



## The Unrecognized Faces of Critical Illness

**CytoSorbents**<sup>™</sup>

WORKING TO SAVE LIVES

CytoSorbents Corporation  
Q4 and Full Year 2022 Earnings Conference Call  
March 9, 2023

# Conference Call Participants

Moderator: Jodi Hoover  
CytoSorbents Corporation



Phillip Chan, MD, PhD  
Chief Executive Officer



Vincent Capponi, MS  
President and  
Chief Operating Officer



Kathleen Bloch, MBA, CPA  
Chief Financial Officer



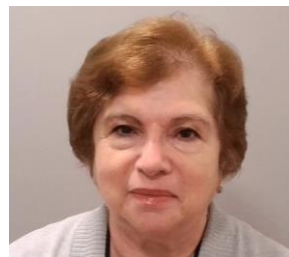
Efthymios "Makis" Deliargyris  
MD, FACC, FESC, FSCAI  
Chief Medical Officer



Christian Steiner, MD  
Executive VP Sales & Marketing  
Managing Director  
CytoSorbents Europe GmbH



Christopher Cramer, MS, MBA  
Senior VP  
Business Development



Irina Kulinets, PhD  
Senior VP  
Global Regulatory Affairs

# Safe Harbor Statement

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Statements in this presentation regarding CytoSorbents Corporation and its operating subsidiaries CytoSorbents Medical, Inc and CytoSorbents Europe GmbH that are not historical facts are forward-looking statements and are subject to risks and uncertainties that could cause actual future events or results to differ materially from such statements. Any such forward-looking statements are made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. It is routine for our internal projections and expectations to change. Although these expectations may change, we are under no obligation to inform you if they do. Actual events or results may differ materially from those contained in the projections or forward-looking statements. The following factors, among others, could cause our actual results to differ materially from those described in a forward-looking statement: our history of losses; potential fluctuations in our quarterly and annual results; competition, inability to achieve regulatory approval for our device, technology systems beyond our control and technology-related defects that could affect the companies' products or reputation; risks related to adverse business conditions; our dependence on key employees; competition for qualified personnel; the possible unavailability of financing as and if needed; and risks related to protecting our intellectual property rights or potential infringement of the intellectual property rights of third parties. This list is intended to identify only certain of the principal factors that could cause actual results to differ from those discussed in the forward-looking statements. Readers are referred to a discussion of important risk factors detailed in the Company's 2022 Form 10-K filed with the Securities and Exchange Commission on March 9, 2023, and other reports and documents filed from time to time by us, which are available online at [www.sec.gov](http://www.sec.gov).

# Operational Update

Phillip Chan, MD, PhD  
Chief Executive Officer

# Recent Operational Highlights

- More than 195,000 cumulative CytoSorb treatments delivered (12/31/22) up 20% from end of 2021, and marking 10 years of commercialization
- STAR-T pivotal trial passed the halfway point of enrollment, with an acceleration of enrollment, aided by addition of new Canadian sites following Health Canada approval of the study. On target to achieve 80 patients by spring 2023 and complete enrollment by summer 2023
- Added Richard Whitlock, MD, PhD, Professor of Surgery McMaster University Medical School, and Canada Research Chair in Cardiovascular Surgery for the Population Health Research Institute, as Canadian PI of STAR-T trial. Outstanding track record of trial execution & brings a superb network of Canadian clinical trial sites specializing in cardiovascular trials
- Strengthened cash balance with \$5M in non-dilutive debt financing from Bridge Bank
- Product gross margins recovered to 75% in Q4 2022 and expected to reach 75-80+% as we ramp volume manufacturing
- Sales momentum from Q4 2022 has extended into Q1 2023 to date, with expectation of sales growth in 2023



# Welcome Irina Kulinets to Management Team

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- Joins senior management team as Senior VP of Global Regulatory
- Goals are to drive U.S. and Canada regulatory strategy and execution for DrugSorb-ATR, as well as to oversee EU MDR compliance
- Brings 30 years of experience in regulatory affairs and clinical research, with a specialty in medical devices, having a track record of success leading the regulatory approval/clearance of many medical products via Class II 510(k) and Class III Premarket Approval (PMA) pathways in the cardiovascular and neurovascular space
- Most recently, Irina served as Senior VP of Regulatory Affairs for Microvention, a division of Terumo Corporation, generating an estimated \$0.5B in annual sales
- Worked for major companies such as J&J, Boston Scientific, CynoSure, and others
- Has extensive experience as a regulator and was appointed as a third-party FDA Inspector and 510(k) reviewer on behalf of the FDA to review, assess, and approve new technologies



# Financial Highlights

Kathleen Bloch, MBA, CPA  
Chief Financial Officer

# Q4 2022 Comparative Revenue Results

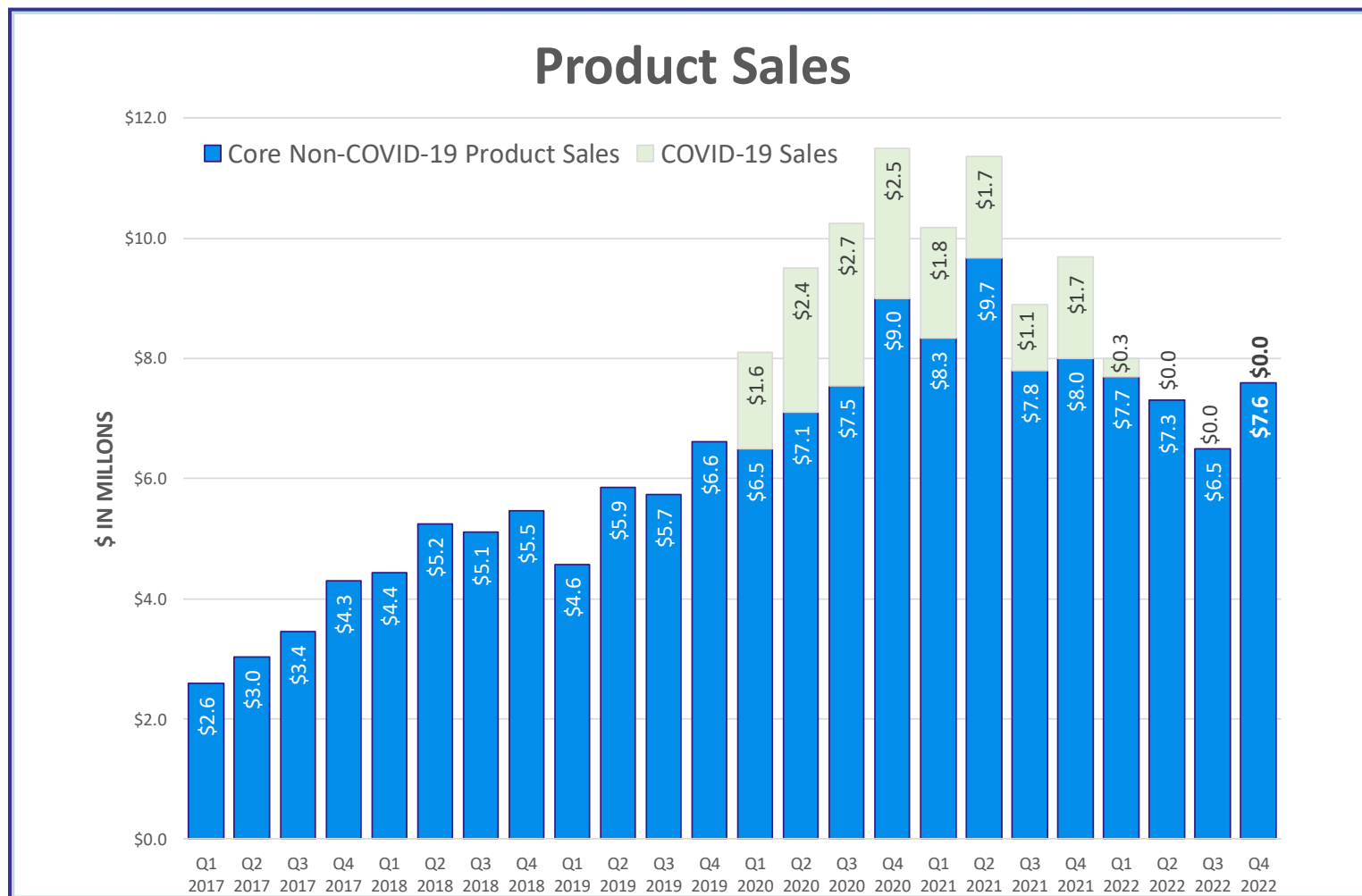
	Quarter Ended Dec. 31, 2022	Quarter Ended Dec. 31, 2021	% Incr.
Product sales	\$ 7,642,022	\$ 9,697,876	-21%
Grant income	1,748,452	1,084,320	61%
Total revenue	\$ 9,390,474	\$ 10,782,196	-13%

- Total revenue in Q4 2022, which includes both product sales and grant revenue, decreased 13% to approximately \$9.4M, compared to approximately \$10.8M in Q4 2021
- Q4 2022 product sales were \$7.6M, a 21% decline over \$9.7M in Q4 2021
  - Q4 2022 product sales of \$3.3M in Germany increased 33% from Q3 2022
- COVID-19 sales were negligible during Q4 2022 as compared to \$1.7M in Q4 2021
- The decrease in the average exchange rate from Euro to US dollar lowered Q4 2022 product sales by approximately \$865K, such that on a constant currency basis, Q4 2022 core non-COVID sales were \$8.5M, which represents a 6.4% increase from \$8.0M in core non-COVID sales a year ago
- Grant revenue in the fourth quarter was \$1.7M compared to \$1.1M in Q4 2021
- Gross profit margins on product sales were 75% for Q4 2022, versus 78% for Q4 2021. This decrease is due to inefficiencies related to relocation of our manufacturing operations



# Quarterly Product Sales

Diminimus COVID-19 sales in 2022.



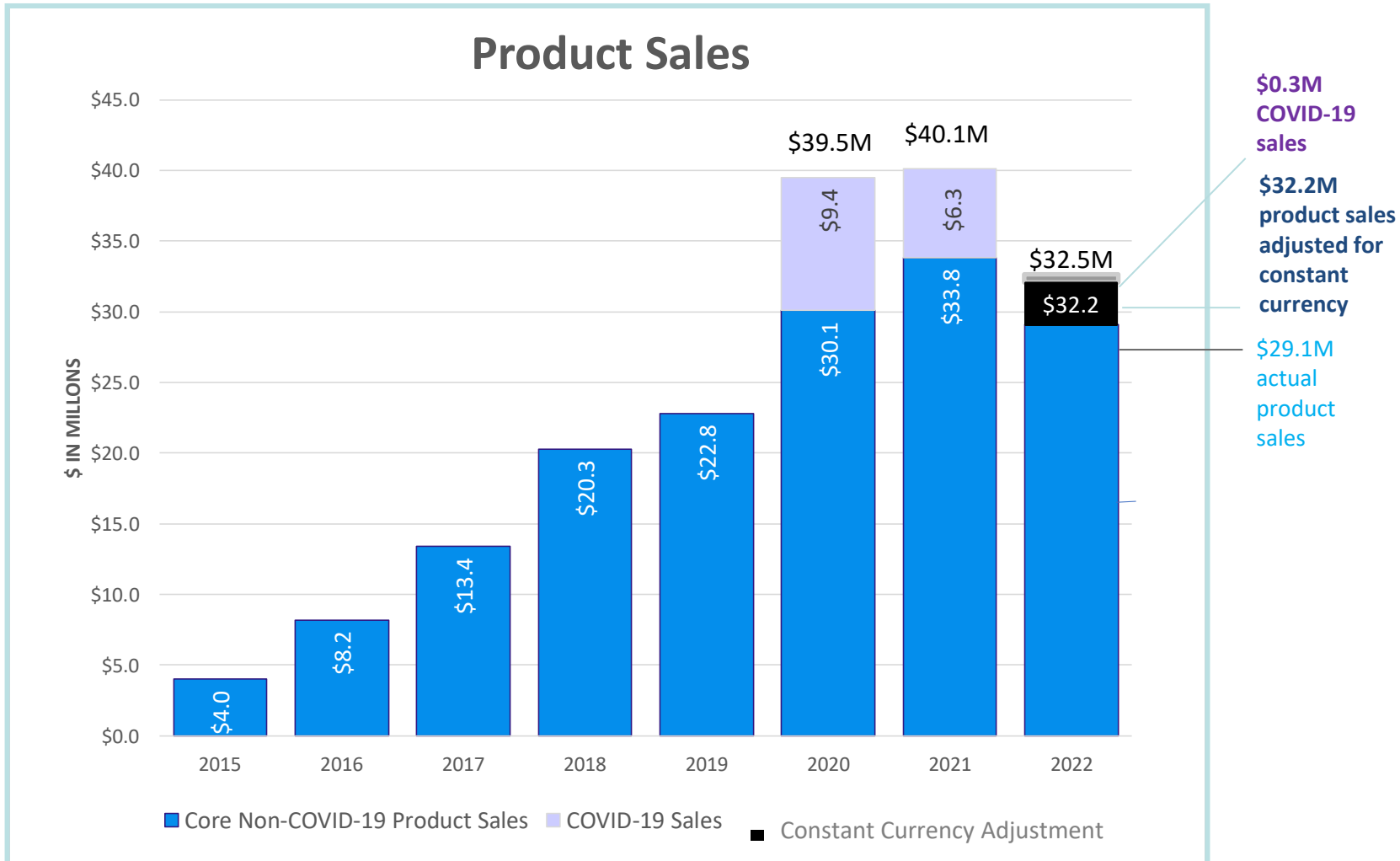
# 2022 Comparative Revenue Results

	Year Ended Dec. 31, 2022		Year Ended Dec. 31, 2021		% Incr.
Product sales	\$29,359,910		\$40,108,567		-27%
Grant income	\$5,328,899		\$3,056,960		74%
Total revenue	\$34,688,809		\$43,165,527		-20%

- Total 2022 revenue, which includes both product sales and grant revenue, was \$35M as compared to \$43M in 2021, a decrease of 20%
- 2022 Grant revenue was \$5.3M, as compared to 2021 grant revenue of \$3.1M
- 2022 Product sales were \$29.4M, a decline of 27% over 2021 product sales of \$40.1M.
- COVID-19 sales were negligible during 2022 as compared to \$6.3M in Q4 2021
- There was a decrease in the averaged exchange rate of the Euro to the US Dollar, which lowered 2022 product sales by approximately \$3.1M, such that on a constant currency basis, 2022 sales were core, non-COVID product sales were \$32.5M, a 4% decrease compared to \$33.8M in core non-COVID sales one year ago.
- Product gross margin was 70% in 2022 compared to 80% in 2021. This decrease is due to inefficiencies related to relocation of our manufacturing operations to our new facility. .

# Annual Product Sales

2022 Core Product Sales were \$29.1M (excluding \$0.3M in COVID-19 related sales). On a constant currency basis, adjusted 2022 core product sales were \$32.2M (5% lower than 2021, +30% 2019).



# Preserving the Cash Runway

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- We have \$23.8M (includes \$1.7M of restricted cash) in cash as of December 31, 2022. This includes \$5M of loan proceeds received from our debt facility in December 2022. Cash on hand provides a runway of more than one year of operating cash flow.
- Cash conservation is a corporate priority, and we are continuing to focus on controlling expenses. We continue to identify potential cost savings opportunities to reduce our cash burn.
- During 2022, we have
  - Reduced our overall headcount by 10%.
  - Shifted our R&D headcount to grant-funded programs, with an \$11.5M backlog at December 31, 2022.
  - Reduced inventory, thereby freeing up working capital.
- Our 2023 Operating Budget has a significantly reduced cash burn. Our goal is, through a combination of driving an increase in sales and gross margin, along with cost cutting measures, to significantly reduce our cash burn and to extend our operating runway. While the quarter is not yet complete, we are observing reductions in our cash burn in Q1 2023.
- We have no capital expenditures planned for 2023 compared to \$6.1M in 2022.
- Our spend is laser-focused on and fully aligned with our strategic priorities, in particular our STAR-T trial designed to support US FDA marketing approval.

# Clinical and Medical Update

Efthymios N. Deliargyris, MD, FACC, FESC, FSCAI  
Chief Medical Officer

# Solid Progress - Increased Visibility

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- Strategy of laser focus on STAR-T and addition of Canada paying off
- STAR-T enrolling fast - now **past the halfway point (>50% enrolled)**
- With increased visibility now we reiterate timelines for milestone #2 (n=80) in the spring and full trial enrollment this summer
- STAR-D activities remain on “pause” with plan to resume after STAR-T
- STAR registry enrolling fast with initial data readouts this year
- PROCYSS amendment in progress and COSMOS accelerating
- Positive data flow for CytoSorb continues in 2023 with constant stream of presentations/publications in critical care & cardiac surgery

# STAR-T: Now with Good Visibility

- Milestone #1 (n=40) completed Dec '22 – “Green light” from DSMB
- Enrollment accelerating with majority of active sites contributing
- Canada has contributed already multiple patients and is accelerating
- With enrollment now past the half-way point (>50%), FDA filling preparedness activities initiated in close collaboration with Regulatory
- With good visibility we reiterate projected timelines for study completion:

M	Enrollment Target	Timeline	Triggered Action	Status
1 <sup>st</sup>	40	Fall 2022	1 <sup>st</sup> DSMB Safety Review	COMPLETED
2 <sup>nd</sup>	80	Spring 2023	2 <sup>nd</sup> DSMB Safety Review	NEXT
3 <sup>rd</sup>	120	Summer 2023	Final Analysis & DSMB Closeout Review	FINAL

# STAR-T: Completion now within sight

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- STAR-T moving fast with high visibility now for study completion
- We estimate that the trial will be fully enrolled by the time the interim analysis process is complete (full data cleaning/event adjudications, etc.)
- Interim analysis also comes with a statistical price ( $\alpha$  spend)
- ***Accordingly, there is now an opportunity to preserve  $\alpha$  for the final analysis by foregoing the interim analysis***
- This positive development is the direct result of fast enrollment by our highly motivated investigative sites in US and Canada and not related to any safety or other known concerns
- **What to look for NEXT:** 2<sup>nd</sup> DSMB Safety Review After 80 patients; Should be completed within 8 weeks (like 1<sup>st</sup> DSMB Review)



# Non-FDA Clinical Programs (at-a-glance)

PROGRAM		Current Status
PROCYSS RCT Septic Shock	GER	17 Activated sites – 24 patients enrolled
STAR Registry Real world ATR	EU	4 Countries open (GER, UK, AT, SWE) 12 Activated sites – 200+ patients enrolled
COSMOS Registry Critical Care	EU	2 Countries open (ESP, GER) 4 Activated sites – 24 patients enrolled
CTC Registry COVID-19 + ECMO	US	Completed/Closed (n=100) – Final publication submitted

STAR Registry: Enrolling fast with data readouts at EuroPCR and submissions at ESC/EACTS

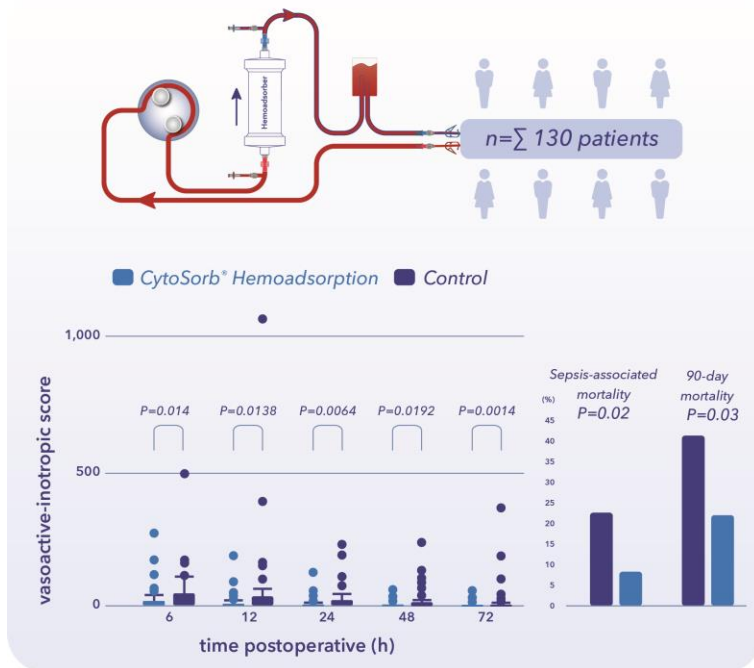
PROCYSS: Protocol amendment in progress for earlier intervention and faster enrollment

COSMOS Registry: Prioritized with increased resources and focus to speed up enrollment

# Now published – *Staph A. Endocarditis Study*

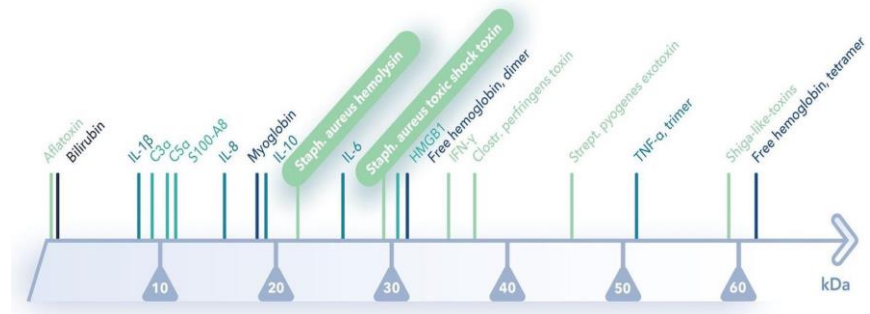
- Multicenter analysis of patients undergoing cardiac surgery with the most serious and lethal form of infective endocarditis (IE) – *Staphylococcus Aureus*
- 130 patients with confirmed *S. aureus* IE undergoing cardiac surgery
  - 75 treated with CytoSorb vs. 55 not treated (controls)

Improved outcomes after cardiac surgery with intraoperative hemoadsorption for *S. aureus* Endocarditis



- Significantly reduced vasopressor requirements
- Sepsis-related mortality 8% vs. 22.8% (p=0.02)
- 90-Day overall mortality 21.3% vs. 40.0% (p=0.03)
- 90 Day mortality ARR: 18.7% & RRR: 46.8%

*Significant benefit likely related to combined removal of cytokines + Staph-specific toxins*




**CytoSorbents**™

WORKING TO SAVE LIVES

Haidari et al. *Interdiscip Cardiovasc Thorac Surg.* 2023 Jan 4;36(1).

# First-ever CytoSorb mention in Guidelines

2023 European Society of Anaesthesiology and Intensive Care (ESAIC):  
Inclusion of Intraoperative Hemoadsorption

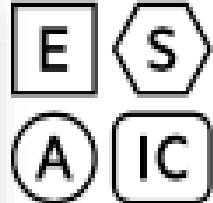


**EJA**

**GUIDELINES**

**Management of severe peri-operative bleeding: Guidelines from the European Society of Anaesthesiology and Intensive Care**

*Eur J Anaesthesiol* 2023; **40**:226–304



European Society of  
Anaesthesiology and  
Intensive Care

**How should intra-operative and postoperative bleeding be stopped and anaemia be managed?**

**R7 Patients undergoing cardiovascular surgery**

In patients on ticagrelor or rivaroxaban undergoing emergency cardiac/aortic surgery on cardiopulmonary bypass, haemoadsorption may be considered as an adjuvant therapy to reduce bleeding complications. 2C

*Hemoadsorption may be considered as an adjuvant therapy to reduce bleeding complications in patients on ticagrelor or rivaroxaban undergoing emergency cardiac/aortic surgery on CPB*

Kietaibl S, et al., Management of severe perioperative bleeding guidelines from the European Society of Anaesthesiology and Intensive Care *Eur J Anaesthesiol* 2023; 40: 226-304

# Conclusions

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## CLINICAL:

- STAR-T now with visibility and >50% enrolled – We reiterate timelines of:  
Milestone #2 (n=80) this spring and trial completion (n=120) this summer
- Straight to final analysis with preserved  $\alpha$  – No longer rationale for interim
- Anticipate topline results by YE (~3-4 mos after last patient completes study)
- STAR-D currently on hold with plan to restart after STAR-T operations complete
- STAR Registry ahead of schedule - ATR increasingly SOC in real world practice
- PROCYSS and COSMOS prioritized with the goal of speeding up enrollment

## MEDICAL:

- Business support remains top priority of our therapeutic area medical teams
- We anticipate increasing adoption of our therapy in 2023 based on:
  - Ongoing interactions with KOLs/Users expressing enthusiasm about our therapy
  - Multiple new and positive data presented at international conferences
  - Continuous flow of new, positive publications across all our therapeutic areas

# Commercialization Update

Christian Steiner, MD

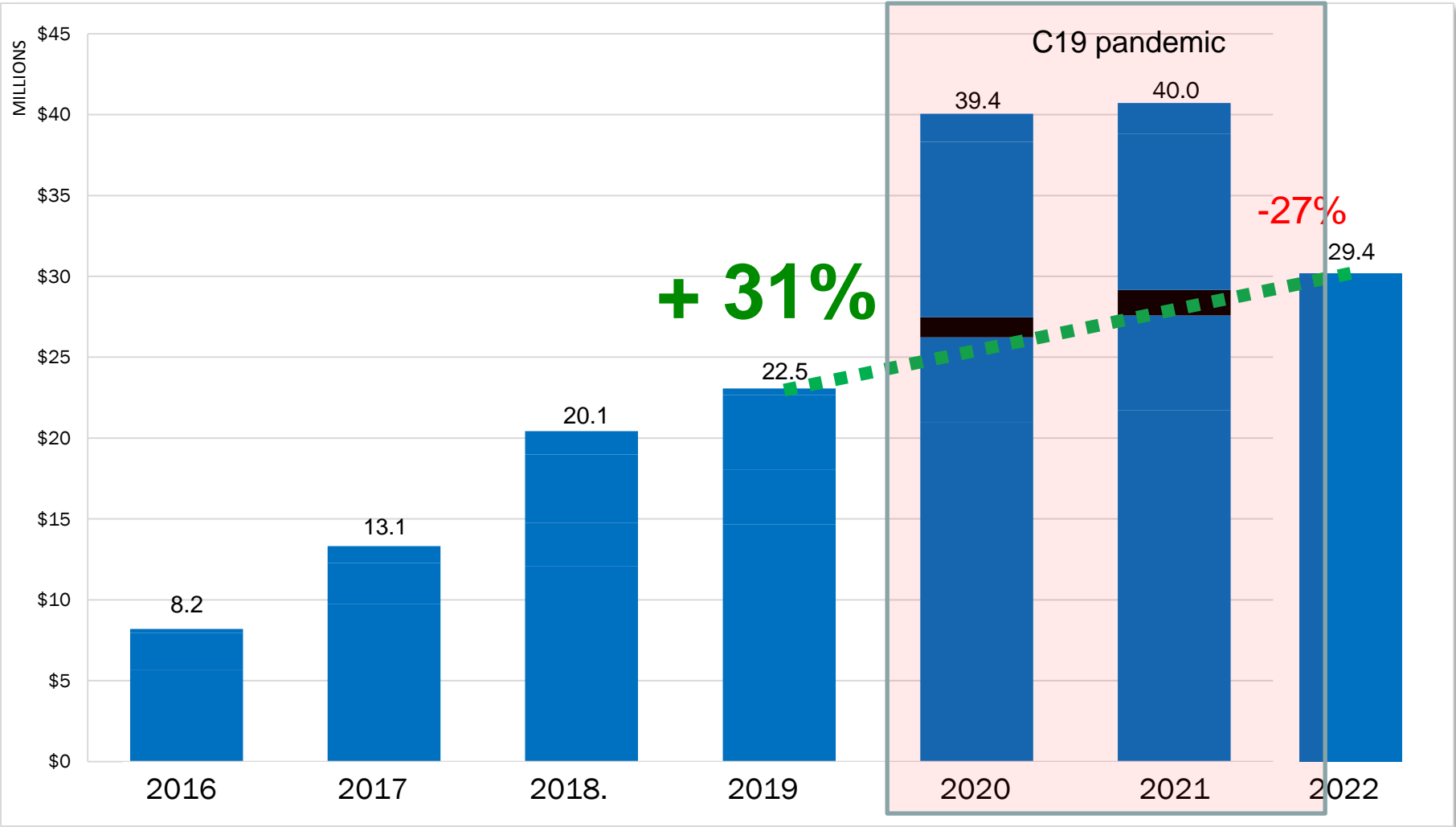
Executive Vice President of Sales and Marketing

Managing Director – CytoSorbents Europe GmbH

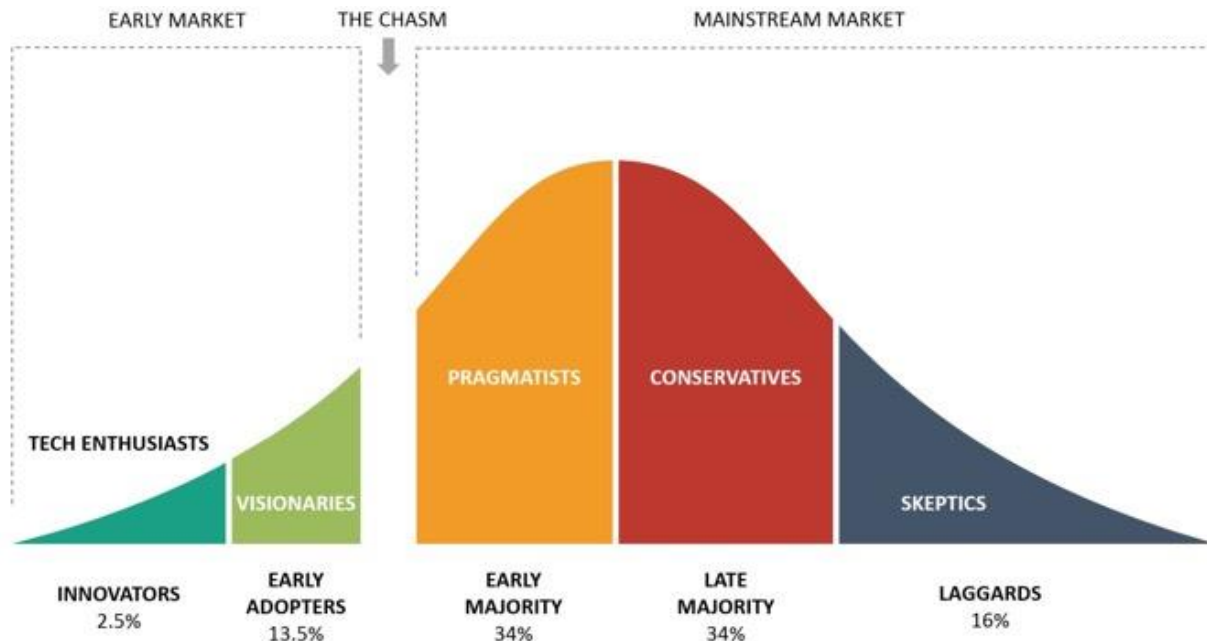
## Direct Business is getting back on track

- Customer visit frequency has further increased but still below pre-pandemic level due to limited time of HCPs
- Q4 2022 product sales was with \$7.6M revenues **+17%** higher than the quarter before and **+15%** above the last pre-pandemic quarter Q4 2019
- The number of buying customers in the direct territories has increased in Q4 2022 by **+9%** after an increase of **+15%** in Q3 2022 and was also **+15%** higher than in Q4 2019
- Customers are treating more frequently and regularly again and are re-ordering several times per quarter
- The average order volume in Q4 2022 has increased by **+22%** compared to Q3 2022 but is still **-11%** below pre-pandemic Q4 2019

# 2022 CytoSorbents Product Revenues



# Crossing the CHASM – Addressing new customer groups





# Progress in TA Cardio Vascular

- CytoSorb made its way into the new "2022 Guidelines for the Management of Severe Perioperative Bleeding" by the European Society of Anaesthesiology and Intensive Care (ESAIC)
- Several remarkable peer reviewed clinical publications and numerous submissions and data presentations at conferences are growing the body of evidence
- Great positive response at national and international congresses and regional symposia
- Increasing KOL support

PROTECT YOUR CARDIOVASCULAR PATIENTS WITH CYTOSORB®. CONFIDENTLY. SAFELY.

➤ CytoSorb® has demonstrated benefit in cardiovascular patients with or at high risk of Hyperinflammation

**EJA**  
**GUIDELINES**  
**Management of severe peri-operative bleeding: Guidelines from the European Society of Anaesthesiology and Intensive Care**  
Second update 2022  
Eur J Anaesthesiol 2023; 40:226–304

Get the best results with CytoSorb®  
Patient selection, timing and dosing

Antithrombotic Removal

Post-Operative Hyperinflammation

Heart Failure

ECMO

Aortic Surgery

Antithrombotic Removal

Antithrombotic Removal

Patients undergoing cardiac surgery who were pretreated with ticagrelor and/or rivaroxaban, with last dose of

- Ticagrelor < 72 hrs.
- Rivaroxaban < 48 hrs.

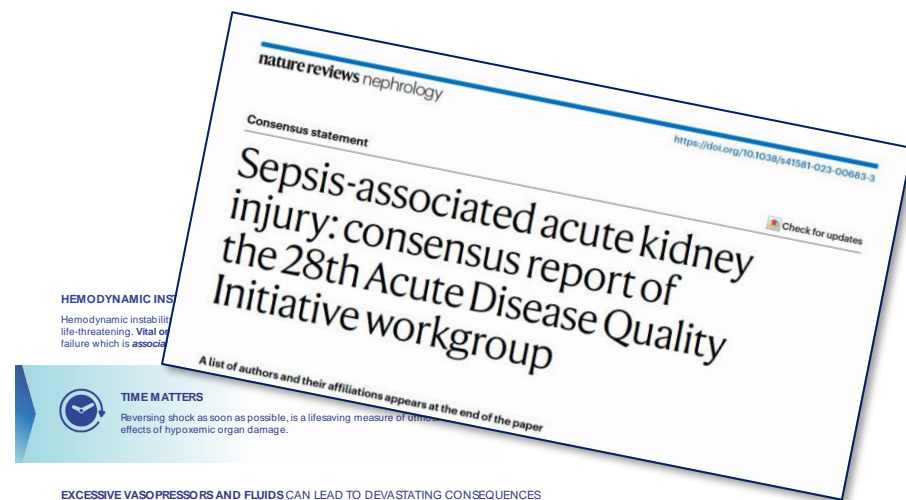
Start therapy with the start of CPB. CytoSorb® is easily integrated into the CPB circuit (post-pump to venous reservoir)

Postoperative continuation (with a new adsorber integrated into an extracorporeal circuit) is normally NOT needed if CPB time > 60 min, but can be done if needed

CytoSorbents™

# Progress in TA Critical Care

- CytoSorb is mentioned for the first time as optional adjunctive therapy in sepsis associated AKI in a recently published consensus of leading KOL nephrologists
- Basic research on CytoSorb's impact on pathophysiological mechanisms confirm the medical rationale of the therapy
- Great positive response at national and international congresses and regional symposia
- Increasing KOL support



**HEMODYNAMIC INSTABILITY**  
Hemodynamic instability is a life-threatening vital organ failure which is associated with sepsis.



#### TIME MATTERS

Reversing shock as soon as possible, is a lifesaving measure of utmost importance to prevent the effects of hypoxic organ damage.

#### EXCESSIVE VASOPRESSORS AND FLUIDS CAN LEAD TO DEVASTATING CONSEQUENCES

Vasopressors and fluids are standard of care but with high dosage & prolonged usage, can lead to tissue ischemia & necrosis (vasopressors) and edema & pulmonary dysfunction (fluids)

#### HEMOADSORPTION

Early intervention  
• Improve  
• Speed up  
• Reduce n



PROTECT YOUR  
CRITICAL CARE  
PATIENTS WITH  
CYTOSORB®.

CONFIDENTLY.  
SAFELY.

CytoSorbents

#### CytoSorb® Meaningful clinical results

- 01 Proven safety
- 02 Demonstrated efficacy
- 03 Easy to use & versatile
- 04 10 years of experience

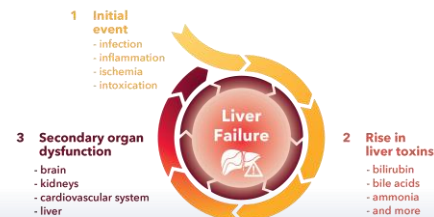
Effective removal of cytokines<sup>(12)</sup>, bilirubin<sup>(14)</sup>, myoglobin<sup>(15)</sup>, rivaroxaban and ticagrelor<sup>(16,17)</sup>  
CytoSorb® treatment has been associated with:

- High survival rates<sup>(1-3)</sup>
- Reduced vasopressor needs & restoration of hemodynamic stability<sup>(2, 7, 18-20)</sup>
- Mitigation of collateral damage caused by excessive vasopressor doses<sup>(20)</sup>
- Modulation of the excessive inflammatory response<sup>(21)</sup>
- Protection of organ function<sup>(19)</sup>
- Faster patient recovery, including shorter LOS after cardiac surgery and faster weaning from ECMO or respiratory support<sup>(4)</sup>

# Progress in TA Liver/Kidney

- Awareness-campaigns on 'CytoSorb liver support in patients with liver dysfunction' and 'CytoSorb protects kidney function in rhabdomyolysis'
- Expert meeting on 'Rhabdomyolysis' of leading German nephrologists and intensivists
- Great positive response at national and international congresses and regional symposia
- Increasing KOL support

Liver dysfunction  
can be life-threatening



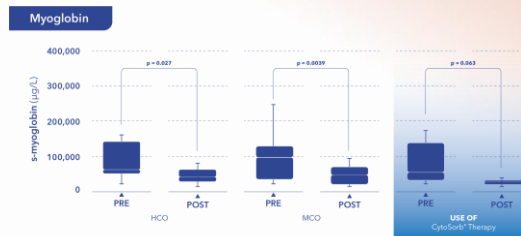
SUPPORT YOUR PATIENTS' LIVER WITH CYTOSORB®.  
CONFIDENTLY. SAFELY.

CytoSorb® is a unique technology proven to effectively, safely and simultaneously reduce both elevated levels of cytokines and bilirubin, thereby promoting hemodynamic stability and recovery of liver function.

CytoSorb®, as a  
bridging therapy, has led  
to improved patient survival.



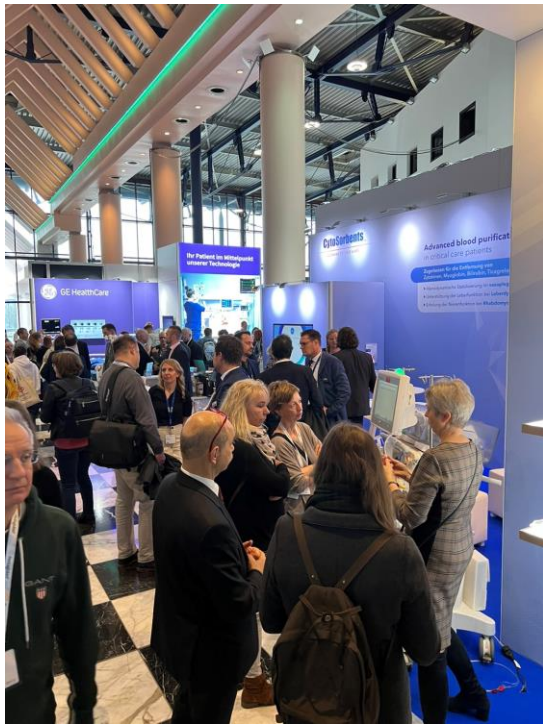
Excellent performance of CytoSorb® in myoglobin removal <sup>(10)</sup>



More than 50% of myoglobin removed with CytoSorb®,  
without complications relating to albumin loss

<sup>10</sup> Jermann A, Agostonova M, Heric V, Gubensek J. Extracorporeal Removal of Myoglobin in Patients with Rhabdomyolysis and Acute Kidney Injury: Comparison of High and Medium Cut-Off Membrane and an Adsorber Cartridge. *Blood Purif* 2022;51(11):907-911





**CytoSorbents™**

WORKING TO SAVE LIVES

- 2022 showed a continuous decline in business until Q3 2022
- Macro-economic situation post-pandemic mostly unchanged but several governments work on support programs
- Q4 2022 saw a stabilization of business – resulting from 12 months of hard work
- *Sales momentum has carried over to Q1 2023 so far. We are hopeful that this stabilization of our business continues with goal of re-establishing quarter-over-quarter growth*

**WE BELIEVE THIS IS THE BEGINNING OF  
A NEW GROWTH PHASE!**

# Operational Update

Vincent Capponi, MS

President and Chief Operating Officer

# 2022 Full Year Overview

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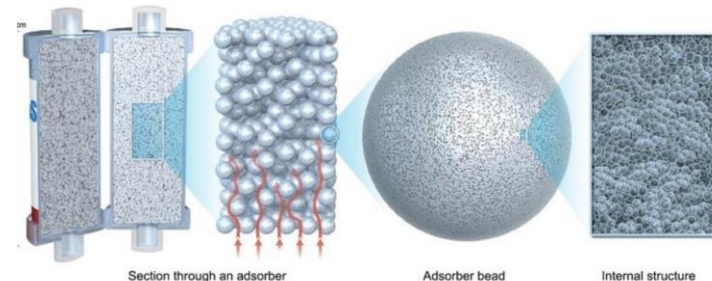
**US Commercialization**



**New Manufacturing Facility**



**R&D/Product Development**





# US and Canadian Commercialization

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## US and Canadian Commercialization

### Preparing for Commercialization

- Development of “Go to Market Plan”
- Blended direct and distributor sales model; identification of distributors based on COVID19 experience in US and Canada for rapid market expansion
- Commercial team buildout aligned with regulatory and clinical timelines

### Antithrombotic Removal – Voice of the Customer

- Continue to see growth in application OUS and we continue to receive positive feedback on the application
- Among our US clinical trial sites, we see keen interest from researchers at study sites and enthusiasm for an anti thrombotic removal application currently under study in our STAR-T trial.

### Reimbursement

- TCET “transitional coverage for emerging technologies” reimbursement program for breakthrough devices. CMS to report in April on program
- Upside potential for DrugSorb ATR



# Facility/Manufacturing Update

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## Facility Update

- 2022 Milestone
  - Successful transfer of polymer manufacturing to the new facility
  - Commissioning of new plant
  - Increasing efficiencies
  - Ramping production

## Product Cost

- Gross Margins
  - 2022 gross margins dipped to ~70% driven by scheduled plant shutdowns, move and startup at new facility
  - We expect to see continuing increases in gross margin to historical levels of 75-80+% as the year progress along as sales continue to grow with recovery in our core business.

# R&D

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## Area Focus

- HemoDefend-BGA
- DrugSorb ATR

## HemoDefend BGA

- Market opportunity is large:
  - Military (supply chain, treatment austere conditions)
  - Civilian (blood transfusions)
  - Plasma processing (civilian & military)
  - Strong government funding; 3 new grants 2022 for \$6.1MM
  - \$11.5 MM in grant funding backlog to aid in completion of product development

## Product Development – DrugSorb-ATR

- Finalizing packaging
- Validation of product in new facility

The teams remains focused on advancing these programs to support the development and monetization of these assets

# Business Development

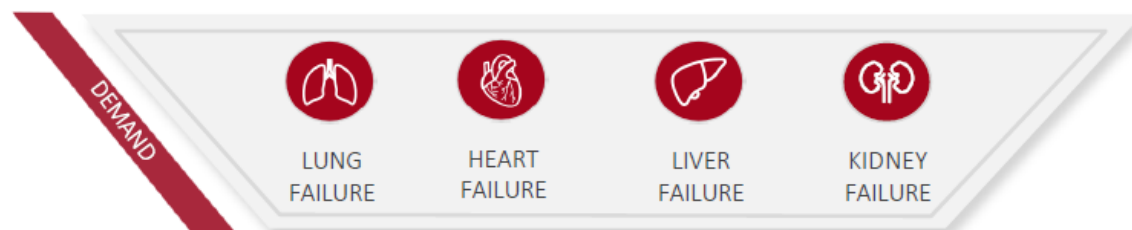
Chris Cramer, MBA

Vice President, Business Development

# Emerging New Opportunities to Expand the Pool of Transplantable Organs with Ex-Vivo Perfusion and CytoSorbents Technology

## High Demand for More Transplants

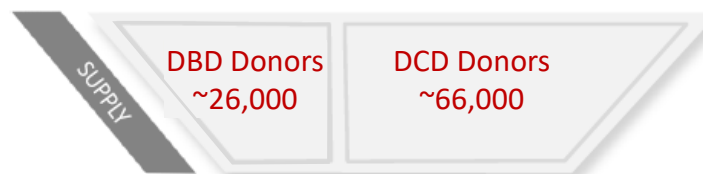
~165,000 US and EU patients on transplant waiting list



## Annual Supply of Donors not Keeping Pace with Demand

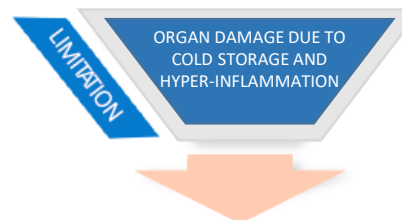
DBD: Donor after Brain Death

DCD: Donor after Circulatory Death



## Low Utilization Due to Limitations of Cold Storage & Hyperinflammation

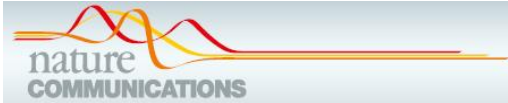
Static Cold Storage (SCS), the standard of care, presents physiologically adverse conditions for the organ and donated organs are also often damaged due to hyperinflammation resulting in low utilization levels



- The global demand for organ transplantation continues to rapidly outpace the supply of donor organs
- Static Cold Storage (SCS), the current standard, presents physiologically adverse conditions for the organ; In addition, donor organs are often irreversibly damaged due to hyperinflammation resulting in low utilization levels
- As a result, only 10-30% of donor organs are utilized leading to demand/supply imbalance in organ transplants
- Ex-vivo perfusion (EVP) aims to preserve or improve organs for transplant; However, because EVP does not reduce hyperinflammation, it represents a new opportunity for CytoSorbents technology to limit irreversible organ damage, restore organ function, and be used as a bridge to transplant by mitigating cytokine release and removing harmful inflammatory mediators

# There is Growing Base of Promising EVP Studies for CytoSorbents' Technology in Multiple Solid Organ Types

## Lung



### Reduction of primary graft dysfunction using cytokine adsorption during organ preservation and after lung transplantation

Haider Ghaidan<sup>1,2,3,4</sup>, Martin Stenlo<sup>2,3,4,5</sup>, Anna Niroomand<sup>2,3,4,6</sup>, Margareta Mittendorfer<sup>2,3,4</sup>, Gabriel Hirdman<sup>2,3,4</sup>, Nika Gvazava<sup>2,4,7</sup>, Dag Edström<sup>2,3,4,5</sup>, Iran A. N. Silva<sup>2,4,7</sup>, Ellen Broberg<sup>2,3,4,5</sup>, Oskar Hallgren<sup>2,3,4</sup>, Franziska Olm<sup>1,2,3,4</sup>, Darcy E. Wagner<sup>2,4,7</sup>, Leif Pierre<sup>1,2,3,4</sup>, Snejana Hyllén<sup>2,3,4,5</sup> & Sandra Lindstedt<sup>1,2,3,4</sup>✉

hemoperfusion. The treatment significantly decreased cytokine levels during EVLP and decreased levels of immune cells post-transplantation. Histology demonstrated fewer signs of lung injury across both treatment periods and the incidence of PGD was significantly reduced among treated animals. Overall, cytokine adsorption was able to restore lung function and reduce PGD in lung transplantation. We suggest this treatment will increase the availability of donor lungs and increase the tolerability of donor lungs in the recipient.

### Perfusate adsorption during ex vivo lung perfusion improves early post-transplant lung function

Ilker Iskender, MD, MSc,<sup>a</sup> Stephan Ami, PhD,<sup>a</sup> Tatsuo Maeyashiki, MD,<sup>a</sup> Necati Citak, MD,<sup>a</sup> Mareike Sauer, DVM,<sup>b</sup> Josep Monné Rodriguez, DVM,<sup>c</sup> Thomas Frauenfelder, MD,<sup>d</sup> Isabelle Opitz, MD,<sup>a</sup> Walter Weder, MD,<sup>a</sup> and Ilhan Inci, MD<sup>a</sup>

**Conclusions:** Implementation of an additional cytokine adsorber has refined the standard ex vivo lung perfusion protocol. Furthermore, cytokine removal during ex vivo lung perfusion improved immediate post-transplant graft function together with a less intense inflammatory response to reperfusion in pigs. Further studies are warranted to understand the beneficial effects of perfusate adsorption during ex vivo lung perfusion in the clinical setting. (J Thorac Cardiovasc Surg 2020; ■:)

## Kidney

### Cytokine absorption during human kidney perfusion reduces delayed graft function-associated inflammatory gene signature

John R Ferdinand<sup>1,2</sup>, Sarah A Hosgood<sup>2,3</sup>, Tom Moore<sup>2,3</sup>, Ashley Ferro<sup>1</sup>, Christopher J Ward<sup>1</sup>, Tomas Castro-Dopico<sup>1</sup>, Michael L Nicholson<sup>2,3</sup>, Menna R Clatworthy<sup>1,2</sup>

### Haemoadsorption reduces the inflammatory response and improves blood flow during ex vivo renal perfusion in an experimental model

Sarah A Hosgood<sup>1</sup>, Tom Moore<sup>2</sup>, Theresa Kleverlaan<sup>2</sup>, Tom Adams<sup>2</sup>, Michael L Nicholson<sup>2</sup>

## Liver

### A new ex-situ machine perfusion device. A preliminary evaluation using a model of donors after circulatory death pig livers

Davide Ghinolfi<sup>1</sup>✉ | Fabio Melandro<sup>1</sup>✉ | Damiano Patrono<sup>2</sup> | Quirino Lai<sup>3</sup>✉ | Riccardo De Carlis<sup>4</sup> | Stefania Camagni<sup>5</sup> | Alessandro Gambella<sup>6</sup> | Franco Ruberto<sup>3</sup> | Paolo De Simone<sup>1</sup>

## Heart

### Impact of intraoperative cytokine adsorption on outcome of patients undergoing orthotopic heart transplantation—an observational study

Endre Nemeth<sup>1</sup>, Eniko Kovacs<sup>1</sup>, Kristof Racz<sup>1</sup>, Adam Soltesz<sup>1</sup>, Szabolcs Szigeti<sup>1</sup>, Nikolett Kiss<sup>1</sup>, Gergely Csikos<sup>1</sup>, Kinga B Koritsanszky<sup>1</sup>, Viktor Berzsenyi<sup>1</sup>, Gabor Trembickij<sup>1</sup>, Szabolcs Fabry<sup>1</sup>, Zoltan Prohaszka<sup>2</sup>, Bela Merkely<sup>3</sup>, Janos Gal<sup>1</sup>

# ECOS-300CY is E.U. Cleared for Ex-Vivo Organ Perfusion and Ready to Support Multiple Partnering Opportunities

- The ECOS-300CY sorbent cartridge has similar cytokine and inflammatory mediator removal capability to CytoSorb, but unlike CytoSorb, was specifically E.U. approved in October 2020 to remove cytokines and inflammatory mediators during *ex vivo* organ perfusion for transplant
- When used in the field of *ex vivo* perfusion, the goal of ECOS-300CY is to limit irreversible organ damage, restore organ function, and be used as a bridge to transplant by mitigating cytokine release and harmful inflammatory mediators
- In the competitive EVP market, we believe ECOS-300CY could provide clinically meaningful benefits and be an important differentiator for ex-vivo perfusion product offerings
- As proof-of-concept, CytoSorbents is providing the ECOS-300CY cartridge, on a non-exclusive basis, under private label (trade name PerSorb®) to Aferetica for use with their PerLife ex-vivo organ perfusion platform for kidney and liver transplant, confirmed interoperability, and is currently available in Italy



# Additional Partnering Opportunities Exist Across the Multi-Billion Dollar Organ Transplant Ecosystem

## Immunosuppressants



## Immunomodulators



## Organ Procurement Orgs.



## Ex-Vivo Perfusion Systems



## Intensive Care / Organ Support





## Surgical Equipment






# Initiated Global Marketing Efforts with CytoSorb as a Featured Therapy on the FMC Corporate Website

- FMC has begun marketing CytoSorb as a featured technology for cytokine, bilirubin, and myoglobin removal on its critical care platforms worldwide; CytoSorb can be found on FMC's corporate website
- Planning underway for cooperation at multiple major international congresses
- Collaboration on general PR and marketing initiatives
- Kickoff innovation working groups

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### CytoSorb therapy

CytoSorb® is an extracorporeal hemoperfusion adsorber which consists of porous polymerized beads<sup>18</sup>, providing a large surface area for adsorption.<sup>19</sup> CytoSorb effectively targets various low- and middle-molecular-weight substances, while the bead's pore size distribution limits the accessibility for larger substances as shown in vitro.<sup>18,19</sup> CytoSorb is able to adsorb various cytokines, bilirubin and myoglobin, as blood passes through the device.<sup>18</sup>

In a retrospective, single-center study, propensity-adjusted mortality was lower with CytoSorb added to CKRT compared to a control group receiving CKRT only.<sup>20</sup>

Kit and solutions are available for the combination of CytoSorb therapy with multi**Filtrate**PRO in CVVHD mode and multi**Filtrate** in CVVHD mode and hemoperfusion mode.





# Concluding Remarks

Phillip Chan, MD, PhD  
Chief Executive Officer

# Expectations for 2023

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- Completion of the STAR-T pivotal trial in U.S. and Canada this year with regulatory submission to FDA and Health Canada to follow
- Increased visibility on the likelihood of DrugSorb-ATR contributing to future sales
- Rebound in international sales growth with economic relief for hospitals expected throughout Europe
- Many new initiatives to drive sales growth, including new clinical data
- Full CytoSorb production from our new Princeton manufacturing facility
- Restoration of product gross margins to 75-80+%
- More normalized year-over-year comparisons
- Reduced cash burn with tight control over expenses and no major capital expenditures, with current cash balance expected to be more than sufficient to drive 2023 operating plan

# Q&A Session

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## CytoSorbents Corporation

NASDAQ: CTSO

### Company Contact

Dr. Phillip Chan

[pchan@cytosorbents.com](mailto:pchan@cytosorbents.com)

