THE FUTURE OF WELLNESS ™

The Problem – Multiple Sclerosis (MS)

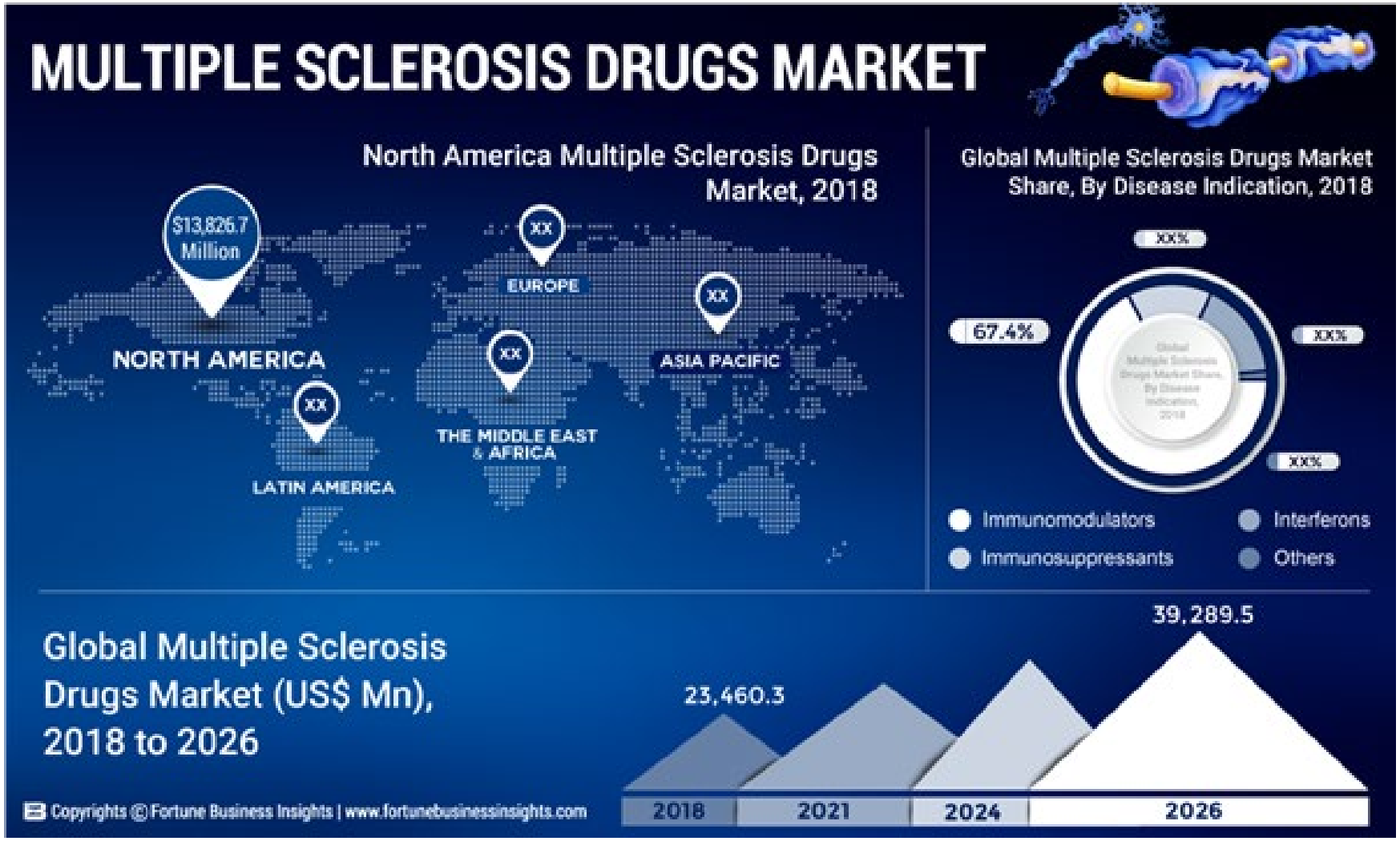
- No biomarker to diagnose prior to illness presentation
- It is believed that MS begins decades prior to diagnosis
- No disease *arresting* (stopping progression) therapy for MS or any neurodegenerative disease currently exists
- No restorative treatments to reverse symptoms currently exists

Solution – ART191

- Arête Discoveries has found a missing protein common to many, if not all, autoimmune diseases
- Art191 resulted from connecting the dots
- Arête continues to modify and work on this protein to protect the intellectual property currently in place, and in pursuit of follow on IP
- Importantly, researchers from Harvard, Johns Hopkins, Stanford, University of Virginia, Feinberg School of Medicine, University of Texas South West, The University of Ottawa, and Massachusetts General Hospital have acknowledged the benefits of Art191 for potential treatments of MS

MS Therapy Market Forecast

Multiple Sclerosis Drug Market to Reach US $39 BILLION by 2026, at a CAGR of 6.7%. Companies focus on strategic collaborations to expand their footprint. *See,* [Fortune Business Insights]



Arête Is Considering Three Possible Therapies For Treatments Based on ART191

- ART191:
  - Stops progression of rodent MS (experimental autoimmune encephalomyelitis)
  - Prevents onset of EAE
- ART192:
  - Has 27.5% higher efficacy than ART191
  - Promotes remyelination and axonal regeneration
- ART191a:
  - Currently in research, expected to achieve ART192 benefits with less toxicity

How ART19X Works

- Upregulates (increases) beneficial Th2 cells
- Downregulates (decreases) harmful Th17 cells
- Reducing Th17 removes production of cytotoxic IL17
- Stimulates somatic stem cells (stem cells unique to that organ) to replace tissue that has been harmed

What we discovered

- MS patients have a mutation in a single strand of RNA in the endoplasmic reticulum of the myeloid stem cell that produces an aberrant mast cell
- Mast cells are the first line of defense in your innate (ancient) immune system
- Mast cells are found on the lining of all tissue in the body (cutaneous tissue)
- Mast cells are released into the blood stream from bone marrow with nothing but an address consisting of a homing receptor pattern and a molecular structure
- When they find this address/pattern, they take up residence

What we discovered (cont'd)

- These healthy mast cells acquire their secretory properties from the tissue on which they reside, and their reactivity from the homeostasis (stable nature) of the environment
- In contrast, **aberrant mast cells** produce an inappropriate pro-inflammatory cascade that leads to oxidative stress, causing cellular cessation (death), recruitment of macrophage and B-cell plasma and activation of astrocytes
- In MS, the oligodendrocytes of the optic nerve, two areas of the brain and the cervical spine have homing receptor pattern and molecular structure mimicry, causing the aberrant mast cells take up residence and resulting in MS

Proof of Concept Success in Rodent Models

- Experimental autoimmune encephalomyelitis (EAE) is the standard mouse model for MS
- The following studies have been completed:
  - 2 successful studies that identify inception of EAE
  - 1 successful study to prevent onset of EAE
  - 2 successful studies that halt EAE
  - 3 successful studies in rats* using another autoimmune inflammatory disease as validation.

*Rats are closer to humans biologically

*17 months later the rats appear and act healthier than naïve (healthy, untreated) controls.

Next Steps For IND

- FDA approval process for investigational new drug (IND) applications requires toxicology, pharmacokinetic and pharmacodynamic studies in two large mammal species
- These studies provide FDA with the necessary safety and efficacy data required by FDA to approve an IND and permit use of the drug in humans in clinical trials
- The cost to complete these studies is approximately $2 million

Nonclinical IND Development Cost Estimates For a Short-Term Dosing Biologic*

Study	Estimated Ave. Cost*
PK in Rhesus Monkey	$145 K
MTD/DRF 2 Phase Toxicity and TK Study in Rhesus Monkey (non-GLP)	$246 K
28-Day GLP Tox and TK study in Rhesus Monkey	933 K
TRC: GLP human and Rhesus and non-GLP cyno	160 K
BA and ADA Assay Development	$368 K
BA and ADA Sample Analysis	$280 K
Total	**~$ 2.1 M***

*Wuxi AppTec est.

Arête Discoveries Team

- Jack Cowie – Founder, Chief Executive Officer
  - Jack is a passionate patient advocate whose wife has multiple sclerosis (MS)
  - His wedding promise to his wife was to find a way to stop MS progression
  - Together they have funded the research to date
- Michael R. McGurk, Co-Founder, Chief Legal Officer
  - Mike is a 30-year life science intellectual property veteran
  - He is an equity stake holder and is a co-founder of Arête Discoveries
- Timothy A. Riley, PhD, Co-Founder
  - Chief Medical Officer and Chief Business Officer of the Rhett Syndrome Research Trust
  - Entrepreneur in Residence, Yale University School of Medicine

Why You Should Invest

- No known disease arresting therapies for any neurodegenerative diseases
- Arête's approach (1) arrests multiple types of rodent neurodegeneration, (2) is restorative, and (3) promotes curative replacement of diseased tissues
- Roche/Genentech launched its disease modifying (only) drug Ocrevus in May of 2018 and in seven months grossed $2.47B
- ART19X is a disease arresting therapy and restorative
- The treated mice remain healthy/alive post treatment for over 17 months
- The prospects for a meaningful treatment of MS looks promising

Intellectual Property

- Patents Pending - United States Application No. 16/318,847, filed January 18, 2019, and related global filings in all relevant countries
- Additional patents will be filed as development continues
- Proprietary developments, including trades secrets will be/are protected

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