JadiCell™
UC-MSC Therapy

Patented Investigational Umbilical Cord-Derived Mesenchymal Stem Cell Therapy for Acute Respiratory Distress Syndrome

BREATHE BIOLOGICS, INC.

Transforming Hope Into Healing

Phase 2b/3	IND #19757	91% vs 42%	Allogeneic
CLINICAL STAGE	FDA ACTIVE IND	PHASE 1/2A SURVIVAL	OFF-THE-SHELF

DISEASE BURDEN OVERVIEW

The ARDS Crisis: **A Lethal Unmet Need**

190,000+
U.S. ARDS CASES ANNUALLY

30–45%
MORTALITY RATE

75,000+
U.S. DEATHS PER YEAR

$1B+
ANNUAL U.S. ECONOMIC BURDEN

ARDS is a life-threatening inflammatory lung condition characterized by rapid-onset respiratory failure and bilateral pulmonary infiltrates. **No FDA-approved pharmacologic therapy** exists targeting its underlying pathophysiology.

ARDS PATHOPHYSIOLOGY

Understanding ARDS: The Cytokine Storm

01

STEP 1 — TRIGGER

Systemic Insult Activates Immune Cascade

Sepsis, trauma, viral pneumonia, or COVID-19 triggers a systemic inflammatory response, activating innate immune pathways.

02

STEP 2 — CYTOKINE STORM

Massive Pro-Inflammatory Cytokine Release

Uncontrolled release of **IL-6, TNF-α, IFN-γ** drives explosive pulmonary inflammation and widespread tissue damage.

03

STEP 3 — ALVEOLAR FLOODING

Protein-Rich Edema Floods Air Sacs

Vascular permeability surges; protein-rich fluid invades alveoli, collapsing air spaces and severely impairing gas exchange.

04

STEP 4 — HYPOXEMIA

Respiratory Failure & Bilateral Infiltrates

PaO_2/FiO_2 <300 mmHg — hallmark ARDS threshold. Bilateral chest infiltrates visible on imaging; life-threatening oxygen deprivation ensues.

05

STEP 5 — MECHANICAL VENTILATION

Supportive Care Only — No Disease Modifier

Ventilatory support remains the primary intervention. **No approved therapy addresses the root inflammatory pathophysiology.**

Current standard of care is supportive only. A disease-modifying therapy targeting the cytokine-driven inflammatory cascade is **urgently needed.**

JadiCell™: The Technology Platform

Allogeneic UC-MSC Therapy — Core Platform Attributes

CELL TYPE 1

Allogeneic UC-MSC

JadiCell is derived from the subepithelial layer of umbilical cord tissue.

MANUFACTURING 2

cGMP-Compliant Production

Diabetes Research Institute, University of Miami — rigorous Good Manufacturing Practice standards

PATENT 3

U.S. Patent 9,803,176 B2

Proprietary JadiCell™ cell line — intellectual property covering unique UC-MSC composition

ADMINISTRATION 4

Two IV Infusions — Day 0 & Day 3

$100 \pm 20 \times 10^6$ cells per infusion, delivered systemically via intravenous route

AVAILABILITY 5

Off-the-Shelf Allogeneic

No patient cell harvesting required — ready-to-administer therapy for immediate clinical use

SCALABILITY 6

Standardized Manufacturing

Consistent, scalable production process enables broad commercial supply readiness

MECHANISM OF ACTION

How JadiCell™ Works

Systemic delivery → targeted immunomodulation → tissue regeneration

BREATHE BIOLOGICS

IND #19757 | Investigational

1

Intravenous Administration

Two infusions **Day 0 & Day 3** **100 million cells** per infusion, delivered systemically via IV

2

Homing to Inflammation

MSCs **traffic** to sites of active pulmonary inflammation via **chemokine gradient** signaling

3

Immuno-modulation

Paracrine factors suppress **IL-6, TNF-α, IFN-γ, PDGF-BB, RANTES** — shifting macrophage phenotype

4

Tissue Repair

Promotes **alveolar epithelial** regeneration, reduces fibrosis, restores **gas exchange capacity**

Net Effect: Cytokine storm suppression → reduced alveolar injury → improved oxygenation → survival advantage. No cytotoxic mechanism; immunomodulation is **paracrine**, not cell-engraftment dependent.

† Mechanism based on preclinical and Phase 1/2a observational data (Ricordi et al., *STEM CELLS Translational Medicine*, 2021; NCT04355728). JadiCell™ is investigational and not approved by the FDA for any indication.

Phase 1/2a Trial Design NCT04355728

PHASE 1/2A · PUBLISHED 2021

STUDY DESIGN

TRIAL TYPE
Double-blind, Randomized, Placebo-controlled

CLINICAL SITE
University of Miami Health System / Jackson Memorial Hospital

PUBLICATION
STEM CELLS Translational Medicine (Wiley, 2021)

PRINCIPAL INVESTIGATOR
Dr. Camillo Ricordi, M.D.

24	12	12
TOTAL SUBJECTS	JADICELL TREATED	CONTROL GROUP

PATIENT POPULATION

ARDS CLASSIFICATION
Moderate-to-Severe ARDS (COVID-19-induced)

SETTING
Hospitalized patients — inpatient acute care

RESPIRATORY SUPPORT
Mechanically ventilated or requiring **high-flow O_2**

AGE RANGE
Ages 18–80

INCLUSION HIGHLIGHTS

- ✓ COVID-19-induced ARDS
- ✓ PaO_2/FiO_2 < 300 mmHg
- ✓ Bilateral infiltrates confirmed
- ✓ Best standard of care received

Two IV infusions of 100 ± 20 million JadiCells, **72 hours apart** | Compared vs. **vehicle solution (placebo)** | Both groups received **best standard of care**

PHASE 1/2A TRIAL · NCT04355728 · N=24

Phase 1/2a: Landmark Clinical Outcomes

91%

JadiCell™ Survival at Day 31
vs. 42% Control

P = 0.015

SURVIVAL ENDPOINT

8×

Fewer Serious Adverse Events
2 vs. 16 cases

P = 0.008

SAFETY SIGNAL

Statistically Significant

Faster Time to Recovery
vs. Control Group

P = 0.03

RECOVERY SPEED

Zero

Treatment-Related
Serious Adverse Events

CONFIRMED SAFE

CLEAN SAFETY PROFILE

> *"UC-MSC infusions were safe and showed no treatment-related adverse events."*
>
> — STEM CELLS Translational Medicine, Wiley, 2021 · Ricordi et al. · NCT04355728

- Data from Phase 1/2a trial (n=24). Results are exploratory. Larger confirmatory trial required. JadiCell™ is investigational and not FDA-approved for any indication. IND #19757.

IMMUNOMODULATORY EVIDENCE · PHASE 1/2A DATA

Cytokine Storm Suppression: **Immunomodulatory Evidence**

NCT04355728

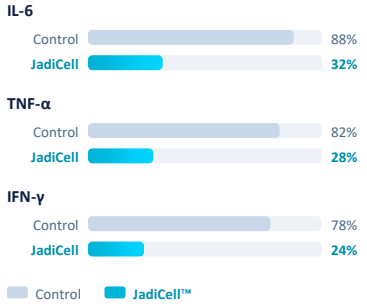
Ricordi et al., 2021

JadiCell™ treatment produced **statistically significant reductions** in key pro-inflammatory mediators driving ARDS severity.

IL-6	**Interleukin-6**	— Key driver of ARDS severity; marked reduction in JadiCell group vs. control	↓ Reduced
TNF-α	**Tumor Necrosis Factor Alpha**	— Central mediator of cytokine cascade; significantly decreased	↓ Significant
IFN-γ	**Interferon Gamma**	— Pro-inflammatory interferon; statistically significant reduction observed	↓ p<0.05
PDGF-BB	**Platelet-Derived Growth Factor BB**	— Implicated in pulmonary fibrosis pathway; decreased with JadiCell	↓ Reduced
RANTES / CCL5	**RANTES (CCL5)**	— Key chemoattractant in lung injury; reduced with JadiCell therapy	↓ Reduced

RELATIVE CYTOKINE LEVELS

JadiCell vs. Control (illustrative)



*Values illustrative of directional trend; consult source data for exact values.

These findings are consistent with JadiCell™ suppressing the cytokine storm driving ARDS lung injury through paracrine immunomodulation — shifting macrophage phenotype and broadly dampening pro-inflammatory signaling.

Source: Ricordi et al., STEM CELLS Translational Medicine, 2021 (NCT04355728). Data from Phase 1/2a exploratory trial (n=24). Larger confirmatory trials required.

PHASE 2B/3 PIVOTAL TRIAL

Phase 2b/3 Pivotal Trial: NCT07479043

IND #19757 ACTIVE

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IND STATUS

IND #19757 Active — FDA regulatory clearance secured for Phase 2b/3 progression

TRIAL REGISTRATION

NCT07479043 registered; double-blind, randomized, controlled, multi-center design

SITE ACTIVATION

Up to 6 U.S. clinical sites; stratified randomization by site and O_2 therapy type

ENROLLMENT

128 subjects (64 JadiCell : 64 control), ages 18–80; moderate-to-severe ARDS

PRIMARY ENDPOINT

Proportion alive & free of respiratory failure at **Day 60**

FOLLOW-UP & ANALYSIS

6-month follow-up (180 ± 7 days); primary endpoint readout ~3 months post-enrollment

If successful, **JadiCell™** could become the **first FDA-reviewed disease-modifying therapy for ARDS** — addressing a critical unmet need affecting 190,000+ U.S. patients annually.

Regulatory Pathway & Intellectual Property

IND #19757 | FDA OTAT | 21 CFR 312

IND STATUS

IND #19757 — Active with FDA

21 CFR 312 Investigational New Drug pathway. Full regulatory clearance secured for Phase 2b/3 progression.

FDA OFFICE

Regulated by the **FDA Office of Tissues and Advanced Therapies (OTAT)** — the primary advanced cell therapy regulatory body.

TRIAL PHASE

Phase 2b/3 Pivotal Trial — NCT07479043

Not yet recruiting as of September 2026. Up to 6 U.S. sites; 128 subjects planned.

PATENT PROTECTION

U.S. Patent 9,803,176 B2

Composition patent covering UC-MSC — the JadiCell™ proprietary cell line. Core IP protection secured.

MANUFACTURING IP

cGMP manufacturing protocols and formulation IP. Produced at Diabetes Research Institute, University of Miami.

FUTURE DESIGNATIONS

Orphan Drug Designation and expedited pathway eligibility (Breakthrough, Fast Track) currently *under evaluation*.

IMPORTANT REGULATORY NOTICE: *JadiCell™ has not been approved by the FDA or any regulatory authority for any indication. JadiCell™ is investigational only. IND #19757.*

PLATFORM EXPANSION & PIPELINE

Expanding the JadiCell™ Platform: Future Indications

● ACTIVE — PHASE 2B/3

ARDS

- COVID-19-induced; expanded to all-cause ARDS
- IND #19757 active
- NCT07479043 — 128 patients, up to 6 U.S. sites

NEAR-TERM

Sepsis-Induced ARDS

- Phase 1/2a signal supports exploration
- Inflammatory mechanism overlap with current indication
- Cytokine modulation directly applicable

MID-TERM

Trauma-Related ARDS

- Emerging preclinical rationale
- High unmet need in trauma & burn centers
- Same immunomodulatory pathway implicated

EXPLORATORY

Viral Respiratory Failure

- Influenza, RSV — broad viral scope
- Immunomodulatory mechanism broadly applicable
- Hypothesis-generating; preclinical evaluation pending

The *JadiCell™* platform's immunomodulatory mechanism positions it as a potential therapy across **multiple ARDS etiologies** — a shared cytokine-driven pathophysiology that transcends any single disease trigger.

[1] Future indications are investigational hypotheses only. No IND filed beyond ARDS (IND #19757). JadiCell™ is not FDA-approved for any indication. Scientific rationale based on Ricordi et al., STEM CELLS Translational Medicine, 2021 (NCT04355728).

FINAL SUMMARY

Key Takeaways

JadiCell™ UC-MSC Therapy
Medical Affairs Edition
September 2026

1. **ARDS is a lethal unmet need** with no FDA-approved disease-modifying therapy — **190,000+ cases/year** in the U.S. and a mortality rate of 30–45%, representing an urgent therapeutic gap.

2. **JadiCell™ is an allogeneic, off-the-shelf UC-MSC therapy** manufactured under cGMP standards at the University of Miami, with a compelling paracrine immunomodulatory mechanism of action targeting the cytokine storm driving ARDS.

3. **Phase 1/2a data (n=24)** showed **>2× survival improvement** (**91% vs. 42%**, P=0.015) and **8× fewer serious adverse events** (P=0.008) — published in *STEM CELLS Translational Medicine* (Wiley, 2021).

4. **Phase 2b/3 pivotal trial** (NCT07479043, IND #19757) enrolling **128 patients** across up to 6 U.S. sites is in preparation — primary endpoint: proportion alive and free of respiratory failure at Day 60.

5. ⚠ NOT FDA-APPROVED

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