

Innovative clinical-stage biotechnology company with a proprietary patented high-energy plasma device delivering a potent therapeutic molecule, nitric oxide, directly into tissue.

August 2023



Glossary

"CMS"	Center for Medicare and Medicaid Services
"CSR"	Clinical Study Report
"DFU"	Diabetic Foot Ulcer
"FDA"	Food and Drug Administration
"IDE"	Investigational Device Exemption
"PMA"	Pre-Market Approval
"PoC"	Proof-of-Concept
"SOC"	Standard of Care
"CDER"	FDA's Center for Drug Evaluation and Research
"CDRH"	FDA's Center for Devices and Radiological Health
"SSTIs"	Skin and soft tissue infections



Origin



Origin Life Sciences, Inc. ("Origin") - Introduction

- Has developed a proprietary device ("IonojetTM") that generates **nitric oxide** ("NO") from atmospheric air in the form of a high-energy plasma/NO stream and delivers it to targeted locations of the body
- The plasma/NO stream has been shown in investigations to date: (i) to be non-toxic, (ii) to generate NO activity up to 3 cm below the skin, (iii) to stimulate sustained biological activity in tissue for up to an hour after delivery of the therapy, and (iv) to penetrate and disrupt biofilm.
- Has identified over 40 target indications in seven clinical areas based on NO's recognized ability to:
 - Increase blood flow
 - Destroy pathogens (bacterial, viral and fungal)
 - Regenerate tissue
 - Control pain and inflammation
- Has completed a dose-ranging feasibility clinical trial in the U.S. for initial target indication (Diabetic Foot Ulcers, "DFU") to identify optimal dose & demonstrate preliminary safety/efficacy data for the device
- Has completed PoC studies in certain target indications
- Intends to initiate PoC studies in a number of additional indications



Origin Life – Introduction (cont.d)

- Is regulated by FDA as a device (CDRH) with drug oversight (CDER)
- Is currently preparing for a pivotal trial in DFU using an adaptive design
- Will pursue a PMA if pivotal trial is successful
- Intends to generate revenue by charging for use of the device rather than by its sale
- Has 4 issued, 3 pending U.S. patents and 4 issued, 3 pending non-U.S. patents related to lonojet
- Has assembled an experienced management team supported by scientific advisors including a Nobel prize-winner in nitric oxide and a Board Member for the World Health Organization's advanced wound care program
- s addressing a market for DFU of \$3.8 billion in North America alone
- Following DFU PMA, intends to seek regulatory approval of lonojet[™] to treat chronic wounds and SSTIs (combined U.S. market of approximately \$12 billion)
- Investigational Device, Limited by Federal (or United States) Law to Investigational Use.



Clinical Strategy

DFU (Diabetic Foot Ulcer)

- \$3.8B U.S. Market
- Device update and manufacturing
- IDE preparation
- Pivotal trial
- Investigators, sites, recruitment
- PMA process

Proof-of-concept studies (PoC)

We intend to complete PoC studies in each of the following indications:

- Onychomycosis (addressable U.S. market of \$2.9 billion)
- Surgical Site Infections (addressable global market of \$4.2 billion)
- Chronic Acne (addressable U.S. market of \$4.27 billion)
- Tendonitis (addressable U.S. market of \$86.6 billion)
- Digital Rheumatoid Arthritis (addressable U.S. market of \$15 billion)
- Alopecia (addressable U.S. market of \$3 billion)
- Respiratory Tract Infections (addressable U.S. market of \$9 billion)

We intend to conduct further clinical studies in the following indications, for which we have already completed PoC studies, which demonstrated that the therapy generated by our medical device was well-tolerated:

- Infected pacemaker and defibrillator wounds (n=7)*
- Infected orthopaedic implant wounds (n=8)*

* Each study was the subject of a poster presented at conferences of the Symposium on Advanced Wound Care, one of the world's leading wound care education organizations



U.S. Target Indications – leading candidates

- Wounds
 - Diabetic foot ulcers
 - Acute wounds
 - Ulcers (venous leg and pressure)
 - Post-surgical wounds
 - Burns (radiation and thermal)
- Anti-infective
 - Onychomycosis (toenail fungus)
 - Surgical site infections
 - Skin and soft tissue infections
 - Infected implant wounds
- Dermal Therapeutics
 - Acne (chronic papulopustular and conglobate)
 - Cellulitis
 - Warts (plantar and viral)
 - Sports injuries

- Musculoskeletal
 - Arthritis
 - Tendinitis
 - Fasciitis
 - Cosmetic
 - Alopecia
 - Plastic surgery scarring
- Dental Infections
 - Periodontitis
 - Gingivitis
 - Implantitis
 - Surgical extraction infections
- Respiratory Tract Infections
 - Viral
 - Bacterial

Intellectual Property (IP)

- We have three issued and two pending U.S. patents directed to lonojetTM and the generation of NO, which relate to our NO generator, which is our core technology, our systemic NO applicator and our mobile console.
- Additionally, we have one patent and one pending patent application in the U.S. and four patents and three pending patent applications outside of the U.S. directed to our lonojet technology. We have also been granted trademark registration in the U.S. for lonojetTM.
- In addition, we have acquired the U.S. patent for the delivery of plasma/NO from the Russian inventor of the Plason, the design of which the lonojet plasma/NO delivery mechanism is derived from.
- The Plason has its origins in four Nobel Prize-winning discoveries, most notably the 1998 Nobel Prize for Medicine and the 1970 Nobel Prize for Physics.
- Our device has been significantly re-engineered and updated from the Plason with higher performance metrics in order to produce a reliable and consistent plasma/NO stream and to address regulatory requirements and "Western" medical expectations.



Prototype of the U.S. version of our therapy delivery platform that was used in our doseranging clinical trial and in our proof-ofconcept studies. THIS DEVICE IS CURRENTLY UNDER DEVELOPMENT. THE PROTOTYPE DEPICTED ABOVE IS IN THE PROCESS OF BEING REENGINEERED AND, THEREFORE, IS NOT THE DEVICE WE INTEND TO USE IN OUR PIVOTAL CLINICAL TRIAL.



Regulatory & Reimbursement

Regulatory

- The FDA previously determined that our product will be a Class III Device
- Prior to commencing a pivotal trial, and subject to consummation of the IPO, we intend to submit a new IDE for our reengineered device
- As a Class III medical device, we are required to follow the PMA process, which has guided the product and clinical development programs which underpin our strategy
- Per our last discussions with the FDA, our PMA application will be reviewed by CDRH consulting with CDER as necessary

Reimbursement

- Our ability to commercialize the lonojet in the U.S. depends in part on the availability of adequate reimbursement from third-party payers, including governmental payers such as the Medicare and Medicaid, which are managed by CMS
- Private payers often rely on the lead of the governmental payers in rendering coverage and reimbursement determinations
- Therefore, achieving favorable CMS coverage and reimbursement is a significant gating issue for successful introduction of our product



Origin Summary

To Date

- Our technology has been studied in (i) numerous animal studies for safety, (ii) a single center study of 40 patients in 2013 to treat chronic wounds; (iii) a clinical study in 10 patients to treat diabetic foot ulcers completed in 2016; and (iv) a dose-ranging feasibility clinical trial for the treatment of patients with diabetic foot ulcers (GENESIS)
- Our device allows us to turn atmospheric air into a plasma/NO stream that has been shown in investigations to date: (i) to be non-toxic, (ii) to generate NO activity up to 3 cm below the skin, and (iii) to stimulate sustained biological activity in tissue for up to an hour after delivery of the therapy
- We believe that animal and human studies have shown evidence of efficacy and that the therapy is well-tolerated
- We have identified target indications for which we intend to explore treatment using the therapy generated by the lonojet[™] device

What's Next

We hope to:

- Complete the final prototype of our lonojet[™] device
- Initiate and complete the pivotal trial for DFUs and seek PMA from the FDA as a Class III medical device
- If Ionojet[™] is approved as a Class III medical device, create a commercial infrastructure to launch the marketing of our product
- Complete PoC studies for additional target indications with goal to expand indications for use of lonojet
- Subject to supplemental approvals, become the leading provider of topical NO treatments using our device for various therapeutic purposes, including as an antiinfective, anti-inflammatory and tissue-regenerative therapy for chronic wounds and SSTIs



Executive Team



Michael Preston

Chairman (2010-Present) and Chief Executive Officer (2015-Present)

Founder of Origin Life Sciences, Inc. Price Waterhouse, London

MA, University of Oxford



David Dantzker, MD Deputy Chairman and Chief Medical Officer (2012-Present)

Director, Sumodics (SRDX) Former Chair American Board of Internal Medicine Former President of North Shore-LIJ Health System

MD, University at Buffalo School of Medicine



Johnny Fernandes

Chief Financial Officer (2015-Present)

Former Senior Vice President of Coty Inc. Associate, Institute of Chartered Accountants (1984-Present)

BSc, University of St. Andrews, Scotland



Board Members and Scientific Advisors



Anthony Brampton Non-executive Director Former Managing Director of Healthcare & Life Sciences Corporate Finance at J.P.Morgan Cazenove (until retirement)

MS, University of Oxford



Victor Micati Non-executive Director

Former President of Pfizer Europe (until retirement)

MBA, Columbia Business School



Jerome Boda Korten

Non-executive Director EVP, Retia Medical Systems, Inc. Director, Onebreath, Inc. MS, University of Michigan



Terry Treadwell, MD, FACS Scientific Advisor

Founder, of The Institute for Advanced Wound Care V-P, Wound Council, WHO

Southwestern Medical School, University of Texas



Ferid Murad, MD, PhD

Scientific Advisor

Nobel prize-winner, Physiology and Medicine (1998)

Western Reserve School of Medicine



Appendix - Clinical Data



Nitric Oxide – Biological Activity

Nitric Oxide in the Body



- Nitric oxide has been found to be important in many other bodily systems, acting as a signaling molecule in the cardiovascular, nervous and immune systems, and used by the nervous system as a neurotransmitter to regulate digestion, blood flow, memory and vision.
- In the immune system, nitric oxide is released by macrophages (a type of white blood cell), killing bacteria, other parasites and tumor cells by disrupting their metabolism.
- The main site of nitric oxide's synthesis is in the inner layer of blood vessels, where it causes the walls of blood vessels to dilate, which in turn increases blood flow and decreases blood pressure.
- Nitric oxide represents a potential wound therapeutic agent due to its ability to regulate inflammation and eradicate bacterial infections.

Origin's Proprietary Nitric Oxide Transdermal Delivery

Origin's Plasma-generated Nitric Oxide Has Potential to Promote Healing In Various Ways





DFU – Clinical Development for Regulatory Approval (initial target indication)



Initial Target Indication – Large Unmet Medical Need Diabetic Foot Ulcers (DFU)

Diabetes and DFUs

According to the CDC, 1 in 10 adults have diabetes



In the last 20 years, the number of adults with diabetes has more than doubled

- Diabetes, a metabolic disorder characterized by prolonged hyperglycemia, affects approximately 37.3 million Americans according to the CDC
- Diabetic neuropathy often leads to diabetic foot ulcers (DFUs), where a thickened wound forms at the balls of the feet
- Over their lifetime, 12% of diabetics develop diabetic foot ulcers
- In 2016 there were 4.9 lower-extremity amputations per 1,000 adults with diagnosed diabetes and that 130,000 diabetes-related hospital discharges involved a lower-extremity amputation, according to the CDC
- In the U.S., the cost of diabetic foot ulcer treatments in annual direct health care costs is \$9 to \$13 billion
- Global diabetic foot ulcer treatment market was valued at \$8.6 billion in 2021 and is projected to reach \$14.8 billion by 2030, per report by GlobeNewswire

DFUs and Nitric Oxide



- Because of the serious medical risks and socioeconomic burden of diabetic foot ulcers, there is a critical unmet need for effective diabetic foot ulcer treatment
- This need is not adequately addressed by standard-of-care (SOC) wound therapies, which have been demonstrated to yield 12-week closure in less than 50% of patients
- We believe that our therapy, if approved by the FDA, will treat this critical unmet need for an effective treatment of diabetic foot ulcers, with potential to both disinfect and promote the healing-of infected wounds, and deliver site-specific and therapeutically relevant concentrations of NO to the wounds
- Our clinical trials to date have demonstrated that our therapy is well-tolerated

Origin's Clinical Journey to Date - DFU

Technology Verification (2013-2016)



Animal safety studies – COMPLETE

Numerous animal studies were conducted to • determine safety of the technology

A 2013 single-center non-controlled observational study for the treatment of various chronic wounds including DFUs - COMPLETE

- Approximately 40 patients
- 100% of patients achieved >50% wound closure after 8 weeks of therapy
- 84% of patients had resolution of wound pain •
- There were no device-related adverse events. as determined by the principal investigator

Clinical Pilot Study (2016)

Clinical pilot study to treat DFUs - COMPLETE

- 10-week, randomized, controlled study to evaluate the efficacy and safety of our plasma/NO therapy in subjects with a diabetic foot ulcer (n=10)
- No device- or procedure-related adverse events
- Patients' pain ratings and wound size decreased from baseline at end of treatment
- Plasma-generated NO therapy was welltolerated in patients

THE DEVICE THAT WILL BE LISED IN PIVOTAL TRIAL

PROTOTYPE OF THE U.S. VERSION OF OUR THERAPY DELIVERY PLATFORM USED IN DOSE-RANGING CLINICAL TRIAL AND IN POC STUDIES, DEVICE IS IN THE PROCESS OF BEING REENGINEERED AND IS NOT

Dose-Ranging Feasibility (2017-2020)

"GENESIS", a human dose-ranging study for DFUs – COMPLETE

- After 83 patients randomized, an interim analysis of 63 subjects, 53 of whom completed the twelve-week treatment, was performed. Additional analysis (n=36) was performed that excluded one clinical site with abnormal data.
- In analysis excluding the site with abnormal data, the best-٠ performing arm of 12-minute treatments 4 times/week delivered a 100% median wound-size reduction at 12 weeks compared to 49% in the control arm and wound closure greater than 95% in 86% of patients at 12 weeks compared to 33% in the control arm. Further, 71% of patients in that arm achieved full wound closure after 12 weeks. These results enabled us to complete the trial early.*
- ٠ Clinical trial completed in 2018, CSR submitted to FDA in 2019, FDA acknowledged completion and submission of CSR in 2020.
- ٠ Upon submission and acceptance of new IDE for reengineered device, Origin can proceed to a pivotal trial

genesis TRIAL

* The GENESIS study was not powered for these endpoints or to demonstrate statistical differences between groups.

Diabetic Foot Ulcer (DFU) Feasibility Study **genesis**

Trial Design, Data, and Clinical Observations



Dose-Ranging Feasibility Trial



Study Design

Study objectives:

- · Evaluate whether device is safe and well-tolerated
- Determine best dose(s) for use in pivotal trial •
- Identify desirable design modifications for the lonojet **Description:**

• DFUs

- Up to 100 adult patients in 15 study sites in the United States
- Designed to evaluate the effect of time and frequency • of NO treatment over 12-week period on wound healing
- Evaluated four doses of NO treatment (ranging from 6) minutes 2x per week to 12 minutes 4x per week) and SoC

Results:

- Interim data analysis performed after 83 patients randomized
- Determined that we had sufficient information to end • enrollment early
- Study completed in 2018 and CSR submitted to FDA • in 2019
- Provided information to develop final safety and effectiveness hypotheses for pivotal trial

1: Standard of Care (SOC) includes bandaging, debridement and pressure reduction. ClinicalTrials.gov Identifier: NCT03078933.; www.clinicaltrials.gov/ct2/show/NCT03078933?cond=apt-001&rank=2 (FDA drug dose-ranging feasibility)

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Plasma-GeneratEd Nitric oxidE doSe-ranging trial in dlabetic foot ulcerS To assess the effect of nitric oxide treatment time (minutes) and frequency (days/week) on wound healing to determine optimal dose for Origin's pivotal trial Patient Screening (1 week) Run-in (2 weeks) Randomization 1:1:1:1:1 Treatment arm 1 Treatment arm 2 Treatment arm 4 Treatment arm 3 Treatment arm 5 Standard of Care $SOC + 2 \times 6$ $SOC + 4 \times 6$ $SOC + 2 \times 12$ $SOC + 4 \times 12$ (SOC)1 minutes per week minutes per week minutes per week minutes per week 12 weeks of treatment Follow-up 3 months





Interim Analysis



Analysis Conclusions

- Interim analysis conducted on 63 subjects, 53 of whom completed treatment (the results reported below exclude one clinical trial site that did not follow inclusion/exclusion criteria for the study and reported results that the independent analyst determined were abnormal and warranted exclusion from the analysis, which resulted in an analysis of 36 patients).*
- After 12 weeks of treatment, the best-performing arm of 12-minute treatment 4x per week achieved:
 - Wound closure >95% in 86% of patients compared to 33% in the control (SoC) arm
 - 100% median wound-size reduction compared to 49% in the control (SoC) arm
 - Full wound closure in 71% of patients, compared to 0% in the control (SoC) arm
- More than 1,000 treatments were administered to patients during the trial and there were no recorded therapy-related adverse events
- Although the study was not statistically powered to evaluate the differences between groups, we have concluded that this analysis supports moving forward to a pivotal trial
- These results demonstrate potential for treating wounds with NO to promote healing

* Because the final clinical study report evaluated the full 83 patients who were randomized, including patients that did not complete treatment and the previously excluded clinical trial site, the results in the final report differ substantially from those reported in the interim analysis. We believe the results of the interim analysis (n=36) are more appropriate for determining whether to move forward with the pivotal trial and selecting the most promising dose arms to study.

GENESIS Analysis

Orıgın[©]

GENESIS Trial – Interim Data for DFU



Proportion of Subjects >95% Wound reduction at 12 weeks



GENESIS Trial – Interim Data for DFU

Proportion of Subjects >95% Reduction in Wound Area Each Week



GENESIS Analysis



The Treatment of Infected Pacemaker and Defibrillator Wounds with Nitric Oxide / Plasma Therapy

Dowis Waker, LPA

Montgomery, Alabama

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Nitric Oxide

NO Production

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Background

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Institute for Advanced Wound Care

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The Treatment of Infected Wounds with Orthopedic Implants and Skeletal Fixation with Nitric Oxide / Plasma Energy

Terry Treadwell, MD, FACS, FAAVC Lyustnile Nikolaychook, DO

Institute for Advanced Wound Care Baptist Medical Center Montgomery, Alabama

Background

Open extention and mercal fuence has been a second provide for the teament of many features and other extention profession, the technology provides more states to features ((1,1,5), bioinforming attractions long user, and along an order relates to feature ((1,1,5), bioinforming protected and the second and the teach of technology (1,1,5), bioinforming attractions in the second of the features ar experiments, our result in provides an and the second of the second of the features are second in the provides and the second of the second of the features are second in the provides and the second of the second of the features of the second of the second technology features of the provide technology in the second of the provides of the second of the second of the second of the second of the provides of the second technology attractions of the second of the second of the features of the technology of the technology of the second of the technology of the second of the technology of the second of the second of the technology of technology the second technology of the second of the provide technology of the technology of the second technology of technology of the technology of technology of the second of the technology to technology to technology of the second of the technology of technology of technology of the technology of technology to technology the technology of technology of technology of technology of the technology of technology to technology of technology of technology of technology of technology of technology attraction of technology to technology of technology of technology of technology attraction technology to technology of technology of technology of technology attraction technology to technology of technology of technology of technology attraction technology to technology of technology of technology of technology attraction technology of technology of technology of technology of technology attraction technology to technology of technology of technol

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References

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The Treatment of Wounds Occurring in Radiated Tissue with Nitric Oxide / Plasma Therapy

Terry Treadwell, MD, FACS, FANWC

Lyudmita Nikslaychook, DO Institute for Advanced Wound Care

Jessica Baker, RN

Montgomery, Alabama

Angela Pickena, RN

Background

Radiation therapy has been used in the treatment of certain sancers for over 100 years with service results: (7) Even though it is effective in treating selected malignamies, the potential damage to normal tissues can be eignificant. The most trequently repred tosue is the exit everying in surrounding the area of treatment. These spartes may be acute occurring within 10-14 days of starting radiation therapy or chronic scounting 2 months or more after therapy. (1) These effects phradiation therapy, both arule and stress, may be the result of deals of and damage to talk especially foroblents, tree of circulation to the tasses due to microstrulation damage, and development of an abnormal inflammatory reaction in the tosues that may be prolonged (1.2.3.4)

White parties in a residencial generated mormally in the body by hitric parties sprittance and functions as an intracellular signaling molecule. There is significant evidence that nime outline plays a major role in adoutd healing by attractating collegen sumhesis and sound strength. abrulating angiogenesis, reducing information, silling bacteria, alimulating microvescular vasionilatation, inhibiting planteer and enythrocyte apgregation, reducing leukocyte adhesion, and attivulating endothelial and fibrobast protiferation and differentiation, rfLSI if functions as an anti-microbial killing bacteria by its direct effect or bacteria and by combining with the superceide anon to form an antimicrobial agent /VO + C0 + CNOO-1. The retric celderblasma energy combination has been found to penetrate up to 3um into what has a making it effective in treating certain conditions under intact skin. It place a large role in usaudiatation of the insurance cubics by restoring the function of endothetial ratio, code synthesis inNOS1. (7.8.8)

Twatment of acounds with riblic coulde has proved to be difficult because the inclinuale has a very short half after in the range of seconds, in an attempt to reactive normal while pulse activity to taskes and improve heating in chronic anunds, attention was turned to a device first developed in Russia by Drs. Petohev and Eheldhal. The NO-Barapy double uses planted energy to deliver rolls, oxide to the bissues, (10,11) The condination of almospherix payper and retroper at high temperatures persetated by an electric arc results in time ontile and plasma every (N2 + 02 + 2ND + M1 K/ every). (R0.11) Two combination of plasma every and notic oxide results in the molecule having an extended half-life long enough to be clinically useful in the treatment of assumits and infections. After periaration, the sitricceldeblasma flow is cooled to ~35C, and nimic colde is delivered to the bases in a "dose" between fold and 1000 opin. (11) The kibic calde is penerated out of the surrounding air without the need to additional games. During the treatment of the palient no part of the device. touches the patient, so there is no need for disposable parts or iterilipation of the device.

Note cathe promoted wound healing by elonulating angingements. reducing inflammation, killing bacteria, altimulating microsoancular vanishiphyton, middling planet and wythrough appropriate, reducing technicyle adhesion, and stresdaling endothetial and Noribland proliferation and differentiation. (12, 13) All of Brace effects would benefit the radiated around and help with healing, (54,15)

This study was done to evaluate the efficiency of plasma i roles unde the We treatment of scale and civoric wounds occurring it railisted Insue

References

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Methods and Treatment

After 1918 approval of the protocol, a series of 3 patients with acute or chronic enumity accurring in tossie following radiation therapy were enrolled in the shuty The wounds have been present from 3 to 20 years with an average of 6.8 years Each wound are debined and invaled with the rithic indepteams energy therapy once per seas for an average of 5 minutes per beatment.

Cases















Results

Each palant shound as immediate reduction in the size of the amend in the radiated basice. Will beatments once per uses for 6 minutes each time, 2 patients. have healed, and 3 have had a significant reduction in size of the smand and nonlinue with thenapy. Continued work with the nitric cuide / pleases avergg thenaby is wananted to determine its ideal beatment duration and interval