

Soligenix Announces Phase 3 FLASH Study Continues to Demonstrate Positive Benefits in Patients with Cutaneous T-Cell Lymphoma

- Nearly half of all patients in Phase 3 trial continue to see sustained and statistically significant improvement in their response rates when treated with SGX301 through 18 weeks (Cycle 3), reinforcing positive SGX301 primary endpoint treatment response**
- SGX301 remains safe and well tolerated with no systemic exposure through 6 months including the optional, final cycle of the trial (Cycle 3)**
- SGX301 demonstrates statistically significant response in both patch and plaque lesions through 12 weeks of treatment (Cycle 2), highlighting the unique benefits of deeper skin penetration**

PRINCETON, N.J., Oct. 22, 2020 /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 continued optional treatment with SGX301 (synthetic hypericin) across all lesions during the compassionate use, safety portion of the trial (Cycle 3), for a total of 6 months in the study, continued to significantly improve responses and remained safe and well-tolerated in its FLASH (Fluorescent Light Activated Synthetic Hypericin) study. This data reinforces the positive SGX301 primary endpoint treatment response demonstrated in Cycle 1. SGX301 treatment in Cycle 3 further improved response rates, with 49% of patients electing to receive SGX301 for a total of 18 weeks demonstrating a 50% or greater reduction in their combined CAILS (Composite Assessment of Index Lesion Score) lesion score compared to 40% of patients demonstrating such a reduction after completing 12 weeks of SGX301 treatment in Cycle 2 ($p=0.046$). In addition, continued analysis of results from the protocol mandated efficacy cycles (Cycles 1 and 2) of the study has revealed that 12 weeks of treatment (Cycle 2) with SGX301 is equally effective on both patch (response 37%, $p=0.0009$) and plaque (response 42%, $p<0.0001$) lesions of cutaneous T-cell lymphoma (CTCL) when compared to Cycle 1 placebo lesion responses, further demonstrating the unique benefits of the more deeply penetrating visible light activation of hypericin. SGX301 continued to be very well tolerated, benefiting from the lack of hypericin circulation in the blood stream after targeted topical application to the lesions, as well as the use of visible light.

"Along with SGX301's rapid response time and safety profile, the patch and plaque data from the study are extremely compelling," stated Brian Poligone, MD, PhD, Lead Enrolling Investigator in the FLASH study and Director of the Rochester Skin Lymphoma Medical Group, Fairport, NY, USA. "Current treatments for CTCL are generally less effective against plaques and deeper lesions, very similar to the problem observed in psoriasis. The ability of SGX301 to target both patches and thicker plaques in CTCL is an important feature for this therapy and, if approved, will be of benefit to patients, regardless of their presentation. These results are consistent with the positive findings highlighted in a [recently reported case study](#) of folliculotropic mycosis fungoides, a hard to treat variant of CTCL where lesions are associated with the hair follicles deep in the skin and more resistant to phototherapy."

"On behalf of everyone at Soligenix, I would like to extend my sincere thanks to the patients, families, investigators, and advisors involved in the pivotal Phase 3 FLASH study," stated Richard Straube, MD, Chief Medical Officer of Soligenix. "In treating CTCL, which is a chronic cancer with no cure, long-term safety is of paramount concern. SGX301 treatment continues to demonstrate strong efficacy and a very benign safety profile, which is of significant benefit to patients living with this difficult disease. Although the focus of the additional optional cycle was safety, we continue to see improvement in CTCL lesions with extended SGX301 treatment, building upon the robust efficacy signal in previous cycles. The efficacy against both patch and plaque lesions, for example, is particularly encouraging and we believe provides another important differentiating feature from other therapies currently being used to treat early stage disease."

"These results continue to strengthen our long-standing belief that SGX301 has the potential to be a valuable and life-changing therapy for patients suffering from CTCL, which is an orphan disease and area of unmet medical need," stated Christopher J. Schaber, PhD, President and Chief Executive Officer of Soligenix. "With the study now concluding, we continue to thoroughly assess commercialization and/or partnership of SGX301 while in parallel preparing for filing the New Drug Application with FDA. Despite the challenges imposed by the COVID-19 pandemic, 2020 continues to be a very impactful year for us as we now focus on our next near-term and potentially transformational catalyst - the announcement of top-line final results by year-end from our other pivotal Phase 3 study of SGX942 (dusquetide) for the treatment of oral mucositis in head and neck cancer patients."

Soligenix previously announced positive top-line results when the FLASH study achieved statistical significance ($p=0.04$) in its primary endpoint over the first 6-week double-blind treatment cycle (Cycle 1) (available [here](#)). The study enrolled 169 patients randomized 2:1 to receive either SGX301 or placebo in Cycle 1. After the subsequent additional 6-week treatment in the open-label Cycle 2, the response rate in patients receiving a total of 12 weeks treatment increased two and a half-fold (40% with $p<0.0001$ compared to placebo and

$p < 0.0001$ compared to 6-weeks treatment). These highly statistically significant results confirm the benefit of continued SGX301 treatment in CTCL patients (press release available [here](#)). Treatment responses were assessed at Week 8 (after 6 weeks of treatment) and at Week 16 (after 12 weeks of treatment). A positive response was defined as an improvement of at least 50% in the CAILS for three index lesions evaluated. Further analysis of the patients receiving SGX301 through 12 weeks has revealed that treatment of both patch and plaque lesions was equally effective. Similar to the overall findings, the responses of individual lesions were statistically significantly improved after 12 weeks treatment relative to 6 weeks treatment with SGX301 or placebo. Importantly, this improvement was seen equally for both patches (response 37%, $p = 0.0009$) and plaques (response 42%, $p < 0.0001$), a differentiating feature of SGX301 relative to other treatment modalities in CTCL.

Cycle 3 of the study was designed as a compassionate use, optional, cycle where patients could elect to continue SGX301 treatment for an additional 6 weeks (up to a total of 18 weeks) for all their lesions. Sixty-six percent (66%) of patients elected to continue into Cycle 3. During this cycle, SGX301 was applied to multiple cancerous skin lesions on the body, maximizing the exposure to the drug. Including Cycle 3 in the study enabled a more rigorous safety assessment in the context of extended and increased exposure to SGX301. Similar to the overall findings, the responses of individual lesions after three cycles of treatment with SGX301 was statistically significant after Cycle 3 relative to outcomes after Cycles 1 and 2 (49% of all lesions responded with a CAILS score reduction of at least 50%, with a statistically significant change from end of Cycle 2 [$p = 0.0009$] and compared to patients receiving placebo only in Cycle 1 [$p < 0.0001$]). Further, no synthetic hypericin was detected in the bloodstream of patients, minimizing safety concerns of drug effects outside of the tumor area. All safety data continues to indicate that SGX301 treatment is safe and well tolerated, in marked contrast to other available second-line and off-label therapies for CTCL.

About Cutaneous T-Cell Lymphoma (CTCL)

CTCL is a class of non-Hodgkin's lymphoma (NHL), a type of cancer of the white blood cells that are an integral part of the immune system. Unlike most NHLs which generally involve B-cell lymphocytes (involved in producing antibodies), CTCL is caused by an expansion of malignant T-cell lymphocytes (involved in cell-mediated immunity) normally programmed to migrate to the skin. These malignant cells migrate to the skin where they form various lesions, typically beginning as patches that may progress to more difficult to treat raised plaques and tumors. Mortality is related to the stage of CTCL, with median survival generally ranging from about 12 years in the early stages to only 2.5 years when the disease has advanced. There is currently no cure for CTCL and no FDA approved first-line treatment option. Typically, CTCL lesions are treated and regress but usually return either in the same part of the body or in new areas.

CTCL constitutes a rare group of NHLs, occurring in about 4% of the approximate 700,000 individuals living with the disease. It is estimated, based upon review of historic published studies and reports and an interpolation of data on the incidence of CTCL that it affects over 25,000 individuals in the US, with approximately 3,000 new cases seen annually.

About SGX301

SGX301 is a novel first-in-class photodynamic therapy utilizing safe visible light for activation. The active ingredient in SGX301 is synthetic hypericin, a potent photosensitizer that is topically applied to skin lesions, is taken up by the malignant T-cells, and then activated by fluorescent light 16 to 24 hours later. The use of visible light in the red-yellow spectrum has the advantage of penetrating more deeply into the skin (much more so than ultraviolet light) and therefore potentially treating deeper skin disease and thicker lesions. This treatment approach avoids the risk of secondary malignancies (including melanoma) inherent with the frequently employed DNA-damaging drugs and other phototherapy that are dependent on ultraviolet exposure. Combined with photoactivation, hypericin has demonstrated significant anti-proliferative effects on activated normal human lymphoid cells and inhibited growth of malignant T-cells isolated from CTCL patients. In a published Phase 2 clinical study in CTCL, patients experienced a statistically significant ($p = 0.04$) improvement with topical hypericin treatment whereas the placebo was ineffective. SGX301 has received orphan drug and fast track designations from the FDA, as well as orphan designation from the European Medicines Agency (EMA).

The Phase 3 FLASH trial enrolled a total of 169 patients (166 evaluable) with Stage IA, IB or IIA CTCL. The trial consists of three treatment cycles. Treatments were administered twice weekly for the first 6 weeks and treatment response was determined at the end of the 8th week of each cycle. In the first double-blind treatment cycle, 116 patients received SGX301 treatment (0.25% synthetic hypericin) and 50 received placebo treatment of their index lesions. A total of 16% of the patients receiving SGX301 achieved at least a 50% reduction in their lesions (graded using a standard measurement of dermatologic lesions, the CAILS score) compared to only 4% of patients in the placebo group at 8 weeks ($p = 0.04$) during the first treatment cycle (primary endpoint). SGX301 treatment in the first cycle was safe and well tolerated.

In the second open-label treatment cycle (Cycle 2), all patients received SGX301 treatment of their index lesions. Evaluation of 155 patients in this cycle (110 receiving 12 weeks of SGX301 treatment and 45 receiving 6 weeks of placebo treatment followed by 6 weeks of SGX301 treatment), demonstrated that the response rate among the 12-week treatment group was 40% ($p < 0.0001$ vs the placebo treatment rate in Cycle 1). Comparison of the 12-week and 6-week treatment groups also revealed a statistically significant improvement ($p < 0.0001$) between the two groups, indicating that continued treatment results in better outcomes. SGX301 continued to be safe and well tolerated. Additional analyses also indicated that SGX301 is equally effective in treating both plaque (response 42%, $p < 0.0001$ relative to placebo treatment in Cycle 1) and patch (response 37%, $p = 0.0009$ relative to placebo treatment in Cycle 1) lesions of CTCL, a particularly relevant finding given the historical difficulty in treating plaque lesions in particular.

The third (optional) treatment cycle (Cycle 3) was focused on safety and all patients could elect to receive SGX301 treatment of all their lesions. Of note, 66% of patients elected to continue with this optional compassionate use / safety cycle of the study. Of the subset of patients that received SGX301 throughout all 3 cycles of treatment, 49% of them demonstrated a treatment response ($p < 0.0001$ vs patients receiving placebo in Cycle 1). Moreover, in a subset of patients evaluated in this cycle, it was demonstrated that SGX301 is not systemically available, consistent with the general safety of this topical product observed to date. At the end of Cycle 3, SGX301 continued to be well tolerated despite extended and increased use of the product to treat multiple lesions. Follow-up visits are expected to be completed in 2020.

Overall safety of SGX301 is a critical attribute of this treatment and was monitored throughout the three treatment cycles (Cycles 1, 2 and 3) and the 6-month follow-up period. SGX301's mechanism of action is not associated with DNA damage, making it a safer alternative than currently available therapies, all of which are associated with significant and sometimes fatal, side effects. Predominantly these include the risk of melanoma and other malignancies, as well as the risk of significant skin damage and premature skin aging. Currently available treatments are only approved in the context of previous treatment failure with other modalities and there is no approved front-line therapy available. Within this landscape, treatment of CTCL is strongly motivated by the safety risk of each product. SGX301 potentially represents the safest available efficacious treatment for CTCL. With no systemic absorption, a compound that is not mutagenic and a light source that is not carcinogenic, there is no evidence to date of any potential safety issues.

The Phase 3 CTCL clinical study was partially funded by the National Cancer Institute via a Phase II SBIR grant (#1R44CA210848-01A1) awarded to Soligenix, Inc.

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 SGX301 as a novel photodynamic therapy utilizing safe visible light for the treatment of cutaneous T-cell lymphoma, our first-in-class innate defense regulator (IDR) technology, dusquetide (SGX942) for the treatment of 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, SGX943, our therapeutic candidate for antibiotic resistant and emerging infectious disease, and our research programs to identify and develop novel vaccine candidates targeting viral infection including Ebola, Marburg and SARS-CoV-2 (the cause of COVID-19). 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 Agents (DTRA) and the Biomedical Advanced Research and Development Authority (BARDA).

For further information regarding Soligenix, Inc., please visit the Company's website at www.soligenix.com.

This press release may contain forward-looking statements that reflect Soligenix, Inc.'s current expectations about its future results, performance, prospects and opportunities, including but not limited to, potential market sizes, patient populations and clinical trial enrollment. Statements that are not historical facts, such as "anticipates," "estimates," "believes," "hopes," "intends," "plans," "expects," "goal," "may," "suggest," "will," "potential," or similar expressions, are forward-looking statements. These statements are subject to a number of risks, uncertainties and other factors that could cause actual events or results in future periods to differ materially from what is expressed in, or implied by, these statements, such as experienced with the COVID-19 outbreak. Soligenix cannot assure you that it will be able to successfully develop, achieve regulatory approval for or commercialize products based on its technologies, particularly in light of the significant uncertainty inherent in developing therapeutics and vaccines against bioterror threats, conducting preclinical and clinical

trials of therapeutics and vaccines, obtaining regulatory approvals and manufacturing therapeutics and vaccines, that product development and commercialization efforts will not be reduced or discontinued due to difficulties or delays in clinical trials or due to lack of progress or positive results from research and development efforts, that it will be able to successfully obtain any further funding to support product development and commercialization efforts, including grants and awards, maintain its existing grants which are subject to performance requirements, enter into any biodefense procurement contracts with the US Government or other countries, that it will be able to compete with larger and better financed competitors in the biotechnology industry, that changes in health care practice, third party reimbursement limitations and Federal and/or state health care reform initiatives will not negatively affect its business, or that the US Congress may not pass any legislation that would provide additional funding for the Project BioShield program. In addition, there can be no assurance as to the timing or success of the Phase 3 clinical trial of SGX942 (dusquetide) as a treatment for oral mucositis in patients with head and neck cancer receiving chemoradiation therapy, or any of our other clinical/preclinical trials. Despite the statistically significant result achieved in the SGX301 Phase 3 clinical trial for the treatment of cutaneous T-cell lymphoma, there can be no assurance that a marketing authorization from the FDA or EMA will be successful. Further, there can be no assurance that RiVax® will qualify for a biodefense Priority Review Voucher (PRV) or that the prior sales of PRVs will be indicative of any potential sales price for a PRV for RiVax®. Also, no assurance can be provided that the Company will receive or continue to receive non-dilutive government funding from grants and contracts that have been or may be awarded or for which the Company will apply in the future. These and other risk factors are described from time to time in filings with the Securities and Exchange Commission, including, but not limited to, Soligenix's reports on Forms 10-Q and 10-K. Unless required by law, Soligenix assumes no obligation to update or revise any forward-looking statements as a result of new information or future events.

SOURCE Soligenix, Inc.

For further information: Jonathan Guarino, CPA, CGMA, Senior Vice President and Chief Financial Officer, (609) 538-8200 | www.soligenix.com

<https://ir.soligenix.com/2020-10-22-Soligenix-Announces-Phase-3-FLASH-Study-Continues-to-Demonstrate-Positive-Benefits-in-Patients-with-Cutaneous-T-Cell-Lymphoma>