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Novan, Inc. (NOVN - NASDAQ)

NO Better Way to Treat Molluscum

Based on our DCF model and a 15% discount rate, Novan is valued at approximately $4.00 per share. Our model applies a 50% probability of ultimate approval and commercialization for SB206 for molluscum contagiosum. The model includes contributions from the United States and Japan.

Current Price (6/12/2020)	$0.41
Valuation	**$4.00**

INITIATION

Novan is a research and development company which employs nitric oxide (NO) to address a number of indications for a variety of skin conditions including molluscum contagiosum (MC), acne, dermatitis, psoriasis, warts and HPV. Novan uses its Nitricil technology to efficiently deliver NO to desired locations and release it at a controlled rate. Novan's lead candidate, SB206 will pursue a confirmatory Ph3 trial later this year for MC. SB206 and other Novan compounds store NO in large polymer macromolecules which allows for stable and druggable NO. Additional Nitricil compounds are in clinical and preclinical stages of development for other skin conditions. However, Novan is solely focused on developing SB206 due to funding limitations.

We expect pivotal trials for SB206 to generate registrational data for MC by 2021 followed by the submission of an NDA if data are supportive. Our valuation assumes a 2022 regulatory approval and 2023 commercialization of SB206 in the US. Partner Sato will advance the candidate through the regulatory and commercialization process in Japan and we anticipate a 2023 regulatory submission in that jurisdiction followed by a 2024 launch.

SUMMARY DATA

52-Week High	**3.72**
52-Week Low	**0.22**
One-Year Return (%)	**-83.9**
Beta	**-0.28**
Average Daily Volume (sh)	**8,417,928**
Shares Outstanding (mil)	**75.5**
Market Capitalization ($mil)	**30.9**
Short Interest Ratio (days)	**0.22**
Institutional Ownership (%)	**9.83**
Insider Ownership (%)	**18.2**
Annual Cash Dividend	**$0.00**
Dividend Yield (%)	**0.00**
5-Yr. Historical Growth Rates	
Sales (%)	**N/A**
Earnings Per Share (%)	**N/A**
Dividend (%)	**N/A**
P/E using TTM EPS	**N/A**
P/E using 2020 Estimate	**N/A**
P/E using 2021 Estimate	**N/A**
Zacks Rank	**N/A**

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

ZACKS ESTIMATES

Revenue

(In millions of USD)

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2019	$1.1 A	$1.1 A	$1.3 A	$1.4 A	$4.9 A
2020	$1.2 A	$1.2 E	$1.2 E	$1.2 E	$4.9 E
2021					$5.1 E
2022					$4.5 E

Earnings per Share

	Q1	Q2	Q3	Q4	Year
2019	-$0.27 A	-$0.69 A	-$0.32 A	$0.11 A	-$1.17 A
2020	-$0.17 A	-$0.11 E	-$0.08 E	-$0.08 E	-$0.39 E
2021					-$0.17 E
2022					-$0.17 E

INITIATING COVERAGE

We are initiating coverage of Novan, Inc. (NASDAQ: NOVN) with a current valuation of $4.00 per share. This present value is based on our estimates for a successful Phase III confirmatory trial, expected to yield results in 2021 and the subsequent launch of SB206 in selected geographies. Novan is currently pursuing an indication in molluscum contagiosum (MC), a contagious skin condition that generally affects young children. Novan recently completed two Phase III trials for its lead candidate in the disease. While the results were directionally correct, the primary endpoint was not statistically significant. We believe that a new trial with more observations, a modified design and better training can generate a statistically significant result for this unmet need. Novan has a broad portfolio of other candidates, including five other clinical stage assets. However, given the company's singular focus on advancing SB206 and finite availability of capital, other projects are on hold.

Novan's Nitricil technology is able to suspend NO in a silica-based polymeric macromolecule; the polymer is then formulated into an alcohol gel, silicone gel or ointment until ready for use. When the active gel is combined with its companion hydrogel, the water in the mixture cleaves the NO from the macromolecule to act as an anti-bacterial, anti-viral, anti-fungal and anti-inflammatory in target tissue. Preclinical and clinical work has demonstrated efficacy against *acne vulgaris*, MC and *tinea pedis* among other indications. It is thought that NO's mechanism of action is able to exact its anti-microbial action through the inhibition of DNA replication, disruption of viral protein production and nitrosative and oxidative damage. The diatomic molecule is also recognized as a signaling molecule that promotes growth of immune cells and can reduce inflammation through inhibition of cytokines.

Novan offers a portfolio of indications in dermatology that take advantage of NO's therapeutic abilities. While the company had initially advanced its Nitricil technology into Phase III studies pursuing an indication in *acne vulgaris*, the current lead indication is for MC. Due to a shorter trial duration, a greater unmet need in MC and the FDA's encouragement, Novan elected to pursue MC in a pair of pivotal trials. MC was additionally an attractive target given the lack of other approved treatments. While neither of the two Phase III MC trials were able to achieve statistical significance in their primary endpoint of complete clearance, the results from these studies demonstrated a therapeutic effect from SB206 and a statistically significant improvement in subjects achieving partial clearance.

From 2% to 6% of the population are estimated to present MC each year, conservatively estimated to be about 6 million cases in the United States. There is an incidence of 6 to 7 million in key European countries and an incidence of about 2 million in Japan. While most cases of MC resolve on their own in a year, some poxvirus lesions can last for multiple years. MC is unsightly, contagious and can cause pruritus, soreness and swelling in which case treatment may be sought. When patients seek relief, treatment consists of mechanical removal, home remedies and off-label approaches. We anticipate that the population afflicted with the virus will be receptive to a safe and effective approved treatment when available.

Novan is planning to launch an additional Phase III study in MC that will serve as a confirmatory trial for the work that has already been completed. The FDA has indicated that an additional successful and statistically significant pivotal trial may be sufficient to support approval for SB206. With a relatively short treatment and observation period, we believe this trial could provide a full data set within one year of launch. In addition to the company's primary focus on MC, there are other preclinical efforts underway, which are funded or expected to be funded by government grants. We do not include a valuation component for these activities; however, we see them as complementary to the primary effort the company is pursuing in MC.

On March 31, 2020, Novan held $21.8 million in cash on its balance sheet after raising an additional ~$14 million in gross proceeds from a public, direct offering in March 2020. The funds have enabled Novan to prepare a path forward for its Phase III MC trial and work with an investment bank to secure the necessary capital to complete the trial. The company currently holds no debt other than a paycheck protection program (PPP) loan of $956,000 entered into as of April 2020. We expect Novan to consume ~$2 million in cash per month for approximately a year following the launch of its Phase III program in MC.

We anticipate that pivotal data will be available for MC by 2Q:21, followed shortly after by a new drug application (NDA) to the FDA and partner submission to the Japanese Pharmaceuticals and Medical Device Agency (PMDA) after trials in Japan have completed. While there are no current plans to do so, Novan may also pursue other partnerships to access additional markets. US and Japanese approval are anticipated in 2022 and 2023 respectively, followed by commercial launch the next year. If successful, Novan's SB206 will address an unmet need with a safe treatment for MC helping parents and children address a communicable disease.

INVESTMENT THESIS

Nitric oxide (NO) is an impressive molecule that serves a broad variety of functions in the body. The molecule is implicated in many physiological functions including cardiovascular signaling, vasodilation, waking, digestion, sexual function, sensory perception, memory recall and sleeping.[1] It also acts as an antimicrobial and anti-inflammatory agent that can address many common dermatological indications. While the effectiveness of NO has been demonstrated and recognized *in vitro* for decades, harnessing its abilities and directing the release of the reactive gas where needed has been difficult.

In response to this unmet need, Professor Mark Schoenfisch and graduate student Nathan Stasco launched an effort to combine sol-gel chemistry with NO chemistry and create a platform that would allow for the controlled release of nitric oxide. This platform was designated Nitricil. The flexible product can be placed into a gel, ointment or cream with a silicone or alcohol base and provides an adjustable NO release profile when combined with its companion water-based proton source.

With this impressive construct, Nitricil can be used to deliver a variable dose of NO to the epithelium to address a broad variety of skin lesions. These conditions include warts, human papilloma virus, psoriasis, atopic dermatitis, *tinea pedis*, acne vulgaris and Novan's lead indication, molluscum contagiosum.

The FDA hurdle required for drug approval in dermatology indications is relatively high. Two identical trials with a primary endpoint of full clearance after 12 weeks are required for approval of an MC therapy. Secondary endpoints recognize partial clearance; however, achieving them is not sufficient to warrant a new drug application (NDA). In several clinical trials, SB206 has demonstrated a therapeutic effect and we believe that statistical significance can be achieved with a sufficiently large trial.

Nitric oxide presents a unique mechanism of action and a favorable safety and scarring profile. The molecule is naturally produced by the body and is critical to a variety of physiological functions. As a component of Nitricil, the agent has been tested in approximately 3,400 patients in clinical work, with a 24 week safety assessment for the B-SIMPLE trials. Of the 700+ patients in the Phase III trials, there was only one serious treatment emergent adverse event (TEAE) in each of the SB206 and vehicle arms. TEAEs in greater than 5% of subjects were for pain and irritation and were mostly mild or moderate.

There is no standard of care for MC and for most healthy individuals, the virus clears on its own. In the population where treatment is desired, the lesions can be physically removed or oral and topical therapies can be administered. Some of the more common topical approaches include the use of cantharidin, ZymaDerm and imiquimod; however, none have been approved for treatment for MC and demonstrated consistent effectiveness in trials. These approaches also have side effects, including pain and severe skin reactions, highlighting the need for a tolerable and effective treatment.

The prevalence of MC is estimated to be from 1.6% to over 15%, with the low end of the range appropriate for the broad population in dry climates and the higher end of the range more applicable to children in humid areas. Based on the wide variety of sources available, we see a fair estimate of an MC population of around six million in the United States and from 2 to 3 million in Japan. We anticipate that the availability of an approved, effective and safe treatment may increase the number of diagnoses and the addressable population could be larger. While a portion of the addressable market will prefer to wait it out, there will be a significant number of patients that will seek treatment given the availability of an approved medicine.

We adopt a conservative approach and anticipate SB206 to have pricing competitive with other prescribed skin treatments. We expect a discount to this level in Japan. While our target price is generated based solely on SB206 in the US and Japan, the demand for treatment of MC has a much broader geographical scope. Novan also has an impressive portfolio addressing other dermatology indications which are in varying stages of development. We will reflect value for these opportunities when Novan resumes their pursuit.

[1] Hirst, D., Robson, T. Nitric oxide physiology and pathology. Methods Mol Biol. 2011;704:1-13. doi: 10.1007/978-1-61737-964-2_1.

Key reasons to own Novan shares:

- **Phase III asset to address an unmet need in MC**
- **MC presents a large addressable market with no approved therapies**
- **SB206 statistically significant (p=0.038) on primary endpoint using integrated trial data**
- **Nitricil presents multiple mechanisms for therapeutic effect**
  - **Anti-viral**
  - **Anti-bacterial**
  - **Anti-inflammatory**
  - **Anti-fungal**
- **Broad portfolio of dermatology indications in clinical development**
  - **Acne Vulgaris**
  - **Tinea Pedis**
  - **Genital Warts**
  - **Others**
- **Favorable drug safety profile with no reported drug-related serious adverse events**
- **Intellectual property protection until 2035 for SB206**
- **North American rights to intellectual property**
- **Partner pursuing commercialization in Japan**
  - **Rights to milestones and royalties**

In the following sections we review the nitric oxide (NO) molecule, Nitricil technology and SB206. A review of molluscum contagiousum is presented along with discussion of the disease's prevalence, treament and risk factors. We report on relevant preclinical and clinical data, trial design and development history for SB206 in MC and provide a summary of other treatments for the condition. We expect first sales in 2022 after a favorable trial outcome and successful submission of an NDA. Following an in-depth discussion of our model assumptions, we provide an appraisal of Novan's valuation at $4.00 per share. SB206 may prove to serve an unmet need for patients with MC, providing a safe and effective treatment for this common childhood virus.

Nitric Oxide

Nitric Oxide (NO) is a colorless gas and one of the primary oxides of nitrogen. It is a diatomic molecule that possesses a free radical, indicating an unpaired electron. It is unstable, will decompose into N_2 and O_2 or other inactive metabolites such as nitrite and nitrate and has a half-life of 0.09 to just over two seconds[2] depending on the concentration of oxygen and availability of NO scavengers. The diatomic molecule has critical signaling functions in humans and animals, transmitting signals to cardiovascular, nervous and immune systems. In nature, NO is created through lightning or high temperatures. It is also a pollutant created by combustion from automobiles and other combustion engines.

Exhibit I – Nitric Oxide Molecule With Unpaired Electron[3]

The molecule is synthesized by the body from the amino acid L-arginine via the enzyme nitric oxide synthase. In the human body, most NO is synthesized in the endothelium where it functions as a vasodilator. The endogenous gas also regulates the cardiovascular system, respiratory tract, musculoskeletal system, cellular function, immune system, nervous system and other functions.

Prior to the 1970s, NO was not recognized as an important molecule in human physiology but rather as a contributor to pollution and a byproduct of cigarette smoke. However, in the late 1970s and 1980s, work by several scientists found that the molecule was endogenous to the body and has numerous physiological functions dilating blood vessels, contributing to immune response, facilitating erection[4] and supporting long-term memory. This work led to recognition of nitric oxide in 1992 as Molecule of the Year by the American Association of Advancement of Science (AAAS). And just a few years later, in 1998, three scientists[5] were awarded the Nobel Prize in Physiology or Medicine for discoveries related to NO as a signaling molecule in the cardiovascular system.

The molecule has been further recognized as contributing to destroying harmful microorganisms, regulating inflammation, revitalizing tissue, preventing clotting and eradicating cancer cells. Additionally, there is evidence that NO inhibits the NLRP3[6] inflammasome thereby suppressing pro-inflammatory cytokines.[7,8]

Multiple Therapeutic Effects

There is data supporting NO's function as an anti-viral, anti-bacterial, anti-fungal and anti-inflammatory. The molecule provides multiple modes of action that can address conditions such as acne and its underlying bacterial and inflammatory drivers, HPV and MC which are viral in nature and atopic dermatitis and psoriasis which are inflammatory in nature.

NO is able to easily penetrate cells due to its small size and hydrophobicity. Once inside the cell, the molecule disrupts the production of viral proteins thereby preventing a virus from replicating. For example, in the HPV-18 virus, NVN1000 is able to interfere with E6 and E7 oncoprotein functions. It is able to inhibit DNA replication by inactivating ribonucleoside diphosphate reductase and inhibit DNA polymerase delta activity *in vitro* via S-nitrosylation. In a 2019 research piece,[9] *in vitro* research demonstrated the ability of NVN1000 to inhibit HPV-18

[2] Thomas, D., *et al.* The biological lifetime of nitric oxide: Implications for the perivascular dynamics of NO and O_2. Proceedings of the National Academy of Sciences, November 2000.
[3] Source: American Chemical Society, Molecule of the Week, February 4, 2013. acs.org
[4] Leading to the development of PDE5 inhibitors, a multi-billion dollar class of drug for erectile dysfunction and the very well-known Viagra.
[5] Robert F. Furchgott, Louis J. Ignarro and Ferid Murad were awarded the 1998 Nobel Prize in Physiology or Medicine for their discoveries concerning NO as a signaling molecule in the cardiovascular system.
[6] NOD-, LRR- and pyrin domain-containing protein 3. (nucleotide-binding oligomerization domain-like receptors (NOD); leucine-rich repeats (LRR).
[7] Mao, K. *et al.* Nitric oxide suppresses NLRP3 inflammasome activation and protects against LPS-induced septic shock. Cell Res. 2013 Feb;23(2):201-12. doi: 10.1038/cr.2013.6. Epub 2013 Jan 15.
[8] Hernandez-Cuellar, E., *et al.* Cutting Edge: Nitric Oxide Inhibits the NLRP3 Inflammasome. J Immunol December 1, 2012, 189 (11) 5113-5117; DOI: https://doi.org/10.4049/jimmunol.1202479
[9] Banerjee, N.S., *et al.* NVN1000, a novel nitric oxide-releasing compound, inhibits HPV-18 virus production by interfering with E6 and E7 oncoprotein functions. Antiviral Research Volume 170, October 2019, 104559.

amplification and suppress capsid protein synthesis. These results were supported by clinical results in warts in a Phase II trial of SB206 (NCT02462187).

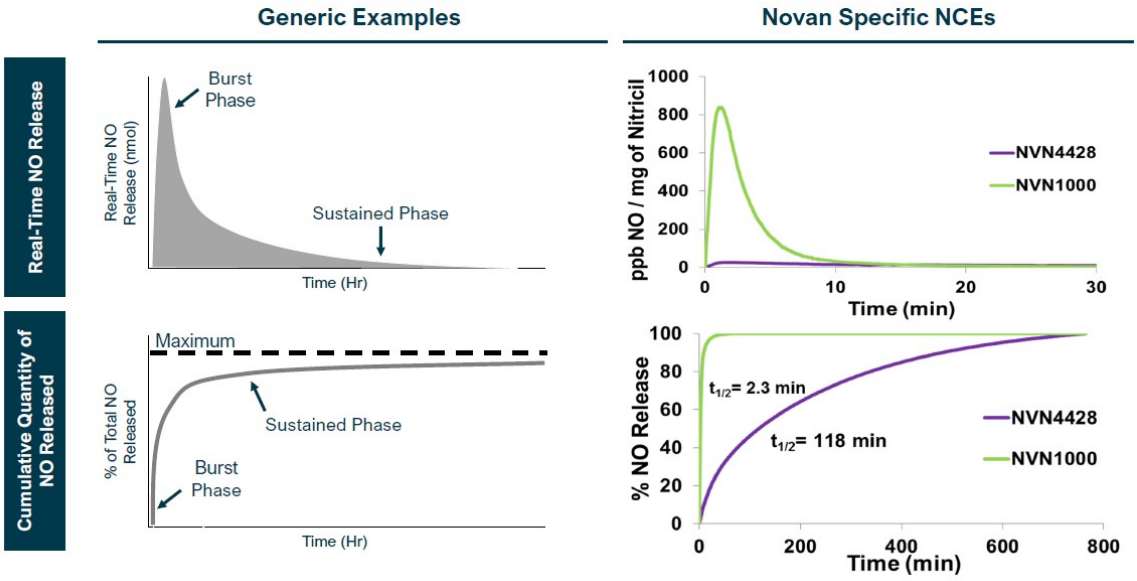
Nitric oxide has demonstrated microbicidal abilities through its capacity to cause oxidative and nitrosative damage. NO can alter DNA, inhibit enzyme function and induce lipid peroxidation providing an attractive profile conducive to killing microbes.[10] NO produces bactericidal reactive oxygen species and reacts with metal centers and thiols to inhibit bacterial respiration, DNA replication and critical metabolic pathways. In a number of *in vitro* and *in vivo* models, Nitricil was able to destroy over 90 to 99% of bacteria. The oxidative stress created by the presence of NO can also serve as a fungicide. Other fungi-inhibiting mechanisms include NO's direct damage to DNA, lipid peroxidation, enzyme inactivation and indirect activity via upregulation of macrophage phagocytic activity.[11]

The molecule's anti-inflammatory properties are more complex and function by regulating the secretion and balance of Th1 and Th2 or suppression of various interleukins such as IL-4 and IL-13. NO can also modulate Th17 cells which produce IL-17. One of the pathways thorough which NO is thought to work is via the NLRP3 inflammasome which is implicated in a variety of diseases including gout, diabetes, Crohn's disease and atherosclerosis.[12] By inhibiting this pathway, production of IL-4, IL-5 and IL-13 is curbed.

Nitricil Technology

Nitricil is a co-condensed silica-based macromolecule which is able to covalently store nitric oxide and prevent it from decomposing into other oxides of nitrogen. The platform provides a nanoparticle delivery system that contains a nitric oxide releasing macromolecule consisting of a polysiloxane[13] (silicone-oxygen) backbone and covalently bound N diazeniumdiolate nitric oxide donors. Novan has designated this construct as berdazimer sodium or NVN1000. NVN1000 is able to stably suspend NO and release it when mixed with a hydrogel. It can be modulated to provide a desired release profile of either a burst or steady delivery of drug.

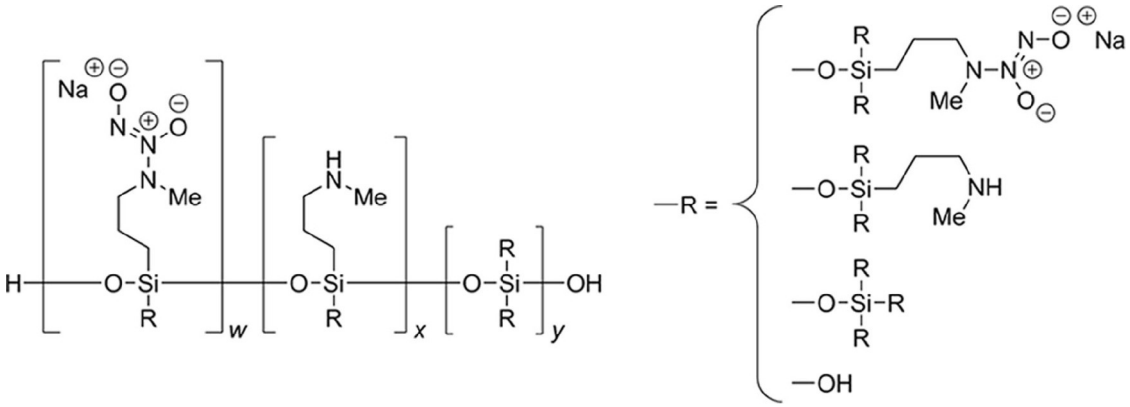
Exhibit II – NVN1000 and NVN4428 Release Profiles[14]



NVN1000 and its active moiety, NO, provide localized immunity against foreign organisms by acting both as a short-lived immune modulator and a direct broad-spectrum antimicrobial agent. While NO is a common molecule and easily manufactured, the development of therapies using it were limited by the ability to deliver the agent to the site of infection and inflammation. This is due to the short half-life of NO, which is in the span of seconds where in the atmosphere NO reacts in the presence of oxygen and converts to nitrogen dioxide ($2NO + O_2 \rightarrow 2NO_2$).

[10] Schairer, David; *et al.* The potential of nitric oxide releasing therapies as antimicrobial agents. Virulence. 2012 May 1; 3(3): 271–279.
[11] Mordorski, B., *et al.* Topical nitric oxide releasing nanoparticles are effective in a murine model of dermal Trichophyton rubrum dermatophytosis. Nanomedicine: Nanotechnology, Biology and Medicine Volume 13, Issue 7, October 2017, Pages 2267-2270
[12] Mao, K. *et al.* Nitric oxide suppresses NLRP3 inflammasome activation and protects against LPS-induced septic shock. Cell Res. 2013 Feb; 23(2): 201–212.
[13] Polysiloxanes are frequently used for medical applications and are stable and unreactive. They are hydrophobic and have a low moisture uptake.
[14] Source: Novan April 2020 corporate presentation. NVN4428 is another Nitricil product with a distinct release profile that is not discussed here.

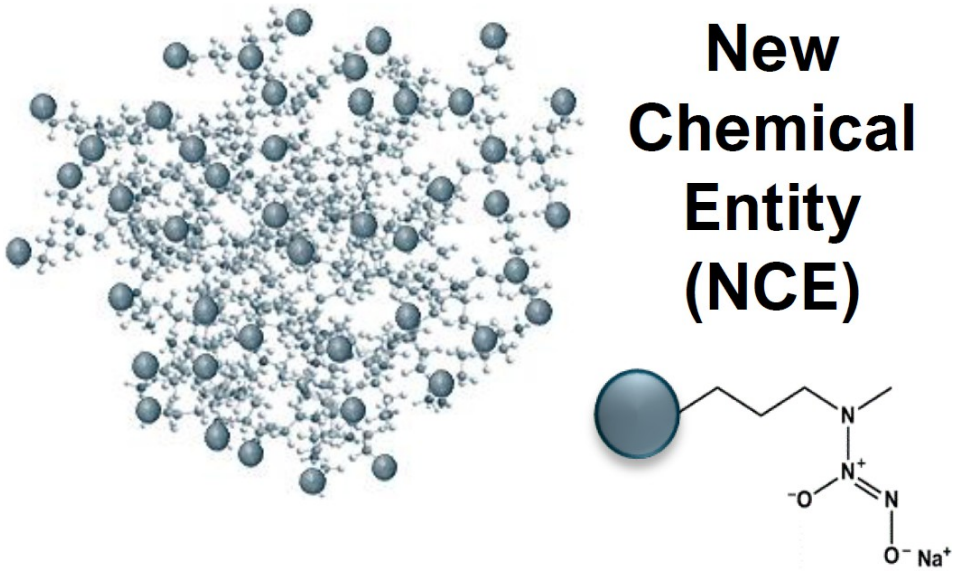
Exhibit III – Berdazimer Sodium (NVN1000) Chemical Structure[15]



SB206

SB206 is the combination of an alcohol-gel containing the nitric oxide-storing macromolecule and a hydrogel. The berdazimer sodium or NVN1000 macromolecule is composed of silica-based polymers which can covalently bind NO. It is an alcohol-based polymer with approximately 15% of its weight comprised of NO formulated in anhydrous compositions. Its companion, pH-buffered hydrogel promotes the release of NO from the macromolecule through the contribution of a water-based proton source and resulting hydrolysis. The water attacks the nitrogen (N) on the linker chain and breaks off the NO dimer which then yields two molecules of NO.

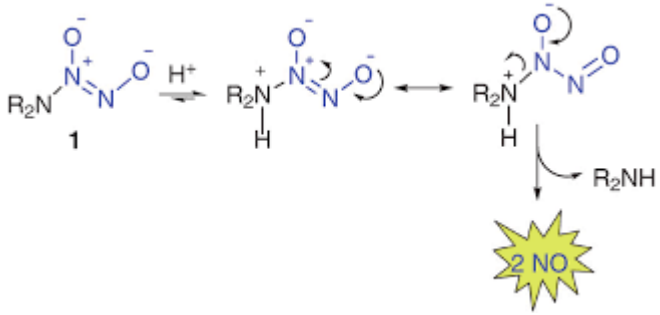
Exhibit IV – Berdazimer Sodium Macromolecule and 2NO Molecule[16]



When the NO in SB206 permeates the skin and the lesion, it disrupts the manufacture of proteins in cells that are critical for viral replication. During the course of treatment, the presence of NO eradicates the virus and allows the skin to heal.

[15] Stasko, N. *et al.* Nitric Oxide-Releasing Macromolecule Exhibits Broad-Spectrum Antifungal Activity and Utility as a Topical Treatment for Superficial Fungal Infections. Antimicrobial Agents and Chemotherapy Jun 2018, 62 (7) e01026-17; DOI: 10.1128/AAC.01026-17
[16] Source: Novan April 2020 corporate presentation

Exhibit V – Hydrolysis of Nitrogen Based Linker Releasing NO[17]



Administration of SB206 requires the application of the berdazimer sodium alcohol gel in combination with the pH buffered hydrogel. The mixing of the NO-containing alcohol gel with the hydrogel starts the reaction to release the NO according to the desired release profile. For SB206, the source of anhydrous NO comes from the high dose alcohol gel which is combined with an aqueous proton source activator, the strongly buffered water-based gel.

Exhibit VI – Application of SB206 to MC Lesions[18]

Molluscum Contagiosum

Molluscum contagiosum (MC) is an infection caused by the molluscum contagiosum virus from the *poxviridae* family. It appears as a rash and bumps on the skin that are itchy or sore to the touch, ranging from 3 to 5 mm in diameter. The lesions can appear on any part of the body and generally clear up in about a year. However, in some cases, evidence of the virus can last longer, especially if the patient is immunocompromised. The virus is highly contagious, and frequently passed among children, especially if they participate in activities such as swimming and contact sports, where there is skin to skin exposure. There is also a higher prevalence of the infection in crowded, warm and humid climates.

The virus is located in the top layer of the skin and is usually localized. Individual lesions frequently clear up in a few months; however, for complete clearance it generally takes a year as reinfection may occur. Some cases last up to five years and in patients that are human immunodeficiency virus (HIV) positive, the disease is prolonged with lesions growing to 10 – 15 mm is diameter.

Exhibit VII – Molluscum Contagiosum[19]

[17] Source: Biswas, D, *et al.* Nitrous oxide as a primary product in base-mediated β-elimination reactions of diazeniumdiolated benzylamine derivatives. Chem Commun (Camb). 2012 Jun 14; 48(47): 5931–5933.
[18] Source: Novan Presentatation, April 22, 2020.
[19] Source: Centers for Disease Control and Prevention Website. Molluscum Contagiosum, accessed April 2020. https://www.cdc.gov/poxvirus/molluscum-contagiosum/index.html

Incidence/Prevalence

The incidence and prevalence of MC ranges widely depending on source. Globally there are estimated to be about 122 million cases[20] and in the United States, it is estimated that there are ~6 million cases.[21,22] Many sources find incidence rates from 2 – 10%, with children falling at the high end of this range.[23] A literature review conducted by Olsen, *et al.*[24] found annual incidence from 3 – 15% in children. A global study published in the Lancet found a global prevalence of 1.78%.[25,26] Based on the broad number of studies, we estimate an overall incidence of 1.6% to 2.0%, with the lower end more appropriate to dryer, lightly populated regions that skew older.

MC is most common in children 14 and under and even more common in those aged one to four. The virus also appears in immunocompromised individuals that present low clearance rates. Atopic eczema is also common in children with MC[27] and this condition increases the risk of contracting MC.

Treatment

Molluscum will resolve by itself in most cases and a majority of patients wait it out. In about half of cases, clearance can take over a year and patients in this group may seek treatment. The lesions are unsightly, sometimes painful and pruritic, and the virus can be transmitted to others. In many cases, patients and their caregivers want them removed for cosmetic reasons and to prevent their spread either to self through auto-inoculation or to others. There is consensus that MC should be treated in populations with extensive disease and secondary complications.[28]

There are no FDA approved medications for MC; however, there are numerous treatments that are employed by dermatologists including mechanical, chemical, immunomodulatory and antiviral methods of care. The most common approach is removal through the use of cryotherapy or curettage. While these procedures have been shown to reduce the duration of the disease, they have side effects that include pain, blistering, scarring, pigmentation differences and bleeding. Laser treatment is also used. Chemical approaches seek to induce an inflammatory and immune response to the virus.

Ycanth, based on cantharidin, is used by some physicians as a blistering agent to remove the MC lesion. Verrica Pharmaceuticals (VRCA) has submitted an NDA for Ycanth and been given a target action date in July 2020. While Ycanth appears to be effective, the blister that results from application of the product may leave a scar. Potassium hydroxide is another chemical approach; however, it has not been evaluated in placebo controlled trials. Immunomodulatory treatments attempt to stimulate the immune system to clear the virus. Studies evaluating one of the leading approaches in this category, imiquimod, had mixed results and a higher incidence of adverse events including pain, blistering, scars and pigment changes. Other candidates in this category include oral cimetidine, interferon alfa, candidin, and diphencyprone. Anti-viral treatments have been administered *ad hoc* including cidofovir and acyclovir. However, these products are not being pursued in large clinical trials.[29]

The off-label and homeopathic approaches that are commonly used have limited support for their efficacy and can elicit a variety of unpleasant side effects. Below we provide a list of treatments for MC that are also used for other skin ailments such as acne or warts. Despite some signs of safety and efficacy in small, investigator-run clinical trials, none of the research on the listed products has met the rigors of a large, controlled study with the exception of Verrica's cantharidin. Many of the approaches below present a variety of side effects ranging from stinging, burning and pain to scarring, bleaching and blistering. We have also included two antiviral approaches which have been used in small trials for patients with immune deficiencies.

[20] Badri, T. Gandhi, G.; Molluscum Contagiosum.
[21] Olsen, JR, *et al.* Epidemiology of molluscum contagiosum in children: a systematic review. Fam Pract. 2014 Apr;31(2):130-6. doi: 10.1093/fampra/cmt075. Epub 2013 Dec 2.
[22] Global Molluscum Contagiosum Epidemiology Forecast to 2028. Research and Markets. https://www.businesswire.com/news/home/20191216005378/en/Global-Molluscum-Contagiosum-Epidemiology-Forecast-2028--
[23] Guan, H. *et al.* A Novel Target and Approach for Identifying Antivirals against Molluscum Contagiosum Virus. Antimicrob Agents Chemother. 2014 Dec; 58(12): 7383–7389.
[24] Olsen, J. *et al.* Epidemiology of molluscum contagiosum in children: a systematic review. Family Practice, Volume 31, Issue 2, April 2014, Pages 130–136,
[25] Vos, T. *et al.* Years lived with disability (YLDs) for 1160 sequelae of 289 diseases and injuries 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet. 2012 Dec 15; 380(9859): 2163–2196.
[26] MC lasts for about a year, therefore we estimate that prevalence and incidence are similar.
[27] Olsen, J., *et al.* Molluscum contagiosum and associations with atopic eczema in children: a retrospective longitudinal study in primary care. Br J Gen Pract. 2016 Jan; 66(642): e53–e58.
[28] Leung, AKC, *et al.* Molluscum Contagiosum: An Update. Recent Pat Inflamm Allergy Drug Discov. 2017;11(1):22-31.
[29] Meza-Romero R, Navarrete-Dechent C, Downey C. Molluscum contagiosum: an update and review of new perspectives in etiology, diagnosis, and treatment. Clin Cosmet Investig Dermatol. 2019;12:373-381 https://doi.org/10.2147/CCID.S187224

Exhibit VIII – Competing Products Used for MC[30]

Generic Name	Class	Type
Trichloroacetic acid	Chemical	Acid peel
Cimetidine	Immunomodulator	Oral H2 receptor antagonist
Interferon alfa	Immunomodulator	Proinflammatory cytokine
Candida antigen	Immunomodulator	Intralesional immunotherapy
Diphencyprone	Immunomodulator	Topical immunomodulator
Cryotherapy	Mechanical	Freezing
Curettage	Mechanical	Scraping
Laser Therapy	Mechanical	Pulsed dye laser
Podophyllotixin cream	Chemical	Topical Therapy
Salicylic acid	Chemical	Desquamation agent
Potassium hydroxide	Chemical	Keratolytic agent
Tretinoin	Chemical	Irritant
Cantharidin	Chemical	Blister agent
Imiquimod	Immunomodulator	Agonist of TLR7
ZymaDerm	Homeopathic	Multiple
Tea tree oil	Antiseptic	Antiseptic
Iodine	Antiseptic	Antiseptic
Cidofovir	Antiviral	Nucleotide Analog
Acyclovir	Antiviral	Nucleoside Analog

Risk Factors & Symptoms

MC is common, especially in children. Subjects with existing conditions such as HIV or atopic dermatitis are particularly vulnerable to the virus and in the former, lesions may be substantially larger compared to those in individuals with healthy immune systems. Warm, humid climates with high population density also show a higher prevalence of MC. The infection is also associated with swimming and sharing of towels and is more common in athletes participating in sports where there is skin to skin contact such as wrestling. It is also a sexually transmitted disease and can be spread through intimate contact.

Research and Development

Preclinical Work

During a discussion with the FDA in an end-of-Phase II meeting regarding the pursuit of NO for genital warts, there was mutual interest between Novan and the agency to pursue an expansion of the SB206 program into MC. At the time of this meeting in 2017, there were multiple competitors developing products for Novan's most advanced candidate in acne that reduced the attractiveness of the space and increased the regulatory hurdle for approval. These factors shifted the balance towards MC and in December 2017, Novan submitted an investigational new drug application (IND) to begin a Phase II trial using SB206 for the treatment of MC.

Additional support for pursuing MC was based on favorable pre-clinical and clinical data in related skin afflictions and encouraging research for treating MC with NO. NO had inhibited viral replication in both human papillomavirus (HPV)[31] and herpes simplex virus (HSV)[32] and other single-stranded RNA viruses. The inhibition in HPV was hypothesized to extend to other double-stranded DNA viruses such as the MC virus. A 1999 study by Ormerod *et al.*[33] demonstrated effective treatment of molluscum using a topical acidified nitrite, nitric oxide liberating cream. The study highlighted the antiviral effects of NO and its ability to inhibit viral replication by nitrosylating viral structural proteins. The 30 person study achieved a cure rate of 75% in the active arm compared to 21% in the control arm with significance at the 1% level. This small but supportive study provided additional impetus for Novan to pursue a larger and more rigorous effort.

[30] Source: Author's own work
[31] Banerjee, S., *et al.* NVN1000, a novel nitric oxide-releasing compound, inhibits HPV-18 virus production by interfering with E6 and E7 oncoprotein functions. Antiviral Research 170 (2019) 104559.
[32] Croen, KD. Evidence for antiviral effect of nitric oxide. Inhibition of herpes simplex virus type 1 replication. The Journal of Clinical Investigation. June 1, 1993.
[33] Ormerod, A. *et al.* Molluscum contagiosum effectively treated with a topical acidified nitrite, nitric oxide liberating cream.

Phase II Trial for MC

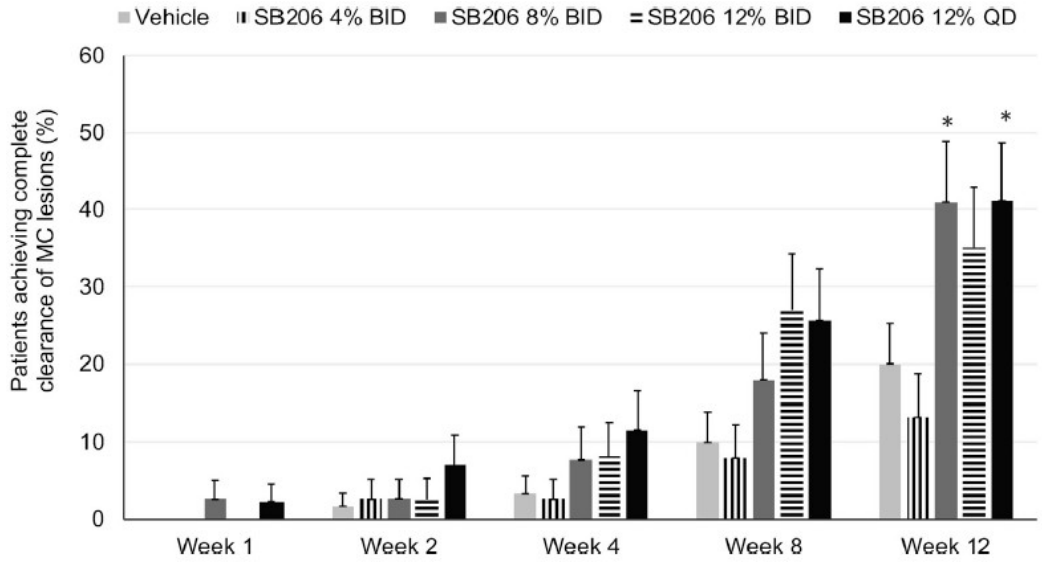
In 2018, the company announced dosing of the first patient in a Phase II (NCT03436615) trial to evaluate topical NO for the treatment of MC. The trial was a multi-center, randomized, double-blind, vehicle controlled, ascending dose study measuring the efficacy, safety and tolerability of SB206. 256 subjects were enrolled for 12 weeks in a 3:1 active to placebo ratio. The dose-finding study evaluated multiple cohorts for 4%, 8% and 12% concentrations of SB206 applied to the lesions.

Patients enrolled were a minimum of 2 years of age and presented from 3 to 70 MC lesions at baseline. Individuals with immunosuppressive conditions, MC in the periocular area or genitals or other complicating conditions were excluded from the study. Candidates must not have used a variety of other identified treatments within two weeks of baseline.

The primary endpoint for the study was lesion clearance at 12 weeks. If complete clearance occurred prior to 12 weeks, it must have been maintained at week 12. Secondary endpoints include proportion of subjects achieving complete clearance at each visit, time to reach complete clearance, proportion of subjects achieving 75% reduction in lesions and change in number of lesions.

Results for the Phase II trial were favorable with 20.0% of placebo patients achieving complete clearance in the active arms compared with 13.2% for the 4% BID arm, 41.0% for the 8% BID arm, and 35.1% for the 12% BID arm. The once-per-day 12% arm did best with 41.9% clearance at 12 weeks. P-values at 12 weeks for arms superior to the placebo were 0.028 for the 8% concentration, 0.144 for the 12% twice per day and 0.024 for the 12% once per day.

Exhibit IX – MC Clearance for Phase II Trial[34]



The strong results of the Phase II trial supported a move to Phase III. The once-per-day 12% concentration SB206 dose demonstrated the greatest efficacy of all the arms and also presented a better safety profile as compared to the 12% twice-per-day option. On December 10, 2018, Novan announced top line results from the trial and on March 11, 2019 discussed guidance provided by the FDA at the end-of-Phase II meeting which called for the initiation of two pivotal trials to support registration.

[34] Source: Hebert, A.; *et al.* Efficacy and tolerability of an investigational nitric oxide-releasing topical gel in patients with molluscum contagiosum: A randomized clinical trial. 2019 by the American Academy of Dermatology, Inc.

Phase III Trials for SB206

Efforts to launch the trials accelerated in the spring of 2019 as Novan secured a CRO, obtained the necessary financing and launched the trial in June 2019. The trials, designated B-SIMPLE (Berdazimer Sodium in Molluscum Patients with Lesions) 1 (NCT03927716) and 2 (NCT03927703), were each multi-center, randomized, double-blind, vehicle controlled studies. Both B-SIMPLE 1 and 2 targeted the enrollment of 340[35] patients to evaluate the efficacy and safety of SB206 at 12% concentration once per day.

Patients were required to be six months of age or older and randomization was performed in a 2:1 active to placebo ratio. Protocol required that SB206 12% gel be applied once daily to all lesions for a minimum of four weeks and up to 12 weeks. Measurements were conducted at baseline, and at week 2, week 4, week 8, week 12 and a safety follow up visit at week 24. The primary endpoint of the two studies was the proportion of patients with complete clearance of MC lesions at week 12. The secondary endpoint was the proportion of patients with complete lesion clearance by week 8. Other exploratory metrics included: proportion of subjects with complete clearance at each visit, percent reduction of lesions at each visit, time to complete clearance, recurrence of MC after complete clearance and lesion scarring. Candidates that are immunosuppressed, present a significant injury, have received other MC treatments, present MC in the periocular area or other criteria were excluded from the study.

B-SIMPLE enrolled the first patient in the Phase III MC program for SB206 in June 2019 and completed the process two months later, placing a total of over 700 subjects in the trial. On the first business day of 2020, Novan reported top-line results. Neither of the primary endpoints for B-SIMPLE1 or 2 achieved statistical significance. While directionally both trials showed that patients in the SB206 arm had higher rates of clearance than the vehicle arm, the p-values for the trials were 0.375 and 0.062. The secondary endpoint for B-SIMPLE1 was also directionally correct but achieved a p-value of 0.202. B-SIMPLE2 demonstrated better results with a statistically significant p-value of 0.028 for the secondary endpoint of complete clearance of lesions by week eight; however, this was insufficient to support the filing of a new drug application (NDA).

Exhibit X – B-SIMPLE Phase III Topline, Intent to Treat Population[36]

	B-SIMPLE1			B-SIMPLE2		
	SB206 (n=236)	Vehicle (n=116)	p-value	SB206 (n=237)	Vehicle (n=118)	p-value
Primary Endpoint: Complete Clearance of All Lesions at Week 12	25.8%	21.6%	p=0.375	30.0%	20.3%	p=0.062
Secondary Endpoint: Complete Clearance of All Lesions at Week 8	15.3%	10.3%	p=0.202	13.9%	5.9%	p=0.028

Following the presentation of topline results, Novan provided additional analysis of the data to compare the intent to treat (ITT) population and the per protocol (PP) population. ITT included all subjects randomized into the study, including those lost to follow up or withdrawn from the study. This compares to the PP population that included subjects that followed the requirements of the trial, including all follow up visits.

[35] Ultimate enrollment of the intent to treat population was 352 in B-SIMPLE1 and 355 in B-SIMPLE2 and patients completing treatment were 303 and 304 respectively.
[36] Source: Novan April 2020 Corporate Presentation.

Exhibit XI – Comparison of Per Protocol and Intent to Treat Populations[37]

		B-SIMPLE1			B-SIMPLE2		
		SB206 (n=192)	Vehicle (n=109)	p-value	SB206 (n=194)	Vehicle (n=103)	p-value
PP Population[1]	Primary Endpoint: Complete Clearance of All Lesions at Week 12	31.3%	21.1%	p=0.074	36.1%	23.3%	p=0.028
		SB206 (n=236)	Vehicle (n=116)	p-value	SB206 (n=237)	Vehicle (n=118)	p-value
ITT Population[2], LOCF[3]	Primary Endpoint: Complete Clearance of All Lesions at Week 12	26.7%	21.6%	p=0.292	30.8%	20.3%	p=0.044
	Exploratory Endpoint[4]: Clearance of 95% Lesions at Week 12	28.0%	22.4%	p=0.217	33.8%	20.3%	p=0.013
	Exploratory Endpoint[4]: Clearance of 90% Lesions at Week 12	33.9%	25.0%	p=0.079	38.4%	20.3%	p<0.001
	Exploratory Endpoint[4]: Clearance of 75% Lesions at Week 12	44.5%	31.9%	p=0.028	48.5%	32.2%	p=0.004

Reasons for discontinuing treatment early were adverse events, loss to follow up and withdrawal by caregiver. Of the 18.2% and 19.8% of early departures from the trial for B-SIMPLE1 and 2 respectively, 14.4 (8.5 + 5.9) and 11.0 (5.9 + 5.1) of these percentage points were due to loss to follow up or withdrawal by subject caregiver. While we cannot know the final status of the lost patients, analysis including only the per protocol patient population materially improves the statistical significance the primary endpoint.

Exhibit XII – Study Disposition[38]

	B-SIMPLE1		B-SIMPLE2	
	SB206	Vehicle	SB206	Vehicle
Prematurely Discontinued Treatments - Reasons	**18.2%**	**5.2%**	**19.8%**	**11.9%**
Adverse Events	3.0%	0.9%	8.0%	0.8%
Lost to Follow Up	8.5%	1.7%	5.9%	8.5%
Lack of Efficacy	0.0%	0.0%	0.0%	0.0%
Physician Decision	0.0%	0.0%	0.4%	0.0%
Withdrawal by Subject Caregiver	5.9%	1.7%	5.1%	2.5%
Worsening of Molluscum	0.0%	0.0%	0.0%	0.0%
Other	0.8%	0.9%	0.4%	0.0%

Further analysis that stratifies by one or two subject household also provides additional insight into the MC populations that benefit most from SB206 therapy. When two subject households are removed from the data set, the p-value for both studies increases.

[37] Source: Novan April 2020 Corporate Presentation. Footnotes in exhibit: 1) Per Protocol (PP): all patients in the ITT population who completed the 12 week treatment period and had no significant protocol deviations that impacted the analyses of efficacy endpoints. 2) Intent to Treat Population (ITT): consists of all subjects who were randomized. 3) Last Observation Carried Forward (LOCF) method for handling missing data: all patients randomized (ITT population) and where a patient missed their Week 12 visit their last visit lesion count is included in the analysis as complete/95%/90% clearance at Week 12 4) Exploratory endpoints were pre specified in the statistical analysis plan.
[38] Source: Novan Corporate Presentation, April 2020.

Exhibit XIII – BSIMPLE Stratified by Household Type[39]

	B-SIMPLE1			B-SIMPLE2		
	SB206 n=236	Vehicle n=116	p-value	SB206 n=237	Vehicle n=118	p-value
One-Subject Household	28.7% n=181	19.1% n=89	p=0.116	29.0% n=193	16.7% n=96	p=0.025
Two-Subject Household	16.4%	29.6%	-	34.1%	36.4%	-

Novan combined data from the two pivotal B-SIMPLE trials and conducted an integrated analysis. In this consolidated analysis, SB206 demonstrated a statistically significant (p=0.038) complete clearance rate at week 12 compared to the placebo. 27.9% of the treated population were cleared compared to 20.9% of the placebo group. This gives us confidence that the anticipated B-SIMPLE4 trial should be statistically significant as it will include a greater number of subjects compared with the integrated analysis for B-SIMPLE1 and 2.

The FDA requires a high hurdle of statistical significance from two separate trials for approval and does not allow for exclusion of multiple subject households. Trial protocol requires that dropouts in the ITT population, which includes all subjects that are randomized, are counted as failures. Given that premature discontinuation of patients in the study was higher in the treated population, this requirement may distort the true effect of SB206. Cleared patients may decide the additional effort required to complete the trial was not worth it. Novan will consider all of these factors with the goal of increasing the proportion of the ITT population when designing the upcoming Phase III.

Adverse Events and Safety Profile

In both Phase II and Phase III programs, the active arms presented a greater proportion of adverse events as compared to the control arm. The safety profile for SB206 was favorable and the most common adverse events were application site pain and erythema. In the Phase III studies, 48.9% and 50.6% of subjects reported at least one treatment-emergent adverse event (TEAE) compared to 25.6% and 31.0% in the placebo arm. The majority of these events were mild or moderate. There were a total of 11 (of 472 patients or 2.3%) severe events for SB206 patients compared to 2 (of 233 or 0.9%) for the vehicle population. SB206 patients had a lower incidence of scarring during all visits compared to the control arm with 33 of 473 or 7.0% presenting scarring compared to 25 of 233 or 10.7% for active compared to vehicle population at 24 weeks.

Next Steps

The FDA required both B-SIMPLE trials to achieve statistical significance for the primary endpoint to justify the submission of a new drug application (NDA). Despite not achieving this high hurdle, a subanalysis of the data demonstrates that a larger trial could generate statistical significance. Better training could also help improve outcomes, especially for two-subject households where there is risk of re-infection by siblings or other family members.

Novan plans to move forward using B-SIMPLE2 combined with an additional confirmatory Phase III trial to support the filing of an NDA. On April 30, 2020, Novan provided details on the minutes related to the Type C meeting related to submitting an NDA for SB206 in MC. Based on their discussions with the FDA, Novan expects to pursue a trial design including 750 patients with 1:1 randomization stratified by investigator type, subjects per household and inflammation of MC lesions. Patients will be treated once-daily with SB206 12% or placebo for a minimum of four weeks and up to 12 weeks to all treatable lesions, baseline and new. The primary endpoint will be complete clearance of all lesions by week 12. Additional efforts will focus on improved patient and caregiver training to increase the proportion of per protocol patients.

Novan has sent the updated protocol to the FDA and expects to enroll the first patient in September 2020. Given the history of rapid enrollment and 12-week course of treatment, topline results should be available by late 2Q:21.

Partner Sato informed Novan that, based on the observed treatment and safety profile in the B-SIMPLE trials, they would advance the SB206 program in Japan with a Phase I trial.

[39] Source: Novan April 2020 Corporate Presentation.

Other Portfolio Candidates

Novan has several clincal candidates in its pipeline; however, the company's current clinical focus is solely on SB206 for MC. The second most advanced candidate is SB204 for *acne vulgaris*. SB204 has been investigated in two Phase II trials and two Phase III trials in acne. NO appears to be able to inhibit the NLRP3 inflammasome, decreasing the downstream release of IL-1β and IL-17. The molecule is effective against *propionibacterium acnes*. The Phase II trial in acne showed a decrease in inflammatory lesion count and SB204 was well tolerated, providing sufficent support to pursue pivotal trials. Two Phase III trials[40] were conducted with over 2,600 subjects where, in pooled analysis, SB204 had statistically significant reduction in inflammatory lesions, non-inflammatory lesions and total lesions compared to placebo. The safety profile was favorable with limited severe reactions in erythema, dryness and burning/stinging. Long-term safety in the Phase III found nasopharyngitis occuring in 3.2%, headache in 1.3%, influenza in 1.2% and upper respiratory tract infection. All other events were 0.5% or lower incidence. Of the six serious adverse events, none were considered to be related to study treatment by the principal investigator.

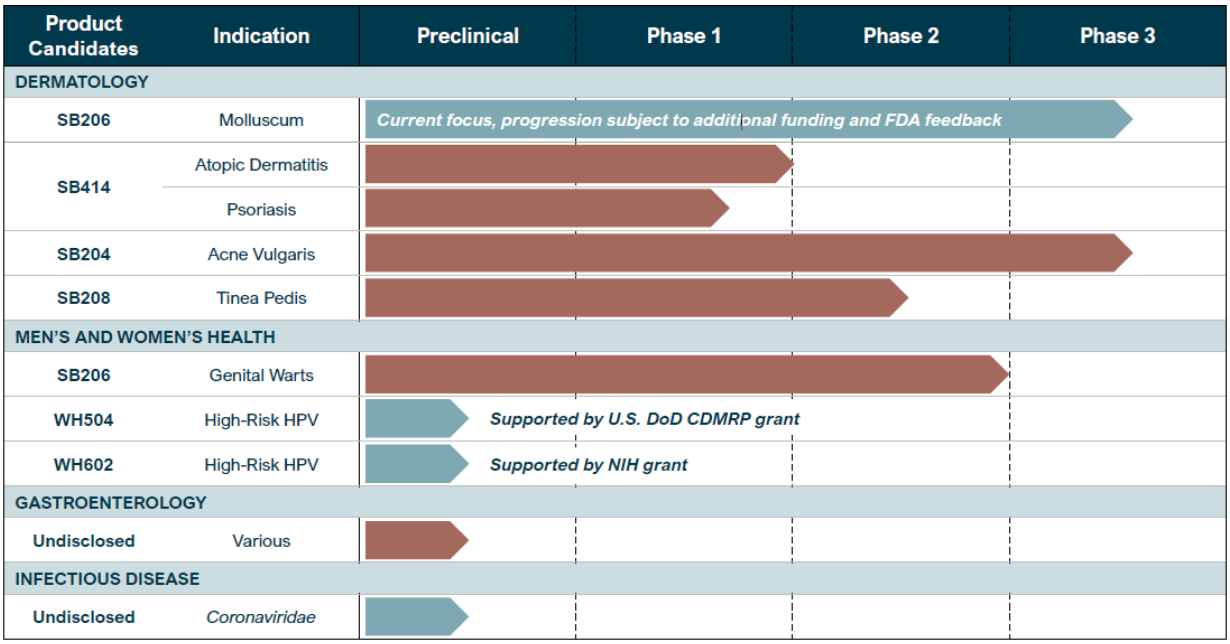
SB208 has been in clinical development targeting fungal indications and a Phase II trial in *tinea pedis* provided favorable data in 2018. The Phase II demonstrated statistically significant results in reducing dermatophytes compared to placebo with a clear dose dependent response. Further advancement of SB208 is dependent on finding a partner to help fund the registrational trials necessary for approval.

SB414 entered the clinic in pursuit of two indications: atopic dermatitis and psoriasis, targeting an anti-inflammatory indication. Two posters were presented summarizing Phase I data, concluding that SB414 was well-tolerated and presented results suggestive of efficacy. Further development is on hold pending the availability of further financing.

Novan Development Pipeline

Novan has a pipleine with nine active and inactive candidates. Two assets, SB206 for MC and SB204 for acne vulgaris, have completed Phase III studies. Other dermatology indications include atopic dermatitis and psoriasis (SB414), *tinea pedis* (SB208). The portfolio also contains several candidates for men's and women's health dominated by genital warts and HPV indications, the latter of which is supported by government grants. There is also an early stage effort to examine the use of NO in a coronavirus indication that seeks to reduce viral shedding and transmission. Due to capital constraints and the late stage of SB206, Novan has narrowed its attention and resources on launching and completing a pivotal Phase III trial for MC. Programs in light blue are active and in mauve on hold.

Exhibit XIV - Novan Development Pipeline[41]



[40] The SB204 pivotal Phase III trials conducted in acne vulgaris patients referenced above are NCT02667444, NCT02672332. One other Phase III trial was also conducted: NCT02798120.
[41] Source: Novan April 2020 Corporate Presentation.

Chemistry, Manufacturing and Control (CMC)

Historically, Novan has performed all of its own product manufacturing. The company leases a 51,000 square foot manufacturing facility connected to its corporate headquarters in Morrisville, North Carolina. As the company moves towards a more streamlined configuration, manufacturing will be outsourced. In the future, Novan will employ two contract manufacturing organizations (CMOs) that will manufacture drug substance[42] and drug product. Orion has been identified as the manufacturer of the macromolecule and will also conduct fill and finish. One other, currently-unidentified partner will provide the active pharmaceutical ingredient.

As part of evaluating an NDA, the FDA will review the manufacturing plant's process, controls and procedures prior to approval. Zacks continuously highlights the importance of good practices both internally and with partners who perform manufacturing, testing, packaging, fill and finish and other services. This emphasis is justified given the risk of regulatory agency action highlighting partner oversights and focus on partner compliance in spite of a phamaceutical product that is safe and effective.

Partners, Collaborators and Investors

In January 2017, Novan signed a license agreement with Sato Pharmaceutical Co., Ltd. to develop, use and sell SB204 in Japan for indications in *acne vulgaris*. The deal included an upfront payment of $11.0 million followed by milestone payments related to product approval in Japan, as well as sales based milestones and royalties. In October 2018, the relationship was amended with Sato to include SB206 in the development, use and sale of products for viral skin infections. This agreement also paid an upfront of $11.0 million and includes regulatory and sales based milestones and a tiered royalty structure for SB204 and SB206. Novan will function as the sole provider of Nitricil products for commercialization by Sato. In April 2020, based on the data in the B-SIMPLE program, Sato elected to advance the SB206 program in Japan in a Phase I trial.

While Novan has not discussed pursuing other partners to develop its Nitricil products outside of the United States, we do think that management will turn its focus to an upfront, milestone and royalty deal for other regions after solidifying its position in the US. Some of the more likely regions for additional partnering deals include Europe, Canada, greater Asia and Australia.

In April 2019, as Novan moved into the clinic for its Phase III study in MC, it entered into an agreement with Reedy Creek Investments which provided up to $35 million in non-dilutive capital. $25 million of the funds were availabile immediately and another $10 million would be provided upon achieving positive Phase III results for BSIMPLE1 and 2. Since the trials did not achieve stastical significance, the additional $10 was not and can not be received. In an outlicensing scenario, the agreement provides for 25% of milestones and upfronts to be paid to Reedy until the initial investment was recaptured, then 10% of SB206 sales and 20% of SB414 and SB204 sales in North America. If the product is commercialized by Novan, which is the approach we use in our model, only a low single digit royalty is owed.

Ligand Pharmaceuticals, a pharmaceutical investment portfolio company, executed a transaction with Novan, providing $12 million in non-dilutive financing to support the development of SB206 in MC. In return for the funds, Ligand will receive a tiered royalty of 7 to 10% based on North American sales of SB206 and regulatory and commercial milestones of up to $20 million.

Novan also has a common stock purchase agreement with Aspire Capital. This arrangement allows Novan to sell up to $25 million in common stock over a 30-month term, beginning August 30, 2019. A maximum of 5.2 million shares or 20% of shares outstanding, may be transacted under the agreement.

[42] The active pharmaceutical ingredient in Novan's product is berdazimer sodium or NVN1000, the silicone-based nitric oxide releasing polysiloxane macromolecule.

Intellectual Property

Novan has been granted numerous patents worldwide and has other patents pending for the Nitricil compounds. SB206 is a new chemical entity and may also qualify for pediatric exclusivity. However, we anticipate that key therapeutic use patent 10,322,081, which expires in 2035 will supersede any exclusivities and provide protection until expiration. Below we summarize Novan's key patents.

Exhibit XV – Key Novan Patents[43]

Title	Patent #	Region	Filed
Nitric oxide-releasing particles for nitric oxide therapeutics and biomedical applications	8,282,967	United States	24-Jun-11
Methods of decreasing sebum production in the skin	8,591,876	United States	14-Dec-11
Temperature controlled sol-gel co-condensation	8,937,143	United States	19-Jul-13
Nitric oxide-releasing particles for nitric oxide therapeutics and biomedical applications	8,956,658	United States	30-Aug-13
Temperature controlled sol-gel co-condensation	9,267,006	United States	8-Jan-15
Topical compositions	9,289,442	United States	19-Dec-13
Topical gels and methods of using the same	9,526,738	United States	20-Aug-10
Topical gels and methods of using the same	9,737,561	United States	16-Nov-16
Topical compositions and methods of using the same	9,855,211	United States	27-Feb-14
Topical compositions and methods of using the same	10,206,947	United States	27-Jan-15
Topical compositions and methods of using the same	10,226,483	United States	2-May-18
Topical compositions and methods of using the same	10,258,564	United States	28-Feb-14
Anhydrous compositions	10,265,334	United States	20-Oct-15
Topical antiviral compositions and methods of using the same	10,322,081	United States	10-Jul-15
Topical gels and methods of using the same	10,376,538	United States	13-Aug-19
Tunable nitric oxide-releasing macromolecules having multiple nitric oxide donor structures	10,435,357	United States	3-Jan-19

Corporate Milestones

Novan is conducting multiple clinical trials for a variety of dermatology conditions. The primary focus for the company is the launch and successful completion of a Phase III confirmatory trial for SB206 in MC. Below we list key milestones that have occurred in the last year and anticipated future events.

- Aspire Capital $25 Million Stock Purchase Agreement – August 2019
- $1.1 Million DoD Grant for WH602 (Cervical Intraepithelial Neoplasia) – September 2019
- MC Phase III Topline – January 2020
- $1.0 Million NIH Grant for WH602 (Cervical Intraepithelial Neoplasia) – February 2020
- $14 Million of Equity Offerings Closed – March 2020
- Type C Meeting Notes Received – April 2020
- B-SIMPLE4 Protocol Sent to FDA – 2Q:20
- B-SIMPLE4 First Patient Enrolled – September 2020
- B-SIMPLE4 Topline – Mid-year 2021

[43] Source: United States Patent Office (uspto.gov) and author's own work.

RISKS

All investments contain an element of risk which reflects the uncertainty of a business and what it will ultimately achieve. Some investments exhibit higher predictability, with current cash flows and established sales. These enterprises will have a lower level of perceived risk while other companies that are developing an undefined, new technology have a much higher level of perceived risk.

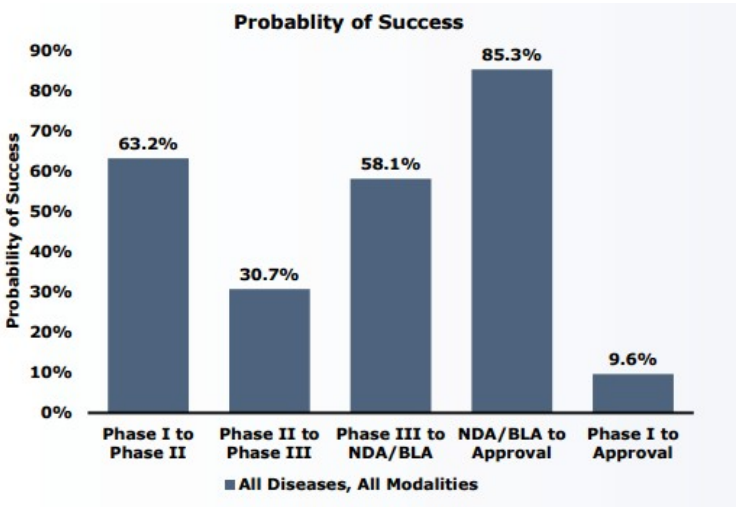
The biotechnology space includes companies at both ends of the spectrum, from mega-cap pharmaceutical powerhouses that have multiple products currently generating revenues, to small operations with a handful of employees conducting pre-clinical studies. Many of the risks faced by the large pharmaceutical companies and smaller biotechnology-focused firms are similar; however, there are some hazards that are particular to smaller companies that have not yet established themselves or their products.

For smaller early-stage companies, investing in drug development is a lengthy process. The timeframe for conducting pre-clinical research to eventually commercializing a drug can take from 12 to 15 years or even longer given market and company-specific conditions. And with, on average, only one in one thousand compounds eventually making it to the market from the preclinical stage, the risks are substantial.

Even if a company has a strong, experienced team that is developing a therapy with a high likelihood of success and a large addressable market, securing funding may be difficult. Access to financing comes and goes in cycles. During periods of improving confidence, capital may be easy to obtain; however, during a liquidity crisis or a period of heightened risk perception, even companies with bright prospects may be in trouble if they are dependent on the financial markets to fund their work. If capital is needed to sustain operations and it is not readily available, the company may be forced to suspend research and development, sell equity at a substantial discount to previous valuations and dilute earlier shareholders. A lack of funding may leave potentially promising therapies without a viable route to progress or force a company to accept onerous terms.

All drugs must navigate the regulatory approval process in the US, EU, Japan and other countries before commercialization in those regions. Success is uncertain and may take years depending upon the needs and desires of the determining authority. Substantial expense is undertaken to bring a molecule or compound through clinical trials and address all of the regulatory agencies' concerns. Companies that have a long history of research success in drug development, with opinion leaders and experts advocating for the product in the field are important factors that can help mitigate this risk. Previous success with the FDA or other regulatory agencies is another attractive attribute for a sponsor. Some accelerated pathways to approval are available such as those outlined in the Orphan Drug Act and the Breakthrough Therapy designation; however, changes in sentiment or perceived safety for pharmaceuticals drugs could change the regulatory environment to demand a more thorough process and these pathways may be extended or additional requirements may be put in place.

Exhibit XVI – Success of Phased Trials and Regulatory Approval[44]



[44]Clinical Development Success Rates 2006-2015. David Thomas, Justin Burns, John Audette, Adam Carroll, Corey Dow-Hygelund, Michael Hay.

Novan has advanced a portfolio of candidates based on its Nitricil technology. The primary indications that it has pursued have been in the field of dermatology. Generally, statistical significance is required in two identically designed trials, raising the hurdle required for approval. Additionally, many endpoints are subjective and rely on a physician's assessment of skin clearance of the targeted lesion or lesions. Novan has faced this difficulty in its Phase III trials for MC and acne vulgaris, with several of its key endpoints failing to achieve statistical significance. Despite these complications, NO has demonstrated efficacy in many studies with limited adverse side effects. While there is evidence that a larger trial can generate supportive data, approval is not guaranteed and complete response letters (CRLs) and delays to originally anticipated timelines target action are common. Novan is working with a partner for commercialization in Japan and may work with other partners in other ex-US regions. While management currently plans to commercialize SB206 in the US by using a targeted strategy to focus on high prescribing pediatricians and dermatologists, it does not have experience doing so. It is difficult for an inexperienced company to change long standing treatment and prescribing behaviors and to integrate a new product into the drug distribution system. Novan may elect to work with a larger partner with a salesforce already in place which may expose them to onerous terms if there are few competitors vying to commercialize SB206.

There are many firms competing in the dermatology space and products must compete against home remedies and off-label use of medicines approved for other indications. In MC, for example, we count approximately 20 approaches to treatment, some of which are available as over the counter medications.

Historically, Novan has used its own manufacturing facilities to produce drug product. As they pare their obligations and focus on MC, Novan is moving towards virtual company status which maintains the intellectual property and expertise inside the company and outsources manufacturing and CMC items. While this approach is more cost effective and flexible, it relies on the quality and experience of partners. Risks of poor manufacturing processes, quality control issues and product delays may postpone ultimate production of a drug if facilities are non-compliant with regulatory agency requirements. Production line availability is also a risk factor and larger customers may dominate capacity resulting in long delays to obtain new product. Despite efforts to ensure high quality, consistent and reputable partners, problems may arise and cause production delays or stoppages for drug product.

In recent years, contract research organizations (CROs) have taken on a larger role in the development of drug candidates as the complexity and cost of trials has increased. Finding appropriate populations to participate in clinical trials has become increasingly difficult due to the shift to personalized medicine and orphan indications that address only a small group of patients. This shift has increased the dependence on specialized CROs for project management and clinical monitoring services that add additional risks related to third parties.

Novan relies on multiple CROs to conduct its clinical trials. For the prior Phase III clinical trials in MC, Synteract was engaged to manage the trial. Novan has not disclosed which CRO may run the next Phase III. CROs may have multiple competing projects that are competing for limited resources which can limit their success compared to initial expectations. Small drug development companies are extremely reliant on the hard work and professionalism of their CRO partners and many times a sponsor's success or failure can rest on the efforts of this partner.

Disruptions due to the coronavirus have been global and severe; many clinical trials have been halted and delayed. Travel restrictions and reallocation of resources also affect the manufacture and distribution of drug product and availability of physicians and patients to conduct clinical trials. Hospitals where clinical trials are conducted are at risk of high demand for services related to the coronavirus drawing away resources towards the pandemic. The presence of large numbers of individuals infected with the coronavirus may dissuade patients from keeping appointments for on-site visits, negatively affecting enrollment and increasing the withdrawal rate.

Drug price inflation has gained increased attention over the last several years and has contributed to the increase in health care costs over the last decades. As new therapies have been approved, drug prices have increased over time. Increases in deductibles have been steady over the last decades and in some cases, individuals and families must cover several thousand dollars in costs before the benefits of insurance begin. Treatments for skin lesions can be either over-the-counter (OTC) and performed at home or at the physician's office. Costs can range widely from around $15 for an OTC treatment to several thousand dollars out of pocket for a combination of a doctor's visit, procedure and prescription medicine. Many treatments for dermatological conditions can be considered discretionary by patients who must balance the cost of treatment with suffering through the condition. Individuals with high deductibles or no insurance may be very sensitive to price and avoid treatments with high cost. While we have discussed a broad variety of risks above, we believe that our forecast parameters, discount rates, success probabilities and valuation metrics address these eventualities and our target price reflects an assumption of these risks faced by all biotechnology companies.

Competitors, Peers and Competing Therapies

Dermatology is a broad therapeutic area including a wide variety of medicines that range from home remedies, nutraceuticals, and off-label usage to approved pharmaceuticals. More so than in other common indications, such as cancer and cardiovascular disease, is the presence of cosmetic approaches, home remedies and off-label products for dermatology conditions. There are other treatments in development for MC including Verrica Pharma's Ycanth, Leo Pharma's Picato, and Veloce BioPharma's VBP-245. Verrica has submitted an NDA to the FDA and expects a response by July of this year. A Phase I trial was launched for Leo Pharma's Picato in HIV patients but no update has been made in several years following the launch of a Phase I trial in 2017. Veloce BioPharma launched a Phase II trial in 2017; however, the company has not provided an update on any of its efforts since 2018.

The competitive environment is favorable for a new treatment in MC. Based on our review of the data, it seems likely that Verrica's Ycanth will be approved and the subsequent commercialization of the product should expand awareness of treatment options for the condition. Ycanth uses cantharidin as its active ingredient and has been used by dermatologists for some time even though the active ingredient is difficult to source.

Nitric oxide is also in development for other indications such as cardiovascular disease by Mallinckrodt (MNK) and Bellerophon Therapeutics (BLPH). Vero Biotech provides Genosyl gas (NO) for infants with pulmonary hypertension and is seeking to expand its use to coronavirus patients. Beyond Air (XAIR) also is using NO for PAH and other respiratory diseases.

Below we highlight several of the key companies that are developing treatments similar to Novan's pursuits in the dermatology space or are using NO in a therapeutic approach.

Exhibit XVII – Peers and Competitors[45]

Ticker	Company	Price	MktCap (MM)	EV (MM)	Therapeutic Area
ABBV	AbbVie	$92.46	$136,540	$158,682	Dermatology franchise
ACRS	Aclaris	$1.40	$59	($10)	Dermatology portfolio
ALM.MC	Almirall	€ 11.99	€ 2,090	€ 2,476	Dermatology portfolio
ATNX	Athenex	$12.28	$1,002	$949	KX2-391: derm applications
BLPH	Bellerophon Tx	$12.60	$77	$70	INOpulse NO delivery for CV diseases
MNLO	Menlo Tx	$2.08	$349	$299	Dermatology: Amzeeq, FMX103, FCD105
LLY	Eli Lilly	$143.54	$137,289	$149,494	Broad dermatology portfolio
MNK	Mallinckrodt	$2.50	$211	$4,142	INOmax for PH/NO for corona
NVS	Novartis	$84.35	$193,052	$213,569	Dermatology franchise
SLGL	Sol-Gel Tech	$8.06	$164	$118	Derm: rosacea, acne, etc.
UCBJF	UCB	$98.35	$19,130	$18,591	Bimekizumab, psoriasis
VRCA	Verrica Pharma	$11.49	$297	$243	Cantharidin (VP102), NDA for MC
XAIR	Beyond Air, Inc	$6.44	$106	$90	NO for respiratory disease & PH
pvt	Boehringer Ingleheim				Dermatology franchise
pvt	Cassiopea				Acne (Ph3) warts (Ph2)
pvt	Castle Creek Bio				Gene therapy for skin disease
pvt	CoDa Therapeutics, Inc				Wound healing
pvt	FirstString Research, Inc				Broad R&D dermatology portfolio
pvt	LEO Pharma				Picato for MC, Ph1, tralokinumab
pvt	Novoteris				NO for Cystic Fibrosis
pvt	Ortho Dermatologics				Broad approved derm portfolio
pvt	Suneva Medical				Bellafil dermal filler
pvt	Veloce BioPharma				VBP-245 for MC, Ph2
pvt	VERO Biotech				Inhaled NO
pvt	ViRAZE				VIR001 for MC/Processivity factor target
pvt	ViroXis Corp				Sandalwood oil (VIR003 for MC, Ph2
NOVN	Novan, Inc.	$0.41	$31.2	$14.4	MC, acne, tinea pedis, warts, HPV

[45] Price and market capitalization data is as of June 12, 2020. Source: Zacks Research System.

MANAGEMENT PROFILES

Paula Brown Stafford, President, Chief Executive Officer and Board Member

Paula Brown Stafford previously served as Novan's Chief Operating Officer from January 2019 to December 2019, and served as Chief Development Officer from March 2017 to January 2019. Ms. Stafford has been a member of Novan's board of directors since August 2017. Prior to joining Novan, Ms. Stafford held various roles of increasing responsibility at Quintiles Transnational Holdings Inc. (now IQVIA Holdings Inc.), a leading multinational provider of biopharmaceutical development services and commercial outsourcing services, since 1985, including serving as President of Clinical Development from 2010 to 2015, where she was responsible for all Phase I-IV clinical development operations globally and served on the Quintiles Executive Committee. Ms. Stafford also serves as a director of Health Decisions, Inc., a contract research organization for women's health and diagnostics, serves as an adjunct professor in Public Health Leadership at the Gillings School of Global Public Health at the University of North Carolina, Chapel Hill, and operates her own third-party consulting business.

John M. Gay, Vice President, Finance and Corporate Controller

John M. Gay is Vice President, Finance and Corporate Controller and serves as Principal Financial Officer and Corporate Secretary for Novan. He joined Novan in May of 2018 and previously held the position of Senior Director of Finance and Corporate Controller until his promotion to his current role in January 2019. Prior to Novan, Mr. Gay held previous director positions, including Director of SEC Reporting, with Valassis Digital and MaxPoint Inc., from May 2014 to April 2018. Mr. Gay also served as Corporate Controller of Furiex Pharmaceuticals, Inc. from June 2010 to May 2014, including from its initial listing on the Nasdaq stock market through the execution of an acquisition agreement of the company by Actavis plc (Forest Laboratories, Inc.) in an all-cash transaction valued at approximately $1.1 billion. Prior to joining Furiex Pharmaceuticals, Inc., Mr. Gay served as Audit Senior Manager and in other roles of increasing responsibilities at Deloitte and Arthur Andersen from September 2000 to May 2010. Mr. Gay is a certified public accountant and holds Bachelor's degrees in Economics and History, and a Master of Accounting degree from the University of North Carolina at Chapel Hill.

Carri Geer, Senior Vice President, Chief Technology Officer

Carri Geer, Ph.D., leads drug substance, drug product, device and analytical development for Novan's drug candidates. Additionally, Dr. Geer serves as the technical liaison for collaborative partnerships. Dr. Geer has 10 years of experience in pharmaceutical product development and a background in analytical and bioanalytical chemistry. During her tenure at Novan, Dr. Geer has been responsible for establishing and growing the analytical capabilities of the company. Prior to joining Novan, Dr. Geer was employed at Merck and bridged the interface between R&D and cGMP analytical testing. Dr. Geer received her Ph.D. in Chemistry from the University of North Carolina at Chapel Hill.

Elizabeth Messersmith, Senior Vice President, Chief Development Officer

Elizabeth Messersmith, Ph.D. is responsible for the oversight of Novan's clinical, medical, statistical, and regulatory activities. Dr. Messersmith joined Novan in May 2018. Most recently, Dr. Messersmith held the position of Senior Vice President, Clinical Operations and Data Management, at Quark Pharmaceuticals, Inc. Prior to Quark, she held positions at Balance Therapeutics, Inc. and Elan Pharmaceuticals. Dr. Messersmith has a Bachelor's and Master's from the University of Kansas in Human Biology and Physiology, respectively, and a Ph.D. in Biomedical Science from the University of Texas Health Science at Houston.

Financial and Operational Results

Novan reported first quarter 2020 results on May 20, 2020 in its 10-Q filing with the SEC. The filing was late due to a last minute catch of an accounting issue related to the recording of warrant liabilities. This led to a one week delay of the submission of the 10-Q and the restatement of the 10-K annual statement for 2018. Quarterly financial statements for 2018 and 2019 and revision of the 10-K annual statement for 2019 were also required. The accounting of warrants beyond their quantity and exercise price do not affect our valuation approach.

The first quarter began on a sour note with the announcement of a miss on the primary endpoint for the company's Phase III clinical trial in MC on January 2nd. Despite not achieving statistical significance, the trial was directionally favorable and strong enough to support another study. The company was able to raise additional capital through a public offering and a registered direct offering providing sufficient funding to consider options for another trial. After the receipt of the FDA's written minutes related to the post-Phase III Type C meeting, management plotted a path forward, designing a confirmatory Phase III trial to start in fall 2020.

In February 2020, Novan was awarded a Phase 2 federal grant that provides approximately $1 million for IND development work. The program will pursue toxicology and pharmacology work on a nitric oxide containing intravaginal gel designed to treat high-risk HPV infections that can lead to CIN.

In the financial sphere, the development stage company declared $1.2 million in revenue for the first quarter of 2020 and recognized operational expenses of $7.4 million. This compares to $1.1 million of upfront and milestone payments related to the Sato arrangement and operational expenses of $7.8 million in the comparable period ending March 31, 2019.

First quarter revenues were comprised of amortized amounts related to the Sato upfront and research and grant revenue from the Department of Defense for the HPV program. Research and development expenses were $4.9 million and up a modest 2% on higher expenditures for the SB206 and SB414 programs, mostly offset by declines in other R&D. General and administrative expenses fell 16% in 1Q:20 to $2.5 million due to lower personnel costs, lower severance costs and a decrease in non-cash compensation costs.

The balance sheet held $21.8 million in cash and equivalents and no debt as of March 31, 2020, reflecting capital raises during the first quarter. Cash burn for 1Q:20 was ($7.8) million compared to ($2.1) million in 1Q:19. Net cash generated from financing was $15.8 million for the first three month period in 2020.

During the first quarter, Novan has received notices from the NASDAQ that its shares do not meet the $1.00 minimum bid price requirement and that the value of the company's listed securities were below the $50 million minimum requirement. Novan has until November 2, 2020 to regain compliance with the minimum bid requirement or shares may be transferred to the NASDAQ Capital Market. Novan has until August 16, 2020 to comply with the minimum market value of listed securities requirement or be subject to delisting. Both decisions can be appealed.

Following the end of the quarter, Novan announced that it had engaged H.C. Wainwright to assist in identifying strategic alternatives and evaluate potential sources of financing.

VALUATION

Novan's lead candidate, SB206, is a nitric oxide-based treatment for molluscum contagiosum that employs a large polymer to hold NO in suspension and allows the level of NO release to be controlled. NO has demonstrated a wide range of beneficial mechanisms of action for dermatology indications including anti-bacterial, anti-fungal, anti-inflammatory and anti-viral activity. Novan's clinical efforts are exclusively focused on SB206 and MC and the company is targeting the launch of a confirmatory Phase III trial this fall that will enroll 750 patients. We anticipate that the study will take three quarters from start to presentation of topline data, reading out by mid-year 2021. Assuming data are favorable and statistically significant, we believe an NDA will be filed with the FDA prior to year-end 2021, with an approval granted in 2022. First sales in the United States will begin in 2023.

MC infects anywhere from 2% to 6% of the population in the United States and Japan with a wider range appropriate depending on age, location and likelihood of skin to skin contact. We estimate that there are approximately six million cases of MC in the US and about two million in Japan. The majority of patients will allow MC to resolve on its own. We anticipate about a third of MC cases will pursue a treatment and a subset of that group will take advantage of Novan's safe and effective treatment assuming it is approved. With a nod towards the broad array of other offerings, we anticipate a conservative penetration into the market of 1.5% (of 6 million) in the first year after approval, growing to a peak of 9% by year four. The peak equates to 540,000 SB206 treatments per year in the US. Price assumptions are $1,500 for a three month course of treatment in the US. We note that for products priced below $700 per month ($2,100 per course of treatment), payors generally do not require step edits or prior authorization, making this an important target to beat. We forecast annual price inflation of 3%. Upon the expiration of patent protection in 2035, we anticipate a ~40% decline in revenues due to competition.

In April 2020, Sato announced that it will pursue the SB206 program in Japan with a Phase I trial. We anticipate that Sato will be able to quickly advance through the regulatory process partially relying on work done by Novan in the United States to obtain regulatory approval. We forecast a four year period for Sato to complete registrational trial work and obtain approval to begin marketing in Japan. We anticipate 1.5% penetration into the addressable market of approximately two million patients in 2024, rising steadily to 9% over the next four years. Peak sales equate to 177,000 treatments at a three month cost of treatment at $800. After 2035, we anticipate a one third drop in sales related to loss of intellectual property protection.

Our forecasts do not attach any value for commercialization outside of the US and Japan, although regions such as Europe and Oceana may be attractive markets in the future. Novan's agreement with Sato provides for milestones and royalties from Japan. The model estimates 15% of revenues as payment to reflect these two components.

Gross margin is expected to be in the mid-90% range, which includes a small amount to be paid as license revenue to the University of North Carolina. Additional high single digit license fees will be paid on revenues generated in North America to Ligand to reflect the financing arrangement with the biopharmaceutical investor. Total expenses are expected to decline in 2020 as Novan streamlines its operations. The sum of R&D expenses over the next four quarters are expected to be similar in amount to 2019 levels as the number of enrollees in the upcoming trial are expected to be consistent with B-SIMPLE1/2 levels. R&D in our model will drop dramatically following the submission of the NDA. G&A expenses are expected to decline in 2020 due to lower headcount and fewer ancillary projects as compared to prior periods. We expect G&A to grow in 2021 and beyond as additional management attention is focused on commercialization.

Novan plans to commercialize SB206 using its own sales force. Sales and marketing is expected to be advanced internally with efforts focused on high prescribing dermatologists and pediatricians. Our forecast calls for an initial 40 person sales force growing by 50% over the following two years, with an additional 5% of revenues allocated toward a marketing budget. We see a 4% annual increase in this expense in 2025 and beyond. We anticipate a 25% combined state and federal tax rate on company profits that will be paid following the consumption of the company's $330 million of state and federal net operating loss carryforwards.

Our valuation approach employs a discounted cash flow model. Assumptions include a discount rate of 15% and a terminal growth rate of -10%. To our net present value (NPV) we attach a 50% probability of FDA approval and ultimate commercialization based on the guidance provided in the Biomedtracker analysis[46] and our assessment of data from the B-SIMPLE1/2 trials. We subtract $20 million from our value which will be paid to Ligand upon reaching regulatory and commercial milestones to generate our equity value to shareholders.

[46] Clinical Development Success Rates 2006-2015. David W. Thomas, Justin Burns, John Audette, Adam Carroll, Corey Dow-Hygelund, Michael Hay.

Option and warrants are assumed to be exercised if below our target price with proceeds added to cash and exercised shares added to shares outstanding. We recognize the additional capital required to fund the Phase III trial until approval and assume ~$20 million in shares are issued near current price and dilute shares outstanding accordingly. Despite the conservative stance of our assumptions, penetration into addressable markets can potentially be higher for SB206 if study results demonstrate strong efficacy and safety. We note that the determinant for many of the variables in our model will be the ultimate safety and efficacy profile as demonstrated in the confirmatory trial. We will update our model accordingly as data is made available.

Based on the assumptions identified in our discounted cash flow model, we generate a current valuation of $4.00 per share.

CONCLUSION

Novan has designed a unique polysiloxane macromolecule that allows for the controlled release of nitric oxide in a variety of concentrations and release profiles. This product, berdazimer sodium, is based on the Nitricil platform. It presents a variety of beneficial features including anti-bacterial, anti-viral, anti-fungal and anti-inflammatory activity in target tissue. These features are particularly advantageous for many skin conditions including *acne vulgaris*, *tinea pedis*, genital warts and molluscum contagiosum among others.

Novan has a number of candidates in its pipeline. It has completed Phase II trials in *tinea pedis* and genital warts, and Phase III trials in acne vulgaris and MC. Due to capital constraints, Novan has elected to pursue a single candidate for regulatory approval in MC designated SB206. This indication has a number of favorable characteristics, including shorter trials, no other approved therapies and the encouragement of the FDA who recognizes the lack of treatment for this common childhood disease.

MC also presents a large unmet need. There are an estimated six million individuals afflicted with MC in the United States and a similar proportion of the population in other geographies and no approved treatment. Novan has granted development rights for SB206 to Sato in Japan. While there are no plans to develop areas outside of the US and Japan, a deal for Europe, Australia and other attractive geographies could be signed if a partner emerges.

SB206 has shown safety and efficacy in Phase II trials and safety and a non-statistically significant benefit in Phase III trials. The FDA erects a high hurdle for approval in dermatology indications and requires two separate trials to be conducted and a primary endpoint that requires complete clearance at 12 weeks. While Novan did not achieve statistical significance in the Phase III efforts, SB206 demonstrated a benefit on primary and secondary endpoints. When examining different groups in the study population, additional analysis found improved significance for the per protocol population, households with one case of MC and when the trial populations were combined. While *ex post facto* integration of the trial data will not be suitable for obtaining approval, the analysis generated does provide support for pursuing an additional trial whose design can be modified to take advantage of what was learned in the B-SIMPLE 1 and 2 studies.

We anticipate that Novan will be able to add sufficient capital to its balance sheet to fund a confirmatory Phase III trial for MC and provide a statistically significant benefit in a topline release mid-2021. With favorable data, and the nod by the FDA following an NDA submission, we see a 2023 launch of SB206 for MC. We apply a 50% probability of success to ultimate commercialization, recognizing that failure could occur in the trial outcome.

Key reasons to own Novan shares:

- **Phase III asset to address an unmet need in MC**
- **MC presents a large addressable market with no approved therapies**
- **SB206 statistically significant (p=0.038) on primary endpoint using integrated trial data**
- **Nitricil presents multiple mechanisms for therapeutic effect**
  - **Anti-viral**
  - **Anti-bacterial**
  - **Anti-inflammatory**
  - **Anti-fungal**
- **Broad portfolio of dermatology indications in clinical development**
  - **Acne Vulgaris**
  - **Tinea Pedis**
  - **Genital Warts**
  - **Others**
- **Favorable drug safety profile with no reported drug-related serious adverse events**
- **Intellectual property protection until 2035 for SB206**
- **North American rights to intellectual property**
- **Partner pursuing commercialization in Japan**
  - **Rights to milestones and royalties**

Based on our analysis of SB206 and the clinical trial data generated to date, we see a pathway forward in to commercialize the compound in MC. Our valuation work takes into account commercialization of SB206 in both the United States and Japan, assuming a 50% probability of ultimate success. The opportunity for SB206 extends beyond the US and Europe and the company has other programs in development that may ultimately generate value. We will add them to our model when there is a reasonable assumption that they can be developed. As we initate on Novan, Inc., our analysis and forecasts generate a valuation of $4.00 per share.

PROJECTED FINANCIALS

Novan, Inc. - Income Statement[47]

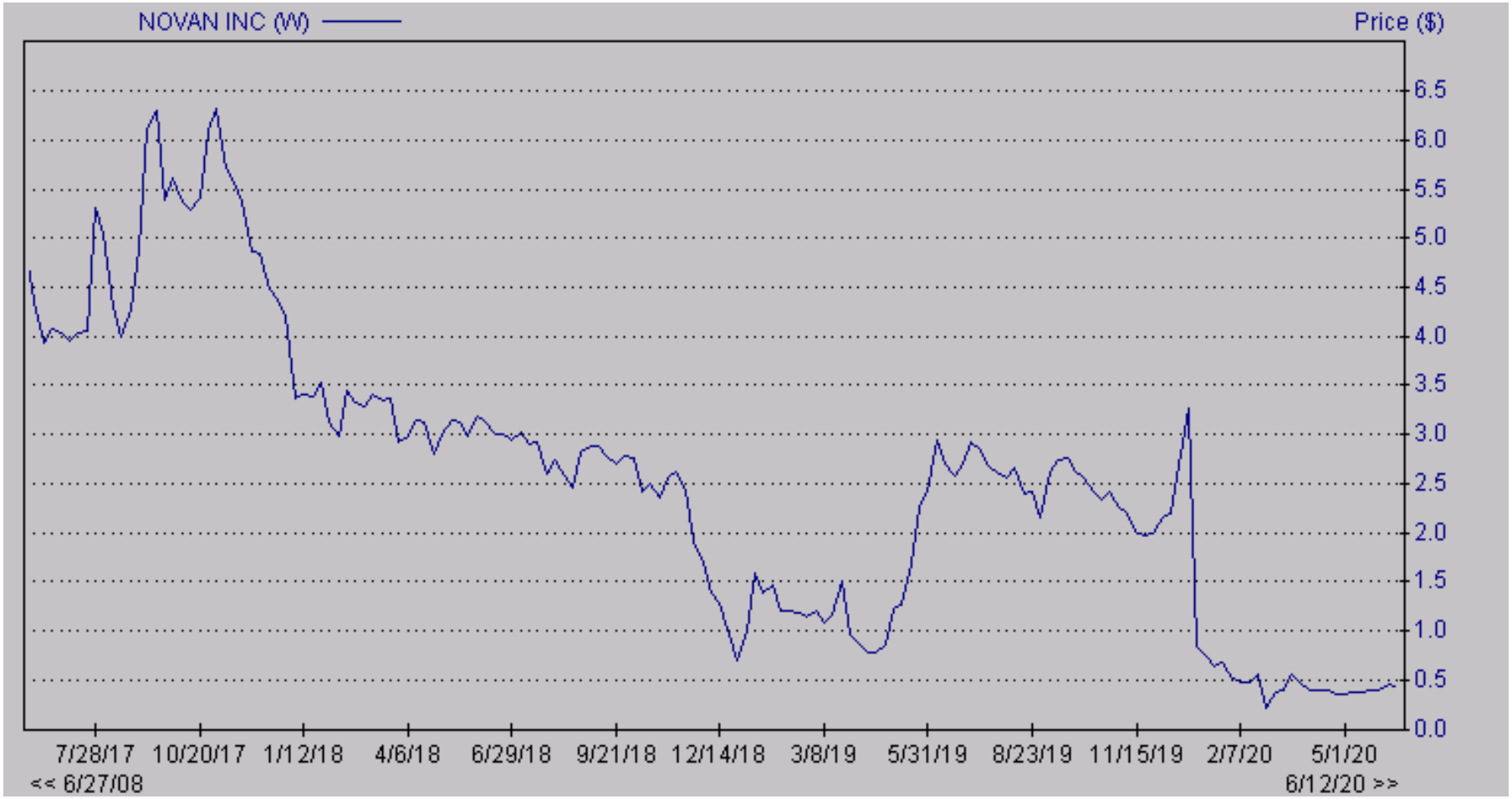
Novan, Inc.	2019 A	Q1 A	Q2 E	Q3 E	Q4 E	2020 E	2021 E	2022 E
Total Revenues ($US)	**$4,896**	**$1,213**	**$1,224**	**$1,224**	**$1,224**	**$4,885**	**$5,100**	**$4,500**
YOY Growth	*-18%*	*10%*	*11%*	*-7%*	*-11%*	*0%*	*4%*	
Research & Development	$25,172	$4,916	$5,000	$7,500	$7,500	$24,916	$15,000	$10,000
Selling, General & Administrative	$10,412	$2,507	$1,800	$1,800	$1,800	$7,907	$8,500	$14,000
Income from operations	($30,688)	($6,210)	($5,576)	($8,076)	($8,076)	($27,938)	($18,400)	($19,500)
Operating Margin	*-627%*	*-512%*	*-456%*	*-660%*	*-660%*	*-572%*	*-361%*	*-433%*
Other Income	$49	$8	$0	$0	$0	$8	$0	$0
Interest Income	($2)	$35	$0	$0	$0	$35	$0	$0
Pre-Tax Income	($30,641)	($6,167)	($5,576)	($8,076)	($8,076)	($27,895)	($18,400)	($19,500)
Provision for Income Tax	$0	$0	$0	$0	$0	$0	$0	$0
Tax Rate	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Net Income	**($30,641)**	**($6,167)**	**($5,576)**	**($8,076)**	**($8,076)**	**($27,895)**	**($18,400)**	**($19,500)**
Net Margin	*-626%*	*-508%*	*-4.55555556*	*-660%*	*-660%*	*-571%*	*-361%*	*-433%*
Reported EPS	**($1.17)**	**($0.17)**	**($0.11)**	**($0.08)**	**($0.08)**	**($0.39)**	**($0.17)**	**($0.17)**
YOY Growth	*138%*	*-38.2%*	*-83.9%*	*-74.6%*	*-175.0%*	*-67%*	*-57%*	*1%*
Basic Shares Outstanding	26,254	37,044	50,000	100,000	102,000	72,261	110,000	115,000

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

[47] Financial statement information presents data as originally reported.

HISTORICAL STOCK PRICE

Novan, Inc. – Share Price Chart[48]



[48] Source: Zacks Research System

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