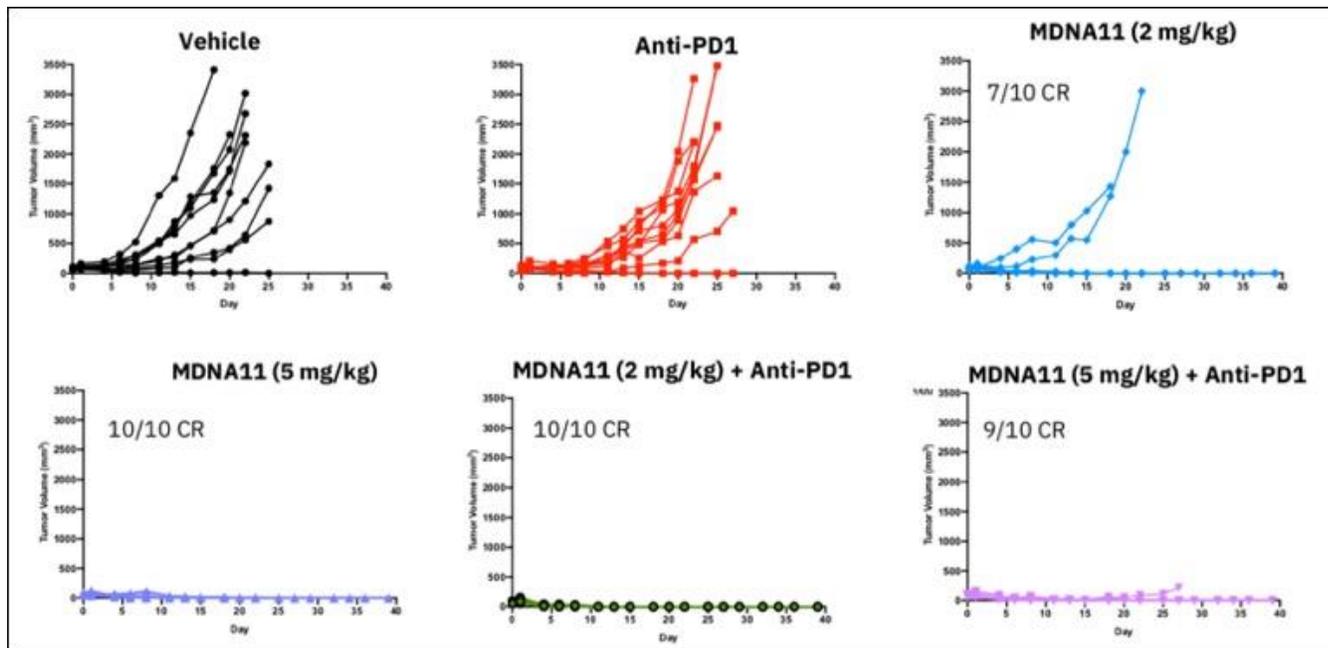
Source: Medicenna Therapeutics Corp.

The company presented new preclinical data on MDNA11 as a monotherapy and in combination with anti-PD-1 therapy in a MC38 mouse model. MC38 is a murine colon adenocarcinoma cell line. The following image shows that MDNA11 monotherapy results in tumor growth inhibition, while combination therapy of MDNA11 and anti-PD-1 therapy results in complete tumor regression. Anti-PD-1 monotherapy did not have an effect on tumor growth.



Source: Medicenna Therapeutics Corp.

When examining each of the animals from the different treatment groups, the data shows that most of the animals treated with MDNA11, whether with or without PD-1 therapy, showed complete tumor regression.

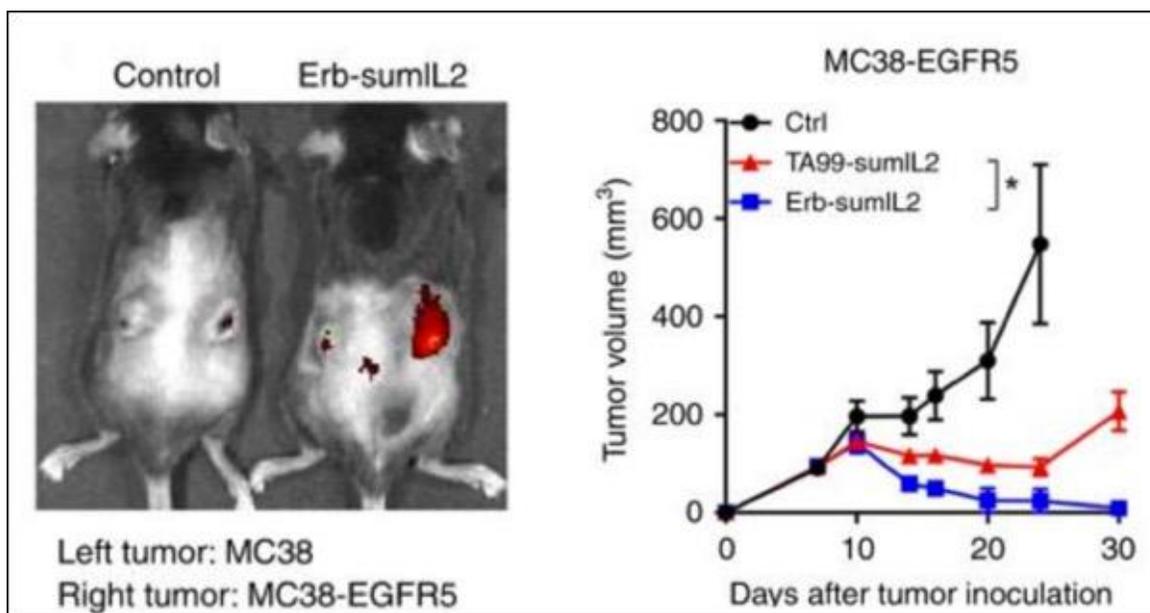


Source: Medicenna Therapeutics Corp.

### BiSKITs

In addition to presenting data on MDNA11, Dr. Merchant's presentation included an overview of the company's **Bi-Functional SuperKine ImmunoTherapies (BiSKITs™)** platform, which includes multiple iterations of IL-2, IL-4, and IL-13 combination molecules.

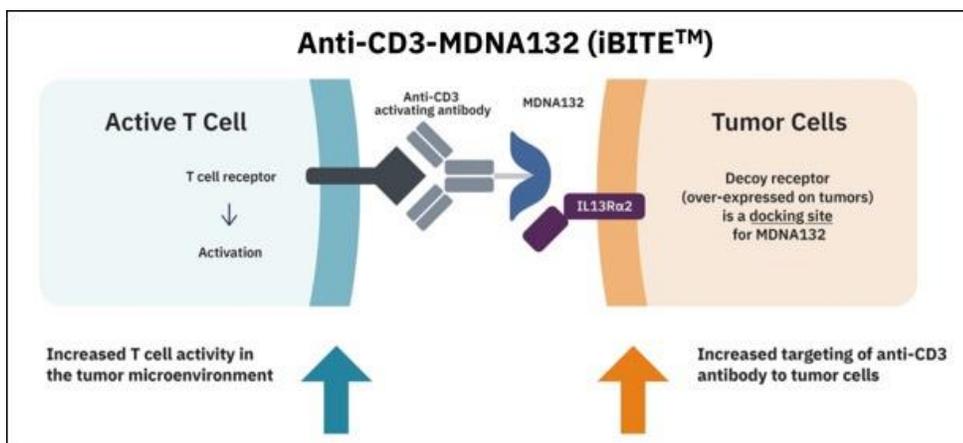
**STAb Cancer™ (Superkines Targeted with Antibodies):** This technology is based on a superkine combined with a targeting antibody with a proof-of-concept molecule composed of an enhanced IL-2 (sumIL2 or MDNA109FA) and anti-human EGFR ([Sun et al., 2019](#)). The following image on the left shows that the EGFR-IL-2 molecule collects in a MC38 tumor that expresses human EGFR while the image on the right shows that the EGFR-IL-2 molecule results in complete tumor regression while an anti-mouse molecule, TA99-sumIL2, only slows tumor growth.



Source: Sun et al., 2019

**Interleukin-Directed Bi-Specific T Cell Engagers (iBITE™):** MDNA132 is an engineered human IL-13 that targets a tumor specific antigen (IL-13R $\alpha$ 2). IL-13 signaling is mediated through binding of the Type 2 IL-4 receptor that consists of IL-4R $\alpha$  and IL-13R $\alpha$ 1 (Suzuki *et al.*, 2015). IL-13 also binds to a second IL-13 receptor (IL-13R $\alpha$ 2) with very high affinity (Caput *et al.*, 1996). However, that receptor has no known function and acts as a “decoy receptor”. IL-13R $\alpha$ 2 is also highly expressed on a number of different tumor types and is correlated with poor survival (Barderas *et al.*, 2012).

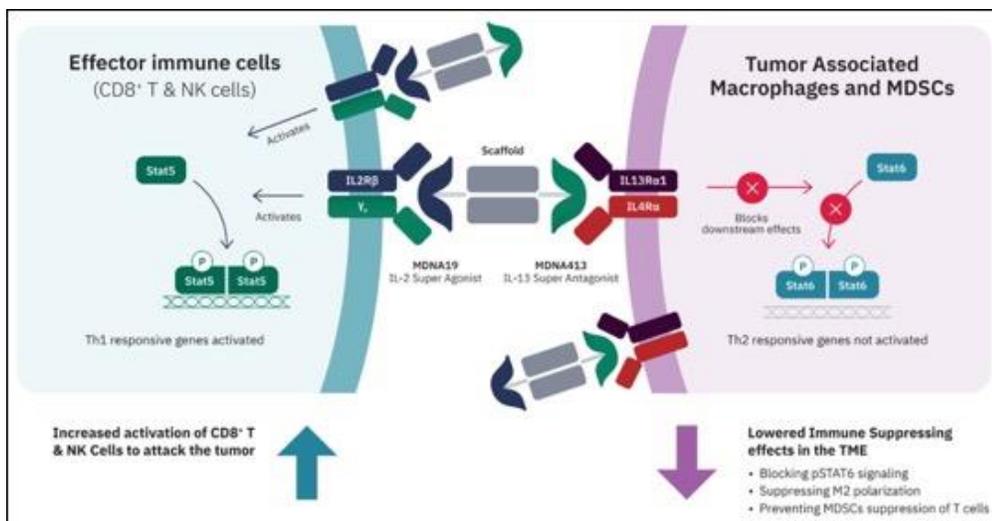
A localized T cell engager was developed that consists of an anti-CD3 antibody and MDNA132, as shown in the following image. The anti-CD3 antibody is utilized to attach the molecule to an active T cell, while the MDNA132 molecule is used to bind to a tumor cell that overexpresses IL13R $\alpha$ 2, thus bringing the T cell in close proximity to the tumor cell.



Source: Medicenna Therapeutics Corp.

This is a similar strategy to Bispecific T Cell Engager (BiTE®), which utilizes a molecule with one side being specific for CD3 and the other for a tumor associated antigen (e.g., CD19, BCMA, CD33). Blincyto (blinatumomab) is a BiTE molecule that is approved for the treatment of acute lymphoblastic leukemia (ALL) and had revenues of \$433 million in 2020 (EvaluatePharma).

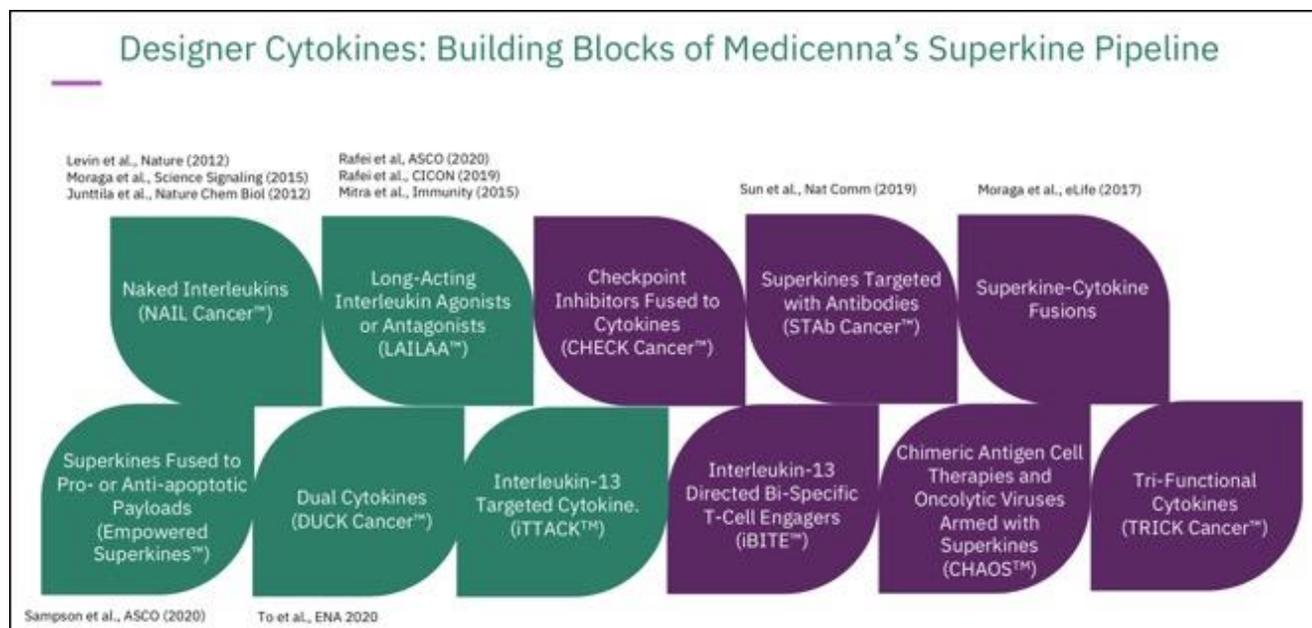
**Dual Cytokines (DUCK Cancer™):** MDNA413 is a super antagonist that blocks IL-4 and IL-13 signaling through binding of the Type 2 receptor (IL-4R $\alpha$ /IL-13R $\alpha$ 1). It has higher affinity for IL-13R $\alpha$ 1 than native IL-13, blocks downstream signaling, and inhibits M2a polarization (Moraga *et al.*, 2015). A dual cytokine compound was created that contains MDNA19 (IL-2 super agonist) and MDNA413. The purpose of this compound is to increase CD8+ T cell and natural killer (NK) cell counts (through binding of the MDNA19 moiety to the CD122/CD132 heterodimer) and decrease the number of immunosuppressive myeloid cells (through binding of the IL-13 Type 2 receptor). We anticipate preliminary data for the IL-2/IL-13 DUCK molecule to be presented at the 2021 AACR Annual Meeting.



Source: Medicenna Therapeutics Corp.

## Conclusion

We are very intrigued by the new superkine programs that Medicenna is developing and look forward to additional details about each one, including data from the IL-2/IL-13 combination molecule that will be presented next month. The ability to modulate multiple signaling pathways with enhanced cytokines offers a huge opportunity to target different oncogenic pathways as well as other diseases where immunomodulation could benefit patients, and the following figure shows that the company is busy building up a pipeline of many diverse compounds.



Source: Medicenna Therapeutics Corp.

We anticipate Medicenna initiating a Phase 1/2a clinical trial of MDNA11 in the U.K. in mid-2021, and it is conceivable we could see initial data before the end of 2021. However, MDNA11 represents only the 'tip of the iceberg' for the company's superkine platform and we anxiously await updates throughout the year on what programs the company will be prioritizing. With no changes to our model the valuation remains at \$12 per share.

## PROJECTED FINANCIALS

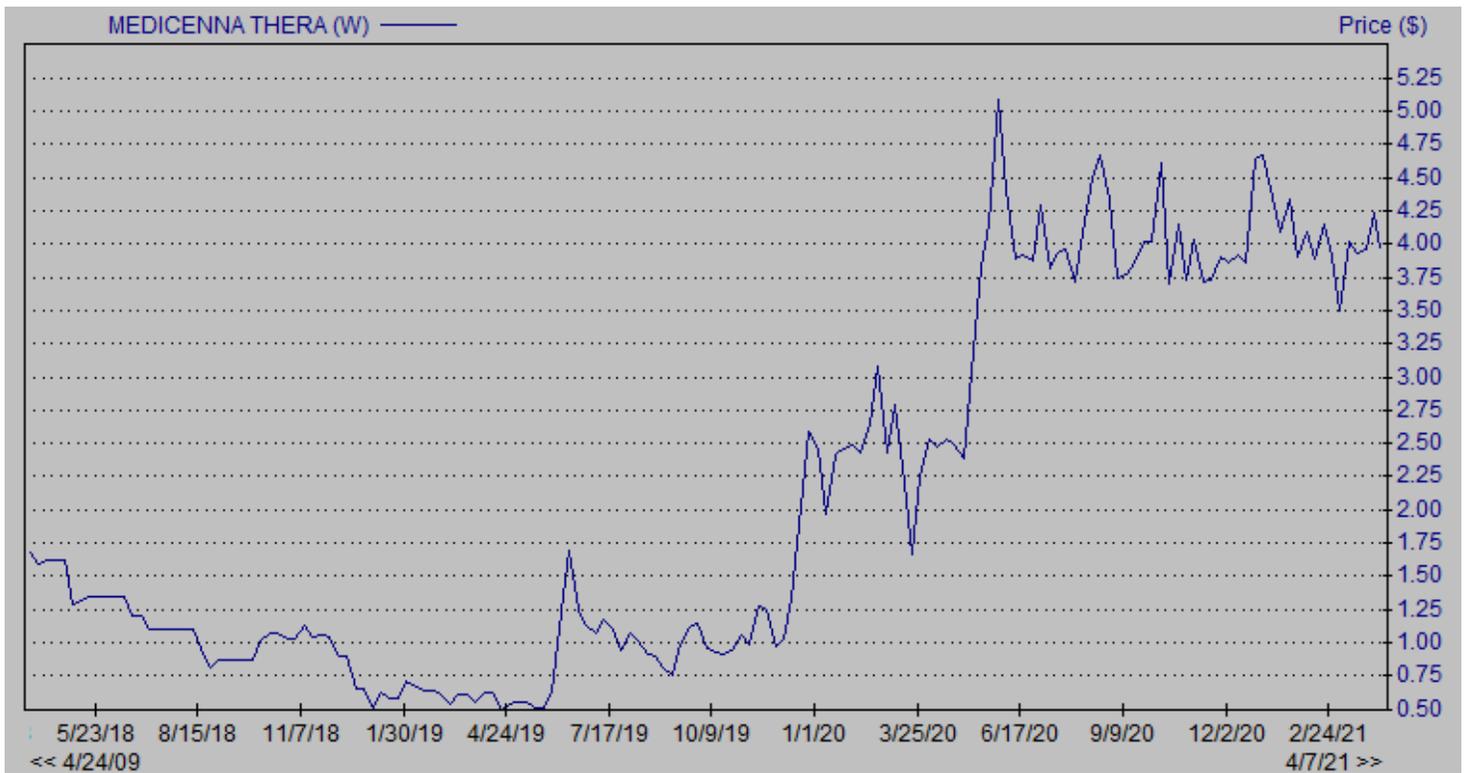
### Medicenna Therapeutics Corp. Income Statement

Medicenna Therapeutics Corp. In Canadian Dollars	FY 2020 E	Q1 FY21 A	Q2 FY21 A	Q3 FY21 A	Q4 FY21 E	FY 2021 E	FY 2022 E	FY 2023 E
MDNA55	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<i>YOY Growth</i>	-	-	-	-	-	-	-	-
MDNA11	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<i>YOY Growth</i>	-	-	-	-	-	-	-	-
Other Income	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<i>YOY Growth</i>	-	-	-	-	-	-	-	-
<b>Total Revenues</b>	<b>\$0</b>							
<i>YOY Growth</i>	-	-	-	-	-	-	-	-
Cost of Sales	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<i>Product Gross Margin</i>	-	-	-	-	-	-	-	-
Research & Development	\$5.9	\$1.8	\$2.2	\$3.2	\$3.0	\$10.2	\$15.0	\$20.0
General & Administrative	\$2.4	\$0.7	\$1.7	\$2.1	\$0.8	\$5.3	\$6.0	\$7.0
Other (Income) Expense	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Operating Income	<b>(\$8.2)</b>	<b>(\$2.5)</b>	<b>(\$3.9)</b>	<b>(\$5.3)</b>	<b>(\$3.8)</b>	<b>(\$15.5)</b>	<b>(\$21.0)</b>	<b>(\$27.0)</b>
<i>Operating Margin</i>	-	-	-	-	-	-	-	-
Non-Operating Expenses (Net)	<b>(\$0.0)</b>	<b>(\$0.2)</b>	<b>(\$0.1)</b>	<b>(\$0.1)</b>	<b>\$0.0</b>	<b>(\$0.3)</b>	<b>\$0.1</b>	<b>\$0.1</b>
Pre-Tax Income	<b>(\$8.3)</b>	<b>(\$2.4)</b>	<b>(\$3.8)</b>	<b>(\$5.3)</b>	<b>(\$3.8)</b>	<b>(\$15.8)</b>	<b>(\$20.9)</b>	<b>(\$26.9)</b>
Income Taxes	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Cumulative translation adjustment	\$0.1	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Net Income	<b>(\$8.2)</b>	<b>(\$2.4)</b>	<b>(\$3.8)</b>	<b>(\$5.3)</b>	<b>(\$3.8)</b>	<b>(\$15.8)</b>	<b>(\$20.9)</b>	<b>(\$26.9)</b>
<i>Net Margin</i>	-	-	-	-	-	-	-	-
Reported EPS	<b>(\$0.26)</b>	<b>(\$0.05)</b>	<b>(\$0.08)</b>	<b>(\$0.11)</b>	<b>(\$0.08)</b>	<b>(\$0.32)</b>	<b>(\$0.42)</b>	<b>(\$0.54)</b>
<i>YOY Growth</i>	-	-	-	-	-	-	-	-
Basic Shares Outstanding	31.9	48.3	48.8	49.2	49.0	48.9	50.0	50.0

Source: Zacks Investment Research, Inc.

David Bautz, PhD

## HISTORICAL STOCK PRICE



Source: Zacks Small Cap Research

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