

## ProMIS Neurosciences Inc

(PMN – TSE)

### Advances on Multiple Targets in AD & PD

Based on our DCF model and a 15% discount rate, PMN is valued at approximately \$7.00 per share. We apply a 7% probability of eventual sales of portfolio products in global markets.

### OUTLOOK

ProMIS is developing a portfolio of monoclonal antibodies to address AD, ALS and PD. The company's lead candidate, PMN310, is able to selectively target toxic oligomers which are thought to be the cause of neuron death in AD. Two proprietary, data-intensive algorithms are used to identify targets on misfolded proteins called ProMIS and Collective Coordinates which allow for precise and efficient target identification.

ProMIS anticipates launching its first in-human trial in 2019 following additional validation of lead candidate, PMN310. The indication has a target population of over 10 million patients in the US and over 40 million ex-US with dramatic expected increases over the next decades. There is no existing treatment therapy available, providing a strong case for pricing and penetration if the drug is approved.

With several other mAbs having navigated phased trials, there is a precedent for trial design, size and duration. Previous trial failures and additional research have narrowed down the optimal drug design and proper target. While still in early stage development, PMN310 makes a compelling case for success and should hold a dominant position in the market if trials are successful and regulatory approval is granted.

Current Price (11/15/18) **\$0.26**  
 Valuation **\$7.00**

### SUMMARY DATA

52-Week High **\$0.73**  
 52-Week Low **\$0.18**  
 One-Year Return (%) **13.0**  
 Beta **-2.1**  
 Average Daily Volume (sh) **210,790**

Risk Level **Above Average**  
 Type of Stock **Small-Growth**  
 Industry **Med-Biomed/Gene**

Shares Outstanding (mil) **247**  
 Market Capitalization (\$mil) **\$64.2**  
 Short Interest Ratio (days) **1.02**  
 Institutional Ownership (%) **N/A**  
 Insider Ownership (%) **N/A**

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**

Zacks Rank **N/A**

### ZACKS ESTIMATES

	Revenue (in millions of \$CAD)				
	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2017	\$0.0 A	\$0.0 A	\$0.0 A	\$0.0 A	\$0.0 A
2018	\$0.0 A	\$0.0 A	\$0.0 A	\$0.0 E	\$0.0 E
2019					\$0.0 E
2020					\$0.0 E

	Q1	Q2	Q3	Q4	Year
	(Mar)	(Jun)	(Sep)	(Dec)	(Dec)
2017	-\$0.01 A	-\$0.01A	-\$0.01 A	-\$0.01 A	-\$0.03 A
2018	-\$0.01 A	-\$0.01 A	-\$0.01 A	-\$0.01 E	-\$0.04 E
2019					-\$0.06 E
2020					-\$0.06 E

## WHAT'S NEW

### Third Quarter 2018 Results

ProMIS Neurosciences Inc. (TSE: PMN) has experienced a busy quarter since our previous report providing presentations and press releases addressing the:

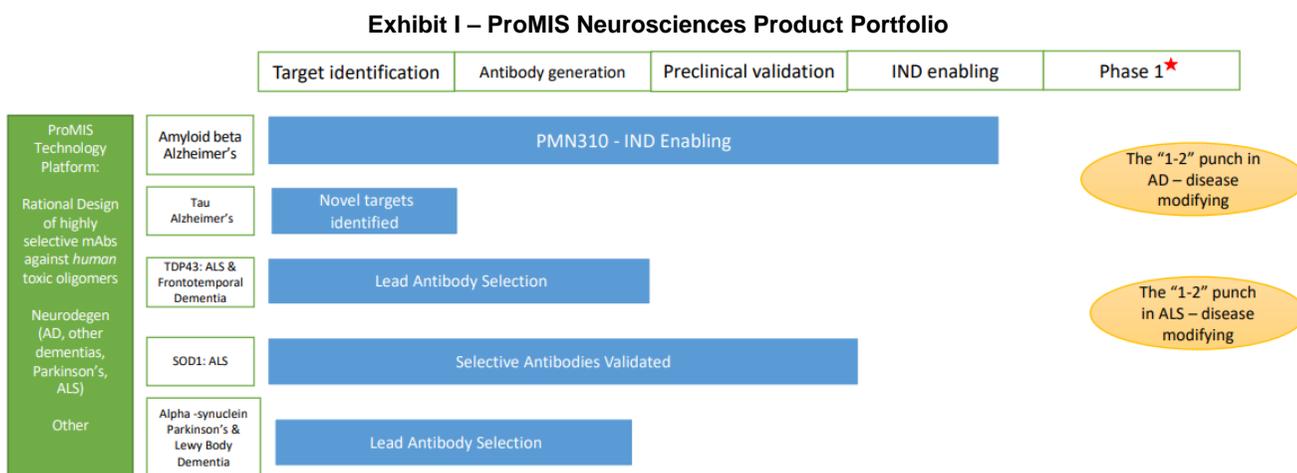
- safety profile of PMN310 with respect to BAN2401 and aducanumab;
- the importance of selectivity against toxic oligomers; and
- the [advancement](#) of monoclonal antibody candidates targeting epitopes appearing on toxic oligomers for  $\alpha$ -synuclein.

Financial results for the period were provided in a [press release](#) and SEDAR [filings](#) released on November 13, 2018 and company CEO Elliot Goldstein [narrated](#) an overview of the year on November 20.

The company continued to advance its programs in the third quarter and expended \$2.9 million<sup>1</sup> in this endeavor. Research and development expenses were \$1.9 million, up 42% compared to the prior year due to higher research program costs for the Alzheimer's Disease program, greater recruiting expenses and higher costs to support its patent portfolio, partially offset by lower stock-based compensation. General and administrative expenses were \$1.0 million in the period, rising 240% on higher consultant salaries and related costs, other professional fees, investor and public relations and stock-based compensation. No service or product revenues were generated for this preclinical company.

Cash stood at \$4.7 million, declining \$2.1 million sequentially. Cash burn in the quarter was (\$2.4) million partially offset by \$0.2 million of cash generated from warrant exercises. Current cash levels are expected to provide sufficient funding to support operations until 2Q:19.

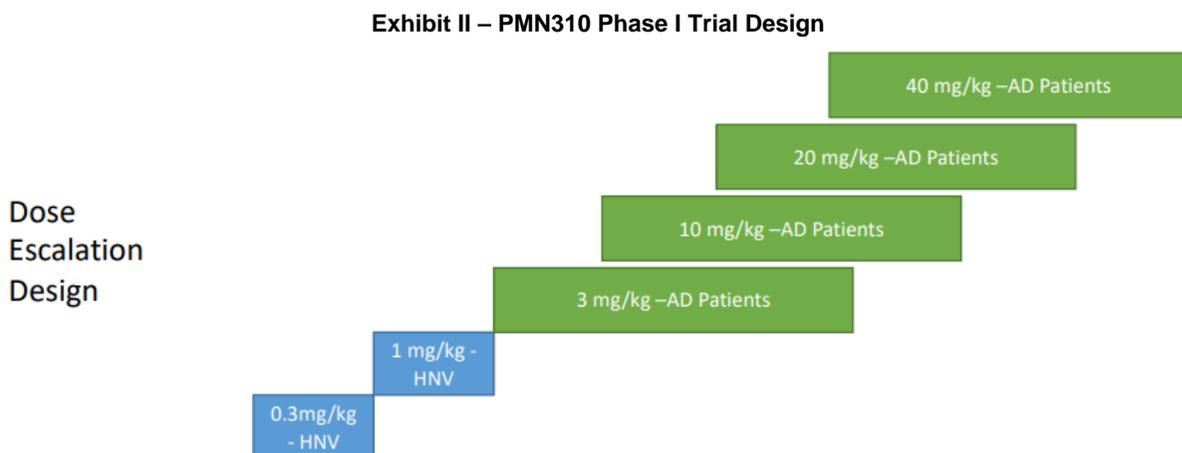
ProMIS anticipates continued advancement of the Alzheimer's Disease (AD) portfolio and PMN310 in preclinical development. Phase I clinical trial results for PMN310 are expected to be ready by 2020. Other programs are also targeted for advancement including Tau in AD, TDP43 and SOD1 in amyotrophic lateral sclerosis (ALS) and  $\alpha$ -synuclein for Parkinson's Disease (PD) as illustrated below in the company's pipeline.



<sup>1</sup> Currency is denominated in Canadian Dollars

## Proposed Phase I Trial Design

ProMIS has provided some detail regarding its anticipated Phase I trial for PMN310; however, trial design remains in progress. There will be a strong emphasis on selecting useful biomarkers and several are being explored, especially ones that require a blood draw as opposed to cerebral spinal fluid. One biomarker in particular that has shown promise is Neurofilament Light Chain (NfL), which may be useful for measuring neuronal death. Neurofilaments are byproducts of neuroaxonal breakdown and can indicate neurodegeneration. We anticipate results from the trial will be available in 2020. In addition to measuring safety, the study will use validated biomarkers to measure dose dependent treatment effect. Low doses from 0.3 mg/kg to 1.0 mg/kg will be administered to healthy normal volunteers to identify any safety signals. As the trial progresses to higher doses, Alzheimer's patients will be treated at various dose levels ranging from 3, 10, 20 and 40 mg/kg. We anticipate further detail as the trial approaches.



### **α-synuclein Target**

In October, ProMIS announced a milestone related to the advance of its Parkinson's Disease (PD) efforts. The company was able to identify monoclonal antibodies that will specifically bind to α-synuclein toxic oligomers and detailed the discovery in a [press release](#). We provided some background on ProMIS PD program and PD itself in an [article](#) highlighting α-synuclein, the stages of PD and the current paradigm that is applicable to the disease.

### **AAIC Presentation**

In July, ProMIS participated in the Alzheimer's Association International Conference (AAIC) and presented a [poster](#)<sup>2</sup> highlighting PMN310's ability to bind to toxic oligomers. The poster provided several conclusions:

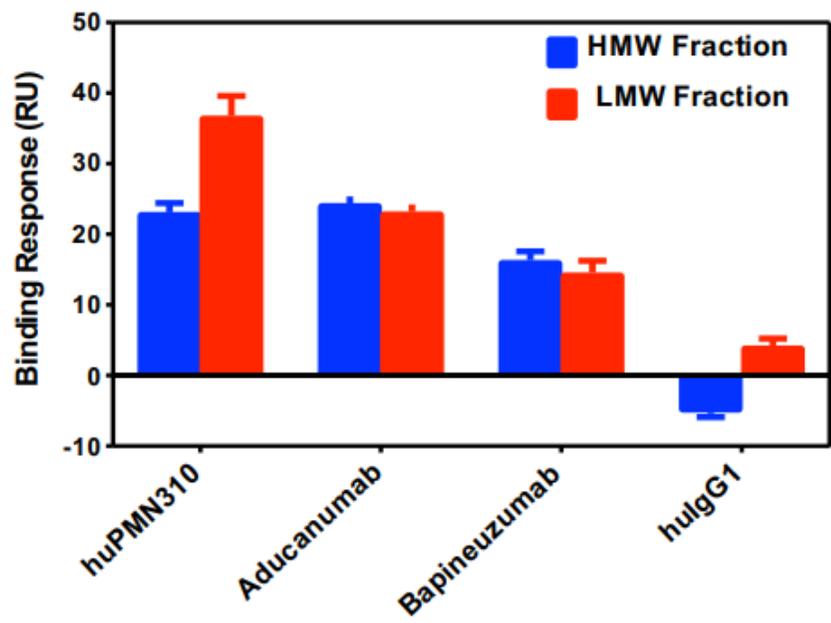
- humanized PMN310 provides better potency and safety as compared to other amyloid beta directed antibodies;
- PMN310's key characteristics<sup>3</sup> allow for greater safety at higher doses; and,
- greater selectivity can allow for a higher effective dose.

The following exhibit is taken from the poster and illustrates the binding response of humanized PMN310. ProMIS' monoclonal antibody is compared to Biogen's Phase III candidate aducanumab and Pfizer's former Phase III and abandoned bapineuzumab.

<sup>2</sup> The poster by Kaplan (et al.), is entitled Humanized PMN310 shows enhanced therapeutic potential by binding toxic low molecular weight Aβ oligomers while avoiding ARIA-related binding to Aβ deposits in AD patient brains.

<sup>3</sup> Key characteristics of PMN310 include no binding to amyloid beta plaques and the use of the IgG4 isotype, which limit the incidence of amyloid-related imaging abnormalities (ARIA) edema or brain swelling.

Exhibit III – Preferential Binding of PMN310 to Low Molecular Weight Fraction

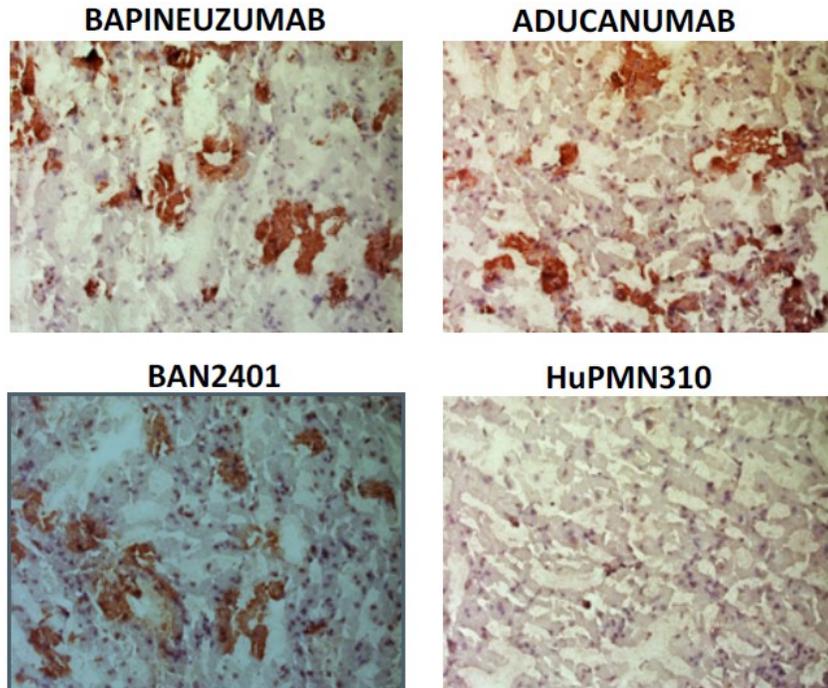


In conjunction with the AAIC conference, ProMIS' Chief Development Officer, Dr. Johanne Kaplan submitted a [white paper](#) and [video presentation](#) which we discuss [here](#). Following the conference, ProMIS provided [commentary](#) on the key themes at the meeting.

**Plaque Binding**

On August 21 the company [announced](#) results demonstrating the lack of binding affinity between PMN310 and amyloid beta plaques. This result was compared to the binding of BAN2401 and aducanumab where robust amyloid beta plaque reactivity was observed. This result is important because it means that PMN310 is less likely to be diluted by plaque binding and greater amounts of the monoclonal antibody can target and bind to toxic oligomers. This targeted binding can also provide an improved safety profile by avoiding ARIA-E. Below are images of brain section exposed to PMN310 and other leading candidates for AD. Brown sections show the binding of antibodies to plaques in the brain. Absence of this stain indicates the desired lack of binding to inert plaques.

Exhibit IV – mAb Binding to Amyloid  $\beta$  Plaques



## **Significant Event Timeline**

ProMIS has a number of recent and upcoming milestones related to development of its pipeline which we chronologically summarize below.

- PMN 310 named lead development candidate – 1Q:17
- White paper on AD failures and toxic oligomers – 1Q:17
- Private placement for CAD\$2.7 MM – 1Q:17
- Anthony Giovinazzo added to board – 1Q:17
- Daniel Geffken appointed as CFO – 1Q:17
- ALS TDP43 patent filed – 2Q:17
- OTCQB Listing (ARFXF) – 4Q:17
- GLP Toxicology – 2018
- Initiate PMN310 Manufacturing – 2Q:18
- Private Placement for CAD\$7.2 MM – 2Q:18
- Participation in AAIC – 2Q:18
- Appointment of James Kupiec, MD as CMO – 3Q:18
- Identification of  $\alpha$ -synuclein targeting candidates for PD – 4Q:18
- Prepare for IND and Phase I trial for PMN310 - 2019
- Generate Phase I biomarker data - 2020

## **Summary**

ProMIS has continued to move forward with its preclinical PMN310 work and is expected to advance its IND-enabling work and identify relevant biomarkers for its clinical trials. Parallel with these efforts is continued interaction with the scientific, investment and corporate community to present the promise of PMN310 and other pipeline candidates to garner KOL support, financing and partnerships. We believe ProMIS represents an attractive opportunity to gain exposure to an immense disease area with no other approved therapies. There are almost six million persons with AD in the US and over 30 million outside of the US that suffer from the disease. Additionally, there is a larger population with MCI and pre-Alzheimer's which may benefit even more from toxic oligomer sequestering therapy. The path forward is relatively clear with other assets including aducanumab setting the precedent for trial design. We update our model to reflect third quarter 2018 actuals and maintain our valuation of CAD\$7.00.

## PROJECTED FINANCIALS

### ProMIS Neurosciences Inc - Income Statement

ProMIS Neurosciences Inc.	2017 A	Q1 A	Q2 A	Q3 A	Q4 E	2018 E	2019 E	2020 E
<b>Total Revenues (CAD\$)</b>	<b>\$0.0</b>							
R&D	\$4.0	\$0.8	\$1.5	\$1.9	\$3.2	\$7.4	\$14.4	\$16.9
G&A	\$2.1	\$0.8	\$0.7	\$1.0	\$0.5	\$3.0	\$2.7	\$3.1
<b>Operating Income</b>	<b>(\$6.0)</b>	<b>(\$1.6)</b>	<b>(\$2.2)</b>	<b>(\$2.9)</b>	<b>(\$3.7)</b>	<b>(\$10.4)</b>	<b>(\$17.1)</b>	<b>(\$20.0)</b>
<i>Operating Margin</i>								
Amort of Financing & Interest	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
<b>Pre-Tax Income</b>	<b>(\$6.0)</b>	<b>\$1.6</b>	<b>(\$2.2)</b>	<b>(\$2.9)</b>	<b>(\$3.7)</b>	<b>(\$10.4)</b>	<b>(\$17.1)</b>	<b>(\$20.0)</b>
Taxes & Other <i>Tax Rate</i>	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
<b>Net Income</b>	<b>(\$6.0)</b>	<b>(\$1.6)</b>	<b>(\$2.2)</b>	<b>(\$2.9)</b>	<b>(\$3.7)</b>	<b>(\$10.4)</b>	<b>(\$17.1)</b>	<b>(\$20.0)</b>
<b>Reported EPS</b>	<b>(\$0.03)</b>	<b>(\$0.01)</b>	<b>(\$0.01)</b>	<b>(\$0.01)</b>	<b>(\$0.01)</b>	<b>(\$0.04)</b>	<b>(\$0.06)</b>	<b>(\$0.06)</b>
<i>YOY Growth</i>								
<b>Shares Outstanding</b>	<b>205.8</b>	<b>223.9</b>	<b>239.4</b>	<b>246.4</b>	<b>255.0</b>	<b>241.2</b>	<b>295.0</b>	<b>345.0</b>

Source: Company Filing // Zacks Investment Research, Inc. Estimates

# HISTORICAL STOCK PRICE

## ProMIS Neurosciences Inc – Historical Price Chart<sup>4</sup>



<sup>4</sup> Chart provided courtesy of [www.barchart.com](http://www.barchart.com)

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