

Soligenix Receives FDA IND Clearance for Phase 2 Clinical Trial of Synthetic Hypericin in the Treatment of Psoriasis

Enrollment on Track to Begin in 4th Quarter of 2022

PRINCETON, N.J., June 28, 2022 /PRNewswire/ -- Soligenix, Inc. (Nasdaq: SNGX) (Soligenix or the Company), a late-stage biopharmaceutical company focused on developing and commercializing products to treat rare diseases where there is an unmet medical need, announced today that the U.S. Food and Drug Administration (FDA) has cleared the Investigational New Drug (IND) application for a Phase 2a clinical trial titled, "*Phase 2 Study Evaluating SGX302 in the Treatment of Mild-to-Moderate Psoriasis*." The study is designed to evaluate the safety and efficacy of topically-applied SGX302 (synthetic hypericin) and is expected to begin patient enrollment in the fourth quarter of 2022.

"We are pleased to have received FDA clearance on our SGX302 Phase 2a clinical trial in mild-to-moderate psoriasis," stated Christopher J. Schaber, PhD, President and Chief Executive Officer of Soligenix. "During the last year, we have made announcements of important development milestones that we have achieved with [HyBryte™](#) (synthetic hypericin) in the treatment of early stage cutaneous T-cell lymphoma (CTCL). We have clearly validated synthetic hypericin's biologic activity with the Phase 3 FLASH study in this orphan disease, where we expect to file a New Drug Application (NDA) in the second half of 2022. We are excited to expand synthetic hypericin's development into different cutaneous T-cell diseases such as psoriasis, as a component of our long-term strategy to enhance the value of this unique compound. Psoriasis is an ongoing unmet medical need, with as many as 7.5 million people in the U.S. and 60-125 million people worldwide affected by this incurable disease. Given our promising results with hypericin to date, including a small [Phase 1/2 proof of concept clinical trial in mild-to-moderate psoriasis](#), we are hopeful synthetic hypericin will have a role to play in helping patients suffering from this difficult to treat and chronic disease."

Under this IND, the Phase 2a clinical trial of SGX302 will be a randomized, double-blind, placebo-controlled study that will enroll up to 32 patients age 18 years or older with mild to moderate, stable psoriasis covering 2 to 30% of their body. Patients will receive placebo or SGX302 (randomized 1:1) as a twice weekly treatment for up to 18 weeks. Each treatment will consist of the application of SGX302 followed approximately 24 hours later with visible light activation. Efficacy endpoints will include the extent of lesion clearance and patient reported quality of life indices.

About Synthetic Hypericin

Visible light-activated synthetic hypericin is a novel, first-in-class, photodynamic therapy (PDT) that is expected to avoid much of the long-term risks associated with other PDT treatments. Synthetic hypericin is a potent photosensitizer that is topically applied to skin lesions and taken up by cutaneous T-cells. With subsequent activation by safe, visible light, T-cell apoptosis is induced, addressing the root cause of psoriasis lesions. Other PDTs have shown efficacy in psoriasis with a similar apoptotic mechanism, albeit using ultraviolet (UV) light associated with more severe potential long-term safety concerns. The use of visible light in the red-yellow spectrum has the advantage of deeper penetration into the skin (much more than UV light) potentially treating deeper skin disease and thicker plaques and lesions, similar to what was observed in the positive Phase 3 FLASH (Fluorescent Light Activated Synthetic Hypericin) study in CTCL. Synthetic hypericin or HyBryte™ (tradename used in CTCL) was demonstrated in this study to be equally effective in treating both plaque (42% treatment response rate after 12 weeks treatment, $p < 0.0001$ relative to placebo treatment) and patch (37%, $p = 0.0009$) lesions in this orphan disease caused by malignant T-cells. In a published Phase 1/2 proof of concept clinical study using synthetic hypericin, efficacy was demonstrated in patients with CTCL (58.3% response, $p = 0.04$) as well as psoriasis (80% response, $p < 0.02$).

This treatment approach avoids the risk of secondary malignancies (including melanoma) inherent with both the frequently used DNA-damaging drugs and other phototherapies that are dependent on UV A or B exposure. The use of synthetic hypericin coupled with safe, visible light also avoids the risk of serious infections and cancer associated with the systemic immunosuppressive treatments used in psoriasis.

The Phase 3 FLASH trial enrolled a total of 169 patients (166 evaluable) with Stage IA, IB or IIA CTCL. The trial consisted of three treatment cycles. Treatments were administered twice weekly in 6-week cycles. In the first double-blind treatment cycle, 116 patients received HyBryte™ treatment and 50 received placebo treatment of their index lesions. A total of 16% of the patients receiving HyBryte™ achieved at least a 50% reduction in their lesions (using the standard Composite Assessment of Index Lesions Severity [CAILS] score) compared to only 4% of patients in the placebo group after just 6 weeks of treatment ($p = 0.04$). Further treatment with HyBryte™ increased the number of treatment successes to 40% and 49% after 12 and 18 weeks, respectively ($p < 0.0001$ for both). Additional analyses also indicated that HyBryte™ is equally effective in treating both plaque (42%

treatment response rate after 12 weeks treatment, $p < 0.0001$ relative to placebo treatment in Cycle 1) and patch (37%, $p = 0.0009$) lesions of CTCL, a particularly relevant finding given the historical difficulty in treating plaque lesions. This is also relevant to psoriasis where the lesions can be thicker than the patches observed in CTCL.

In a subset of patients evaluated during their third treatment cycle, it was demonstrated that HyBryte™ is not systemically available, consistent with the general safety of this topical product observed to date. At the end of Cycle 3, HyBryte™ continued to be well tolerated despite extended and increased use of the product to treat multiple lesions.

About Psoriasis

Psoriasis is a chronic, non-communicable, itchy and often painful inflammatory skin condition for which there is no cure. Psoriasis has a significantly detrimental impact on patients' quality of life, and is associated with cardiovascular, arthritic, and metabolic diseases, as well as psychological conditions such as anxiety, depression and suicide. Many factors contribute to development of psoriasis including both genetic and environmental factors (e.g., skin trauma, infections, and medications). The lesions develop because of rapidly proliferating skin cells, driven by autoimmune T-cell mediated inflammation. Of the various types of psoriasis, plaque psoriasis is the most common and is characterized by dry, red raised plaques that are covered by silvery-white scales occurring most commonly on the elbows, knees, scalp, and lower back. Approximately 80% of patients have mild-to-moderate disease. Mild psoriasis is generally characterized by the involvement of less than 3% of the body surface area (BSA), while moderate psoriasis will typically involve 3-10% BSA and severe psoriasis greater than 10% BSA. Between 20% and 30% of individuals with psoriasis will go on to develop chronic, inflammatory arthritis (psoriatic arthritis) that can lead to joint deformations and disability. Studies have also associated psoriasis, and particularly severe psoriasis, with an increased relative risk of lymphoma, particularly CTCL. Although psoriasis can occur at any age, most patients present with the condition before age 35.

Treatment of psoriasis is based on its severity at the time of presentation with the goal of controlling symptoms. It varies from topical options including PDT to reduce pain and itching, and potentially reduce the inflammation driving plaque formation, to systemic treatments for more severe disease. Most common systemic treatments and even current topical photo/photodynamic therapy such as UV A and B, carry a risk of increased skin cancer.

Psoriasis is the most common immune-mediated inflammatory skin disease. According to the World Health Organization (WHO) Global Report on Psoriasis 2016, the prevalence of psoriasis is between 1.5% and 5% in most developed countries, with some suggestions of incidence increasing with time. It is estimated, based upon review of historic published studies and reports and an interpolation of data that psoriasis affects 3% of the U.S. population or more than 7.5 million people. Current estimates have as many as 60-125 million people worldwide living with the condition. The global psoriasis treatment market was valued at approximately \$15 billion in 2020 and is projected to reach as much as \$40 billion by 2027.

About Soligenix, Inc.

Soligenix is a late-stage biopharmaceutical company focused on developing and commercializing products to treat rare diseases where there is an unmet medical need. Our Specialized BioTherapeutics business segment is developing and moving toward potential commercialization of HyBryte™ (SGX301 or synthetic hypericin) as a novel photodynamic therapy utilizing safe visible light for the treatment of cutaneous T-cell lymphoma (CTCL). With a successful Phase 3 study completed, regulatory approval is being sought and commercialization activities for this product candidate are being advanced initially in the U.S. Development programs in this business segment also include our first-in-class innate defense regulator (IDR) technology, dusquetide (SGX942) for the treatment of inflammatory diseases, including oral mucositis in head and neck cancer, and proprietary formulations of oral beclomethasone 17,21-dipropionate (BDP) for the prevention/treatment of gastrointestinal (GI) disorders characterized by severe inflammation including pediatric Crohn's disease (SGX203) and acute radiation enteritis (SGX201).

Our Public Health Solutions business segment includes active development programs for RiVax®, our ricin toxin vaccine candidate, and SGX943, our therapeutic candidate for antibiotic resistant and emerging infectious disease, and our vaccine programs targeting filoviruses (such as Marburg and Ebola) and CiVax™, our vaccine candidate for the prevention of COVID-19 (caused by SARS-CoV-2). The development of our vaccine programs incorporates the use of our proprietary heat stabilization platform technology, known as ThermoVax®. To date, this business segment has been supported with government grant and contract funding from the National Institute of Allergy and Infectious Diseases (NIAID), the Defense Threat Reduction Agency (DTRA) and the Biomedical Advanced Research and Development Authority (BARDA).

For further information regarding Soligenix, Inc., please visit the Company's website

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