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Bioxytran, Inc.

Revolutionizing the Covid-19 Treatment

(OTCQB: BIXT, Valuation: $2.71)

REINITIATING COVERAGE (Nov 22, 2022)

Equity | Healthcare / Biotechnology

COMPANY OVERVIEW

We reinitiate our coverage on Bioxytran, Inc. (BIXT) with a fair valuation of $2.71 per share. Bioxytran, Inc. is a clinical-stage biotechnology company developing novel therapies targeting the treatment of significant unmet medical needs in virology, degenerative disease, and hypoxia. The leading drug candidate, ProLectin-M, is a new class of antiviral drugs designed to antagonize galectins implicated in inflammatory, fibrotic, and malignant diseases. It is also developing BXT-25, a glycopolymer that acts as an anti-necrosis drug by carrying oxygen to tissues even when blood flow is blocked and can reverse hypoxia (oxygen deficiency). The Company is headquartered in Newton, Massachusetts.

SUMMARY

Recommendation	Re-initiation Report
Risk Rating	High
Current Share Price (11/18/2022)	$0.52
DCF Valuation	$2.71
52-Week High/Low	$0.0021 – $1.25
Market capitalisation	$64.0 M
Shares Outstanding	123.01 M
Float	39.51 M
Average Volume	83.5K
Institutional Ownership	0.0%

Investment Rationale

ProLectin-M: Potential Game Changer for Covid-19

Bioxytran is developing niche therapeutics in the crowded Covid-19 antiviral drug space, setting a new benchmark with 100% of patients in mild-to-moderate condition recovering by day 7 and 88% of patients by day 3. ProLectin-M may have significant safety, efficacy, and dosing advantages over currently marketed therapies in its class. The targeted virus types represent an addressable market of over 10 million patients and a multi-billion-dollar market.

Overcoming the Biggest Challenge in Stroke Treatment

The Company continues to focus on developing BXT-25, the only ambulatory treatment which can overcome the problem of a minuscule 3-hour treatment window available for victims of stroke. The Company is not only on an accelerated pathway for the approval of its drug from the FDA but also poised to capture a majority share of the multibillion-dollar global stroke market.

Proven Track Record of Dr. David Platt

With Dr. David Platt, an expert in carbohydrate chemistry with a decade-long management experience, at its helm, Bioxytran is on an accelerated path to emulating his earlier successes. Dr. Platt's various achievements include a portfolio of patents, the distinction of uplisting two companies from OTC to NASDAQ and creating a value of nearly $1 billion for investors through three publicly traded companies.

INVESTMENT VIEW:

While Covid-19 continues to remain a threat, the unavailability of 100% effective vaccines or antiviral therapeutics offers significant scope for new entrants with significant clinical trial innovation. Positive results from the upcoming Phase III trial of ProLectin-M could position the drug to capture significant market share. However, the inability to garner sufficient funds for the drug development process may delay the clinical process of both Prolectin-M and BXT-25. We are attracted to its strong management team and unique breakthrough technology. We adopt DCF methodology to arrive at a fair valuation of $2.71/share, discounted at a WACC of 12.1%.

Financial Forecasts & Valuation Metrics

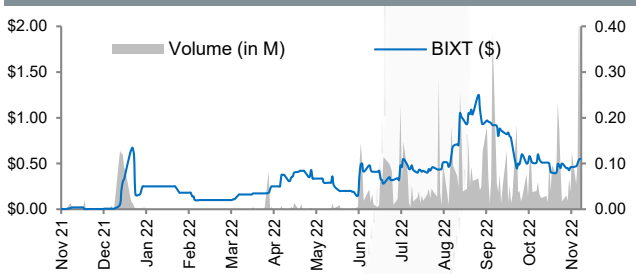
Y/e FY	FY21A	....FY24F	FY25F	FY26F
Revenue ($ in M)	-	7.3	19.4	38.9
% Growth (Y-o-Y)	-	-	*165.1%*	*100.1%*
EBITDA Margin (%)	-	*49.0%*	*72.6%*	*83.4%*
EBIT ($ in M)	(4.2)	3.6	14.1	32.4
PAT ($ in M)	(4.5)	2.64	10.54	24.27
PAT Margin (%)	-	*36.1%*	*54.3%*	*62.5%*
EV/Sales (x)	-	8.8	3.3	1.7
EV/EBITDA (x)	-	17.9	4.6	2.0
P/BV (x)	-	122.9	3.5	2.0
RoCE (%)	-	*332.3%*	*133.2%*	*115.8%*

Source: Company, Yahoo Finance, Avise Analytics Estimates

Risks

- Bioxytran is currently conducting clinical studies of its Covid-19 treatment drug ProLectin-M. But such processes are expensive, time-consuming and uncertain.
- Failure to raise additional funding may adversely impact the management's planned R&D initiatives.
- Failure to secure FDA approval may delay or impair the Company's ability to commercialize its planned drug portfolio.

Share Price Chart



Source: Yahoo Finance, Avise Analytics Research

ProLectin-M: Potential Game Changer for Covid-19

The Company's latest candidate, galectin antagonist ProLectin-M, demonstrated stunning results in its Phase 2 clinical trials. In this study, all 34 patients with mild to moderately severe Covid-19 showed negative RT-PCR from day three onwards, proving that the orally administered drug is safe and effective for clinical use in reducing viral load and promoting rapid viral clearance. There is a strong possibility that this complex polysaccharide drug can offer profound and far-reaching results in terms of ending the Covid-19 pandemic by drastically reducing the transmission rate of the virus, as well as stopping hospitalization and related deaths in affected patients.

Effects of the Covid-19 Pandemic

On March 11, 2020, the WHO declared the coronavirus disease (Covid-19) a global pandemic. Brought on by the outbreak of severe acute respiratory syndrome coronavirus 2 (SARS-CoV2), the pandemic developed into a worldwide health crisis.

As of October 2022, more than 636 million cases have been reported worldwide, resulting in over 6.6 million deaths. The U.S. is still considered one of the epicenters of the disease, with roughly over 100 million cases and over 1.1 million death.

SARS-CoV-2 is primarily transferred via respiratory fluids, including droplets and aerosols, and can have health impacts ranging from mild to deadly. In asymptomatic and mild cases, the infection may spread no further than the upper respiratory passages because the immune system easily controls the infection.

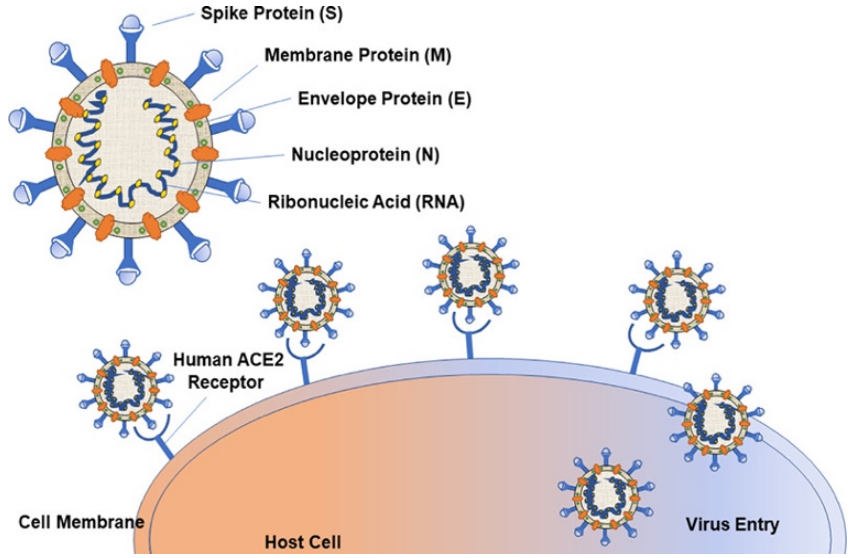
In more severe cases, SARS-CoV-2 infection spreads deep into the lungs and other organs and causes direct damage by killing cells. In such cases, the immune system also creates problems by killing infected cells and causing collateral damage to nearby cells.

Several vaccines have been approved, but the new variants can evade the immune system, thereby contributing to the spread of the virus infecting all age groups, despite the administration of over 10 billion doses.

SARS-CoV2 Wreaks Havoc on the Human System

The SARS-CoV-2 virus infects the human system through an S protein binding on the host cell

Schematic Representation of the SARS-CoV-2 Structure and its Mode of Host Entry



Source: Science Direct, Avise Analytics Research

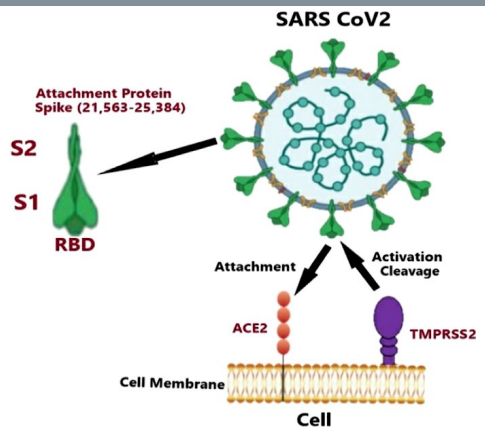
The four important structural proteins of the SARS-CoV-2 virus are (E) the envelope protein, (M) the membrane protein, (S) the spike protein and (N) the nucleocapsid protein. Among these, S and N help to attach the virus to host cells.

During infection, the S protein is cleaved into S1 and S2 subunits by the host cell's Transmembrane Serine Protease 2 (TMPRSS2). TMPRSS is a cell surface protein primarily expressed by endothelial cells across the respiratory and digestive tracts.

Subunit S1 contains the receptor binding domain (RBD) through which the virus directly binds to the peptidase domain (PD) of Angiotensin Converting Enzyme-II (ACE2) receptors in the human.

cell. Subunit S2 helps fuse the membrane of the virus with that of the host cell. Therefore, ACE2 facilitates SARS-CoV-2 entry into cells, which makes it a functional receptor for the coronavirus. Infection ensues when the virus binds ACE2 with its spike protein and tricks the cell into swallowing it through endocytosis.

SARS-CoV-2 Binds to ACE2 Receptor on Human Cells to Gain Access Through Endocytocis



Source: Egyptian Journal of Medical Human Genetics, Avise Analytics Research

Once the virus binds ACE2, it remains effectively occupied and is unable to perform its regular function.

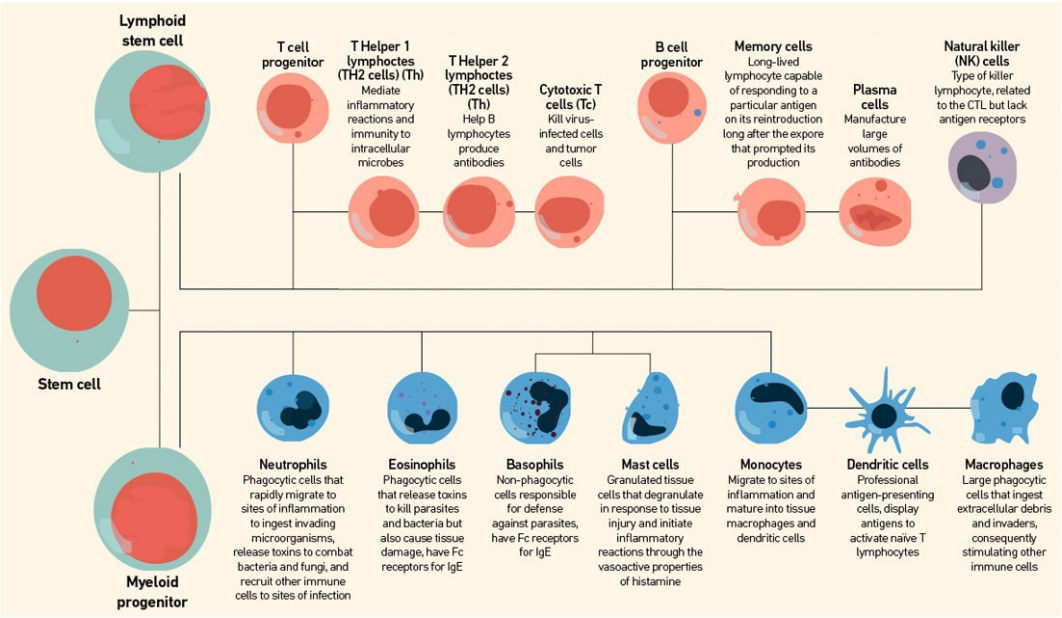
ACE2 is expressed on multiple organs throughout the body, where it performs critical local regulatory tasks. It is highly enriched in the lungs, heart, kidney, and intestine and can be found in the liver, testes, brain, and adipose tissue. ACE2 expression in these respective niches causes healthy cardiac function, prevents acute lung failure from infection, and promotes optimal beta-cell function (the cells in the pancreas that generate insulin) and insulin sensitivity.

Thus, when SARS-CoV-2 blocks ACE2 function, it is no longer available to perform its regulatory roles in the heart, pancreas, liver, or other cell types, nor is it readily available to reduce blood pressure. When ACE2-expressing cells are infected and destroyed by the virus, the tissues as a whole suffer.

SARS-CoV-2 Capable of Evading Immune System

Not only is SARS-CoV-2 responsible for the destruction of human tissue, but it is also capable of modulating the immune system. There are two arms of the immune system—innate and adaptive—make up the human body's natural defense against infection and play a critical role in defending from viral and other pathogenic infections.

Cells of the Innate and Adaptive Immune System, their Origins and Roles in the Immune Response

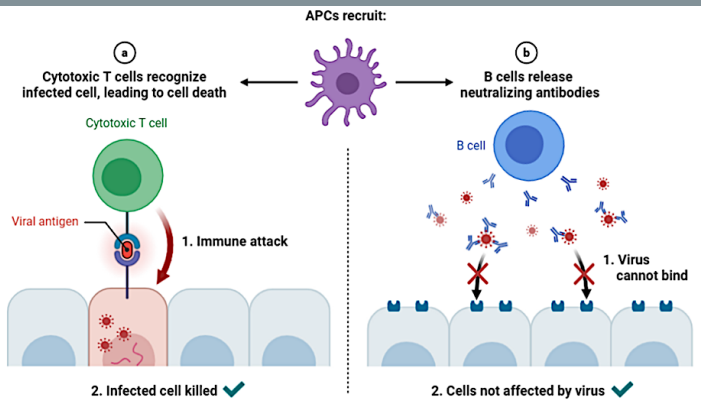


Source: Technology Networks , Avise Analytics Research

Immediately after infection, mediators of innate immune response - chemicals known as interferons - are activated to limit viral multiplication and to increase the mobilization of the adaptive immune system consisting of white blood cells or lymphocytes and B and T cells.

T cells are crucial in controlling primary infection by killing virally-infected cells. Activated B cells release antibodies that can attach to specific proteins on viruses, bacteria, and other disease-causing pathogens and prevent further infection of healthy cells. For an effective antiviral immune response, it is essential that B and T cells work in concert to destroy the virally-infected cells and neutralize the circulating viral particles.

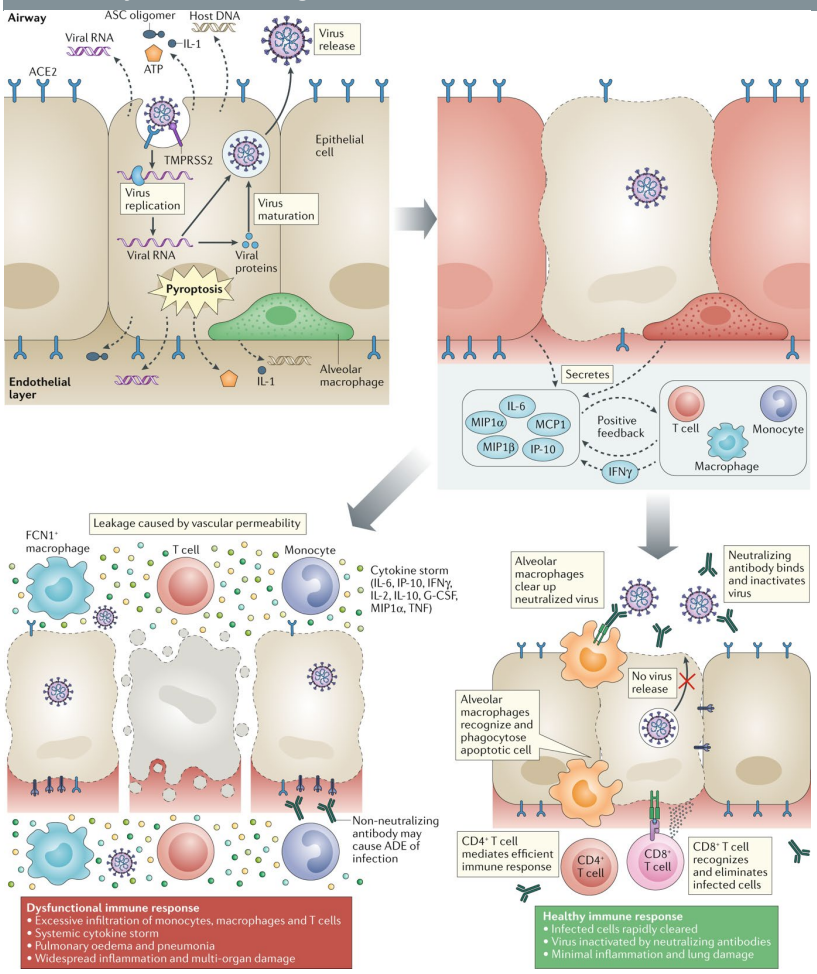
Immune System Defense Against Sars-CoV-2 Virus



Source: BioRender, Akiko Iwasaki, Avise Analytics Research

Research has shown that once SARS-CoV-2 infects the cells of the airway in the host's lungs, it may cause massive destruction of the affected tissues. This occurs because the replication and release of SARS-CoV-2 triggers the host cells to undergo a form of cell death called pyroptosis.

Immune System Defense Against Sars-CoV-2 Virus



Source: Nature Reviews Immunology, Avise Analytics Research

During pyroptosis, the damaged or dying cell releases the viral RNA and other intracellular debris, which triggers immune cells such as macrophages, monocytes, and dendritic cells to produce cytokines. Cytokines are inflammatory chemicals such as interleukin (IL)-1, tumor necrosis factor α (TNF-α), and IL-6, released into the afflicted patients' blood.

Secretion of cytokines attracts immune cells, such as white blood cells or lymphocytes, from the blood to the site of infection. In most patients, this initial immune response is enough to kill the virus and clear the infection in the lungs.

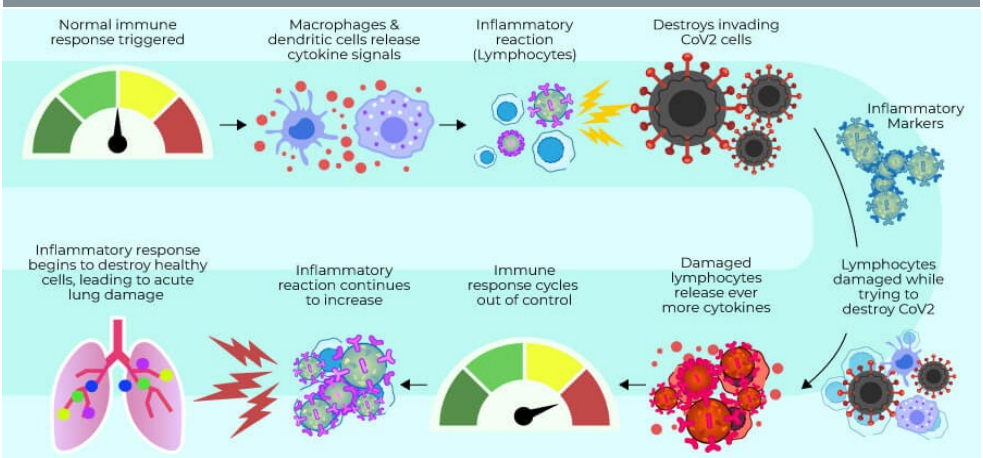
However, some COVID-19 patients respond with an abnormal immune response, where damaged or dying cells (this includes both infected cells and lymphocytes) continue to release more and more cytokines into the blood. This phenomenon is known as Cytokine Storm Syndrome (CSS).

Cytokine Storm Syndrome – Main Cause of Covid-19 Deaths

The majority of severe cases and deaths from COVID-19 result from runaway inflammatory responses within the patient's own immune systems – these cause cytokine storms that are difficult to interrupt.

Cytokine Storm Syndrome develops due to the hyper-activation of macrophages, monocytes, and dendritic cells, which are stimulated to release a variety of inflammatory mediators, including IL-1, IL-6, and TNF-α. During a cytokine storm, various inflammatory cytokines are produced at a much higher rate than usual. This overproduction of cytokines causes positive feedback to occur on other immune cells, which allows for more immune cells to be recruited to the site of injury. This, in turn, can lead to organ damage.

Cytokine Storms Lead to Organ Damage



Source: DrJockers, Avise Analytics Research

Inflammation of the lungs can progress to acute respiratory distress syndrome (ARDS). ARDS is the most notable clinical condition associated with cytokine storm, causing difficulty in breathing and low blood oxygen levels. If unchecked, ARDS can progress to respiratory failure, which is the cause of death in many fatal COVID-19 cases. In addition, uncontrolled CSS can lead to the failure of other organs, most notably the heart, liver, and kidneys.

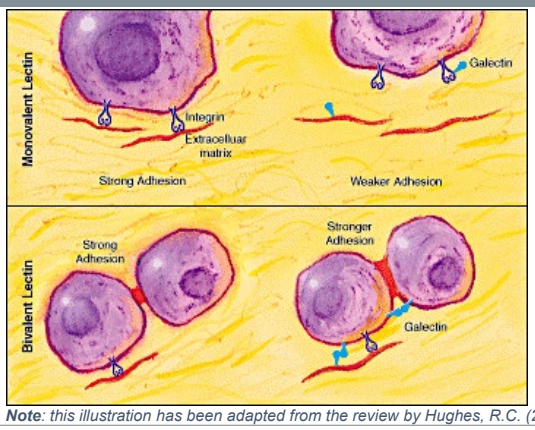
Another explanation for the widespread organ damage from severe COVID-19 is abnormal blood clots frequently observed in some patients. This may arise from SARS-CoV-2 infection and damage of the endothelial cells—cells lining the blood vessels—and/or the inflammatory response due to the abnormal activation of the immune system.

Recent discoveries specific to viral infections indicate that galectins, a carbohydrate-binding protein, play critical regulatory roles in immune cell response and homeostasis. Based on the analysis of cytokines and chemokines, researchers detected a positive correlation of the plasma galectin family (galectin-1, -3, and -9) with C-reactive protein (CRP) and proinflammatory cytokines/chemokines such as interleukin (IL)-1β, IL-6, TNF-α, among others. Patients suffering from COVID-19 show elevated levels of these galectins apart from the cytokines TNFα, IL-1β, and IL-6.

Galectins are Important Regulators of Immune Responses

Galectins are carbohydrate-binding proteins, essentially involved in many physiological functions, such as inflammation, immune responses, cell migration, autophagy, and signaling. These proteins can bind to sugar molecules that are part of other proteins in and on the cells of our body. Galectin proteins act as a kind of glue, bringing together molecules that have sugars on them.

Galectins Enhance the Adhesive Potential Between Cells or Between Cells and the Extracellular Matrix



***Note**: this illustration has been adapted from the review by Hughes, R.C. (2001) Biochimie 83:667*

There are 15 galectin protein subtypes. All these subtypes have a carbohydrate recognition domain that binds to galactose-containing carbohydrates and glycoproteins. However, Gal-1, -3, and -9 are the three most prominent galectins involved in pathological processes. These most widely studied members of the galectin family belong to the proto-type (galectin-1), chimera-type (galectin-3), and tandem-repeat type (galectin-9) classes.

Structure of Galectin Protein Subtypes

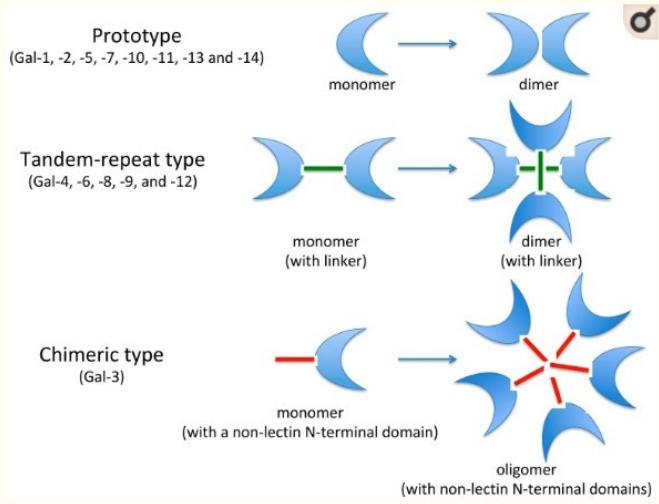


Figure 1

The structure of the galectin family members. The galectin family members are divided into three types: The prototype with one carbohydrate recognition domain (CRD), the tandem-repeat type with two CRDs connected by a non-conserved linker, and the chimeric type with one CRD and a non-lectin N-terminal domain (ND). Some galectins can self-associate into dimers or oligomers.

Source: Sciacchitano S, Lavra L, Morgante A, et al., Avise Analytics Research

They are highly expressed in immune system macrophages and activated by tissue damage. While they are also involved in immunogenicity, i.e., cell recognition, between human cells and infective pathogens, viruses, bacteria, and parasites can be detrimental in other circumstances. Further, secreted galectins play important roles in a wide variety of pathological processes involved in immune regulation, inflammation, fibrogenesis, and tumor cell biology. But they can negatively interfere with mechanisms crucial for pathogen adherence and cell entry.

Galectin Link to Chronic Disease and Mortality

The increase in galectin protein promotes chronic diseases like cancer, rheumatoid arthritis, diabetes, and heart failure and is detrimental to the patient. They are also recognized as a potentially important diagnostic or prognostic biomarker for a variety of inflammatory and fibrotic diseases (as shown in the table below). They have been found to be elevated in patients with idiopathic pulmonary fibrosis and COVID-19 patients.

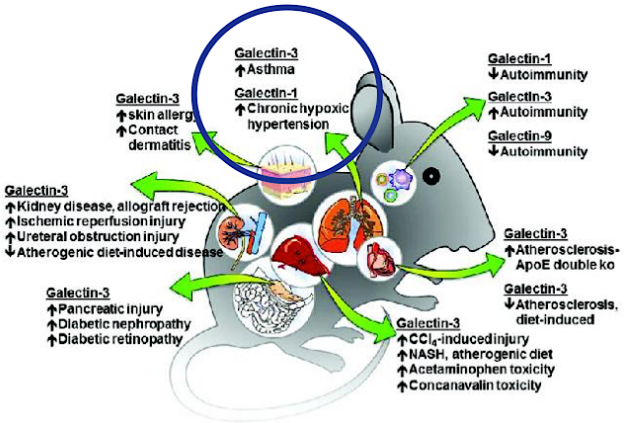
Galectins are the Key Biomarker of Chronic Disease

Disease Indication	Journals	Areas of Focus
Cancer	1500	Cervical, Breast, Endometrial, Pancreatic, Thyroid, CRC, Biomarker
Cardiovascular Disease	622	Biomarker for heart failure, stroke, other cardiovascular disease
Brain	350	Predictive Biomarker stroke, TBI, Postpartum Depression
Kidney	211	Fibrosis, Biomarker in chronic kidney disease
Lung	200	Cancer, Fibrosis, Biomarker
Liver	185	NASH, NAFLD, Fibrosis, Biomarker
Skin	127	Wound Healing, infection, Lupus, Psoriasis, Cancer, Biomarker
Digestive System	109	Gastric & Colorectal Cancer, Metastasis, Inflammatory, Biomarker

Source: Company Presentation, Avise Analytics Research

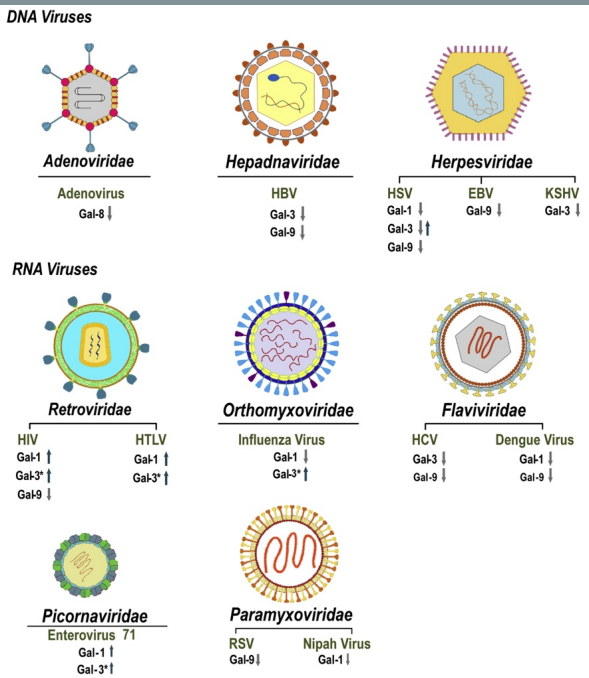
Among the different mammalian galectins, Gal-1, -3, and -9 have a significant role in the modulation of the immune response. Elevated levels of Gal-1, -3, and -9 are not just associated with multiple chronic diseases - they are also modulators of viral diseases, including Covid-19. Their abundance and secretion by target and infected cells probably explain why these three galectins appear more involved in infections than other galectins.

Disease Involvement by Tissues and Organs in Gal-1, Gal-3, & Gal-9 Deficient Mice



Source: Company Presentation, Avise Analytics Research

Galectin-1, 3, and 9 are Modulators of Viral Infection



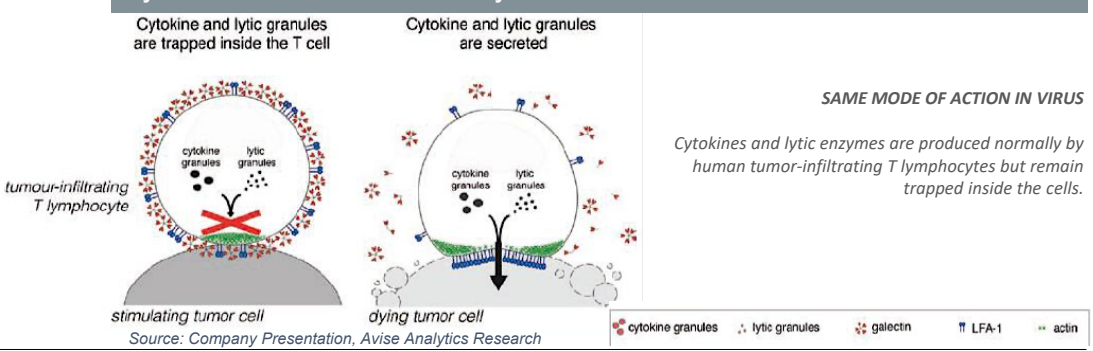
The regulation capabilities of galectins in human DNA or RNA virus infections. The regulations of galectins to human virus infection were via positive or negative ways. The down and up arrows indicate negative and positive regulations of galectins to virus infection respectively ("*" indicates endogenous galectin).

Source: Company Presentation, Avise Analytics Research

Galectins Render T-cells Ineffective by Causing T-cell Anergy

Further, galectins are responsible for CD8+ T-cell anergy. They prevent the LFA-1 lectins present on the T-cells from achieving the necessary adhesion required to destroy Covid-19 infected cells. Therefore, the cytokines and lytic granules produced by the T-cells remain trapped inside and are unable to act and destroy the virus-infected cells.

Lytic Granules Release Prevented by Galectins



SAME MODE OF ACTION IN VIRUS

Cytokines and lytic enzymes are produced normally by human tumor-infiltrating T lymphocytes but remain trapped inside the cells.

Source: Company Presentation, Avise Analytics Research

Galectins can exert positive or negative effects on the same infection. The relative abundance of these three galectins is also crucial for the establishment of infection. Generally, Gal-1 and Gal-3 increase adherence as well as immune evasion, while the contribution of Gal-9 is mostly restricted to immune evasion.

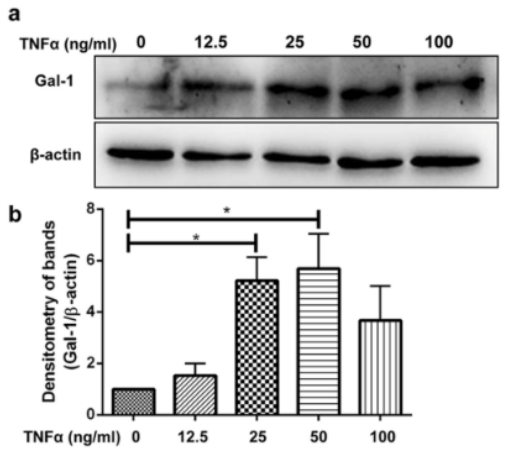
Gal-1 Increases During Disease Progression and Stimulates Viral Progression

Galectin-1 (Gal-1) has a high affinity for β galactose-containing oligosaccharides. It is a key player in different biological functions, including growth, cell proliferation, inflammation/immune response, and carcinogenesis.

Recently, the involvement of Gal-1 in the progression of idiopathic pulmonary fibrosis was demonstrated. In hypoxemic conditions, Gal-1 interplays with focal adhesion kinase-1 (FAK1) in lung epithelial cells and contributes to the trans-differentiation of fibroblasts into myofibroblasts. On the other hand, its inhibition reduces FAK1 activity and alleviates fibrogenesis progression.

Gal-1 modulates inflammatory responses in Sertoli cells by enhancing the pro-inflammatory activity of TNFα via stimulation of MAPK signaling.

Analysis of Gal-1 Expression in Primary Sertoli Cells

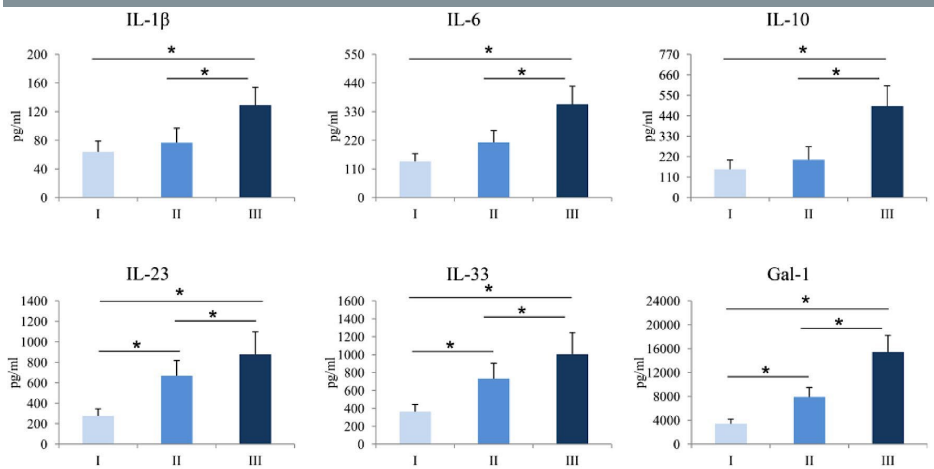


Source: Springer Nature , Avise Analytics Research

Gal-1 can play different roles, depending on whether it acts early or late during the course of acute or chronic inflammation. The regression model for independent variables, including demographic features of the patients, clinical, biochemical parameters, serum levels of proinflammatory, anti-inflammatory cytokines and dependent variable (COVID-19 severity) showed notable results.

Kazancioglu et al. found that the systemic level of Gal-1 increased in patients with COVID-19 compared to healthy control. A recent study found that the level of Gal-1 increases during the infection, and its value is the highest in patients in stage III.

Serum Values of Pro-inflammatory and Anti-inflammatory Cytokines



Note: Serum values of pro-inflammatory and anti-inflammatory cytokines. Based on the disease severity, all COVID-19 patients were divided into three groups: I, II, and III. Systemic levels of IL-1β, IL-6, IL-23, IL-33, and Gal-1 were measured by ELISA. Statistical significance was tested by Mann–Whitney Rank Sum test.

Source: Springer Nature, Statistical significance was tested by Mann–Whitney Rank Sum test, Avise Analytics Research

Gal-1 appears to be involved in the COVID-19 pathogenesis, as there is a correlation between its blood level, proinflammatory cytokines, and clinical parameters (chest radiography, dry cough). Elevated serum Gal-1 values were correlated with IL-1β, IL6, IL-10, IL-23, and IL-33 (as shown in the figure below). Moreover, the statistical analysis highlighted the increased level of IL-10 and Gal-1, as well as a strong positive correlation between them in stage III of COVID-19, suggesting their dependent immunomodulation.

Correlation Between Gal-1 and Pro- and Anti-inflammatory Cytokines

	Gal-1					
	I		II		III	
Clin. stage	Pearson's rho	*p* value	Pearson's rho	*p* value	Pearson's rho	*p* value
IL-1 β	0.089	0.511	**0.345**	**0.004**	**0.429**	**0.001**
IL-6	−0.150	0.267	0.007	0.955	**0.374**	**0.005**
IL-10	−0.121	0.369	0.082	0.509	**0.574**	**0.001**
IL-23	0.206	0.124	**0.603**	**0.001**	**0.656**	**0.001**
IL-33	**0.723**	**0.001**	**0.886**	**0.001**	**0.869**	**0.001**

Note: Strength of correlation was defined as negative or positive weak (− 0.3 to − 0.1 or 0.1 to 0.3), moderate (− 0.5 to − 0.3 or 0.3 to 0.5), or strong (− 1.0 to − 0.5 or 0.5 to 1.0). Statistically, significance values (p < 0.05) were given in bold.

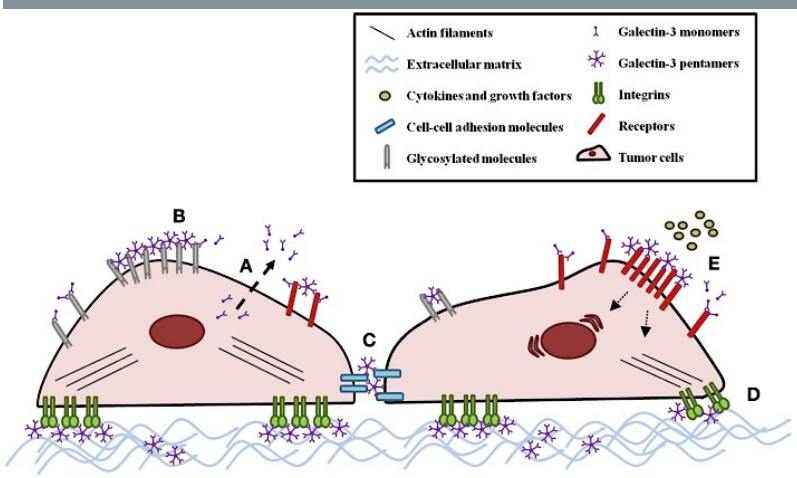
Source: Springer Nature, Avise Analytics Research

Apart from Gal-1, Gal-3 and Gal-9 are known to be important contributing factors in cytokine release syndrome. Many studies have shown that significantly elevated levels of Gal-3 in sera of COVID-19 patients were associated with worse outcomes and lower survival. Gal-3, in particular, is responsible for all types of organ fibrosis, including the brain, heart, lungs, kidneys, and GI tract. Single cell analysis has also shown significantly elevated levels of galectin 3 (Gal-3) in macrophages, monocytes, and dendritic cells in patients with severe COVID-19 as compared to mild disease.

Galectin-3 – A Unique Galectin Subtype

Although there are 15 galectin protein subtypes, Galectin-3 (Gal-3) is unique among the other galectin protein subtypes as being the sole chimeric protein, being able to link in a five-sided pentamer (see figure below). At low concentrations, Gal-3 is monomeric and acts to inhibit adhesion, but as Gal-3 increases in concentration, it forms large complexes that promote adhesion by bridging between cells and the extracellular matrix.

Galectin-3 Modulates Tumor Cell Behavior



Note: *(A) Galectin-3 monomers are secreted by a non-classical mechanism. (B) This complex cross-link carbohydrate-containing glycans, promoting the formation of organized galectin–glycan clusters termed lattices and modulating tumor cell behavior, such as (C) adhesion and (D) migration. (E) Galectin-3-glycan lattices also extend the exposition of receptors on the cell surface, affecting cell response to cytokines and growth factors.*

Source: ResearchGate, Avise Analytics Research

Gal-3 expresses in many different immune cells and modulates broad biological functions, including cell adhesion, cell activation, cell growth, apoptosis, and inflammation.

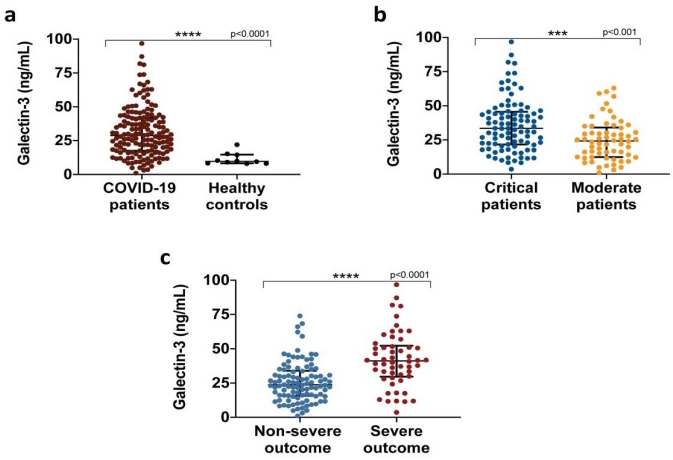
Galectin-3 Promotes Immunologic Sequelae of COVID-19 in Severe Infection

Galectin-3, a ß-galactoside binding lectin, is known to drive neutrophil infiltration and release of pro-inflammatory cytokines which contributes to airway inflammation. Moreover, the highest blood levels of Gal-3 were found in severe cases of COVID-19.

Covid-19 patients with serum levels of Gal-3 above 35.3 ng/ml had an increased risk for Intensive Care Unit admission, severe acute respiratory distress syndrome (ARDS), and mortality. Therefore, researchers aimed to investigate the potential of galectin-3 as a biomarker of severe COVID-19 outcomes. A total of 156 patients with RT-PCR-confirmed SARS-CoV-2 infection and CT findings were enrolled in the study.

Galectin-3 serum levels in COVID-19 patients are shown in the figure below.

Galectin-3 Serum Levels in COVID-19 Patients



(a) Galectin-3 circulating levels upon hospital admission of COVID-19 patients (n = 156) and age-matched healthy pre-pandemic controls (n = 10).

(b) Severe outcomes in COVID-19 patients were associated with elevated levels of galectin-3.

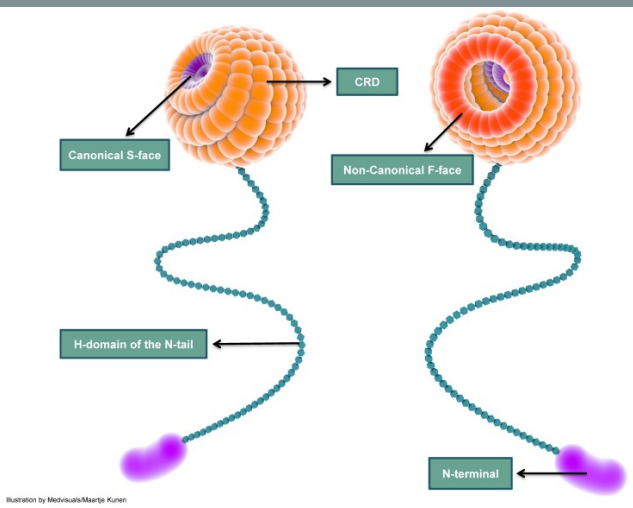
*Data in (a, b) are shown as median with IQR. ****p < 0.0001; two-tailed Mann–Whitney U test or two-tailed t-test. Samples were assessed in duplicate in ELISA assays.*

***Journal Reference**: Cervantes-Alvarez, E., la Rosa, N.Ld., la Mora, M.Sd. et al. Galectin-3 as a potential prognostic biomarker of severe COVID-19 in SARS-CoV-2 infected patients. Sci Rep 12, 1856 (2022). https://doi.org/10.1038/s41598-022-05968-4*

Source: medRxiv, Avise Analytics Research

Gal-3 plays a crucial role in SARS-CoV-2 infection, not only by being structurally close to the N-terminal domain of coronaviruses spike protein subunit 1, but also by its ability to bind the ACE receptor, which has a structural affinity to ACE2 receptor.

Simplified Depiction of Galectin-3 Structure Indicating the Carbohydrate Recognition Domain (CRD), H-Domain & the Amino-Terminal (N-Terminal)



Source: Theranostics, doi: 10.7150/thno.22196, Avise Analytics Research

Severe COVID-19 was associated with hyperinflammation and supported by the concomitant upregulation of Gal-3, TNF-α, and IL-6 in lobar and bronchial pneumonia.

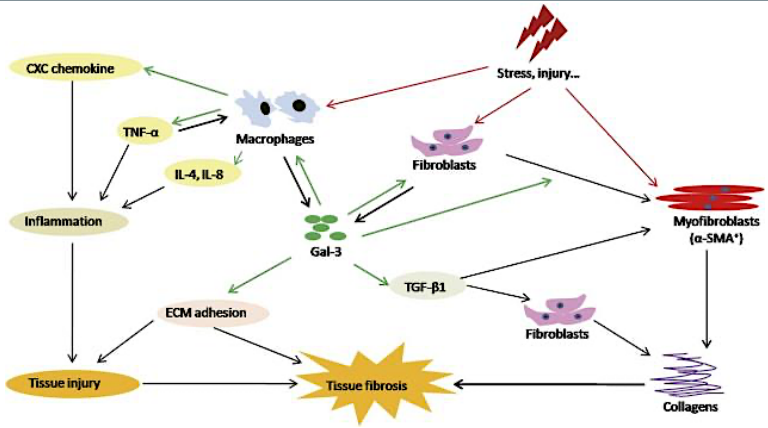
In fact, the major cause of fatality in Covid-19 infected patients is the “Cytokine Storm Syndrome”. As discussed earlier, CSS is a direct result of abnormal immune activation that results in the excess release of inflammatory cytokines, such as interleukin (IL)-1, tumor necrosis factor α (TNF-α), and IL-6, by macrophages, monocytes, and dendritic cells.

Gal-3 intensifies the Cytokine Storm Syndrome

Galectin-3, a pro-inflammatory molecule, enhances the effects of Covid-19 infection by promoting host inflammatory responses and the release of some of the major cytokines present in severe COVID-19 patients. Inflammation and fibrosis are key contributing mechanisms to the progression

of severe COVID-19 and the development of its long-term consequences. Secretion of Gal-3 by macrophages contributes to fibrosis by increasing the expression of TGF-ß receptors on the surface of fibroblasts. Fibroblasts and myofibroblasts are then activated by TGF-ß mediated signaling, stimulating the deposition of extracellular matrix and collagen that leads to fibrotic damage. Cytokines induced by Gal-3 expressions such as IL-1, IL-6, and TNF-α further accelerate this process.

Functions of Galectin-3 in Viral Infections

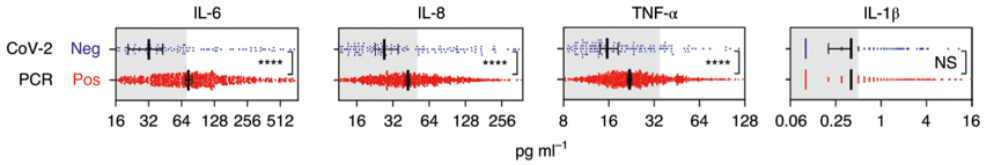


Source: Company Presentation, Avise Analytics Research

Notably, a study of 3,936 patients found that the levels of IL-1, IL-6, and TNF-α were significantly elevated in the sera of patients suffering from severe COVID-19, compared to those with mild disease (*Wang et al., 2020a*).

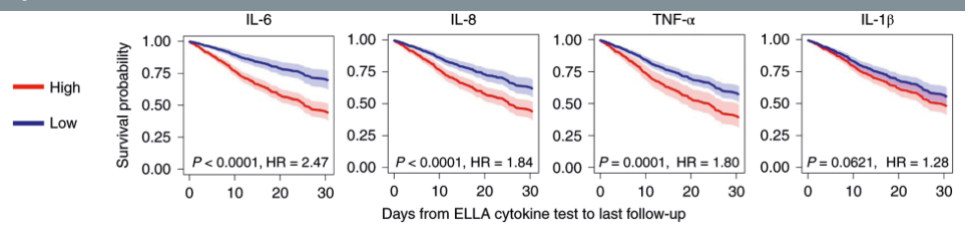
Similar findings were reported in a cohort of over 15,000 patients, where serum IL-6 and TNF-α were found to be independent predictors of disease severity and mortality in COVID-19 (Del Valle et al., 2020).

Cytokine Levels Observed in Relation to a SARS-CoV-2 PCR Status



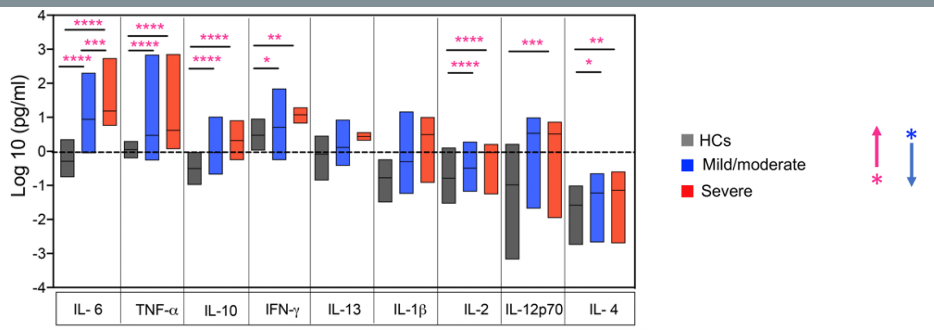
Source: Del Valle DM, Kim-Schulze S, Huang HH, et al, Nat Med. 2020. 10.1038/s41591-020-1051-9, Avise Analytics Research

Cytokine Levels and Survival



Source: Del Valle DM, Kim-Schulze S, Huang HH, et al, Nat Med. 2020. 10.1038/s41591-020-1051-9, Avise Analytics Research

Elevation of Cytokines and Chemokines in the Plasma of COVID-19 Patients

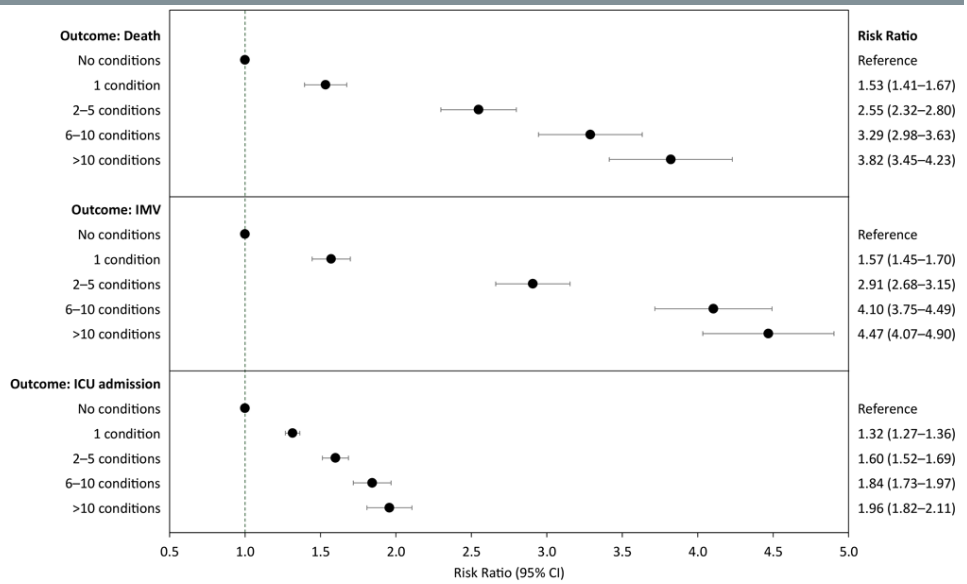


Source: 2021 Bozorgmehr et al, DOI: https://doi.org/10.1128/mBio.00384-21, Avise Analytics Research

Gal-9 has also been found to be a player in cytokine release syndrome and a surrogate diagnostic biomarker in SARS-CoV-2 infection. Studies have indicated a massive elevation of plasma Galectin-9 (Gal-9) in COVID-19 patients compared to healthy controls has led to poor outcomes.

In general, Gal-3 and Gal-9 serum levels have been seen to increase with the number of underlying co-morbid conditions. As the number of underlying co-morbid conditions increase, the Covid-19 Death Risk Ratio also rises.

Covid-19 Death Risk Ratio(X) Increases as the Number of Comorbid Conditions Increases



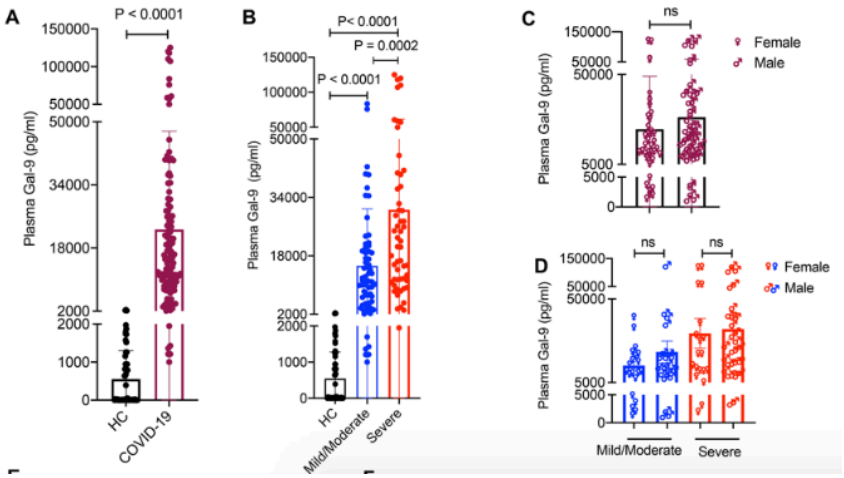
***Note**: Compared with patients with no documented underlying medical conditions, patients' risk of death was 1.53 times (95% CI, 1.41–1.67) as high if they had 1 condition, 2.55 times (95% CI, 2.32–2.80) as high if they had 2 to 5 conditions, 3.29 times (95% CI, 2.98–3.63) as high if they had 6 to 10 conditions, and 3.82 times (95% CI, 3.45–4.23) as high if they had more than 10 conditions.*

Source: CDC, DOI: http://dx.doi.org/10.5888/pcd18.210123, Avise Analytics Research

Gal-9 is Another Lectin Involved in SARS-CoV-2 Pathogenesis

Gal-9-glycan interactions promote SARS-CoV-2 attachment and entry into airway epithelial cells (AEC) in an ACE2-dependent manner, enhancing the binding affinity of the viral spike protein to ACE2. Transcriptomic analysis revealed that Gal-9 and SARS-CoV-2 infection synergistically induce the expression of key pro-inflammatory programs in AECs, including the IL-6, IL-8, IL-17, EIF2, and TNFα signaling pathways.

Elevation of Plasma Gal-9 Discriminates COVID-19 Patients from Healthy Subjects



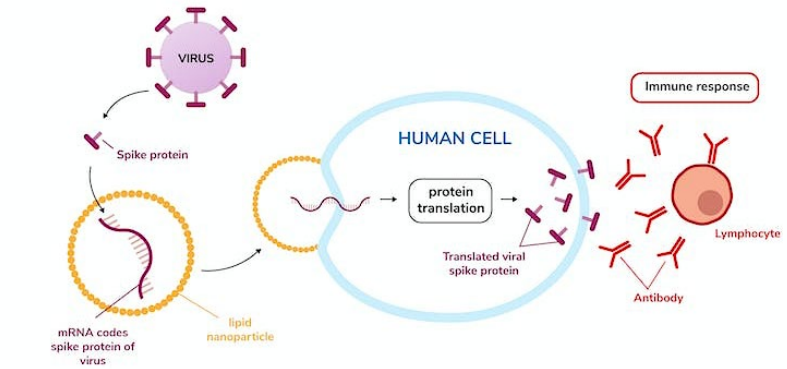
***Note**: HC > Healthy Condition*
Source: CDC, DOI: http://dx.doi.org/10.5888/pcd18.210123, Avise Analytics Research

Compared to untreated monocytes, significantly higher IL-6 and TNF-α expression was observed in Gal-9-treated monocytes. Therefore, Gal-9 may contribute to the exacerbation of the cytokine storm in Covid-19 patients. The above data indicate the urgency of identifying therapeutics to reduce the incidence of CSS.

Vaccines Teach the Immune System to Recognize the Virus

So far, the primary line of defense against the SARS-CoV-2 virus has been Messenger RNA (mRNA) vaccines such as those by Pfizer-BioNTech and Moderna. These vaccines put a weakened or inactivated germ inside the body to teach cells how to make a protein that triggers an immune response. This immune response produces antibodies and prevents the body from getting sick from that germ in the future.

Vaccines Trigger Human Cells to Produce Immune Response



Source: BigBearCamera, Avise Analytics Research

At the time of vaccination, the mRNA enters the muscle cells and uses the cells' machinery to produce the spike protein that is found on the surface of the SARS-CoV-2 virus. After the protein piece is made, the cells break down the mRNA and remove it, leaving the body as waste.

The cells display the spike protein piece on their surface. The immune system recognizes that the protein does not belong there and gets triggered to activate the two key types of immune cells - B and T cells. The B cells produce Y-shaped protein molecules called antibodies. The antibodies bind to the protruding spike protein on the surface of the virus. This blocks the virus from entering a cell and prevents it from causing an infection.

But if enough antibodies are not produced, the virus can escape and infect the host cells. When this happens, the immune system activates the T cells. These cells recognize virus-infected cells immediately after infection and destroy them, thereby stopping the virus from replicating and causing widespread infection.

Through the entire process, the human body learns to recognize the spike protein and trigger an immune response to protect itself against future infection with the SARS-CoV-2 virus.

Ineffectiveness of Vaccination-Based Treatments

Till now, mRNA vaccines have been successful at preventing hospitalization and death. The Commonwealth Fund reported that between December 2020 and March 2022 in the U.S., the vaccines protected over 2 million people from dying and over 17 million from hospitalization.

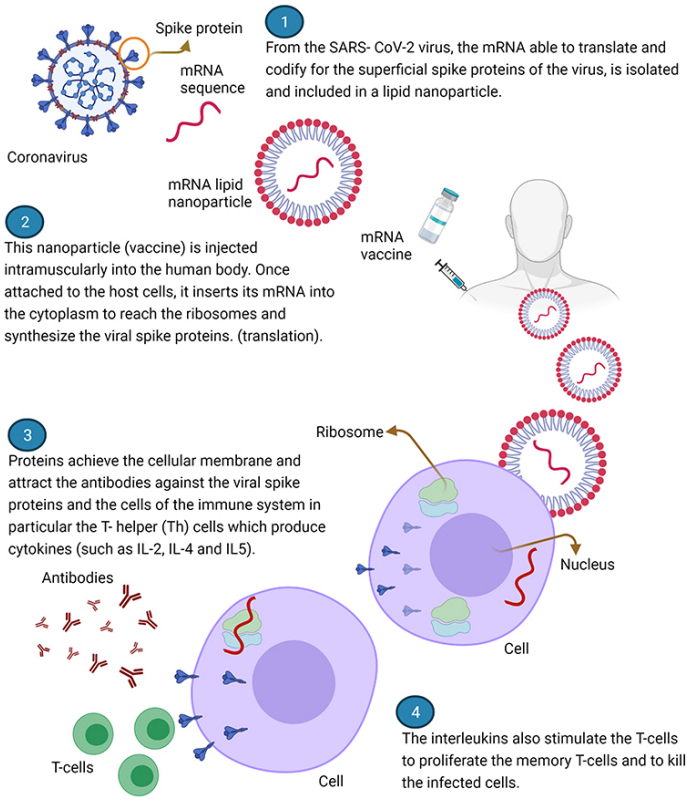
But vaccines and booster shots have not been able to provide long-term protective immunity against break-through infections, which are cases of Covid-19 infection that occur in fully vaccinated people. The third dose – or first booster – of COVID-19 vaccines can prevent the severe form of COVID-19, but the protection against infection lasts less than four to six months.

Frequent or constant exposure to foreign molecules present in an infectious agent can also cause immune "exhaustion." In severe cases of Covid-19, T cells see the foreign molecules all the time, therefore they get worn down and are unable to mount a strong immune response.

Another reason why the mRNA vaccines have failed to induce sustained antibody and memory response may be related to ingredients called adjuvants. Traditional vaccines such as those for diphtheria and tetanus use adjuvants to boost the immune response. These are compounds that activate the innate immunity that consists of cells known as macrophages. These are specialized cells that help the T cells and B cells, ultimately inducing a stronger antibody response.

Because mRNA-based vaccines are a relatively new class of vaccines, they do not include the traditional adjuvants. The current mRNA vaccines used in the U.S. rely on small balls of fat called lipid nanoparticles to deliver the mRNA. These lipid molecules can act as adjuvants, but how precisely these molecules affect the long-term immune response remains to be seen. And whether the current COVID-19 vaccines' failure to trigger strong long-lived antibody response is related to the adjuvants in the existing formulations remains to be explored.

Mechanism of Action of Vaccines: Pfizer-BioNTech and Moderna



Source: Dovepass, Avise Analytics Research

Vaccination is also unable to resolve the problem of long Covid - the constellation of symptoms that many people have reported months after their initial infections. These symptoms last at least two months and cannot be explained by alternate diagnoses. Regarding longer-term risks of neurological issues, gastrointestinal symptoms, kidney failure, and other conditions, there is no difference between vaccinated and unvaccinated individuals.

The “vaccine only” approach to Covid-19 has failed because of the lack of a worldwide net of vaccinated people that could limit the rise of variants. Further, there will always be COVID-variant breeding grounds in animals and immunocompromised patients.

There is also an ever-present risk of natural and herd immunity wearing off to the point that a new emerging variant in the future could be highly deadly.

However, the biggest reason behind the failure of the vaccine approach is that it works to stop the virus by boosting the immune system response. But as discussed earlier, due to the presence of galectins, the virus can completely bypass the immune system and inflict damage throughout the human body.

In such circumstances, there is an increasing need for a therapy that would work fast to clear the virus and halt its spread without at all depending on the body immune system.

Antiviral Drug Treatments Remain Inadequate

For some time, antivirals such as Pfizer’s Paxlovid and Merck’s Molnupiravir seemed effective when used as early-stage therapies. In 20 days of using Paxlovid, approximately 30% of the patient population reached an undetectable level of Ct value.

All antiviral drugs like Paxlovid, Molnupiravir, Remdesivir, Bemnifosbuvir, Bequinar, and Tempol interfere with the replication process of the virus inside the cell at least via one mechanism once it has entered the host cell.

Other than the above, another subset of antiviral drugs keeps the virus outside the cell and prevents it from entering. This subset of antiviral drugs is called an entry inhibitor.

All viruses need help getting inside a host cell and what viruses can do is trick the cell into opening up the door to let them in. The primary entry receptor in Sars-Cov-2 is the ACE2 receptor along with TMPRSS as an essential primer. The idea behind entry inhibitors is to block the cellular

receptors, making docking with the cell impossible.

The approval of Paxlovid and Molnupiravir in particular was based on the reduction of the risk of hospitalization or death. However, in October 2020, the WHO removed Remdesivir from the list of effective drugs in the treatment procedure of COVID-19 patients as its primary mechanism of action against SARS-CoV-2 was unclear, and more research is necessary to understand it precisely.

Many other antiviral drugs faced similar challenges in the recent past which urged the need for more effective anti-viral drugs to cure SARS-CoV-2 patients.

ProLectin-M Halts Sars-Cov-2 Virus Infectivity

Galectins have been shown to have a good prognostic value – high serum levels indicate poor outcomes in Covid-19. Therefore, if galectins are blocked, the problem of the pandemic can be resolved.

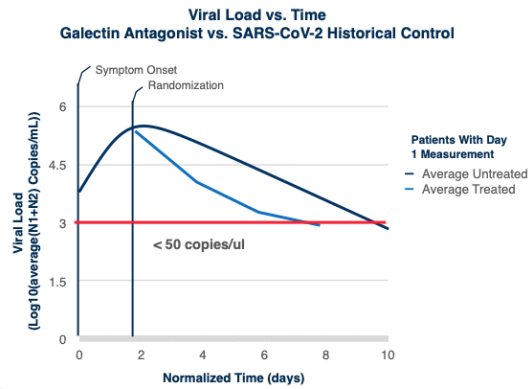
Bioxytran has come up with a newly developed galectin antagonist called ProLectin-M, an oral chewable drug, that is being produced in a GMP facility located in Pune, India. ProLectin-M (PL-M) formulation was prepared and sent to the in vitro lab facility in Hyderabad, India.

Essentially, ProLectin-M acts as an antiviral agent that blocks the Sars-Cov-2-binding spike protein. A pilot clinical study was conducted with five patients with laboratory-confirmed COVID-19 disease, where they were treated with an oral formulation of α(1–6)-D-mannopyranose (ProLectin-M). All patients achieved complete disease remission with zero hospitalization or need for oxygen support. Moreover, viral load was significantly lowered within two days of drug administration. PL-M can eliminate the Covid-19 virus to undetectable levels in 3 days. By reducing transmissibility and lowering infectivity, the pandemic can be quickly brought to an end.

This galectin-targeted approach to combat the Covid-19 disease is highly revolutionary. In fact, this is the first time in the history of drug development that this type of therapy is being used for the treatment of a viral disease.

Essentially, galectin inhibitors or galectin antagonists are poised to become a comprehensive remedy for Covid-19.

Viral Curve Comparison



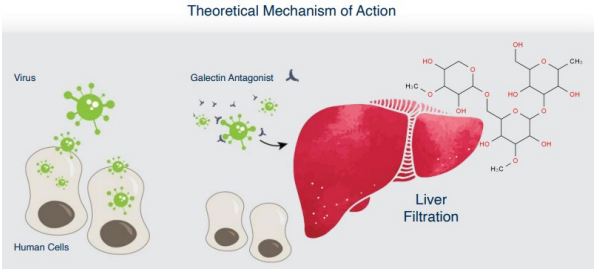
Source: Plog.org [1] , Journal of Vaccines & Vaccination[2]

- Historical control is taken from a mathematical model using longitudinal data across four different studies of symptomatic, untreated cases[1]
- Assumed symptom onset at a viral load of 6500 copies/mL (i.e., log10(3.81))[1]
- Patients treated within two days of symptom onset (average 1.80 days)[2]
- Upper and lower bounds of the model are 95% confidence interval[1]

Galectin Antagonist Method of Action

Galectin inhibitor, Prolectin M, is a carbohydrate drug that is not metabolized by the body. They eventually go to the liver, where they are filtered out and eliminated.

Galectin Antagonist Tags Virus for Elimination



Source: Company Presentation, Avise Analytics Research

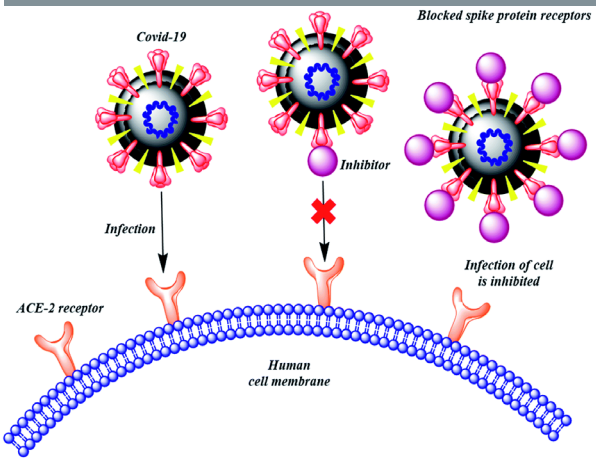
Approach Used for the First Time in the History of Drug Development

During the journey, the inhibitors travel within the bloodstream, and they bind to the conserved region of the spike protein in the virus (commonly known as galectin fold). This way, the antagonists absorb all the viral particles that they encounter.

The inhibitors also throttle the trafficking of macrophages to the site of infection and remove the galectin-3 plaque on T-cells. This eliminates T-cell anergy and galectin effect (which is also present in cancer) and leads to improved response.

Prolectin-M treats elevated levels of Gal-1, Gal-3 and Gal-9 in the human body. The treatment of Gal-1 in particular leads to lower inflammation in lungs.

Galectin Inhibitor Method of Action



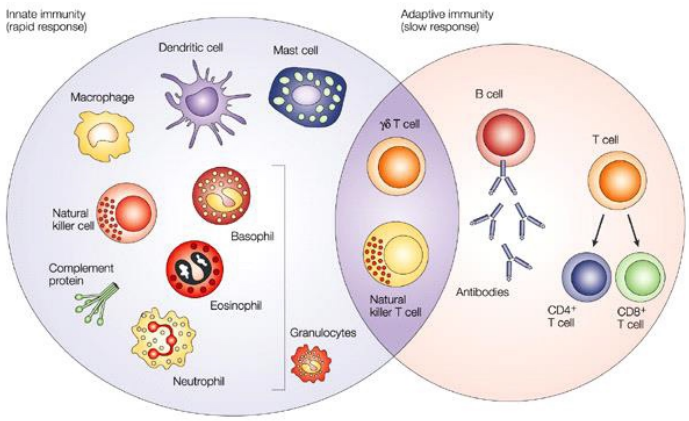
- ***Binding to the spike protein in blood***
- ***The liver removes carbohydrates drugs and viruses.***
- ***Restoration of Adaptive immune system – peel off galectin plaque***
- ***Adaptive immune system creates long-term immunity***

Source: Royal Society of Chemistry, DOI: 10.1039/D0RA04795C, Avise Analytics Research

As discussed, spike protein N Terminal Domain (NTD) of the novel SARS-CoV-2 is essential for viral entry and replication in human cell. This S1 NTD of the human coronavirus family is similar to a galectin binding site – human galactose binding lectins which makes it a target for early treatment in Covid-19.

Prolectin-M in particular has a very high micromolar binding – this means that once the virus is attached to the inhibitor, it remains bound. Galectin antagonists can clear the virus from immunocompromised people very quickly as well because they completely bypass the immune system.

Clearing the Virus Through the Immune System

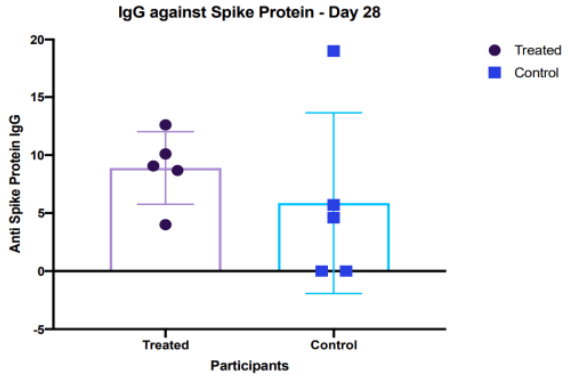


Source: Macmillan Publishers Ltd: Nature Reviews Cancer, Avise Analytics Research

The innate immune system consists of dendritic cells, mast cells, macrophages, natural killer cells, neutrophils, eosinophils, basophils, and complement proteins present in the blood. Galectin antagonists remove the viral load from the blood – this prevents activation of the innate immune system response. Therefore, cytokine storm syndrome and other complications caused by an overactive immune system are also prevented.

The disease is stopped from spreading to other organs, and contagiousness and clinical symptoms are reduced. Meanwhile, the adaptive immune system works in the background to remove virally infected cells and tissue while increasing IgG antibody production.

Galectin Antagonist Treatment Results in SARS-CoV-2 Spike Protein-Specific Antibody Immunity



Source: Journal of Vaccines & Vaccination, Avise Analytics Research

Inhibitors cannot stop viruses already present inside an infected cell – that is the work of the adaptive immune system with specialized T-cells. In Bioxytran's clinical trial, high levels of IgG were present in the treatment arm – this indicates long-term immunity and an activated adaptive immune system.

In effect, Bioxytran's investigational product, galectin antagonist ProLectin-M is poised to provide Covid-19 patients with a faster recovery (irrespective of their vaccination status or underlying medical conditions) compared to other available solutions.

ProLectin-M – Dosage and Efficacy

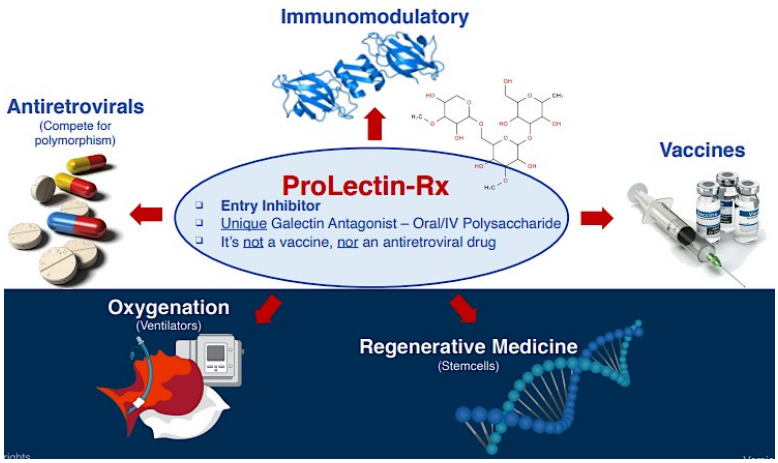
ProLectin-M is a novel substance that is given orally to individuals who have an infection with Sars-CoV-2 or its subsequent mutations causing COVID-19 disease. The oral tablet contains guar gum with added flavoring agents and other excipients. It is chewed every hour, for 8 hours daily, for seven days.

The expectation is that if given early in the disease, the first drug candidate, ProLectin-M, should block viral entry and tag the virus for elimination through the liver. In theory, the virus will be eliminated from the bloodstream after a couple of treatments.

The main benefit of the drug is that it should stop the spread of the disease by eliminating the virus and promoting immunity. It is in oral tablet form. Therefore, it is easy to transport and administer, with no adverse side effects.

It is also universally compatible with other therapies, such as antiretrovirals, vaccines, ventilators, and regenerative medicine.

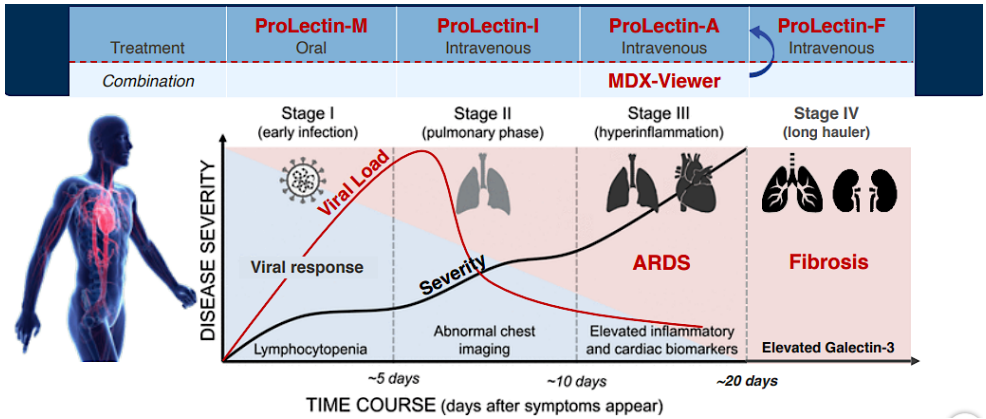
Galectin Antagonist Treatment Results in SARS-CoV-2 Spike Protein-Specific Antibody Immunity



Source: Company Presentation, Avise Analytics Research

At a later stage in the disease pathology, a more potent IV solution, ProLectin-I could restore adaptive immune function to help eradicate the virus from the body. In severe COVID-19 patients the drug, ProLectin-A, could reduce the trafficking of macrophages responsible for the cytokine storm and restore immune homeostasis. ProLectin-F is designed to treat organ damage after virus is eliminated from the system.

ProLectin – Comprehensive Solution for Covid-19



Source: Company Presentation, Avise Analytics Research

Galectin Antagonists are Superior to Other Available Solutions

Bioxytran's ProLectin-M is superior to other available treatments for Covid-19, such as vaccines, anti-replication drugs, immunomodulatory drugs, and regenerative medicine.

Technology Comparison of Prolectin with Other Therapies

	Stops the spread	Easy to administer	Safety	Resistant to mutations	Storage Condition	Promotes Immunity
Galectin Antagonists	+	+	+	+	+	+
Vaccines	-	-	+	-	-	+
Anti-replication drugs	+	+	-	-	+	-
Immunomodulatory drugs	-	-	+	+	+	-
Regenerative medicine	-	-	-	+	-	-

Source: Company Presentation, Avise Analytics Research

As discussed in detail, Bioxytran's product stops the spread of the virus. Since it is in oral form, it is easy to administer and store, unlike vaccines which need to be injected into the body and stored at certain temperatures only.

Galectin antagonists are resistant to Covid-19 mutations because they bind to a conserved area of the spike protein which is present in all mutations of the virus. They also promote immunity by strengthening the adaptive immune system and reducing the load on the innate immune system.

Above all, they are expected to be perfectly safe without side effects.

Prominent Companies in the Galectin Research Field

Despite the significant advantages offered by galectin antagonists and their associated method of treatment, there are just a handful of companies in this emerging field of galectin research. Other than Bioxytran, there is Galecto Biotech (NASDAQ: GLTO) and Galectin Therapeutics (NASDAQ: GALT). Both these companies have therapies in mid-to-late stage development—phase 2 or phase 3 clinical studies.

Galecto Biotech has multiple synthetic galectin inhibitor formulations in its pipeline. Their lead candidate, GB0139, is a promising inhaled galectin-3 inhibitor for idiopathic pulmonary fibrosis (IPF). The company is advancing another oral galectin-3 inhibitor, GB1211, in liver cirrhosis and cancer. Its oncology indication is promising as the company is in a phase 2 trial.

Galecto was also testing its galectin-3 inhibitor in COVID-19 acute respiratory distress syndrome, but they appear to have discontinued the program.

Galectin Therapeutics lead drug Belapectin is aimed at treating NASH cirrhosis, primarily, with a 3-year, robust global phase 2b/3 trial. The company has conducted preliminary studies in cancer—advanced melanoma and head and neck squamous cell carcinoma.

However, Bioxtran is the only company in the galectin research field that is pursuing galectin antagonist treatment for Covid-19.

Another interesting point to note is that Bioytran has stayed away from specifically calling their molecules galectin-3 inhibitors as their competitors do. Instead, they are calling them galectin antagonists. Thus, it is reasonable to assume that Bioxytran's drug is targeting multiple galectins, as these mediate different processes in disease pathology (specifically galectin-1, galectin-3 and galectin-9 in multiple viral infections). On the other hand, Galectin Therapeutic's drug inhibits Galectin-1 and Galectin-3, while Galecto's drug is simply a Galectin-3 inhibitor.

Bioxytran Reports Astounding Phase 2 Trial Results

Most recently, Bioxtran announced Phase 2 results where a study was conducted to evaluate the antiviral effect of ProLectin-M tablets in 34 subjects with COVID-19 disease, in addition to determining its antiviral mechanisms.

The efficacy of ProLectin-M was evaluated in a randomized, double-blind, placebo-controlled clinical study in patients with mild to moderately severe COVID-19. Primary endpoints included changes in absolute RT-PCR Ct values of the nucleocapsid and open reading frame (ORF) genes from baseline to days 3 and 7.

The results showed that ProLectin-M treatment significantly ($p = 0.001$) increased RT-PCR cycle counts for N and ORF genes on days 3 (Ct values 32.09 and 30.69 +/-3.38, respectively) and 7 (Ct values 34.91 +/-0.39 and 34.85 +/-0.61, respectively) compared to placebo. All subjects were RT-PCR negative for both genes in the PL-M treatment group from day three onwards.

Percentage of Covid-19 Patients PCR Negative

Source: Company, Avise Analytics Research

This irrevocably proves that ProLectin-M is safe and effective for clinical use in reducing viral load and promoting rapid viral clearance in COVID-19 patients by inhibiting SARS-CoV-2 entry into cells through the inhibition of Gal-3.

More importantly, ProLectin-M appears to be more effective than Paxlovid, which is currently the best available treatment for Covid-19. In real world use, Paxlovid achieved an undetectable level of Ct value in approximately 30% of the patient population by day 20. In this clinical trial which did not exclude for people with underlying medical conditions, the 30% response rate was achieved in one to two days versus 20 days.

Bioxtran's Planned Phase 2/3 Trial

Currently, the company planning to conduct a registrational clinical trial with an estimated 40 patients enrolled in the Phase 2 with an additional 408 participants in the Phase 3. The aim of the clinical trial is to evaluate the efficacy and safety among asymptomatic to moderately-severe ambulatory Patients.

The trial is unique because the inclusion criteria consist of male or female patients of ≥ 18 years of age, regardless of vaccine status or viral variant, or underlying medical conditions.

Glycovirology Development Pipeline

Source: Company Presentation, Avise Analytics Research

The drug bypasses the immune system to act on the Sars-CoV-2 virus. Hence it should prove equally effective for immunocompromised or unvaccinated patients.

Pandemic Could be the Fact of Life

After two-and-a-half years of the Covid Pandemic, everyone hoped this global health crisis would come to an end. However, science suggests that COVID-19 will likely remain a major healthcare concern for years to come.

In Dec 2022, Pfizer's Paxlovid received FDA approval for pharmacist prescriptions. Consequently, the company invested $8.1 billion in the second quarter and expects to have sales of $22 billion in 2022. In India, the generic version of Paxlovid, sells at a maximum retail price of Rs. 5200 under the name of Paxzen. Another antiviral covid-19 drug, Molnupiravir, generated sales of Rs. 46 crores or approx. $5.8 million in the month of January in India. Paxlovid was found to have more widespread use than Merck's COVID-19 antiviral, Molnupiravir, and as such may have a significantly higher sales target.

Bioxytran is on the fast track to complete its clinical study of ProLectin-M in India and may commercialize it by mid-2024. The recent clinical study of ProLectin-M looks promising as it delivers significantly better results than Paxlovid. Based on our conservative estimates, at a maximum retail price of Rs. 6,100, the Company may achieve the following forecasted sales in India.

Percentage of Covid-19 Patients PCR Negative

REVENUE FROM PROLECTIN-M	2024P	2025P	2026P	2027P	2028P	2029P	2030P	2031P	2032P	2033P
INDIA										
Total No. of ProLectin Patients	0.19 mn	0.51 mn	0.70 mn	1.17 mn	1.19 mn	1.20 mn	1.21 mn	1.22 mn	1.23 mn	1.25 mn
Effective Price in USD, to be sold at 50% discount to distributor	$ 38.13	$ 38.13	$ 38.13	$ 30.50	$ 30.50	$ 30.50	$ 30.50	$ 30.50	$ 30.50	$ 30.50
Revenue	$ 7.3mn	$ 19.4mn	$ 26.6mn	$ 35.8mn	$ 36.2mn	$ 36.6mn	$ 36.9mn	$ 37.3mn	$ 37.7mn	$ 38.0mn

Source: Avise Analytics Estimates

While this game-changing treatment may not stop the recurrence rate, we believe that it will change the pandemic forever.

Overcoming the Biggest Challenge in Treating Stroke

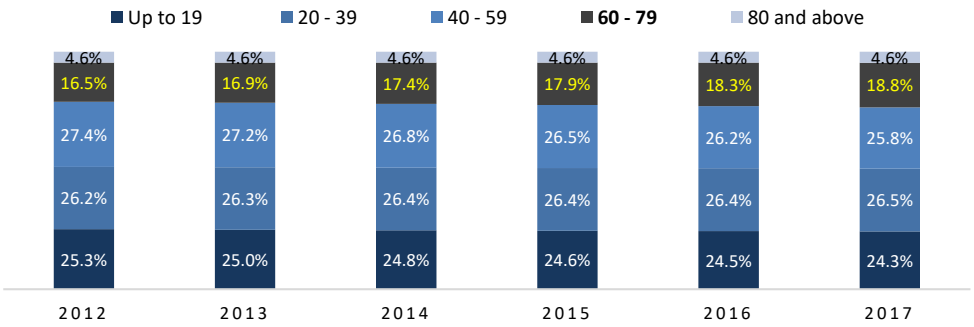
The Company plans to submit an Investigational New Drug (IND) application for its lead drug candidate, BXT-25, to the US FDA and initiate clinical trials. BXT-25 is designed to support the oxygenation of the brain until the clot is dissolved by medication or removed by surgery. By leveraging its breakthrough technology for hypoxic condition and necrosis prevention, it aims to address the biggest challenge in the multibillion global stroke management industry.

5th Leading Cause of Death in the United States

Stroke is a leading cause of disability, cognitive impairment, and death in the United States and accounts for 1.7% of the national health expenditures. Since the population is aging and the risk of stroke more than doubles for each successive decade after the age of 55 years (as shown in the chart below), these costs are anticipated to rise dramatically.

Population between the age group of 60 to 80 years is rising.

US Population Estimate : By Age

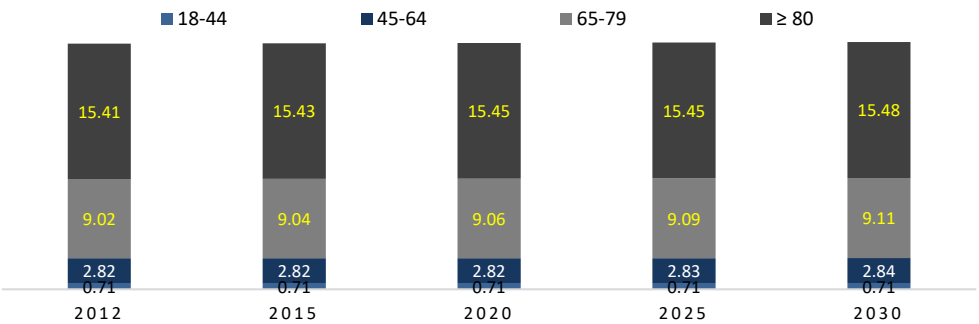


Source: U.S. Census Bureau, Population Division
Release Date: June 2018

With the aging population, the prevalence of stroke is projected to increase, which translates into an additional 3.4 million people with stroke by 2030, as compared to 2012. By 2030, U.S. Census Bureau projects that nearly 4% of the US population will suffer a stroke. Because the risk of stroke increases with age, people ≥65 years of age (particularly those ≥80 years of age) have a higher prevalence of stroke, and this segment of the population will grow substantially over the next 18 years (as shown in the chart below).

Stroke prevalence is projected to increase the most among people in the 65-79-year-old age category

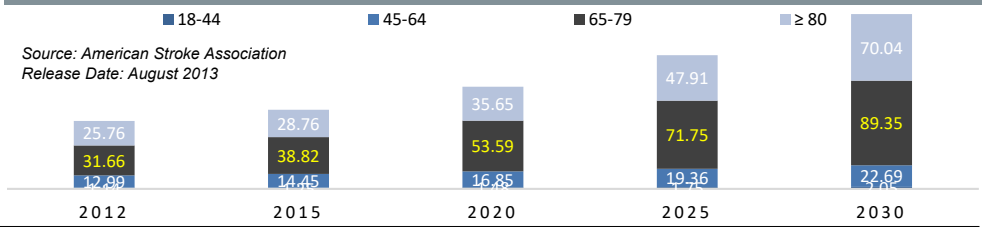
Projections of Crude Stroke Prevalence (%), 2012–2030, in the United States



Source: American Stroke Association
Release Date: August 2013

Not just the incidences of strokes, even the total direct medical stroke-related costs are increasing at an alarming rate. It increased by more than 16% in the three years until 2015 and is projected to triple from $71.55 billion in 2012 to $184.13 billion by 2030. These costs are projected to increase the most among people in the 65- to 79-year-old age category.

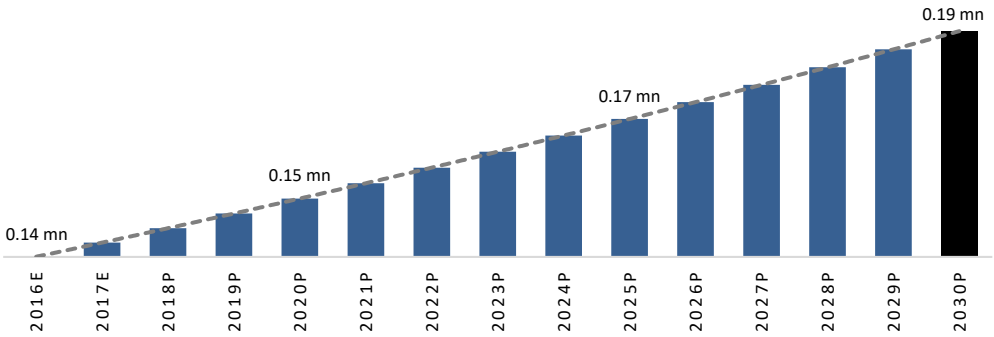
Projected Direct (Medical) Costs of Stroke, 2012–2030, in the United States (USD in Bn)



According to the American Stroke Association, stroke ranks at No. 5 among all causes of death in the US, killing ~142,000 people every year. In 2016, the age-adjusted stroke death rate was 37.3 per 100,000, a decrease of 16.7% from 2006, whereas the actual number of stroke deaths increased 3.7% during the same time period. Assuming death rate to increase by 2% per annum, we estimate that the average death due to stroke to reach ~190,000 people a year by 2030.

Stroke accounted for about 1 of every 19 deaths in the US.

Average Death Due to Stroke: United States (in million)

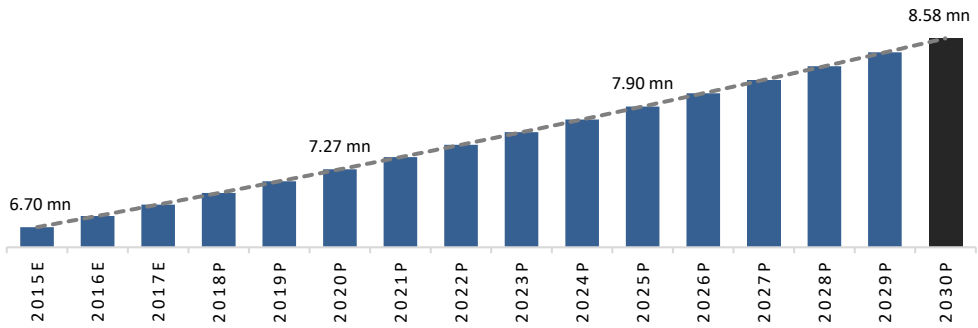


Source: American Stroke Association, Avise Analytics Research
Release Date: August 2013

2nd Leading Cause of Death Worldwide

Stroke has already reached epidemic proportions. 1 in every 6 individuals worldwide suffers a stroke in their lifetime. According to the latest research from World Stroke Organization, more than 10 million people worldwide suffer a stroke each year and 5.8 million people die from it. Current trends suggest that unless appropriate action is taken, the number of annual deaths (which was estimated at 6.7 million in 2015) will climb to 8.6 million by 2030.

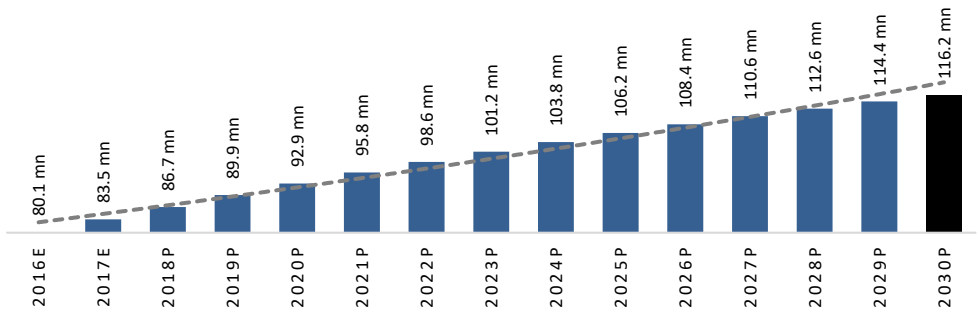
Average Death Due to Stroke: Worldwide (in million)



Source: World Stroke Organization, Avise Analytics Research

Assuming that 10 million people are likely to suffer from stroke each year and given that worldwide death is expected to increase at 2% per annual till 2030, we estimate that stroke prevalence cases may eventually cross 116 million, compared to 80 million patients in 2016 (as shown in the chart).

Projections of Crude Stroke Prevalence,2012-2030 in NUMBERS (units in million)

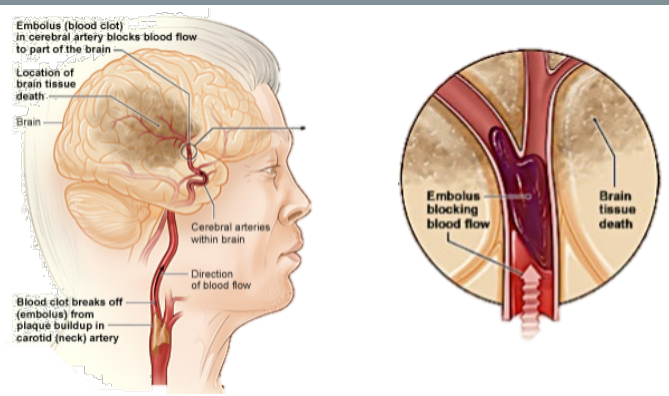


Source: World Stroke Organization, Avise Analytics Research

What Causes a Stroke?

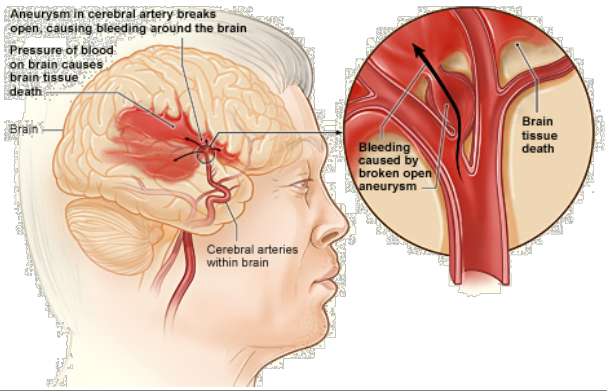
Stroke is a condition where the blood supply to the brain is disrupted, resulting in oxygen starvation, brain damage and loss of function. It is most commonly caused by a clot in an artery supplying blood to the brain, a situation known as ischemia.

Ischemic Stroke



It can also be caused by hemorrhage, when a burst vessel causes blood to leak into the brain. Stroke can cause permanent damage, including partial paralysis, impairment in speech, comprehension and memory. The extent and location of the damage determines the severity of the stroke, which can range from minimal to catastrophic.

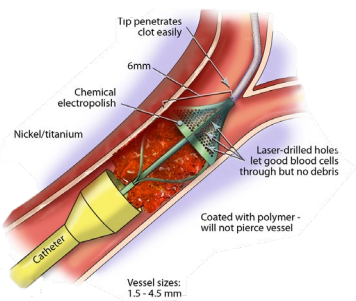
Hemorrhage Stroke



Promises & Limitations in the Ischemic Stroke Treatment

The most common stroke is the ischemic stroke, which accounts for ~ 85% of the total stroke cases in the United States. It can either be treated using drugs or through mechanical devices.

Drug Treatment
The only Food & Drug Administration (FDA) approved drug treatment for acute ischemic stroke is the Tissue plasminogen activator (tPA). It is given via intravenous therapy (IV) and works by dissolving the clot and improving blood flow to the part of the brain being deprived of blood. The limitations in this treatment is that the tPA should be administered within three hours (and up to 4.5 hours in certain eligible patients) of the onset of symptoms.



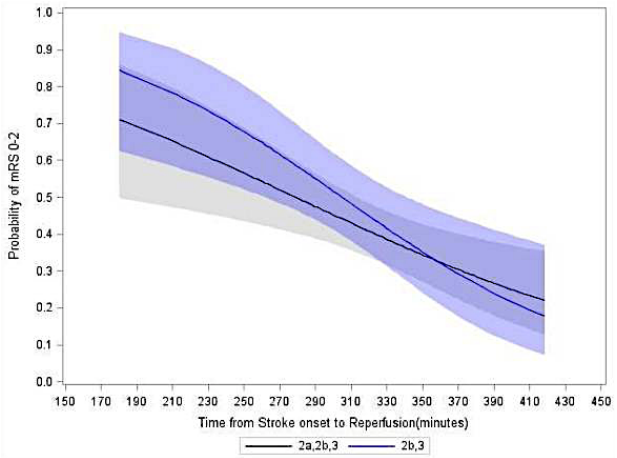
Mechanical Devices
Some ischemic strokes are treated with a small mechanical devices that removes or breaks up blood clots. This procedures is popularly known as Endovascular therapy. A surgeon inserts a small mechanical device into the blocked artery using a thin tube. Once inside, the tool traps the clot, and either breaks it up or the surgeon pulls it out of the brain, reopening the blocked blood vessel in the process.

Though, it has greatly improved survival rates. it has some limitations. The procedure can be performed up to six to eight hours after a person exhibits symptoms of stroke and can be extended up to 24 hours. However, the probability of a good outcome declines as we move further and further away from the onset of symptoms.

Studies from the US National Institute of Health and National Institute of Neurological Disorders and Stroke, show that time is brain, as it is very crucial in case of stroke.

Of the 240 patients who were otherwise eligible for inclusion in the analysis, 182 (76%) achieved angiographic reperfusion. Mean time from symptom onset to reperfusion (i.e., procedure end) was 325 min (SD 52). Increased time to reperfusion was associated with a decreased likelihood of good clinical outcome (unadjusted relative risk for every 30-min delay 0·85 [95% CI 0·77-0·94]; adjusted relative risk 0·88 [0·80-0·98]).

Time to Angiographic Reperfusion and Clinical Outcome After Acute Ischemic Stroke



Source: US National Library of Medicine National Institutes of Health
Release Date: April 2014

Delays in angiographic reperfusion leads to a decreased likelihood of a good clinical outcome in patients after a moderate to severe stroke.

Major Challenges in the treatment of Ischemic Stroke

Limited time window is one of the foremost limitations for not receiving IV tPA. In 2009, the American Stroke Association published a scientific advisory supporting the use of tPA within the 3- to 4.5-hour window, and this information was then disseminated to participating hospitals.

According to the research published in National Institute of Health by Brandi R. French, MD in 2016 Nov-Dec, between 15% to 32% of stroke patients successfully reach the hospital within three hours of symptom onset, while others fail to reach the hospital within the given time window. Only 2% to 3% of stroke patients receive intravenous tPA therapy, while between 1% to 7% of stroke patients arrive at hospital in-time for endovascular therapy.

The major disadvantage is that there is no treatment available for stroke patients before reaching the hospital. Even after reaching the hospital, very limited patients get treatment to dissolve the clot. This is because the treatment itself could be dangerous to the patient. Sometimes giving too much oxygen to remove the clot may also damage the brain.

However BXT-25 is Breaking Stereotypes

To prevent catastrophic brain damage from stroke, the Company is developing a drug, BXT-25, also known as oxygen bridge. It is a glycol-polymer, made of hybrid molecules of Heme chemical structure, taken from the hemoglobin molecule and a proprietary polymer chemical composition. The drug is intravenously administrated to supply oxygen to the hypoxic tissue.

Chemical Structure of BXT-25

Source: Company

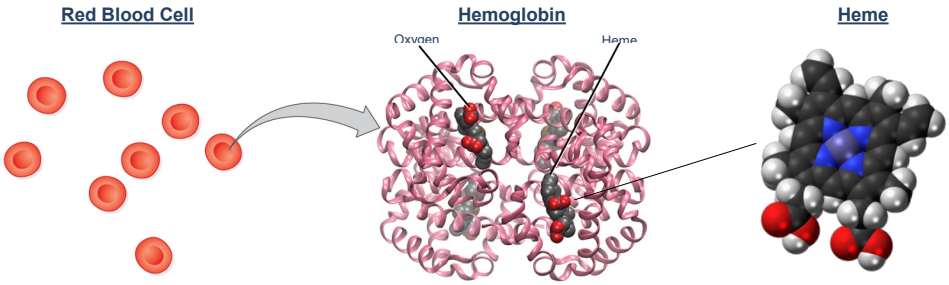
Heme, the Oxygen Carriers of Human Blood Cells

According to BJA Education, a single red blood cell (RBC) consists of 200-300 million hemoglobin molecules. Each hemoglobin molecule is made up of globin group (protein subunits) surrounded by four heme group. Each heme group contains one iron atom, that can bind to one oxygen molecule. Therefore, each hemoglobin molecule having four heme group can carry 4 oxygen molecules.

Image Illustration of Red Blood Cell

1 Red Blood Cell (RBC)
carries
200–300 million Hemoglobin
or
800-1,200 million Heme
or
800-1,200 million Oxygen

In other words, each RBC contains 800-1,200 million Heme



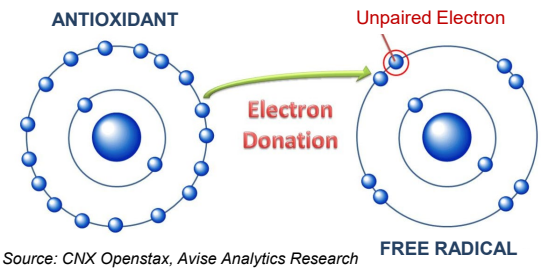
Source: CNX Openstax, Jynto (talk), Avise Analytics Research

Whereas, Excess Free Heme Causes Toxicity

According to the Frontiers, Heme (iron-protoporphyrin IX) is an essential co-factor involved in multiple biological processes of transporting and storing oxygen, transferring electrons and many more. In contrast to the positive functions of heme, excess free heme leads to undesirable toxicity. It can cause cell damage and tissue injury since heme catalyzes the formation of reactive oxygen species (ROS), resulting in oxidative stress.

According to National Institute of Health (NIH), oxidative stress occurs when there is an imbalance between free radicals and antioxidants in our body. Free radicals like Heme are the products of normal cellular metabolism. A free radical can be defined as an atom or molecule containing one or more unpaired electrons in valency shell or outer orbit and is capable of independent existence. The odd number of electron(s) of a free radical makes it unstable, short lived and highly reactive. Because of their high reactivity, they can extract electrons from other compounds to attain stability. Thus the attacked molecule loses its electron and becomes a free radical itself, beginning a chain reaction cascade which finally damages the living cell. On the other hand, antioxidants are the molecules that can donate an electron to a free radical without making themselves unstable. This causes the free radical to stabilize and become less reactive. When there are more free radicals present that can be kept in balance by antioxidants, the high reactivity property of free radicals extract electrons from other compounds to attain stability. As a result, the attacked molecule loses its electron and becomes a free radical itself, beginning a chain reaction cascade which finally damages the fatty tissue, DNA, and proteins in the body. Proteins, lipids, and DNA makes up a large part of the body, so that damage can lead to a vast number of diseases over time.

Image Illustration of Reaction Between Free Radical and Antioxidant



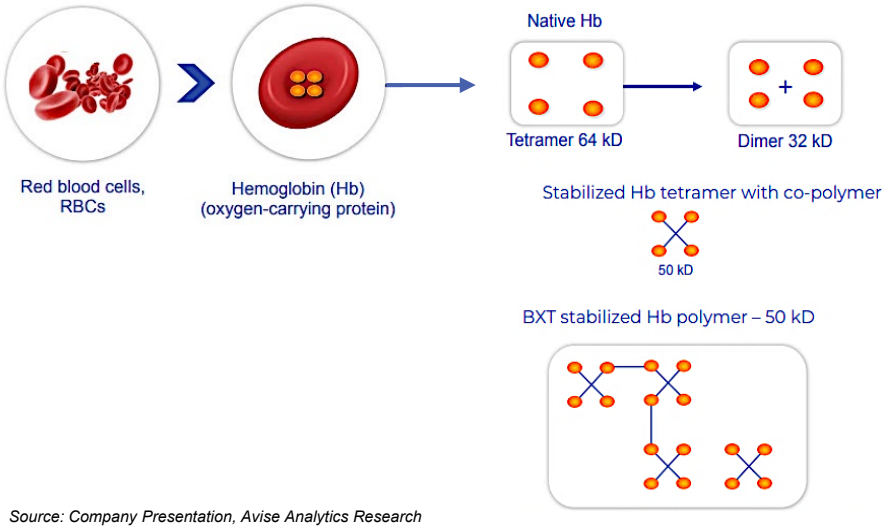
Source: CNX Openstax, Avise Analytics Research

However, BXT-25 has Overcome the Limitation of Heme

Bioxytran applies a unique chemistry to stabilize the free heme, by reattaching it to a proprietary polymer chemical structure, forming a glyco-polymer hybrid molecules, BXT-25. The polymer stabilizer mimics the sugar found in the blood cells. It is made from the galactoarabinan family of sugar chains and is therefore not metabolized.

When the heme stabilizes, it does not cause damage to the proteins, DNAs and lipids and thus prevents undesirable toxicity. Using carbohydrate chemistry, heme and the co-polymer is functioned to deliver oxygen to the brain.

BXT-25 - Stabilized Oxygen-Carrying Protein



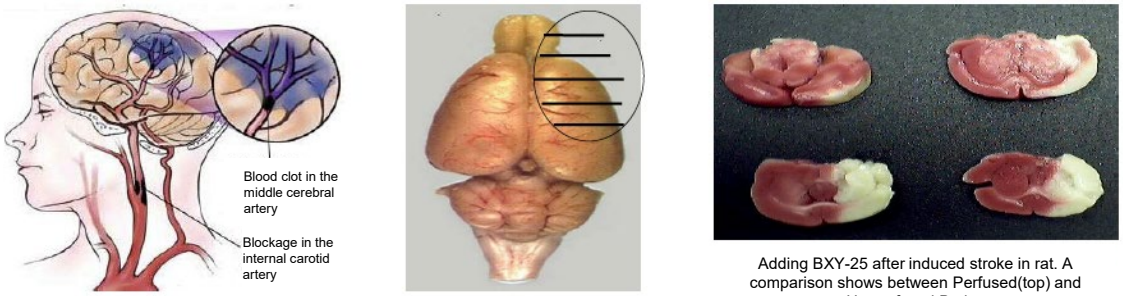
Source: Company Presentation, Avise Analytics Research

Proof of Concept of BXT-25 in Animals

Following are the key takeaways:

- Absence of nitric oxide scavenging, no increased blood pressure in diabetic mice (Harvard Medical, 2013)
- No toxicity from replacing 90% of the blood in dogs with similar chemistry to BXT-25.
- Oxygen delivery and brain recovery in stroke induced rats with similar chemistry to BXT-25 (Harvard Medical, 2013)

Middle Cerebral Artery Blockage Model in Rats



Adding BXY-25 after induced stroke in rat. A comparison shows between Perfused(top) and Un-perfused Brains

Source: Company Presentation, Avise Analytics Research

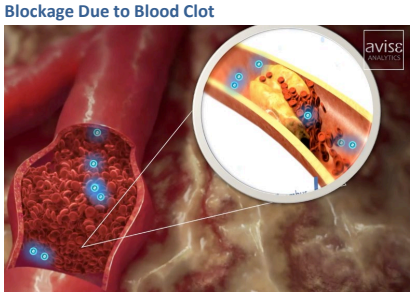
Unique Mechanism of Action of BXT-25

The drug, BXT-25, is a whopping 5000 times smaller than a red blood cell. It is small enough to overcome severe blockage and bring oxygen to the hypoxic tissue. The reduced size of the drug enables it to perfuse constricted ischemic capillaries, that are inaccessible to red blood cells due to clots. Instead of dissolving or breaking down the clot, BXT-25 penetrates a blood-clot to reach the brain within 3 minutes, reducing time-to-needle by a whopping **90%**.

BXT-25 Brings Oxygen to the Hypoxic Tissue

Blockage Due to Blood Clot

Blockage Due to Blood Clot



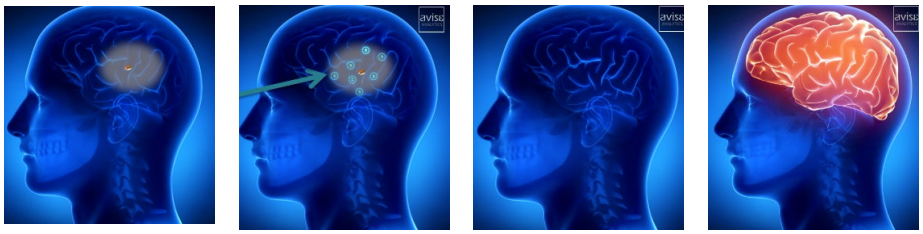
Source: Company, Avise Analytics Research

BXT-25, is whopping 5000 times smaller than a red blood cell

Until the clot is dissolved, or surgery is performed, it can continuously oxygenate the hypoxic tissue for up to 9 hours until the next IV injection is administered, and hence helps to widen the treatment window. BXT-25 is equally effective in case of hemorrhagic stroke.

Over-oxygenation is not an issue with BXT-25. The glycoprotein does not release oxygen into tissues if too much oxygen is already present, and keeps the normal tissue unaffected, where oxygen concentration is too low. The laws of physics and partial pressure chemistry are responsible for preventing over-oxygenation. Oxygen diffuses from high to low concentration. Perfusion works off the oxygen pressure differential. What keeps oxygen on the heme is a chemical bond. Perfusion of oxygen into tissue happens when the pressure of the tissue is low. Low pressure breaks the chemical bond.

Image of Demonstration on How it Works



Source: Company, Avise Analytics Research

Can be Stored for More Than Three Years

An interesting fact about BXT-25 is that, unlike blood, it does not need to be stored in a refrigerator. This new molecule is stable in solution for 3 years at room temperature and can be freeze-dried for even longer shelf life.

Only Treatment Before Reaching the Hospital

It widens the treatment window by 9 hours

While tPA is the only available FDA approved treatment for stroke, it needs to be administered within 3 hours of onset of symptoms. Therefore, the importance of immediate action cannot be emphasized enough, when the first symptoms of a stroke appear. For every minute the brain is deprived of oxygen, it looses 2 million brain cells which accelerates brain aging by 3.1 weeks. In a typical stroke scenario, 30 minutes is spent getting to the hospital which results in brain aging of 1.8 years and then an additional 2 hours to do CT scan and get imaging, resulting in another 7.2 years of brain aging. This brings the total aging of the brain to 9 years in an average stroke case.

Hospital Trip Could Age Brain Close to a Decade

	Neurons Lost	Synapses Lost	Myelinated Fibers Lost	Accelerated Aging
Per stroke (average)	300 million	2 trillion	1,800 km/1,100 miles	9 years
Per hour	120 million	830 billion	710 km/440 miles	3.6 years
Per minute	1.9 million	14 billion	12 km/7.5 miles	3.1 weeks
Per second	32,000	230 million	200 meters/220 yards	8.7 hours

Source: Company, Avise Analytics Research

The CT scan is mandatory because it is imperative to determine whether the victim has an ischemic stroke or hemorrhagic stroke as tPA can only be given to 87% of stroke patients that suffered an ischemic stroke. The tPA works by dissolving the clot and improving blood flow to the part of the brain being deprived of blood supply. But, if the victim falls in the category of hemorrhagic stroke and tPA is administered before diagnosis, it would result in the patient's death.

However, even in case of tPA being administered to an ischemic stroke patient, there is still a risk that when the clot is dissolved and blood suddenly flows back into the affected area of the brain, there will be bleeding that can cause more damage, or even death.

Also, it is quite challenging to complete the following within 3 hours of critical window:

1. Identifying the stroke symptoms,
2. Reaching hospital,
3. Diagnosing stroke with imaging, and
4. Administrating tPA for Ischemic Stroke.

Hospital Trip Could Age Brain Close to a Decade

Source: Company, Avise Analytics Research

The use of BXT-25 could drastically expand this window. Once developed and approved by the FDA, BXT-25 will be the only treatment that can be given to any stroke patient in an ambulance for immediate relief, as it is effective in both ischemic and hemorrhagic stroke. The doctor will no longer have to wait for CT scan, and subsequent therapeutic decisions, to understand whether the patient has had a hemorrhagic stroke or not. The drug can be injected to patient in the ambulance on the way to the hospital. We believe, BXT-25 would be the fastest way possible to save the brain cells from dying soon after the occurrence of a stroke. The drug is not meant as a long-term solution, but rather as a stop-gap measure. However, if the patient cannot get a clot removed, BXT-25 could be used to oxygenate the patient's brain over a longer period of time to minimize damage.

Comparing the Efficacies of BXT-25 with its Peer Group

Development Stage Drugs	Cure Stroke	Dissolve Clot	Penetrate Through Clot	Time Window to Take Drug	Expand tPA Window	Available in Ambulance	Treat both AIS & HS
Diffusion Pharmaceuticals Inc. TSC	Pre-treatment drug	No	**Yes**; Effective for 3 hours	3 Hours	No	Yes	Yes
DiaMedica THERAPEUTICS DM199	Treatment drug	No	**Yes**; improvement after 12 days	24 Hours	tPA not required	No	No
NuvOx Pharma DDFPe	Pre-treatment drug	No	Yes	3 Hours	1.5hrs to 9hrs	Yes	Yes
Biogen TMS007	Treatment drug	Yes	No	24 Hours	tPA not required	No	No
BioXyTran BXT-25	Pre-treatment drug	No	**Yes**; Restores in 3 minutes	Any-time	> 9hrs	Yes	Yes

Source: Avise Analytics Research

On comparing the efficacies of each development stage stroke management drug with BXT-25, it is quite interesting to see that BXT-25 would be able to address some of the most serious limitations in the stroke treatment measures that are currently available. The above comparison table gives us a clearer picture – it shows that BXT-25 would be able to address 5 out of 7 highlighted limitations and would surpass most of the drugs that are currently being developed by peer companies.

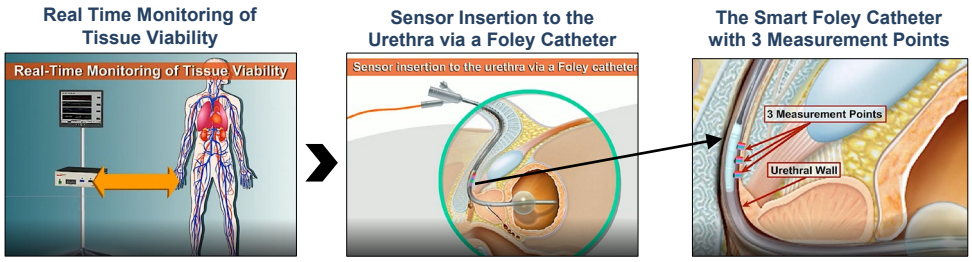
Upon completing the clinical stages in 6 to 7 years, we expect doctors to prescribe this pre-treatment drug to most of the stroke patients, to be taken while in the ambulance or at home, before reaching the hospital for treatment.

Licensed Technology to Measure the Tissue Metabolic State of the Brain

The Company has entered into an exclusive licensing agreement with MDX Lifesciences, Inc. (MDX) that will allow Bioxytran to continue commercial development of MDX technology and develop new protocols that measure the tissue metabolic state of the brain.

MDX viewer is a monitoring system that analyzes, in real time, the physiological activities at the tissue level integrated with systemic vital signs. It is connected to the urethral wall via a Foley catheter. It is an adjunctive bedside patient device to be applied in intensive care, operating suits and emergency care settings, providing early identification / warning of the body's critical metabolic imbalances or Tissue Metabolic Score (TMS) of a patient.

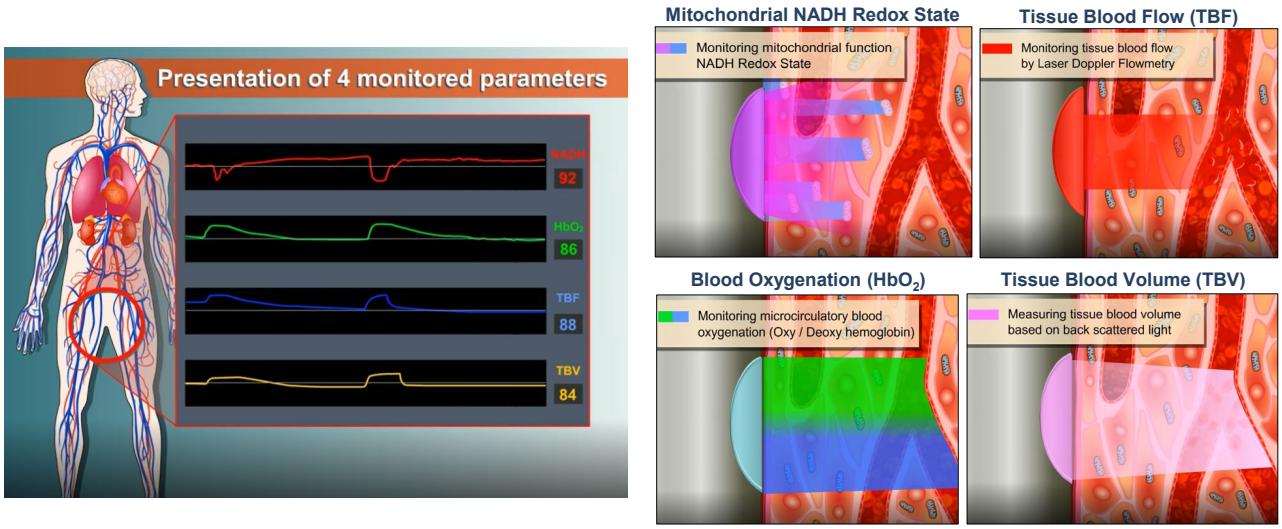
Image Illustration of Insertion of the Foley Catheter to the Urethra



Source : Mdx Lifesciences, Inc., Avise Analytics Research

The four parameters monitored at the tissue microcirculation and cellular compartment are as follows:

Image Illustration of Four Parameters Monitored by MDX Viewer



Source : Mdx Lifesciences, Inc., Avise Analytics Research

These parameters are then combined with systemic hemodynamic parameters, cardiovascular and respiratory, including heart rate, system IC blood pressure, respiratory rate, systemic haemoglobin saturation, and body core temperature. The result is an entire body score, which is important to monitor whenever there is a hypoxic or critical pathologic state in the body.

The last model of the device was tested in animals that mimicked the conditions of lack of oxygen in the human brain or in other organs in the body. The stability of the device was tested by monitoring an animal model for a number of hours.

With the help of Tissue Metabolic Score (TMS), tissue oxygenation levels can be measured before and after the administration of BXT-25. Once it is proved that tissue oxygenation increased, the drug can be approved.

Bioxytran Agreed to Pay the Licensing Fee

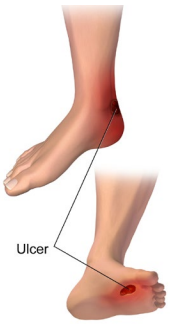
Bioxytran agreed to pay $500,000 as licensing fee, contingent upon its receipt of $3.0 million or more in equity financing under the S-1 registration. Bioxytran also agreed to reimburse MDX for development costs required to use the device with BXT-25 or other compounds, plus a 20% value-added fee. We trust that MDXViewer will further the market position of BXT-25.

The path-breaking technology BXT-25 looks promising. We assume that Bioxytran will soon start its preclinical study and expect the Company to complete each of its clinical phases on time successfully.

Other Promising Drugs in the Pipeline

The Company plans to develop and commercialize two more products, BXT-252 and BXT-251, to address the challenges in the treatment of unmet clinical needs.

BXT-252 to Bring Disease-Altering Treatment in Wound Management



Foot Ulcers

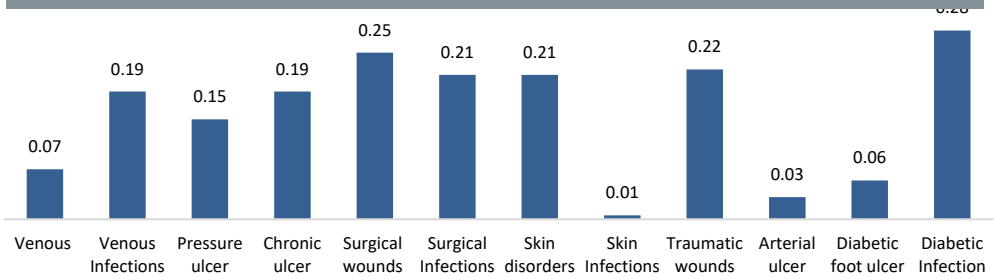
Bioxytran is developing new drug candidates and next-generation technologies to address real unmet medical needs in Ischemic wound healing. A second drug candidate, BXT-252 is a chemical structure sub-class of BXT-25, sharing the same physical properties (1/5000th of red blood cell); however, its proprietary co-polymer can improve the healing of pressure and arterial ulcers. It will be designed to treat hypoxia in wounds that do not heal. The company is planning to begin pre-clinical studies and apply to the FDA for approval for these indications.

BXT-252 will be an injectable anti-necrosis drug specifically meant to treat ischemic wounds, where poor blood flow causes the cells to die and damages the tissue. Generally, the mean healing time of ischemic injuries is about 3-6 months. However, in the case of BXT-252, the Company expects to enable quick delivery of oxygen to wounded tissue in conditions where red blood cells cannot reach, significantly minimizing the wound healing time.

Growing Market Size, Prevalence, and Cost of Wound in the U.S.

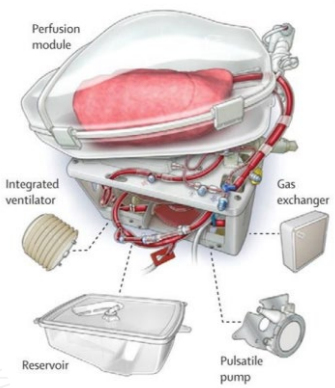
As per the latest research from Markets and Markets, the wound care market is expected to reach USD 22.81 billion by 2022 from USD 18.99 billion in 2018 at a CAGR of 3.7. According to the National Institute of Health, chronic wounds affect around 6.5 million patients in the United States every year. It is claimed that more than $25 billion is spent annually on the treatment of chronic wounds, and the burden is proliferating due to increasing healthcare costs, an aging population, and a sharp rise in the incidences of diabetes and obesity worldwide. 7.8% of the U.S. population suffers from diabetes. It is estimated that up to 25% of all people with diabetes will develop a diabetic foot ulcer. All these factors envisage a vast potential for the BXT-252 drug candidate to accelerate revenue growth in the wound care market.

Prevalence of Wounds in the U.S in 2014 by Type of Wound (in millions)



Source : Value in Health, Avise Analytics Research

BXT-251 Bringing Innovation in Organ Preservation



According to the Euro transplant Annual Report 2010, up to 72% of donated organs go to waste and are not transplanted. BXT-251, another drug candidate of Bioxytran, aims to prolong extracorporeal circulation and preserve organs for transplant during transport or storage from hours to days.

Bioxytran Pipeline

Drug Candidate	Indication	Pre-clinical	Phase 1	Phase 2	Phase 3	Rights
BXT-252	Organ Preservation	●	●	●	●	Bioxytran Inc. BIXT
BXT-251	Wound Healing	●	●	●	●	Bioxytran Inc. BIXT

Source: Company

We believe both BXT 251 & 252 are highly potent drug candidates structurally different from many existing drugs and may address the critical issues of emerging treatment resistance that limit the duration of preservation & quick and effective healing, respectively.

Proven Track Record of Dr. David Platt

Dr. David Platt

Dr. David Platt, Chief Executive Officer and Chairman of the Company is a world-renowned carbohydrate chemist with a proven track record of shaping preclinical and clinical regulatory strategies and securing product approvals. With extensive experience spanning over 30 years in the pharmaceutical industry, Dr. Platt created a value of nearly $1 billion for the investors of three publicly traded companies and has successfully raised $150 million directly from public markets in the United States. He holds a solid patented portfolio of breakthrough technologies and has led the development of two drug candidates from concept through phase 2 clinical trials.

Dr. Platt received a Ph.D. in Chemistry in 1988 from Hebrew University in Jerusalem. In 1989, he was a research fellow at the Weizmann Institute of Science, Rehovot, Israel, and from 1989 to 1991, he was a research fellow at the Michigan Foundation (re-named Barbara Ann Karmanos Institute). From 1991 to 1992, Dr. Platt was a research scientist with the Department of Internal Medicine at the University of Michigan.

IGG International, Inc. Is now La Jolla Pharmaceutical

In 1995 Dr. Platt founded International Gene Group (NASDAQ: IGGI, GLGS, now LPJC); where he developed the core technology of the company for the treatment of cancer and chronic kidney diseases and continued to serve the firm through 2000. At initiation, the valuation of IGGI was around $15-20 million, which reached $600 million by 2000.

Between 2001 and 2009, Dr. Platt became a founder of Pro-Pharmaceuticals, Inc. (OTC: PRWP and AMEX: PRW, now NASDAQ: GALT) and served as its chief executive officer and board chairman.

Observable Performance of Pro Pharmaceuticals During his tenure (2001-2009)

Galectin Therapeutics

Dr. Platt co-founded Pro Pharmaceuticals, which eventually changed its name to Galectin Therapeutics (GALT). He served as the Chairman, President, and Chief Executive Officer of Pro Pharmaceuticals. In this company, he had a key role, along with Anatole Klyosov, in inventing the galectin inhibitor DAVANAT for the treatment of cancer. This had a ~$500 million market cap at its peak. The company was highly dependent on David Platt to develop its products and also to pursue collaborations.

Key Milestone Achieved During His Tenure (2001-2009)

2001
- Conducted preclinical trial in 2001 on DAVANAT

2002
- Raised more than $3 million in capital 2002
- The FDA accepted the IND of DAVANAT, authorizing the company to begin Phase I clinical trials

2003
- Began Phase I clinical trial of DAVANAT ® and DAVANAT ®/5-FU
- Raised approximately $9.9 million in new financing in 2003

2004
- Initiated and submitted to the FDA a Phase II clinical trial of DAVANAT ®/5-FU in colorectal cancer patients

2005
- Successfully completed a Phase I clinical trial for end-stage patients with all solid tumours
- Completed Phase II trial for end-stage patients with metastatic colorectal cancer.

2006
- Raised $10.0 million by issuing 7% Convertible Debentures and common stock warrants through a private placement

2007
- From inception through 2007 fiscal year, raised approximately $37.6 million from these offerings.

2008
- Entered into a license agreement with Medi-Pharma to commercialize all of the company's polysaccharide technology in exchange for a royalty equal to 10% of Medi-Pharma's net revenues from products sold based on the licensed technology.

2009
- DAVANAT completed Phase II trials for treatment of colorectal cancer.
- Received $1.0 million in advance under the terms of the agreement with Medi-Pharma

Source : Galectin Therapeutics, Avise Analytics Research

Summarizing the Achievements of the Company During his Tenure 2001-2009

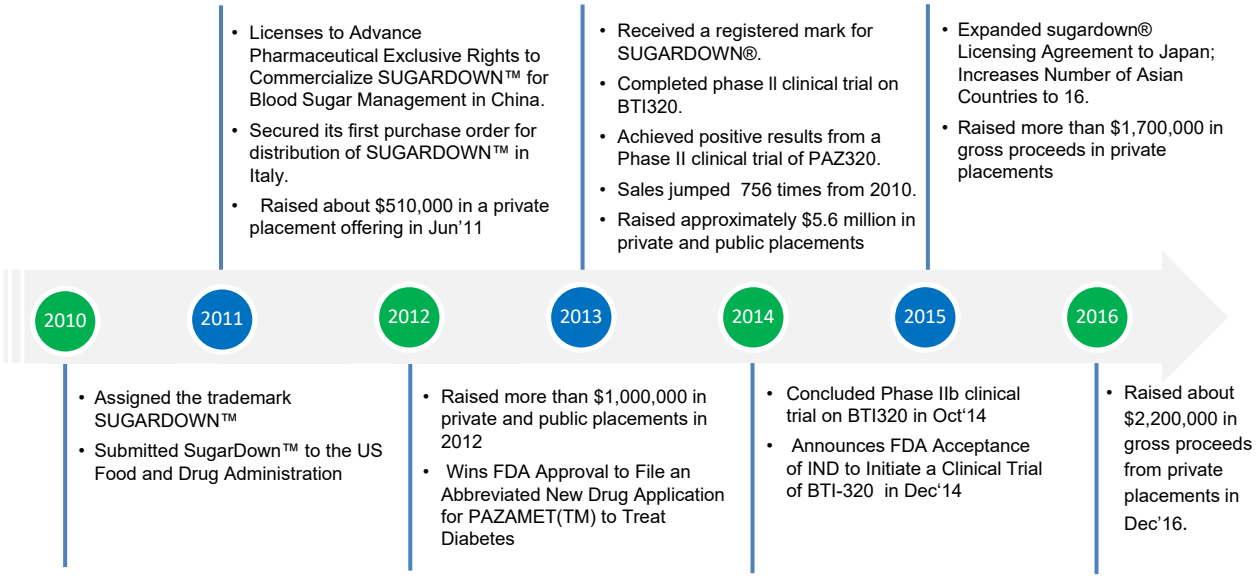
1 Raised Capital: **$43.4 million**	2 U.S. Patents held: **5**	3 Licencing Agreement Achieved: **1** *Received $1.0 mn in advance*	4 DAVANAT ® ,the lead drug candidate completed Phase I clinical trial for 3 diseases	5 DAVANAT ® completed Phase II clinical trial for second line and end stage patients with colorectal cancer

Significant Progress at Boston Therapeutics During His Tenure (2010-2016)

Boston Therapeutics

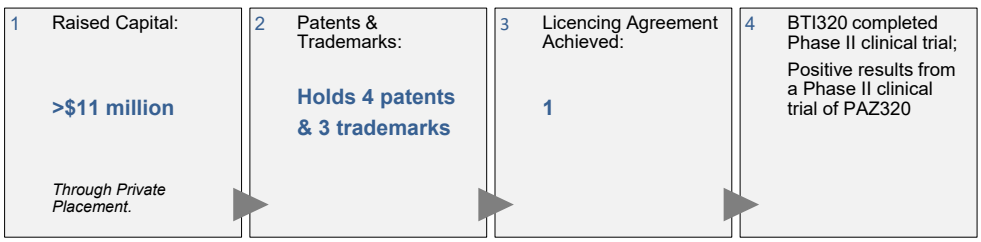
Bringing his management experience to the role, Dr. Platt became the Founder, Chairman and Chief Executive Officer of Boston Therapeutics between 2010-2016. He has played a significant role in the development and commercialization of complex carbohydrate science, and a pipeline of carbohydrate-based therapeutics, to address a variety of unmet medical needs in treating diabetes and inflammatory diseases. During this period, he invented and developed all the Intellectual properties of the company. His expertise was particularly valuable to bring progress to the clinical development of their drugs and work, to expand market awareness and sales of SUGARDOWN® , a dietary supplement designed to reduce post-meal sugar spikes.

Key milestone achieved during David Platt's tenure (2010-2016)



Source :Boston Therapeutics

Summarizing the achievements of the company during 2010-2016



1. We expect Dr. Platt to lead the Company through the evolving regulatory landscape in close collaboration with the development, CMC, and quality teams as it closes in on near-term milestones and prepares to bring drug therapies to patients. His leadership would strengthen the relationships of Bioxytran with key stakeholders towards the successful development of its drugs.

Overview of Other Key Management Team

Ola Soderquist, CFO with experience in Multiple Industry Sector

Mr. Soderquist has more than 30 years of senior international entrepreneurial management experience within technology companies. He has served as CFO and in other capacities in multiple industry sectors. Ola is a multi-lingual senior finance professional poised to work globally and cross-functionally, particularly with complex projects involving business integration, systems implementation, continuous improvement, and process excellence. Ola's managerial experience portfolio includes; Start-ups, Private, Public, Venture Capital, and Private Equity ownership. He obtained a BS and an MS in Accounting from Stockholm School of Economics and an MBA from Babson College – Franklin W. Olin Graduate School of Business.

Mike Sheikh, EVP Business Development

Mr. Sheikh worked as a Broker and eventually Research Analyst at Dean Witter and National Securities. He is a long-time Biotech Consultant expertise for public or private biotech companies with disruptive technologies. Mr. Sheikh the founder of Falcon Strategic Research. Mike has a BS in Economics and is a US Air Force Academy graduate and pilot.

Board of Directors

Hana Chen-Walden

Dr. Chen-Walden has specialized in regulatory affairs in the pharmaceutical industry in the US and Europe. She has thirty years of regulatory experience in EMEA and in individual European countries. Since 2004, She has consulted for the European Clinical and Regulatory Consultancy in medical monitoring, quality assurance, and regulatory input for clinical studies in the fields of oncology, cardiology, diabetes, neurology, respiratory diseases, and medical devices. From 2000 to 2003, Dr. Chen-Walden was Director of International Regulatory Affairs, Covalent Group Ltd. From 1997 to 2000, she was Medical, Drug Safety, and Regulatory Director at CRC, a clinical contract research organization in France. Dr. Chen-Walden received her MD degree from the University of Tel Aviv, Israel. She has practiced medicine in Germany and France.

Anders N. Utter

Mr. Utter has more than 25 years of finance, accounting and management experience in medical devices, consulting and manufacturing industries in capacities as CFO, Controller and Managing Director. He had progressively increased management experience in the European Nolato Group and later on in the Amplex Group. Mr. Utter has had a broad business exposure with IFRS and GAAP reporting as well as with SOX compliance. He has also worked with M&A evaluations, financing and integration as well as more hands-on manufacturing cost accounting and reporting. He is currently in charge of the finance control at one of General Cable's entities. Mr. Utter is and has been serving as a director on boards in both profit as well as non-profit organizations. Mr. Utter holds an MBA from Babson College and a BA from Uppsala University in Sweden.

Alan M. Hoberman

Alan M. Hoberman, PhD is president and CEO of Argus International, Inc., overseeing a staff of scientists and other professionals who provide consulting services for industry, government agencies, law firms, and other organizations, both in the U.S. and internationally. Between 1991 and 2013 he held a series of positions of increasing responsibility at Charles River Laboratories Preclinical Services (formerly Argus Research Laboratories, Inc.), most recently as Executive Director of Site Operations and Toxicology. He currently works with that organization to design, supervise, and evaluate reproductive and developmental toxicity, neurotoxicity, inhalation, and photobiology studies. Dr. Hoberman holds a PhD in toxicology from Pacific Western University, an MS in interdisciplinary toxicology from the University of Arkansas, and a BS in biology from Drexel University.

Dale H. Conaway

We are proud to have Dr. Dale H. Conaway as a board member at Bioxytran Inc. From 1998 to 2001, Dr. Conaway served as Manager of the Equine Drug Testing and Animal Disease Surveillance Laboratories for the Michigan Department of Agriculture. From 1994 to 1998, he was Regulatory Affairs Manager for the Michigan Department of Public Health Vaccine Production Division. From May 2001 to February 2009, Dr. Conaway was a director of Pro-Pharmaceuticals, Inc., a public company with shares traded on the NYSE Alternext US. Dr. Conaway received a DVM degree from Tuskegee Institute and an MS degree in pathology from the College of veterinary medicine at Michigan State University.

Risk Assessment

Clinical Drug Development is a Lengthy and Expensive Process

Bioxytran is currently working on Phase II/III clinical trial with the CDCSO in India for its galectin antagonist drug ProLectin-M and is finalizing its IND application for a Phase II/III clinical trial with the FDA, soon to be followed by a Phase III submission with the EMEA. However, such clinical trials are not only expensive and time-consuming but also carry greater risks of failure in terms of yielding negative test results. This could adversely affect the management's ability to raise capital, plan future activities, and consequently operational and financial performance of the Company.

Failure to Secure FDA Approval

In the US, pharmaceutical products are subject to extensive regulation by Food and Drug Association (FDA). Any failure to comply with applicable U.S. Requirements may subject a company to a variety of administrative or judicial sanctions, such as FDA refusal to approve pending new drug applications, warning letters, product recalls, product seizures, total or partial suspension of production or distribution, injunctions, fines, civil penalties, etc. The occurrence of any such events may delay or impair the Company's ability to successfully commercialize its planned drug portfolio.

Ability to Raise Additional Capital

Bioxytran is an early-stage pharmaceutical company, and it will likely need further additional financing to undertake and complete clinical trials, testing, and regulatory compliance activities for ProLectin and cover projected general and administrative expenses. There is no guarantee that this type of financing would be available if needed and/or at terms that are acceptable to shareholders. Without such additional capital, the management may be forced to curtail operations or delay the business plan.

Currently, the Company does not have sufficient capital resources to fund operations. To stay in business and to continue the development of our products, they will need to raise additional capital through public or private sales of securities, debt financing or short-term bank loans, or a combination of the foregoing. The Company believes that if it can raise $5,300,000, it will have sufficient working capital to repay the outstanding convertible notes and develop its business over the next approximately 15 months. At funding raised that is less than $5,300,000, they can likely repay the four convertible notes and continue to develop their business over the same 15-month period, but funding at that level will delay the development of their technology and business.

Presence of Peer Companies in the Market

It faces stiff competition from major pharmaceutical companies, specialty pharmaceutical companies and biotechnology companies worldwide. The market for Covid- 19 treatment drugs is characterized by intense competition, with a relatively small selection of large global corporations having significant advantages of scale, sales distribution, research & development labs, and financial resources when compared to the smaller players in the industry. This dynamic may place the Company at a competitive disadvantage as it seeks to raise funds for its clinical trials and build a robust intellectual property portfolio of patent applications and trademarks.

Risk of Dilution

Given the significant costs associated with funding clinical studies required for regulatory approval, early-stage, development-stage biotechnology companies are especially susceptible to the risk of dilution. If Bioxytran requires more capital than expected or faces a more challenging capital-raising environment, or if its clinical pipeline takes longer to develop than anticipated, the Company may be forced to raise capital at prices/terms which are unfavorable to existing equity holders. This may include the issuance of new shares and dilutive instruments such as warrants, convertible debt, and preferred stock. Dilution reduces the proportionate ownership of shareholders and may adversely impact the Company's common stock value.

INCOME STATEMENT

PARTICULARS ($ in M)	FY21A	FY22E	FY23F	FY24F	FY25F	FY26F	FY27F	FY28F	FY29F	FY30F	FY31F	FY32F	FY33F
REVENUE													
ProLectin-M	-	-	-	7.32	19.42	26.61	35.84	36.20	36.56	36.93	37.30	37.67	38.05
As a % of Net Revenue				*100.0%*	*100.0%*	*68.5%*	*88.0%*	*83.1%*	*81.7%*	*63.5%*	*55.0%*	*48.0%*	*43.5%*
Licencing Revenue (BXT-25)													
Domestic	-	-	-	-	-	12.23	4.89	7.34	5.61	14.90	21.41	28.58	34.38
As a % of Net Revenue				*0.0%*	*0.0%*	*31.5%*	*12.0%*	*16.9%*	*12.5%*	*25.6%*	*31.6%*	*36.4%*	*39.3%*
International	-	-	-	-	-	-	-	-	2.58	6.33	9.14	12.22	14.95
As a % of Net Revenue				*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*5.8%*	*10.9%*	*13.5%*	*15.6%*	*17.1%*
Net Revenue	**-**	**-**	**-**	**7.32**	**19.42**	**38.85**	**40.74**	**43.54**	**44.76**	**58.16**	**67.84**	**78.47**	**87.38**
y/y growth					*165.1%*	*100.1%*	*4.9%*	*6.9%*	*2.8%*	*30.0%*	*16.6%*	*15.7%*	*11.4%*
Cost of Sales	-	-	-	1.10	2.91	3.99	5.38	5.43	5.48	5.54	5.59	5.65	5.71
As a % of Revenue from ProLectin-M				*15.0%*	*15.0%*	*15.0%*	*15.0%*	*15.0%*	*15.0%*	*15.0%*	*15.0%*	*15.0%*	*15.0%*
R&D Expenses	2.01	1.00	1.00	1.25	1.00	1.00	0.10	0.10	0.10	0.10	0.11	0.11	0.11
As a % of Net Revenue				*17.1%*	*5.2%*	*2.6%*	*0.2%*	*0.2%*	*0.2%*	*0.2%*	*0.2%*	*0.1%*	*0.1%*
G&A Expenses	1.62	0.62	0.67	1.23	1.23	1.25	1.29	1.32	1.36	1.40	1.44	1.48	1.52
As a % of Net Revenue				*16.8%*	*6.3%*	*3.2%*	*3.2%*	*3.0%*	*3.0%*	*2.4%*	*2.1%*	*1.9%*	*1.7%*
D&A	-	0.00	0.03	0.03	0.03	0.03	0.32	0.63	0.88	1.20	1.24	1.30	1.45
As a % of Net Revenue				*0.4%*	*0.2%*	*0.1%*	*0.8%*	*1.4%*	*2.0%*	*2.1%*	*1.8%*	*1.7%*	*1.7%*
Total Operating Expenses	**4.21**	**1.77**	**1.84**	**3.77**	**5.35**	**6.47**	**7.29**	**7.71**	**8.08**	**8.52**	**8.68**	**8.87**	**9.15**
Operating Profit/(Loss)	**(4.21)**	**(1.77)**	**(1.84)**	**3.56**	**14.07**	**32.38**	**33.44**	**35.83**	**36.68**	**49.64**	**59.16**	**69.60**	**78.23**
As a % of Net Revenue				*48.6%*	*72.5%*	*83.3%*	*82.1%*	*82.3%*	*82.0%*	*85.3%*	*87.2%*	*88.7%*	*89.5%*
EBITDA	**(4.21)**	**(1.77)**	**(1.82)**	**3.59**	**14.10**	**32.41**	**33.76**	**36.45**	**37.55**	**50.84**	**60.40**	**70.90**	**79.67**
As a % of Net Revenue				*49.0%*	*72.6%*	*83.4%*	*82.9%*	*83.7%*	*83.9%*	*87.4%*	*89.0%*	*90.3%*	*91.2%*
Interest Expenses (net)	0.24	0.20	0.09	0.03	-	-	-	-	-	-	-	-	-
Debt Discount Amortization	0.08	0.30	-	-	-	-	-	-	-	-	-	-	-
Profit/(Loss) Before Taxes	**(4.53)**	**(2.27)**	**(1.93)**	**3.53**	**14.07**	**32.38**	**33.44**	**35.83**	**36.68**	**49.64**	**59.16**	**69.60**	**78.23**
As a % of Net Revenue				*48.1%*	*72.5%*	*83.3%*	*82.1%*	*82.3%*	*82.0%*	*85.3%*	*87.2%*	*88.7%*	*89.5%*
Income Tax Expenses (Benefits)	-	-	-	0.88	3.52	8.10	8.36	8.96	9.17	12.16	14.54	17.15	19.56
Net Profit / (Loss) for the period	**(4.53)**	**(2.27)**	**(1.93)**	**2.64**	**10.55**	**24.29**	**25.08**	**26.87**	**27.51**	**37.48**	**44.62**	**52.45**	**58.67**
As a % of Net Revenue				*36.1%*	*54.3%*	*62.5%*	*61.6%*	*61.7%*	*61.5%*	*64.4%*	*65.8%*	*66.8%*	*67.1%*
Less: Net Loss/(profit) attributable to non-controlling interest	0.50	0.19	0.16	(0.22)	(0.90)	(2.06)	(2.13)	(2.28)	(2.34)	(3.19)	(3.79)	(4.46)	(4.99)
Net Profit / (Loss) Attributable to BIXT	**(4.03)**	**(2.08)**	**(1.77)**	**2.42**	**9.65**	**22.22**	**22.95**	**24.59**	**25.17**	**34.29**	**40.83**	**47.99**	**53.68**
As a % of Net Revenue				*33.0%*	*49.7%*	*57.2%*	*56.3%*	*56.5%*	*56.2%*	*59.0%*	*60.2%*	*61.2%*	*61.4%*

Source: Company's filings and Avise Analytics estimates

BALANCE SHEET

PARTICULARS ($ in M)	FY21A	FY22E	FY23F	FY24F	FY25F	FY26F	FY27F	FY28F	FY29F	FY30F	FY31F	FY32F	FY33F
Assets													
Current Assets:													
Cash & Cash Equivalents	0.07	0.31	0.05	0.82	17.86	30.49	55.21	80.86	108.78	136.43	175.62	222.25	277.48
Prepaid Expenses	-	-	-	-	-	-	-	-	-	-	-	-	-
Accounts & Other Receivables	-	-	-	0.37	0.97	1.94	2.04	2.18	2.24	2.91	3.39	3.92	4.37
Inventories	-	-	-	0.73	1.94	3.88	4.07	4.35	4.48	5.82	6.78	7.85	8.74
Other Current Assets	-	-	-	-	0.19	0.39	0.41	0.44	0.90	1.16	1.36	1.57	1.75
Total Current Assets	**0.07**	**0.31**	**0.05**	**1.91**	**20.96**	**36.71**	**61.73**	**87.82**	**116.39**	**146.32**	**187.15**	**235.39**	**292.33**
Non-Current Assets:													
Property, Plant & Equipment, Net	-	-	-	-	-	-	1.38	2.62	3.26	4.03	4.42	5.00	5.67
Intangibles Assets - IP	0.05	0.07	0.08	0.08	0.08	0.08	0.21	0.30	0.36	0.42	0.49	0.57	0.64
Other Assets	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Non-Current Assets	**0.05**	**0.07**	**0.08**	**0.08**	**0.08**	**0.08**	**1.59**	**2.92**	**3.61**	**4.45**	**4.91**	**5.57**	**6.31**
Total Assets	**0.12**	**0.38**	**0.13**	**1.99**	**21.04**	**36.78**	**63.32**	**90.75**	**120.01**	**150.77**	**192.06**	**241.16**	**298.64**
Liabilities & Shareholders' (Deficit)/ Equity													
Current Liabilities:													
Accounts Payables & Accrued Exp	0.62	0.34	0.46	0.46	0.49	0.47	0.53	0.56	0.58	0.61	0.63	0.64	0.66
Convertible Notes Payable, net	2.12	2.16	1.50	0.50	-	-	-	-	-	-	-	-	-
Accounts Payable Related Party	0.53	0.45	0.46	0.46	0.49	0.47	0.53	0.56	0.58	0.61	0.63	0.64	0.66
Un-issued Shares Liability	-	0.00	-	-	-	-	-	-	-	-	-	-	-
Un-issued Shares Liability Related Party	-	0.04	-	-	-	-	-	-	-	-	-	-	-
Total Current Liabilities	**3.28**	**2.98**	**2.43**	**1.42**	**0.98**	**0.93**	**1.05**	**1.11**	**1.16**	**1.23**	**1.25**	**1.28**	**1.32**
Non-Current Liabilities:													
Long-Term Debt	-	-	-	-	-	-	-	-	-	-	-	-	-
Other Non-Current Liabilities	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Non-Current Liabilities	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Liabilities	**3.28**	**2.98**	**2.43**	**1.42**	**0.98**	**0.93**	**1.05**	**1.11**	**1.16**	**1.23**	**1.25**	**1.28**	**1.32**
Shareholders' Equity													
Preferred stock	-	-	-	-	-	-	-	-	-	-	-	-	-
Common stock, $0.001 par value	0.1	0.1	0.1	0.1	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
Additional Paid-in Capital	5.88	8.28	10.68	10.68	10.68	10.68	10.68	10.68	10.68	10.68	10.68	10.68	10.68
Accumulated Losses	(8.75)	(10.41)	(12.35)	(12.35)	(12.35)	(12.35)	(12.35)	(12.35)	(12.35)	(12.35)	(12.35)	(12.35)	(12.35)
Retained Earnings	-	-	-	2.64	10.55	24.29	48.57	73.65	100.52	128.03	165.51	210.31	262.58
Non-Controlling Interest	(0.40)	(0.59)	(0.76)	(0.53)	0.37	2.43	4.56	6.85	9.19	12.37	16.16	20.62	25.61
Total Sh.holders' (Def)/Eq	**(3.16)**	**(2.60)**	**(2.30)**	**0.57**	**20.05**	**35.85**	**62.27**	**89.63**	**118.84**	**149.54**	**190.81**	**239.89**	**297.32**
Total Liabilities & Sh.holders' (Def)/Eq	**0.12**	**0.38**	**0.13**	**1.99**	**21.04**	**36.78**	**63.32**	**90.75**	**120.01**	**150.77**	**192.06**	**241.16**	**298.64**

Source: Company's filings and Avise Analytics estimates

KEY RATIOS

PARTICULARS	FY21A	FY22E	FY23F	FY24F	FY25F	FY26F	FY27F	FY28F	FY29F	FY30F	FY31F	FY32F	FY33F
Diluted Earnings per Share ($)	(0.04)	(0.02)	(0.02)	0.02	0.08	0.19	0.19	0.20	0.21	0.28	0.33	0.39	0.44
Book Value per Share ($)	(0.03)	(0.02)	(0.02)	0.00	0.15	0.27	0.47	0.68	0.90	1.13	1.43	1.79	2.20
Dividend Per Share ($)	-	-	-	-	-	-	-	-	-	-	-	-	-
Payout (%)	-	-	-	-	-	-	-	-	-	-	-	-	-
LIQUIDITY RATIOS													
Debt/Equity Ratio (x)	(0.75)	(0.75)	(0.74)	0.11	0.44	-	-	-	-	-	-	-	-
Current Ratio (excl. cash & cash eq.) (x)	0.1	0.0	0.0	0.4	2.0	4.9	6.4	6.2	6.4	7.3	8.6	9.8	10.9
TURNOVER RATIOS													
Debtors Turnover Ratio (x)	-	-	-	20.0	29.0	26.7	20.5	20.7	20.3	22.6	21.5	21.5	21.1
Debtors' days	-	-	-	18	13	14	18	18	18	16	17	17	17
Net Fixed Assets Turnover Ratio (x)	-	-	-	-	-	-	29.4	21.7	15.2	16.0	16.1	16.7	16.4
PROFITABILITY RATIOS													
Gross Profit Margin	-	-	-	85.0%	85.0%	89.7%	86.8%	87.5%	87.7%	90.5%	91.8%	92.8%	93.5%
EBIT Margin	-	-	-	48.6%	72.5%	83.3%	82.1%	82.3%	82.0%	85.3%	87.2%	88.7%	89.5%
EBITDA Margin	-	-	-	49.0%	72.6%	83.4%	82.9%	83.7%	83.9%	87.4%	89.0%	90.3%	91.2%
NPAT Margin	-	-	-	36.1%	54.3%	62.5%	61.6%	61.7%	61.5%	64.4%	65.8%	66.8%	67.1%
RoCE	-	-	-	332.3%	133.2%	115.8%	68.2%	47.2%	35.2%	37.0%	34.8%	32.3%	29.1%
RoNW	-	-	-	(305.3%)	102.3%	86.9%	51.1%	35.4%	26.4%	27.9%	26.2%	24.4%	21.8%
VALUATION RATIOS													
P/E (x)	-	-	-	-	-	2.9	2.8	2.7	2.6	1.9	1.6	1.4	1.2
P/BV (x)	-	-	-	122.9	3.5	2.0	1.1	0.8	0.6	0.5	0.4	0.3	0.2
EV/Sales (x)	-	-	-	8.8	3.3	1.7	1.6	1.5	1.4	1.1	0.9	0.8	0.7
EV/Adj. EBITDA (x)	-	-	-	17.9	4.6	2.0	1.9	1.8	1.7	1.3	1.1	0.9	0.8
Dividend Yield	-	-	-	-	-	-	-	-	-	-	-	-	-
CAPEX / Dep (x)	-	11.0	1.1	0.9	1.0	1.0	5.8	3.1	1.8	1.7	1.4	1.5	1.5
CAPEX / Sales (x)	-	-	-	-	-	0.00	0.05	0.05	0.04	0.04	0.03	0.03	0.03
No. of Shares Outstanding (M) =	106.3	116.4	116.4	116.4	116.4	116.4	116.4	116.4	116.4	116.4	116.4	116.4	116.4
Year end Adj. Closing Share price ($) =	0.25	0.54[1]	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54
Add: Debt ($ in M) =	2.12	2.16	2.16	2.16	2.16	2.16	2.16	2.16	2.16	2.16	2.16	2.16	2.16
Minority Interest ($ in M)=	(0.40)	(0.59)	(0.59)	(0.59)	(0.59)	(0.59)	(0.59)	(0.59)	(0.59)	(0.59)	(0.59)	(0.59)	(0.59)
Preferred Shares ($ in M) =	-	-	-	-	-	-	-	-	-	-	-	-	-
Less: Cash & Cash Eq. ($ in M)=	0.07	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37
Enterprise Value ($ in M) =	28.2	64.3	64.3	64.3	64.3	64.3	64.3	64.3	64.3	64.3	64.3	64.3	64.3
DU-Pont ANALYSIS													
PAT/PBT	100.0%	100.0%	100.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.5%	75.4%	75.4%	75.0%
PBT/EBIT	107.4%	128.6%	104.9%	99.2%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
EBIT/Revenue	-	-	-	48.6%	72.5%	83.3%	82.1%	82.3%	82.0%	85.3%	87.2%	88.7%	89.5%
Revenue/Total Assets	-	-	-	3.7	0.9	1.1	0.6	0.5	0.4	0.4	0.4	0.3	0.3
Total Asset/Total Equity	-	-	-	3.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Return on Equity (RoE)	-	-	-	**464.0%**	**52.6%**	**67.7%**	**40.3%**	**30.0%**	**23.1%**	**25.1%**	**23.4%**	**21.9%**	**19.7%**

Source: Company's filings, Yahoo finance and Avise Analytics estimates
[1]Share Price as on November 15, 2022

VALUATION & OUTLOOK

VALUATION:

PARTICULARS ($ in M)	FY21F	FY22F	FY23F	FY24F	FY25F	FY26F	FY27F	FY28F	FY29F	FY30F	FY31F	FY32F	FY33F
Operating Income (EBIT)	(4.21)	(1.77)	(1.84)	3.56	14.07	32.38	33.44	35.83	36.68	49.64	59.16	69.60	78.23
Less: CAPEX	0.04	0.03	0.03	0.03	0.03	0.03	1.83	1.96	1.57	2.04	1.70	1.96	2.18
Add: D & A + Impairment	0.00	0.00	0.03	0.03	0.03	0.03	0.32	0.63	0.88	1.20	1.24	1.30	1.45
Current Assets excl. cash	-	-	-	1.10	3.11	6.22	6.52	6.97	7.61	9.89	11.53	13.34	14.85
Less: Current Liabilities	3.28	2.98	2.43	1.42	0.98	0.93	1.05	1.11	1.16	1.23	1.25	1.28	1.32
Working Capital (WC)	**(3.28)**	**(2.98)**	**(2.43)**	**(0.32)**	**2.12**	**5.28**	**5.47**	**5.85**	**6.44**	**8.66**	**10.28**	**12.06**	**13.54**
Increase/(Decrease) in WC		0.30	0.55	2.11	2.44	3.16	0.18	0.39	0.59	2.21	1.62	1.78	1.47
Less: Taxes	-	-	-	0.88	3.52	8.10	8.36	8.96	9.17	12.16	14.54	17.15	19.56
FCF for the Firm/Equity =	**(4.25)**	**(2.09)**	**(2.40)**	**0.57**	**8.11**	**21.12**	**23.38**	**25.15**	**26.23**	**34.43**	**42.54**	**50.00**	**56.46**
Terminal Value =													**722.93**
Present Value of FCF =		**(2.07)**	**(2.12)**	**0.45**	**5.70**	**13.24**	**13.07**	**12.54**	**11.66**	**13.65**	**15.05**	**15.77**	**219.29**

Particulars ($ in M except per Share data)	
Total Present Value of Free Cash Flows	316.23
Add: Cash & Cash Equivalents	0.37
Less: P.V. of Total Debt o/s (as per latest filings)	2.16
Less: Preferred Shares	-
Less: Minority Interest	(0.54)
Equity Value (Present Value)	314.99
Number of Shares outstanding (in M)	116.39
Fair Value per Share ($)	**2.71**

Estimating Weighted Average Cost of Capital (WACC)	
WACC Inputs	
Risk-free rate	3.81%
Excess Return on NASDAQ Biotechnology Index (3-Yr)	7.90%
Beta	0.80
Unadjusted Equity Risk Premium	6.31%
+Company Specific Risk Premium	1.00%
+ Small Business Risk Premium	1.00%
Cost of Equity (CAPM)	**12.12%**
Cost of Debt	-
Statutory Tax rate	25.00%
Debt / Capital	-
After Tax Cost of Debt	-
WAC (Debt)	-
Cost of Equity (CAPM)	12.12%
Equity / Capital	100.0%
WAC (equity)	12.12%
WACC Conclusion	**12.12%**
Long Term Growth Rate (Assumed) =	**4.00%**

OUTLOOK:

We believe the company has strong fundamentals given the soundness of science exhibited through optimistic early-stage clinical results, a large total addressable market, and a management team with extensive experience in the given field.

We have forecasted revenue for two therapies currently in clinical trials and applied a conservative approach based on their progress through the clinical trial. Our financial forecasting and valuation model is highly dependent upon the continued clinical success of ProLectin-M and BXT-25 and will be adjusted accordingly based on future clinical results.

We believe that Bioxytran will become an important player in the treatment of COVID-19 and viral diseases more broadly. Timely development and commercialization of ProLectin-M could bring significant improvement over conventional treatment methodology in reversing the viral load and may help BIXT to achieve a significant market position.

For BXT-25, based on our assumption that the Company would license BXT-25 after completing the Phase-2 clinical trial in 2026, we estimate 10% royalty revenue with a net margin of ~67% from the sale of BXT-25, starting from 2029.

We reinitiate our coverage on BIXT with a fair valuation of $2.71 per share, based on our discounted cash flow method (DCF), using a 12.1% discount rate and 4.0% terminal growth rate. We are using DCF valuation as our preferred methodology for valuing the stock, as it incorporates our long-term view of the Company's operations.

SENSITIVITY ANALYSIS

Change in Fair Value per Share with a 1% Change in WACC

WACC	11.12%	12.12%	13.12%	14.12%	15.12%
Terminal Growth %	4.00%	4.00%	4.00%	4.00%	4.00%
Fair Value ($ / Share)	**3.23**	**2.71**	**2.30**	**1.99**	**1.73**

Change in Fair Value per Share with a 0.5% Change in Terminal Growth %

WACC	12.12%	12.12%	12.12%	12.12%	12.12%
Terminal Growth %	3.00%	3.50%	4.00%	4.50%	5.00%
Fair Value ($ / Share)	**2.50**	**2.60**	**2.71**	**2.83**	**2.97**

Source: Company filings, Yahoo Finance, Avise Analytics estimates.

FINANCIAL PROJECTIONS ASSUMPTIONS

➢ Revenue:

a) Revenue from ProLectin-M

Following the recent positive top-line results from Phase II Trial of ProLectin-M, we expect the Company to start the Phase III Trial in 2023. Considering the time taken by the peer companies in completing different phases of the clinical trials, we expect the galectin antagonist ready for commercialization in the Indian market from 2024.

- ProLectin-M Sales & Marketing

To estimate the potential market size for the sale of ProLectin-M in the Indian market from 2024 onwards, we estimate roughly 1% of the population will get infected with Covid-19 virus each year. Out of this, close to 80% will be mild to moderate severity cases and we expect this proportion to gradually increase to reach as high as 95% by 2026 and stay at this level during the rest of our forecasting period.

We expect during the first year of commercialization (2024), approximately 1.5% covid affected patients (with mild to moderate severity) would opt for full seven-day course (8 tablets per day) of ProLectin-M treatment. Our forecasting model further assumes following the successful treatment results and growing awareness of the galectin antagonist, the proportion of SARS-Cov-2 virus infected patients (with mild to moderate severity) who will opt for full seven-day course (8 tablets per day) of ProLectin-M treatment will gradually reach 7.5% by 2027 as more doctors would start prescribing it and stay at that level during the rest of our forecasting period.

Estimating ProLectin-M's Market Size for the Treatment of SARS-Cov-2 Virus in India: 2024-2033

	2022P	2023P	2024P	2025P	2026P	2027P	2028P	2029P	2030P	2031P	2032P	2033P
Population & Covid Cases Forecast												
India Population (M)[1]	1,407	1,421	1,436	1,450	1,464	1,479	1,494	1,509	1,524	1,539	1,555	1,570
Total Covid Cases (M)[2]	11.8	15.8	16.0	16.2	16.3	16.5	16.7	16.8	17.0	17.2	17.3	17.5
As a % of Total population	*0.8%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*
Growth (%)	*-52.2%*	*34.7%*	*1.0%*	*1.0%*	*1.0%*	*1.0%*	*1.0%*	*1.0%*	*1.0%*	*1.0%*	*1.0%*	*1.0%*
Stages of Covid Cases (in %)												
Early Stage (as a % of total covid cases) - FIrst 5 days			*80%*	*90%*	*95%*	*95%*	*95%*	*95%*	*95%*	*95%*	*95%*	*95%*
Dosage												
ProLectin-M (per patient 8 tablets per days for 7 days)			60	60	60	60	60	60	60	60	60	60
Percentage of Covid Patients taking ProLectin-M												
India			*1.5%*	*3.5%*	*4.5%*	*7.5%*	*7.5%*	*7.5%*	*7.5%*	*7.5%*	*7.5%*	*7.5%*

Source :

[1] https://nhm.gov.in/New_Updates_2018/Report_Population_Projection_2019.pdf
[2] https://www.worldometers.info/coronavirus/country/india/

- ProLectin-M Pricing & Distributorship Strategy

Following the industry trend, we have arrived at the maximum retail price (MRP) estimate of each ProLectin kit (comprising of 60 tablets) based on selected 6 drugs widely used in the Indian market for mild to moderate COVID treatment.

Anti-Covid Pills – Kit Price Trend in India (in INR)

Medicine Prices	MRP (INR)	Course
Paxzen[1]	₹ 5,200.0	5 days
Molnupiravir 200[2]	₹ 1,399.0	5 days
Molnutor 200mg[3]	₹ 2,760.0	5 days
Avigan 200mg[4]	₹ 12,078.0	14 days
Codifab 200mg[5]	₹ 7,507.2	14 days
Alfluenza 200mg[6]	₹ 7,888.0	14 days
Average	₹ 6,138.7	7 days

Source :

[1] https://timesofindia.indiatimes.com/city/hyderabad/hyds-zenara-rolls-out-generic-of-pfizers-covid-19-pill-at-5200-per-regimen-pack/articleshow/94108682.cms
[2] https://www.business-standard.com/article/current-affairs/covid-antiviral-drug-molnupiravir-launched-in-india-for-moderate-infection-122010400916_1.html
[3] https://www.apollopharmacy.in/medicine/molnutor-200mg-cap-10-s
[4] https://www.1mg.com/drugs/avigan-200mg-tablet-609440
[5] https://www.1mg.com/drugs/codifab-tablet-650091
[6] https://www.1mg.com/drugs/alfluenza-200mg-tablet-715434

FINANCIAL PROJECTIONS ASSUMPTIONS *(contd.)*

Based on the above, we estimate the launch price of ~INR 6,139/- (*higher rounding off*) for each ProLectin-M kit. As the Company begins to reap the benefits of economies of scale, we expect the MRP to decline by 20% in 2027 to ~INR 4,911/- (*rounding off*) and remain at this level during the rest of the forecasting period. We also expect the Company to sell the kits to the distributor at a 50% discount to the MRP price.

Forecasting Company's Revenue from Sale of ProLectin-M in India: FY2024-FY2033

	2024P	2025P	2026P	2027P	2028P	2029P	2030P	2031P	2032P	2033P
Pricing (in US$)										
ProLectin-M Per Kit (MRP)										
MRP (in INR)	₹ 6,138.7	₹ 6,138.7	₹ 6,138.7	₹ 6,138.7	₹ 6,138.7	₹ 6,138.7	₹ 6,138.7	₹ 6,138.7	₹ 6,138.7	₹ 6,138.7
USD/INR Assumption (as on November 14, 2022)	*$80.5*	*$80.5*	*$80.5*	*$80.5*	*$80.5*	*$80.5*	*$80.5*	*$80.5*	*$80.5*	*$80.5*
Discount to Distributor	*50%*	*50%*	*50%*	*50%*	*50%*	*50%*	*50%*	*50%*	*50%*	*50%*
Revenue from ProLectin-M										
India										
Total No. of Patients (in M)	0.19	0.51	0.70	1.17	1.19	1.20	1.21	1.22	1.23	1.25
Effective Price (in US$)	38.13	38.13	38.13	30.50	30.50	30.50	30.50	30.50	30.50	30.50
Revenue (US$ in M)	**7.3**	**19.4**	**26.6**	**35.8**	**36.2**	**36.6**	**36.9**	**37.3**	**37.7**	**38.0**

Source : *Yahoo finance, Avise Analytics estimates*

➢ Revenue from BXT-25:

Our sales revenue forecast model for BXT-25 is primarily based on the assumption that the Company will start its pre-clinical trial in 2024. Considering the time taken by the peer companies in completing different phases of the clinical trials, we estimate the drug development process to be successfully completed by 2029 before it can be prescribed to any stroke patient.

- Collaboration to Develop & Market BXT-25

Upon successful completion of the Phase-2 trial of BXT-25 in FY2026, we expect the management to collaborate with an established pharmaceutical company(s), to further develop and market the drug. Based on the valuation of similar deals that happened in the past, we estimate the Company to license the rights for ~$24.5 million, which is equivalent to 3.0x of the capital spent on the drug development and clinical trials (up to phase II). We expect the Company to receive 50% licensing rights in FY2026, 20% in FY2027, and the rest 30% in FY2028 following the successful completion of phase III and IV clinical trials, respectively. Included in our model is the cumulative capital spending of ~$2.6 million on BXT-25 drug development during the period FY2018 - 2021.

- BXT-25 Sales & Marketing

Following the FDA approval of BXT-25 for its sale and marketing in the United States, we have assumed the following market size for this drug:

US	RoW
A minimum 3% of the stroke patients are expected to be prescribed to use BXT-25 during the first year of sales in 2029, which will gradually increase to reach as high as 16% by 2033.	A minimum 1.5% of the stroke patients are expected to be prescribed to use BXT-25 during the first year of sales in 2029, which will gradually increase to reach as high as 7% by 2033.

For estimating the drug market size for BXT-25 in the US and RoW, we have made the following assumptions and projections:

FINANCIAL PROJECTIONS ASSUMPTIONS *(contd.)*

Estimating Overall Drug Market Size for Stroke Management: 2029-2033

US	Global
POPULATION: For US population projections, we have referred to the data published by the US Census Bureau	**POPULATION:** For global population projections, we have referred to Worldometers
AVERAGE DEATH DUE TO STROKE According to a report by the American Heart Association (AHA), the average death rate in the US, due to stroke, increased at a CAGR of 1.97% between 2011-2016. We expect this historical growth trend to continue and have assumed an average growth rate of 2% p.a. during the forecasting period.	**AVERAGE DEATH DUE TO STROKE** According to World Health Organization (WHO), the average death cases due to stroke was ~6.70 million in 2015. This is expected to grow at a CAGR of ~1.66% during 2016-2030 to reach 8.58 million by 2030. For forecasting, we have assumed the same growth trend to continue during the rest of the forecast period.
AVERAGE ANNUAL STROKE CASES (NEW+RECURRENT) According to a report by the AHA, each year approximately 795,000 people experience a new or recurrent stroke, and this level is expected to continue in future.	**AVERAGE ANNUAL STROKE CASES (NEW+RECURRENT)** According to a report by the AHA, the incidence of stroke was 10.3 million in 2013, and we have assumed this to remain constant during the forecast period.
STROKE PATIENTS: According to a policy statement by the AHA and American Stroke Association (ASA), crude stroke prevalence rate in 2015 is estimated at 3.31%. For forecasting the stroke prevalence from 2016 onwards, we have incorporated the effect of average annual stroke cases (both new and recurrent attacks) and average death due to stroke each year and have arrived at the following growth trend: ~4% p.a. between 2017-2022, ~5% p.a. between 2023 - 2028 and ~6% p.a. for the rest of the forecast period.	**STROKE PATIENTS:** According to a report by the AHA, the global prevalence of stroke in 2016 was 80.1 million people. For forecasting the stroke prevalence from 2017 onwards, we have incorporated the effect of average annual stroke cases (both new and recurrent attacks) and average death due to stroke each year and have arrived at the following growth trend: ~0.14% p.a. between 2015-2017, ~0.13% p.a. between 2018 - 2025 and ~0.12% p.a. for the rest of the forecast period.
TOTAL DIRECT MEDICAL COSTS According to a policy statement by the AHA and ASA, the total direct medical costs of stroke in the US is projected to grow at a CAGR of ~5.4% between 2015-2030 to reach $184.13 billion by 20302. We have assumed the same growth trend to continue during the rest of the forecast period.	**MEDICATION & OTHER EXPENSES COST:** According to the market research firm ReportLinker, the acute ischemic stroke drug sales in the US represented 47% of all sales in 2017 from the 8MM. Based on this, we have assumed this ratio to remain constant during the forecast period. Further, based on our assumption and projections on total medication and expenses costs in the US, we have derived the projections for the global medication and other expense costs of stroke during 2019-2033
MEDICATION & OTHER EXPENSES COST: As per Healing in Motion, a patient-driven agency focused on strokes, brain injuries and brain attacks, the total medications and other expenses costs constitute 13% of total direct medical costs. We have assumed this ratio to remain constant during our forecast period. Based on this and above projections related to total direct medical costs, we have derived the total medications and other expenses costs for the forecast period.	

Source : *US Census Bureau, American Heart Association, American Stroke Association, World Health Organization, Worldometers, Avise Analytics estimates*

FINANCIAL PROJECTIONS ASSUMPTIONS *(contd.)*

Estimating Overall Drug Market Size for Stroke Management in the US: 2022-2033

	2022F	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F	2031F	2032F	2033F
US Population Forecast (in M)[1]	337	340	342	344	346	349	351	353	355	357	359	361
Projections of Crude Stroke Prevalence, in US (%)	*4%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*6%*	*6%*	*6%*	*6%*	*6%*
Projections of Crude Stroke Prevalence, in US (in M)	15.2	15.8	16.4	17.0	17.7	18.3	18.9	19.5	20.1	20.7	21.3	21.9
Avg. Annual Stroke Cases (new + recurrent attacks)[5]	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
As a % of US population	*0.24%*	*0.23%*	*0.23%*	*0.23%*	*0.23%*	*0.23%*	*0.23%*	*0.23%*	*0.22%*	*0.22%*	*0.22%*	*0.22%*
Average Death Due to Stroke (in M)[4]	0.16	0.16	0.17	0.17	0.17	0.18	0.18	0.18	0.19	0.19	0.20	0.20
Growth (%)	*2.0%*	*2.0%*	*2.0%*	*2.0%*	*2.0%*	*2.0%*	*2.0%*	*2.0%*	*2.0%*	*2.0%*	*2.0%*	*2.0%*
Projected Direct (Total Medical) Costs of Stroke ($ in B)[2]	120	126	133	141	149	157	165	175	184	194	205	216
Growth (%)	*5.5%*	*5.5%*	*5.5%*	*5.5%*	*5.5%*	*5.5%*	*5.5%*	*5.5%*	*5.5%*	*5.5%*	*5.5%*	*5.5%*
Projected Direct (Medical) Costs of Stroke **per Patient**, in US ($ in '000s)	$7.90	$8.01	$8.12	$8.26	$8.41	$8.57	$8.75	$8.94	$9.15	$9.37	$9.62	$9.87
Projected Medication & Other Expenses Costs in US *(13% of direct cost)* ($ in B)[3]	$15.6	$16.4	$17.3	$18.3	$19.3	$20.4	$21.5	$22.7	$24.0	$25.3	$26.7	$28.1
Projected Medication and Other Expense Costs of Stroke **per Patient**, in US ($)	$1,027	$1,041	$1,056	$1,074	$1,093	$1,114	$1,138	$1,163	$1,190	$1,219	$1,250	$1,283

Source :

[1] https://www.census.gov/data/tables/2017/demo/popproj/2017-summary-tables.html
[2] https://www.cdc.gov/mmwr/preview/mmwrhtml/mm5619a2.htm
[2] https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6120a5.htm
[2] https://www.ahajournals.org/doi/pdf/10.1161/STR.0b013e31829734f2
[3] http://www.healingsinmotion.org/what-is-a-stroke/stroke-facts/
[4] https://www.ahajournals.org/doi/pdf/10.1161/CIR.0000000000000659
[5] https://www.ahajournals.org/doi/pdf/10.1161/CIR.0000000000000659

Estimating Drug Market Size for Stroke Management Globally: 2022-2033

	2022P	2023P	2024P	2025P	2026P	2027P	2028P	2029P	2030P	2031P	2032P	2033P
World Population Forecast (in M)[6]	7,954	8,032	8,110	8,186	8,261	8,335	8,408	8,480	8,551	8,621	8,691	8,759
Projections of Crude Stroke Prevalence, (%)	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*
Projections of Crude Stroke Prevalence, (in M)[9]	98.6	101.2	103.8	106.2	108.4	110.6	112.6	114.4	116.2	117.7	119.2	120.5
Growth based on US Crude Stroke Patient Growth Projections (%)	*4.4%*	*4.2%*	*4.0%*	*3.8%*	*3.6%*	*3.5%*	*3.4%*	*3.2%*	*3.1%*	*3.0%*	*2.9%*	*2.8%*
Average Annual Stroke Cases (new + recurrent attacks)[8]	10.30	10.30	10.30	10.30	10.30	10.30	10.30	10.30	10.30	10.30	10.30	10.30
As a % of Total US Population	*0.13%*	*0.13%*	*0.13%*	*0.13%*	*0.12%*	*0.12%*	*0.12%*	*0.12%*	*0.12%*	*0.12%*	*0.12%*	*0.12%*
Average Death Due to Stroke (in M)[7]	7.52	7.64	7.77	7.90	8.03	8.16	8.30	8.44	8.58	8.72	8.87	9.01
Growth (%)	*1.66%*	*1.66%*	*1.66%*	*1.66%*	*1.66%*	*1.66%*	*1.66%*	*1.66%*	*1.66%*	*1.66%*	*1.66%*	*1.66%*
Projected Medication & Other Expense Costs (13% of direct cost) ($ in B)	331	350	369	389	411	433	457	483	509	537	567	598
US Stroke Medication Cost Represents 47% of Global Medication Cost[10]	*47%*	*47%*	*47%*	*47%*	*47%*	*47%*	*47%*	*47%*	*47%*	*47%*	*47%*	*47%*
Projected Medication & Other Expense Costs of Stroke **per Patient**, ($)	$336.1	$345.3	$355.5	$366.7	$378.8	$392.0	$406.3	$421.7	$438.4	$456.4	$475.8	$496.7

Source :

[6] Worldometers
[7] WHO
[8] https://www.ahajournals.org/doi/pdf/10.1161/CIR.0000000000000485
[9] https://www.ahajournals.org/doi/pdf/10.1161/CIR.0000000000000659
[10] https://www.prnewswire.com/news-releases/acute-ischemic-stroke-global-drug-forecast-and-market-analysis-to-2027-300744837.html

FINANCIAL PROJECTIONS ASSUMPTIONS *(contd.)*

- **Cost of BXT-25 per patient: U.S. & RoW**

Based on our most conservative estimates, BXT-25 is expected to cost only 5% of the total medication cost. In other words, the total dosage of BXT-25 per patient in the U.S. would cost only $58 in 2029, which is forecasted to reach $64 by 2033. For rest of the world (RoW), it is estimated to cost only $19 per patient in 2029 and will gradually increase to $22 per patient, by 2033.

- **Assumptions related to License revenue**

We estimate the Company to receive royalties of 15% & 10% on net sales in the US and RoW, respectively from FY2029 onwards.

We forecast the license revenue in the U.S., to increase from $5.6 million in FY2029 and reach $34.4 million by FY2033. Similarly, for RoW, we forecast the license revenue to increase from $2.6 million in FY2029 and reach $14.95 million by FY2033.

Forecasting Total Revenue from BXT-25: FY2026-FY2033

BXT-25	FY22F	FY23F	FY24F	FY25F	FY26F	FY27F	FY28F	FY29F	FY30F	FY31F	FY32F	FY33F
DOMESTIC												
No. of Patients (in M)	-	-	-	-	-	-	-	0.64	1.67	2.34	3.04	3.57
As a % of total no. of stroke patients	-	-	-	-	-	-	-	*3.3%*	*8.3%*	*11.3%*	*14.3%*	*16.3%*
Drug cost per patient ($)	-	-	-	-	-	-	-	58.2	59.6	61.0	62.6	64.2
As a % of total medication cost in $	-	-	-	-	-	-	-	*5%*	*5%*	*5%*	*5%*	*5%*
Gross Revenue to Licensee ($ in M)	-	-	-	-	-	-	-	37.4	99.3	142.7	190.6	229.2
Licence Revenue ($ in M) (i)	-	-	-	-	12.2	4.9	7.34	5.6	14.9	21.4	28.6	34.4
Licence Commission								*15%*	*15%*	*15%*	*15%*	*15%*
Transfer of licence	-	-	-	-	*50%*	*20%*	*30%*	-	-	-	-	-
Total Capital Spent before transfer of Licensee to develop BXT25 ($ in M)	0.34	0.37	1.63	1.63	1.64	-	-	-	-	-	-	-
Assuming a licencing deal @ 3.0x of capital spent on BXT25 before the deal ($ in M)	-	-	-	-	24.5	-	-	-	-	-	-	-
INTERNATIONAL												
No. of Patients (in M) (Global *Less* US)	-	-	-	-	-	-	-	1.36	3.23	4.50	5.79	6.82
As a % of total no. of stroke patients	-	-	-	-	-	-	-	*1.5%*	*3.5%*	*4.8%*	*6.1%*	*7.1%*
Drug cost per patient ($)	-	-	-	-	-	-	-	18.9	19.6	20.3	21.1	21.9
As a % of total medication cost in US	-	-	-	-	-	-	-	*5%*	*5%*	*5%*	*5%*	*5%*
Gross Revenue to Licensee ($ in M)	-	-	-	-	-	-	-	25.8	63.3	91.4	122.2	149.5
Licence Revenue ($ in M) (ii)	-	-	-	-	-	-	-	2.58	6.33	9.14	12.22	14.95
Licence Commission	-	-	-	-	-	-	-	*10%*	*10%*	*10%*	*10%*	*10%*
REVENUE FROM BXT-25 ($ in M) (i+ii)	-	-	-	-	**12.2**	**4.9**	**7.3**	**8.2**	**21.2**	**30.5**	**40.8**	**49.3**

Source : Avise Analytics estimates

FINANCIAL PROJECTIONS ASSUMPTIONS *(contd.)*

➢ **Operating Expenses:**

i. Cost of Sales:

Based on industry average, we have assumed cost of sales as 15% in case of Pro-Lectin-M.

ii. Research & Development (R&D) Expenses:

In-line with the management guidance, we have assumed R&D expenditure of ~$1 million a year in FY2022 and FY2023 for ProLectin-M development and clinical trials. For BXT-25, we estimate the management to incur R&D expenditure of roughly $8.2 million between FY2018-26 to successfully complete the drug development till phase-2 clinical trial. The R&D expenditure requirement for the remaining clinical trials on BXT-25 will be negligible post collaboration in FY2026.

R&D Expenses (as a % of Net Revenue)

PARTICULARS	FY24F	FY25F	FY26F	FY27F	FY28F	FY29F	FY30F	FY31F	FY32F	FY33F
Assumption rate	17.1%	5.2%	2.6%	0.2%	0.2%	0.2%	0.2%	0.2%	0.1%	0.1%

Source: Avise Analytics estimates

iii. General & Administration (G&A) Expenses:

We also expect G&A expenses to be under control, after the drugs commercialization.

For the purpose of forecasting salaries & wages, we have considered Dr. Platt, Mr. Soderquist and Mr. Sheikh as the only employees and each of them is expected to remain committed on a full-time basis. We expect the current management salary structure to remain unchanged till the development stage. Post-commercialization of both the drugs, i.e., from FY2027 onwards, we expect a minimal salary hike of 3% p.a.

G&A Expenses (as a % of Net Revenue)

PARTICULARS	FY24F	FY25F	FY26F	FY27F	FY28F	FY29F	FY30F	FY31F	FY32F	FY33F
Assumption rate	16.8%	6.3%	3.2%	3.2%	3.0%	3.0%	2.4%	2.1%	1.9%	1.7%
Payroll & Related exp as a % of G&A exp.	85.4%	85.3%	83.7%	83.7%	83.7%	83.6%	83.6%	83.6%	83.6%	83.5%

Source: Avise Analytics estimates

Based on above assumptions, we expect the EBITDA margin to stabilize from FY2027 onwards and the management to achieve EBITDA margin levels of as high as 90% by FY2032.

iv. Depreciation & Amortization (D&A) Expenses:

Our valuation model assumes:

- the average useful life of 4 years for computer hardware & software and 10 years in case of machinery & equipments; and
- depreciation on leasehold improvements @5% p.a.
- amortization in case of intangibles assets @25% p.a. on the opening balance.

On an aggregate basis, D&A expenses as a % of net revenue, is expected to increase from 0.1% in FY2026 to 1.7% by FY2033.

D&A Expenses (as a % of Net Revenue)

PARTICULARS	FY24F	FY25F	FY26F	FY27F	FY28F	FY29F	FY30F	FY31F	FY32F	FY33F
Assumption rate	0.4%	0.2%	0.1%	0.8%	1.4%	2.0%	2.1%	1.8%	1.7%	1.7%

Source: Avise Analytics estimates

v. Financial Expenses:

We expect the management to raise fresh capital in FY2023 and FY2024 (to fund ProLectin-M's development and clinical trials) via issue of convertible notes bearing interest rate of 6% p.a.

vi. Tax rate:

From FY2024 onwards, we have assumed the corporate tax rate of 25% in our valuation model.

FINANCIAL PROJECTIONS ASSUMPTIONS SHEET *(contd.)*

➢ Capital Expenditure (Capex):

We expect the Company's capex requirement to be minimal, not exceeding 5% of the forecasted revenue in any year during our forecasting period.

➢ Non-Cash Working Capital Requirements:

Estimating Non-Cash Working Capital Requirements

PARTICULARS ($ in M)	FY26F	FY27F	FY28F	FY29F	FY30F	FY31F	FY32F	FY33F
Current Assets excl. cash	6.22	6.52	6.97	7.61	9.89	11.53	13.34	14.85
Less: Current Liabilities	0.93	1.05	1.11	1.16	1.23	1.25	1.28	1.32
Working Capital (WC)	**5.28**	**5.47**	**5.85**	**6.44**	**8.66**	**10.28**	**12.06**	**13.54**
Change in WC requirements	***3.16***	***0.18***	***0.39***	***0.59***	***2.21***	***1.62***	***1.78***	***1.47***
WC to Sales ratio (x)	*0.14*	*0.13*	*0.13*	*0.14*	*0.15*	*0.15*	*0.15*	*0.15*

Source: Avise Analytics estimates

i. Accounts Receivables (AR)

Based on industry trend, we have assumed a receivables turnover of 20x for the forecast period.

Accounts Receivables (Turnover ratio)

PARTICULARS	FY23F	FY24F	FY25F	FY26F	FY27F	FY28F	FY29F	FY30F	FY31F	FY32F	FY33F
Receivable Turnover (x)	-	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0

Source: Avise Analytics estimates

ii. Inventory

Based on industry trend, we have assumed an inventory turnover of 10x for the forecast period related to ProLectin-M. In case of BXT-25, since the Company would operate under the Licensee model from FY2026 onwards, hence no requirement for its inventory maintenance.

iii. Accounts Payable (AP)

For the purpose of forecasting account payables, we have assumed the same to be as high as 25% of total operating expenditure in FY23 because of the expenses involved in the drugs development and clinical trials procedure. We expect this level to gradually decline to ~7% by FY26 once the Company reaches commercialization stage and stay at this level during the rest of the forecast period.

Accounts Payables (as a % of OpEx)

PARTICULARS	FY23F	FY24F	FY25F	FY26F	FY27F	FY28F	FY29F	FY30F	FY31F	FY32F	FY33F
Accounts Payables	25.2%	12.2%	9.2%	7.2%	7.2%	7.2%	7.2%	7.2%	7.2%	7.2%	7.2%

Source: Avise Analytics estimates

➢ Free Cash Flow to the Firm (FCFF)

Post commercialization in FY26, we estimate the Company to maintain a strong and expanding free-cash-flow generating profile with the resulting cash increases being sufficient to fund the future expansionary requirements. The Company's FCFF is estimated to grow at a CAGR of ~15% between FY2026-2033 and reach $56.7 million by FY2033.

PARTICULARS ($ in M)	FY26F	FY27F	FY28F	FY29F	FY30F	FY31F	FY32F	FY33F
FCF	21.12	23.38	25.15	26.23	34.43	42.54	50.00	56.46
Planned Capex	0.03	1.83	1.96	1.57	2.04	1.70	1.96	2.18
Working Capital (WC)	5.28	5.47	5.85	6.44	8.66	10.28	12.06	13.55
Change in WC requirements	***3.16***	***0.18***	***0.39***	***0.59***	***2.21***	***1.62***	***1.78***	***1.47***

Source: Avise Analytics estimates

FINANCIAL PROJECTIONS ASSUMPTIONS SHEET *(contd.)*

➢ Capital Structure:

i. Debt

We expect the Company to raise $1.5 million and $0.5 million, through issue 1-year convertible notes (bearing 6% interest rate), in FY2023 and FY2024 respectively to fund its requirement ProLectin-M's drug development and clinical trials. Post drug commercialization in FY2024, we expect the Company to remain debt-free during the rest of the forecast period generating sufficient free cash flows to meet its capex and working capital requirements internally.

ii. Equity

We have also assumed fresh equity raise of $2.4 million in FY2023 to support the drug development and clinical trials. We do not expect any further capital raise following the drug commercialization from FY2024 onwards.

Following fresh capital raising through issue of equity shares in FY2023, conversion of convertible notes during FY2023-FY2025 and exercise of stock options under the Company's stock option plan, we expect the number of equity shares outstanding to increase from 106.3 million in FY2021 to 134.9 million by FY2033.

➢ WACC for DCF Valuation Methodology:

For the purpose of arriving at cost of capital, we have adopted weighted average cost of capital (WACC) approach:

i. Risk premium:

We have used S&P Biotechnology Select Industry Index (Ticker: SPSIBI) Index as best proxy of the market index. For the purpose of arriving at risk premium, we have considered 10-years return on index.

ii. Risk free rate:

We have used 10-year US Treasury rate. Source: CNBC.com

Iii. Beta:

0.80. To calculate Beta, we have first arrived at the mean of unlevered Beta of the selected 4 peer company's stock and re-levered it based on company's leverage ratio. *(Source: Company filings, Yahoo Finance)*. We have further adjusted the Company's cost of equity by net 100 bps to reflect its company specific risk premium and by another 100 bps to reflect the small business risk premium.

iv. Terminal growth rate *(assumed)*:

4% p.a.

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