Initial Pre-Clinical Studies (In-vivo)

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Forward Looking Statement

This presentation contains express or implied forward-looking statements pursuant to U.S. Federal securities laws. For example, the Company is using forward-looking statements when it discusses the conclusions from the pre-clinical studies on swine. These forward-looking statements and their implications are based on the current expectations of the management of the Company only and are subject to a number of factors and uncertainties that could cause actual results to differ materially from those described in the forward-looking statements. Except as otherwise required by law, the Company undertakes no obligation to publicly release any revisions to these forward-looking statements to reflect events or circumstances after the date hereof or to reflect the occurrence of unanticipated events. More detailed information about the risks and uncertainties affecting the Company is contained under the heading “Risk Factors” in the Company’s Registration Statement on Form F-1 filed with the SEC, which is available on the SEC’s website, www.sec.gov.
Studies Have Proven

- ART treatment in hypoxemic animal model, resulted in significant increase of oxygen saturation of 8%-10%
- A flow of 1 liter per minute, was sufficient to provide a saturation increase of 8-10%
- Pulmonary artery saturation, exhibiting ART oxygenation independent of oxygenation resulting from lung activity, increased by 26%
- ART exhibited a significant decrease of PaCO2
- Blood pressure was unaffected
Pre-clinical Studies (In-vivo)

**When:** August 2020¹

**Tested:** ART’s ability to rebalance oxygen saturation levels within minutes

**Where:** LAHAV CRO in Israel²

**Animal model:** Swine model

**ART system used for the studies:** Lab unit constructed from lab components

25 hypoxemic events were induced

In 20 out of the 25 hypoxemic events induced, ART treatment³ was provided with a blood flow rate of 1 liter per minute.

**The results are presented here from these studies**

Additional studies were conducted

- During 2019-2020, additional 15 pre-clinical studies were conducted as feasibility tests.
- On November 2021, an additional pre-clinical study was conducted in LAHAV CRO in Israel.

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¹ Research protocol was approved by the national ethics committee of animal experimentations.
² LAHAV CRO https://lahavcro.com/
³ ART Treatment = extracorporeal blood oxygenation with one liter of blood
Method

In these initial pre-clinical studies (In-vivo) the goal was to assess the oxygenation effectiveness of ART system¹ in animal model.

Animal model
The swine species chosen for the current study is Large-White X Landrace. This breed was chosen due to a well-known resemblance of the anatomy, cardiovascular and respiratory physiology, size scale and other characteristics to adult humans.

Experiment setup
Two anesthetized mechanically ventilated swine, were cannulated in the right internal jugular vein via a double lumen cannula. The cannula conduits were connected to 3/8” diameter inlet & outlet tubes, allowing for blood transportation to and from the veno-venous ART device.

Hypoxemia induction
Intubated swine were ventilated with hypoxemic gas-mixture resulting in oxygen saturation level of ~80-85%. Hypoxemia was induced prior to each initiation of ART treatment.

¹. An extracorporeal respiratory support system composed of an oxygenator, a pump, a plug-and-play cartridge, sensors, and a control unit
Clinical and physiological parameters were collected throughout the test. Oxygenation was assessed by means of a non-invasive sensor (PPG-Sat), and blood gas measurements. Both arterial and venous blood were drawn and analyzed using the GEM 4000 Blood Gas Analyzer (Werfen, Barcelona, Spain). Blood pressure was assessed from pressure probes located in the femoral vein and carotid artery. An arterial sample (drawn from the carotid artery) and a venous sample (drawn from the femoral vein) were assessed for partial oxygen pressure (pO$_2$), oxygen-bound hemoglobin (O$_2$HGB), blood gas saturation, carbon dioxide partial pressure (pCO$_2$), bicarbonate levels (HCO$_3$), hemoglobin (HGB), hematocrit (HCT), pH, glucose, and electrolytes (sodium, potassium, chloride and ionized free calcium).
Study design

Blood oxygenation and CO2 removal at a flow rate of 1 litter/min were assessed in 20 consecutive observations, each repeated the following steps:

1. **Hypoxemia induction (ART is OFF)**
2. **ART turned ON**
   - For 15 minutes
   - Blood flow: 1 liter/min
3. **ART turned OFF**
   - Hypoxemia induction (~3-5 min)

Blood samples are taken from the (1) femoral vein (2) pulmonary artery, and (3) carotid artery at baseline (prior to the activation of ART) and 15 minutes following the system's activation.
Study Results
ART Provides Significant Increase In Saturation

The saturation levels in the pulmonary artery increased on average by 26%, and in the carotid artery by about 8-10%.
ART’s Contribution to Oxygen Saturation Should Be Reviewed Independently From the Lung Activity

ART increased saturation by 26% in the Pulmonary Artery.

The contribution of ART to saturation should be assessed via saturation measured in the Pulmonary artery; right after ART oxygenates 1 liter of blood and just before the patients’ entire Cardiac Output further oxygenates via the lungs.

SvO2 & SaO2

Disclaimer: The oxygenation capabilities of a patient/animal model lung will depend on the underlying pathophysiology, the level of severity and response to treatment.
ART Provides Significant Increase In PO2 Levels

![PaO2 & PvO2 (mmHg)](chart)

| Parameter | Blood sample location | ART Status | ART Status | Difference | Std Error | t Ratio | Prob>|t| | Lower 95% | Upper 95% |
|-----------|-----------------------|------------|------------|------------|-----------|---------|------|-----------------|-----------|-----------|
| PO2 (mmHg)| Femoral vein          | OFF        | ON         | -3.688546  | 1.316849  | -2.8    | 0.0122| -6.46393       | -0.91316  |
| PO2 (mmHg)| Pulmonary artery      | OFF        | ON         | -10.75     | 1.632462  | -6.59   | <.0001| -14.1797       | -7.32033  |
| PO2 (mmHg)| Carotid artery        | OFF        | ON         | -13.83333  | 1.272559  | -10.87  | <.0001| -16.5069       | -11.1598  |
# CO2 Removal Via ART Is Significant

![Graph showing PaCO2 & PvCO2 (mmHg)](image)

**ART contribution to PCO2 decrease**

| Parameter | Blood sample location | ART Status | ART Status | Difference | Std Error | t Ratio | Prob>|t| | Lower 95% | Upper 95% |
|-----------|-----------------------|------------|------------|------------|-----------|---------|----------|-----------|-----------|
| PCO2 (mmHg) | Femoral vein | OFF | ON | 3.8 | 2.591466 | 1.46 | 0.1609 | -1.64929 | 9.220551 |
| PCO2 (mmHg) | Pulmonary artery | OFF | ON | 8.5 | 1.707613 | 4.98 | <.0001 | 4.91244 | 12.08756 |
| PCO2 (mmHg) | Carotid artery | OFF | ON | 5.8 | 0.699289 | 8.22 | <.0001 | 4.28085 | 7.219151 |
Blood Pressure Was Unaffected

### SBP (mmHg)

| Parameter | Blood sample location | ART Status | - ART Status | Difference | Std Error | t Ratio | Prob>|t| | Lower 95% | Upper 95% |
|-----------|-----------------------|------------|--------------|------------|-----------|---------|----------|-----------|-----------|
| SBP (mmHg) | Femoral vein | OFF | ON | -8.45 | 1.762394 | -4.8 | 0.0001 | -12.1547 | -4.74943 |
| DBP (mmHg) | Femoral vein | OFF | ON | -4.19 | 1.172648 | -3.57 | 0.0022 | -6.65322 | -1.72594 |
| SBP (mmHg) | Pulmonary artery | OFF | ON | -8.45 | 1.762394 | -4.8 | 0.0001 | -12.1547 | -4.74943 |
| DBP (mmHg) | Pulmonary artery | OFF | ON | -4.19 | 1.172648 | -3.57 | 0.0022 | -6.65322 | -1.72594 |
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| DBP (mmHg) | Carotid artery | OFF | ON | -4.19 | 1.172648 | -3.57 | 0.0022 | -6.65322 | -1.72594 |

### DBP (mmHg)

| Parameter | Blood sample location | ART Status | - ART Status | Difference | Std Error | t Ratio | Prob>|t| | Lower 95% | Upper 95% |
|-----------|-----------------------|------------|--------------|------------|-----------|---------|----------|-----------|-----------|
| SBP (mmHg) | Femoral vein | OFF | ON | -8.45 | 1.762394 | -4.8 | 0.0001 | -12.1547 | -4.74943 |
| DBP (mmHg) | Femoral vein | OFF | ON | -4.19 | 1.172648 | -3.57 | 0.0022 | -6.65322 | -1.72594 |
| SBP (mmHg) | Pulmonary artery | OFF | ON | -8.45 | 1.762394 | -4.8 | 0.0001 | -12.1547 | -4.74943 |
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Thank You