

CytoSorbents™



HELPING REDUCE DEADLY UNCONTROLLED INFLAMMATION IN HOSPITALIZED PATIENTS WORLDWIDE

NASDAQ: CTSO
Investor Presentation
February 2019

Safe Harbor Statement

This presentation contains “forward-looking statements” pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements include, without limitation, any statement that may predict, forecast, indicate, or imply future results, performance or achievements, and may contain the words “estimate,” “intend,” “target,” “will,” “is likely,” “would,” “may,” or, in each case, their negative, or words or expressions of similar meaning. These forward-looking statements are found at various places throughout this presentation and include information concerning possible or assumed future results of our operations; business strategies; future cash flows; financing plans; plans and objectives of management; any other statements regarding future operations, future cash needs, business plans and future financial results, and any other statements that are not historical facts. Unless otherwise indicated, the terms “CytoSorbents,” “Company,” “we,” “us” and “our” refer to CytoSorbents Corporation. Any or all of the forward-looking statements included in this presentation are not guarantees of future performance and may turn out to be inaccurate. These forward-looking statements represent our intentions, plans, expectations, assumptions and beliefs about future events and are subject to risks, uncertainties and other factors. Many of those factors are outside of our control and could cause actual results to differ materially from the results expressed or implied by those forward-looking statements. 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 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. In light of these risks, uncertainties and assumptions, the events described in the forward-looking statements might not occur or might occur to a different extent or at a different time than we have described. You are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date of the applicable presentation. You are referred to a discussion of important risk factors detailed in the Company’s Form 10-K filed with the Securities and Exchange Commission on March 8, 2018 and other reports and documents filed from time to time by us, which are available online at www.sec.gov.

CytoSorbents is a Leader in Critical Care Immunotherapy



Leading the Prevention or Treatment of
Life-Threatening Inflammation
in the ICU and Cardiac Surgery using
CytoSorb® Blood Purification

CytoSorbents At a Glance (NASDAQ: CTSO \$8)

- CytoSorb® is E.U. approved as an extracorporeal cytokine adsorber with 56,000+ cumulative treatments (up from 35,000 a year ago) delivered and distributed in 55 countries

- Record 2018 Financial Performance:

	2017	2018*	Increase
Total Revenue	\$15.1M	\$22.3M	+48%
Product Revenue	\$13.4M	\$20.2M	+51%
Blended Product Gross Margin	71%	>72%	-

- Healthy cash balance of \$22.3M (12/31/18)*
- 120 employees with international footprint across two wholly-owned subsidiaries
 - CytoSorbents Medical, Inc: Headquarters - New Jersey, USA
 - CytoSorbents Europe GmbH: International sales office - Berlin, Germany
- Strategic Partnerships with Fresenius Medical Care, Terumo, Biocon, Dr. Reddy's
- Strong government support with ~\$26M in grants, contracts, other non-dilutive funds
- Russell 2000 & 3000 listed with coverage by Cowen, B Riley, HCW, Maxim, Zacks

Leadership Background



Phillip Chan, MD, PhD – Chief Executive Officer and President

Former Partner at the \$80M NJTC Venture Fund, leading life science investments for 5 years. Co-founder of Andrew Technologies, commercializing its HydraSolve™ lipoplasty device in the U.S. MD/PhD from Yale School of Medicine, internal medical residency at the Beth Israel Deaconess Medical Center at Harvard.



Vincent Capponi, MS - Chief Operating Officer

20+ years experience in the medical device, pharmaceutical and imaging fields. Led the first regulatory approval for the heparin flush syringe, used worldwide in hospitals, and managed manufacturing of > 1 million units/week



Kathleen Bloch, MBA, CPA – Chief Financial Officer

20+ years as CFO of private and public companies. Former Laureate Biopharma CFO, a contract biopharmaceutical manufacturer, and CFO of Silverline Windows, a \$750M revenue window manufacturing company with 9 manufacturing plants nationally



Eric Mortensen, MD, PhD - Chief Medical Officer

25 years leading clinical trials for key programs at Pfizer, GSK, and Merck. Most recently Vice President & Therapeutic Area Clinical Head for Inflammation and Immunology at Pfizer, leading the company's global late-stage development organization for programs in inflammation including studies for Enbrel and Xeljanz



Christian Steiner, MD – Vice President of Sales and Marketing

15+ years experience in sales and marketing of extracorporeal therapy and critical care sales at Teraklin for MARS, the first liver failure dialysis technology, and at Pulsion Medical (hemodynamic monitoring)



Christopher Cramer, MS, MBA – Vice President of Business Development

15+ years experience in business development and commercial experience. Former Senior Director of New Venture Development and WW Strategic Marketing at Johnson & Johnson, and previously at PwC Consulting

Product Pipeline

Sepsis,
Critical Care,
High Risk
Surgery



HemoDefend

Blood
Transfusions



Nearing US Pivotal Trial

CytoSorb-XL



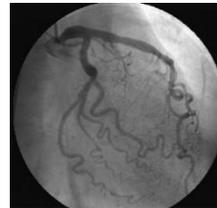
Sepsis,
Critical Care,
High Risk
Surgery

CE Mark Approved



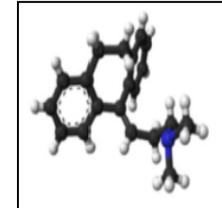
U.S. Animal Health Market

ContrastSorb



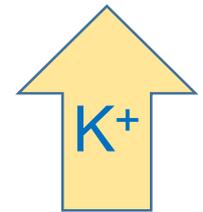
CT Imaging,
Interventional
Radiology

DrugSorb



Drug Overdose,
Chemo
Removal

K+ontrol



Severe
Hyperkalemia

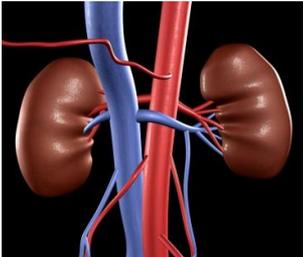
Under Development

Uncontrolled Inflammation is Deadly



Massive Inflammation Causes Organ Failure

Organ failure occurs when vital organs stop working,
causing nearly half of all deaths in the ICU.



Little can be done to prevent or treat organ failure today

No Ideal Options to Treat Severe Inflammation

Anti-Inflammatory (too weak)

NSAIDs

Aspirin

**Anti-cytokine
antibodies**

**Anti-integrin
antibodies**

Anti-oxidants

Immunosuppressive (too strong)

Corticosteroids

Chemotherapy

**Organ transplant
Anti-rejection drugs**

Radiation

**Immune system
ablation**

Anti-leukocyte Abs

CytoSorb Bridges the Gap

Anti-Inflammatory (too weak)

NSAIDs

Aspirin

Anti-cytokine
antibodies

Anti-integrin
antibodies

Anti-oxidants



Immunosuppressive (too strong)

Corticosteroids

Chemotherapy

Organ transplant
Anti-rejection drugs

Radiation

Immune system
ablation

Anti-leukocyte Abs

CytoSorb[®] Reduces the Fuel to the Fire

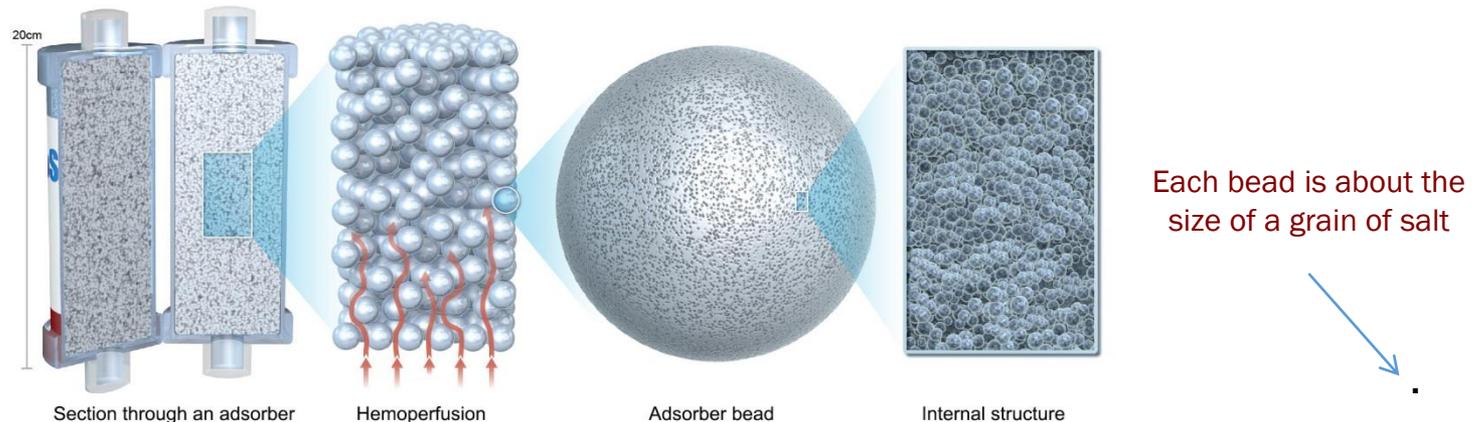
- CytoSorb[®] targets the \$20+ billion opportunity in critical care and cardiac surgery
- Approved in the European Union as the first specifically approved extracorporeal cytokine adsorber
- Broad indication for use where cytokines are elevated
- Removes cytokines and many other inflammatory mediators such as free hemoglobin, bacterial toxins, myoglobin, and activated complement
- Safe and well-tolerated: 56,000+ cumulative treatments delivered, up from 35,000 a year ago



*CytoSorb is not yet approved in the U.S.

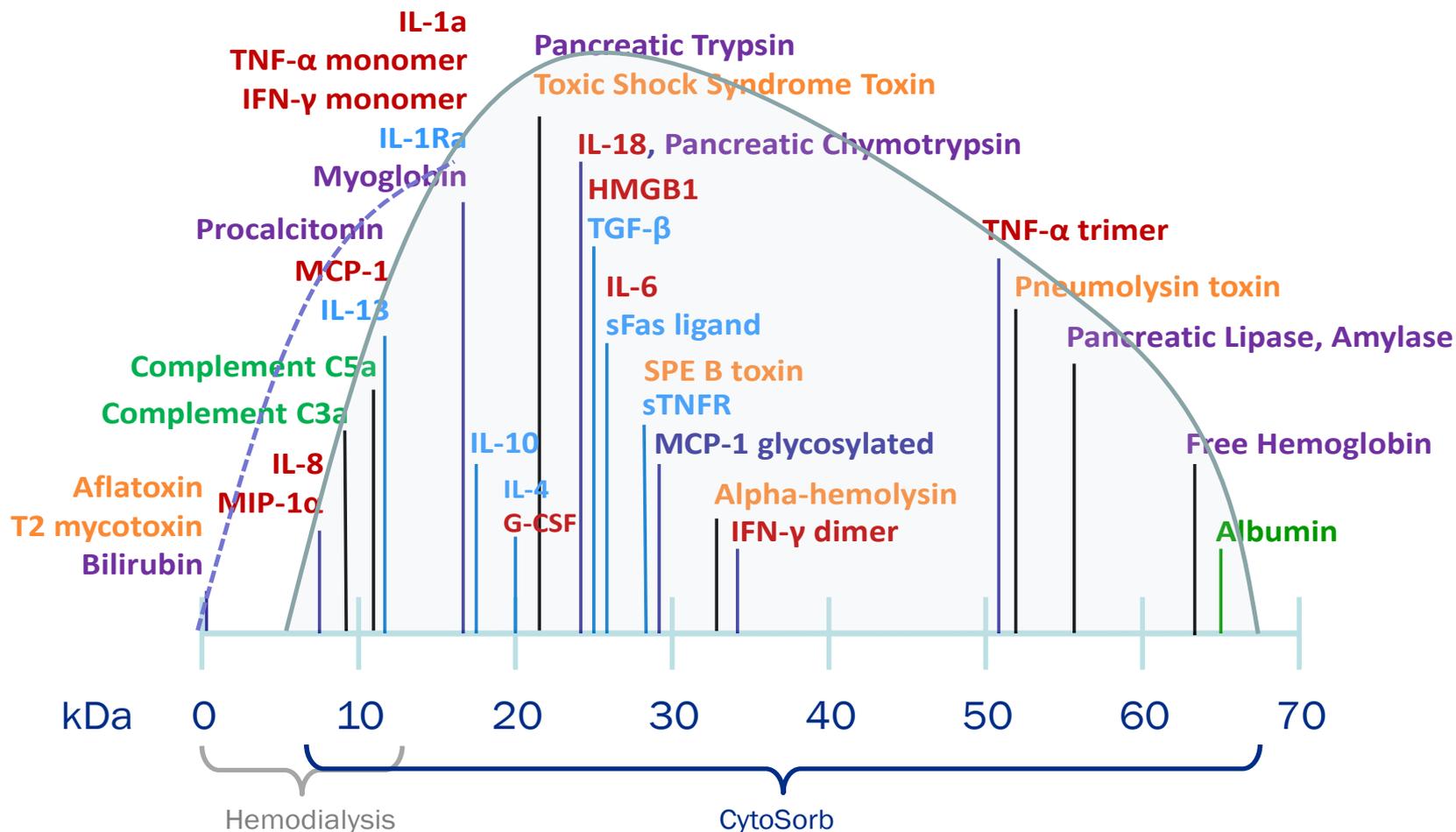
Patented Blood Purification Technology

The underlying blood purification technology is based on biocompatible, highly porous polymer beads that act like tiny sponges to remove harmful substances from blood



- Proprietary patented technology with multiple patents pending worldwide
- Manufactured at our ISO 13485 certified facility in New Jersey
- One of the highest grade medical sorbents on medical market today

CytoSorb® Is Active in Cytokine Sweet Spot



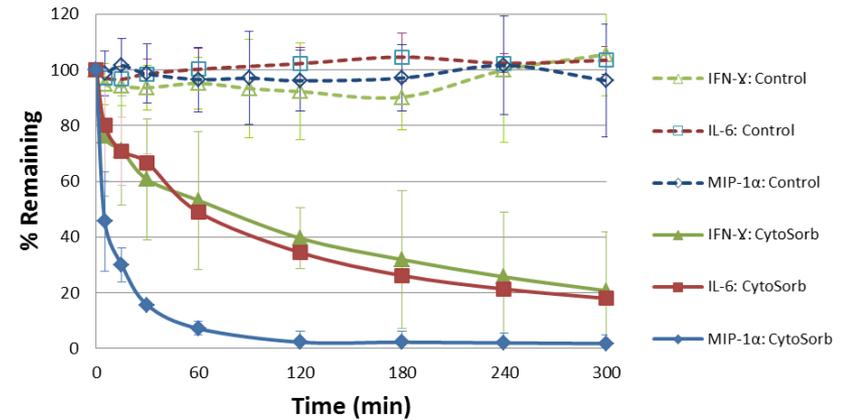
CytoSorb has been shown to adsorb a wide range of inflammatory mediators, including bilirubin, free hemoglobin, bacterial toxins, and other PAMPs and DAMPs. Dotted line shows removal primarily based on adsorption

CytoSorb Reduces Inflammatory Mediators Broadly

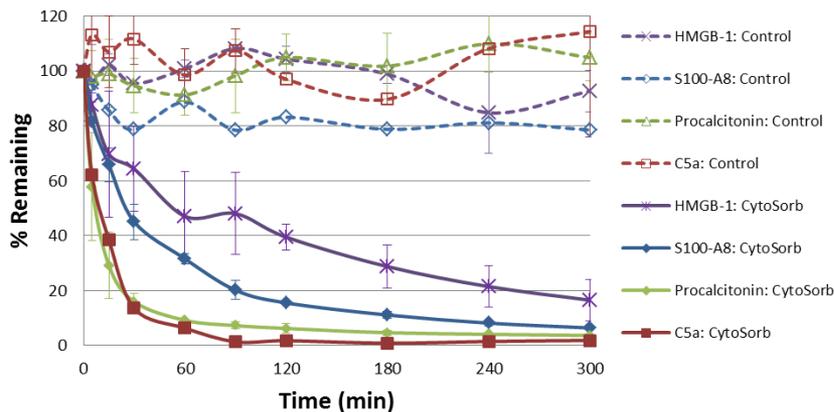
CytoSorb can treat hyperinflammation by reducing a broad range of proinflammatory:

- Cytokines
- Pathogen associated molecular patterns (PAMPs)
- Damage associated molecular patterns (DAMPs)

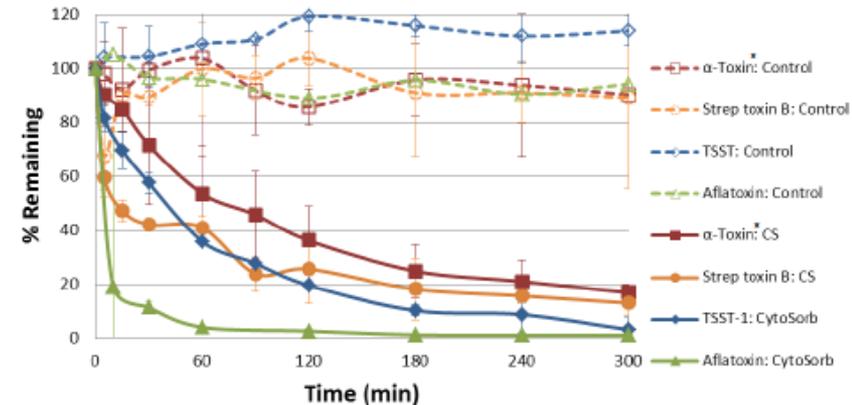
In Vitro Adsorption of Cytokines from Blood with CytoSorb® or Control Device



In Vitro Adsorption of DAMPs from Blood with CytoSorb® or Control Device

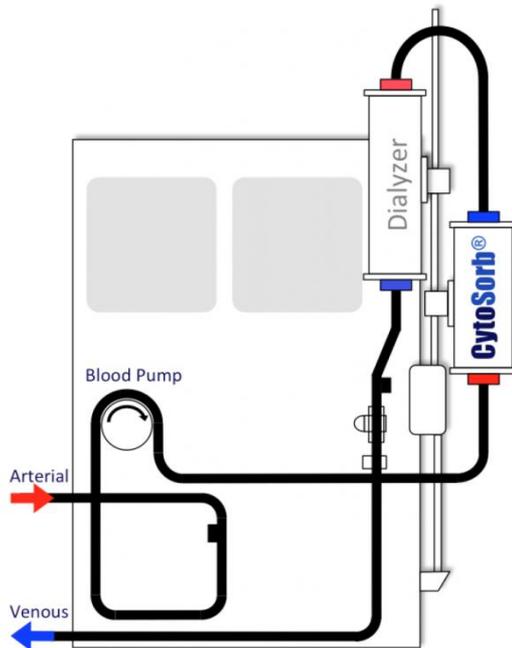


In Vitro Adsorption of PAMPs from Blood with CytoSorb® or Control Device



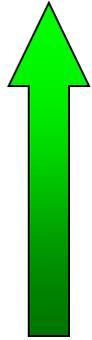
CytoSorb is “Plug and Play”

Compatible with Existing Dialysis and Heart-Lung Machines

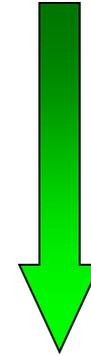


- Place a temporary dialysis catheter in a major vein
- Connect the device to a standard dialysis, ECMO, or heart-lung machine found in hospitals worldwide
- Pump blood out of the body and through the cartridge
- The polymer beads directly contact blood and remove unwanted or toxic substances
- “Purified” blood is pumped back into the patient
- Can treat 70+ total blood volumes per 24 hour treatment
- Each treatment uses a new cartridge

Goal: To Prevent or Treat Organ Failure

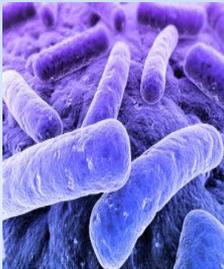


Improve
Patient
Outcome
and
Survival

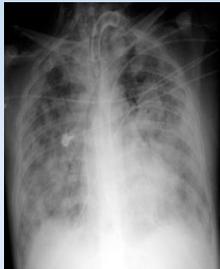


Decrease
Costs Of
ICU and
Patient
Care

Sepsis



ARDS



Burn Injury



Trauma



Pancreatitis



Influenza



Surgical



The Potential to Revolutionize Critical Care Medicine

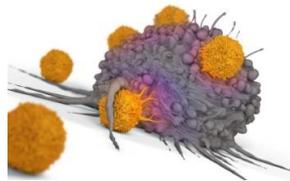
Refractory Septic Shock

Prospective, single arm study in 20 patients with refractory late-stage septic shock using CytoSorb aggressively every 12 hours with a new cartridge

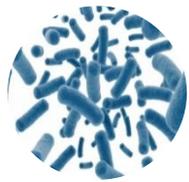
- Patients had refractory shock despite high doses of vasopressors, respiratory failure requiring mechanical ventilation, oligo-anuric kidney failure requiring dialysis, and lactate > 8 mmol/L
- Results from the CytoSorb Greifswald Study
 - Resolution of shock in 65% of patients treated with CytoSorb
 - 28-day survival was 45%, a 30-40% absolute improvement over expected (0-10%)
 - Reduction of IL-6 from an initial average of 87,000 pg/mL to below 10,000 pg/mL after 24 hours of treatment
- A similar population (n=16) receiving standard of care but no CytoSorb therapy, where shock could not be reversed, also on mechanical ventilation with an initial lactate level of 6.1 ± 4 mmol/L, and 75% requiring renal replacement therapy had a mortality of 100% at 28 days.*
- Conrad, M., et. al., "Early prediction of norepinephrine dependency and refractory septic shock with a multimodal approach of vascular failure", J Crit Care, 2015; 30:739-743.
- Friesecke, S, et.al., "Extracorporeal cytokine elimination as rescue therapy in refractory septic shock: a prospective single center study", J Artif Organs 2017 Sep; 20(3):252-259.



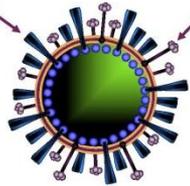
The World Needs CytoSorb®



H1N1



H5



N1

Hospital Stays for Sepsis Appear to Be Rising Dramatically
Experts say cases of sepsis may have been undercounted for years

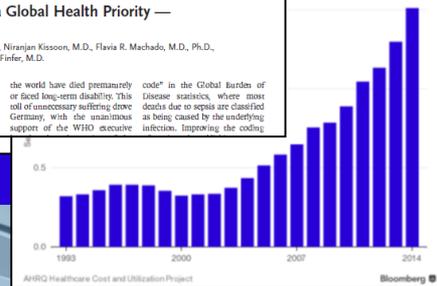
Recognizing Sepsis as a Global Health Priority — A WHO Resolution

Konrad Reinhart, M.D., Ron Daniels, M.D., Niranjan Kissoon, M.D., Flavia R. Machado, M.D., Ph.D., Raymond D. Schachter, L.L.B., and Simon Finfer, M.D.

"Some very important clinical issues, some of them affecting life and death, stay largely in a backwater which is inhabited by academics and professionals

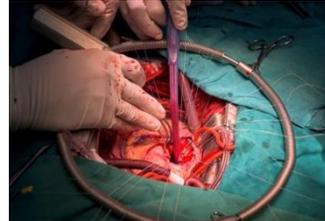
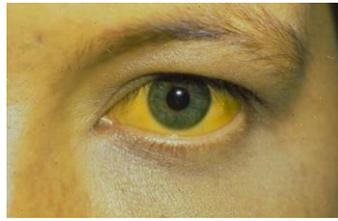
the world have died prematurely or faced long-term disability. This toll of unnecessary suffering drove Germany, with the unanimous support of the WHO executive

code" in the Global Burden of Disease statistics, where most deaths due to sepsis are classified as being caused by the underlying infection. Improving the coding



Bloomberg

America Has a \$27 Billion Sepsis Crisis



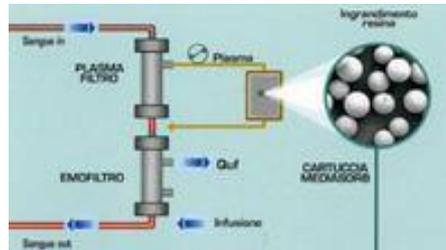
Blood Purification Alternatives

Blood Compatible
Sorbents



CytoSorb
CytoSorbents

Blood Incompatible
Sorbents



CPFA - Bellco
I.M.P.A.C.T - Hemolife

HMCO
Filters



EMiC2 - Fresenius



SepteX - Baxter
Oxiris - Baxter
Theranova - Baxter

CytoSorb

56,000+ Treatments

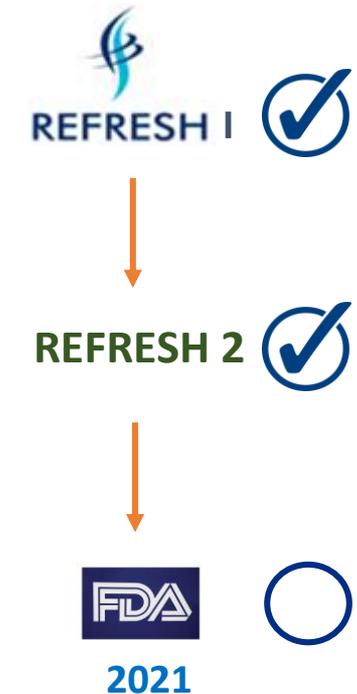
55 Countries Worldwide with E.U.

Critical Care

Cardiac Surgery

United States

Cardiac Surgery



Recently added Mexico and South Korea with partner, Fresenius Medical Care

CytoSorb® Is a High Margin “Razorblade”

- High margin “razorblade” fully compatible with existing installed base of “razor” blood pumps: Dialysis/CRRT, ECMO machines (ICU), heart-lung machines (OR)
- Blended gross margins are >72%, expected to rise to ~80% on a quarterly basis in 2019, driven by volume production from our new manufacturing facility
- Average Direct Selling Price is approximately \$1,000 per cartridge
- Approximately 1 - 10 cartridges are typically used per patient
 - Open heart surgery: 1-2 cartridges
 - Sepsis: 3-5 cartridges or roughly 1 day in the ICU
 - Severe acute pancreatitis: 5-10 cartridges
- In Germany, 400 hospitals have >400 beds. Each hospital typically sees 300-600 sepsis patients per year. At 3-5 cartridges per patient:
 - Revenue per patient = ~\$3,000-5,000
 - Potential revenue per hospital = \$1-3M for sepsis alone
- Previously disclosed one German hospital has already achieved sales >\$1M, validating revenue model

Direct Sales: Focused on 5 Countries



Dr. Christian Steiner, MD
Vice President – Sales and
Marketing and General Manager
CytoSorbents Europe GmbH

CytoSorbents' direct sales force focused on most major university and public hospitals in Germany, Austria, Switzerland, Belgium and Luxembourg with full reimbursement in Germany. German market alone is \$1.0-1.5 B.



CytoSorb® Distributed in 55 Countries



Dr.Reddy's



HOANG LONG PHARMA

IntensivMed

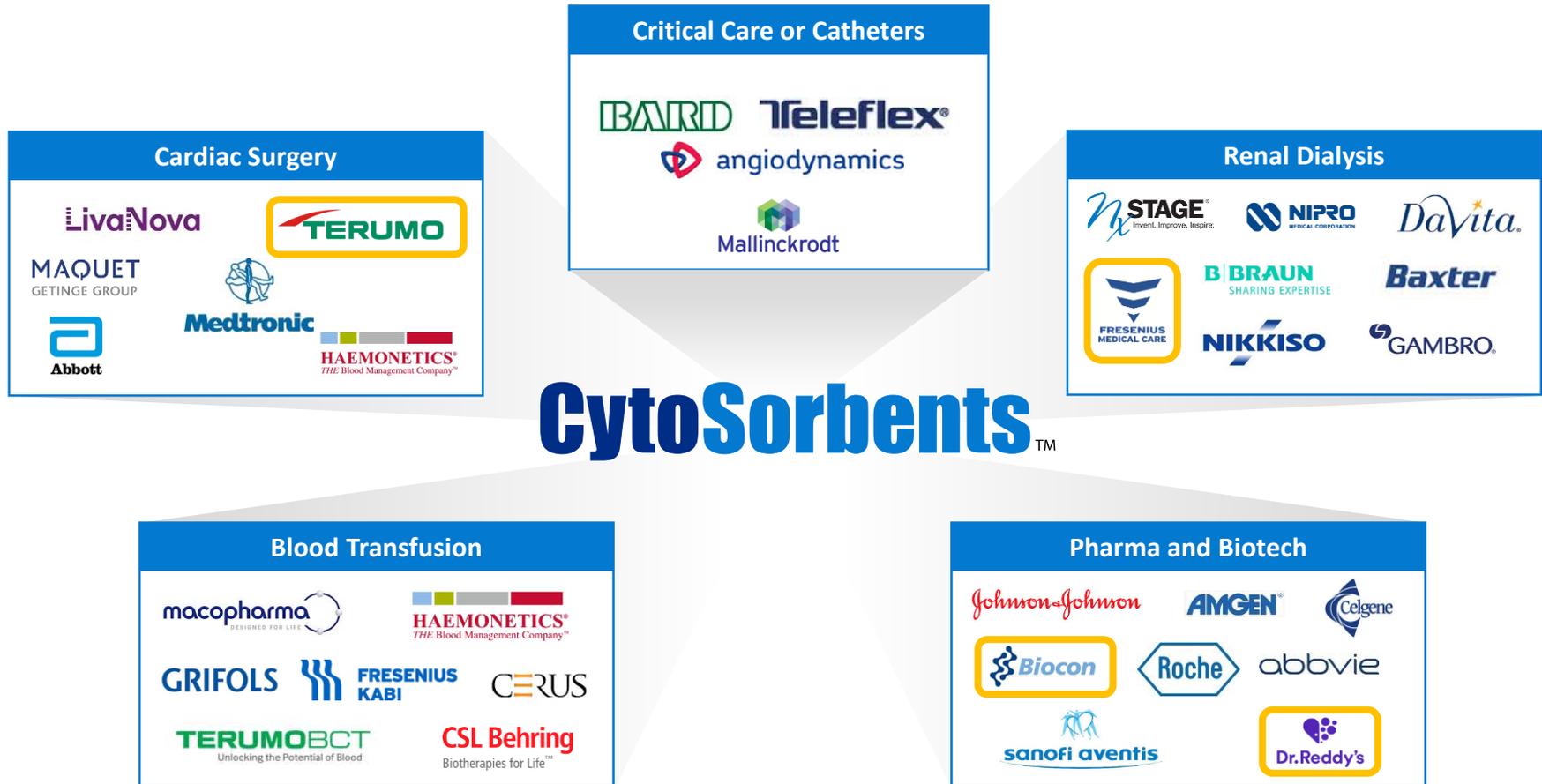


TekMed



WMC

Four Major Partnerships, Potential for More



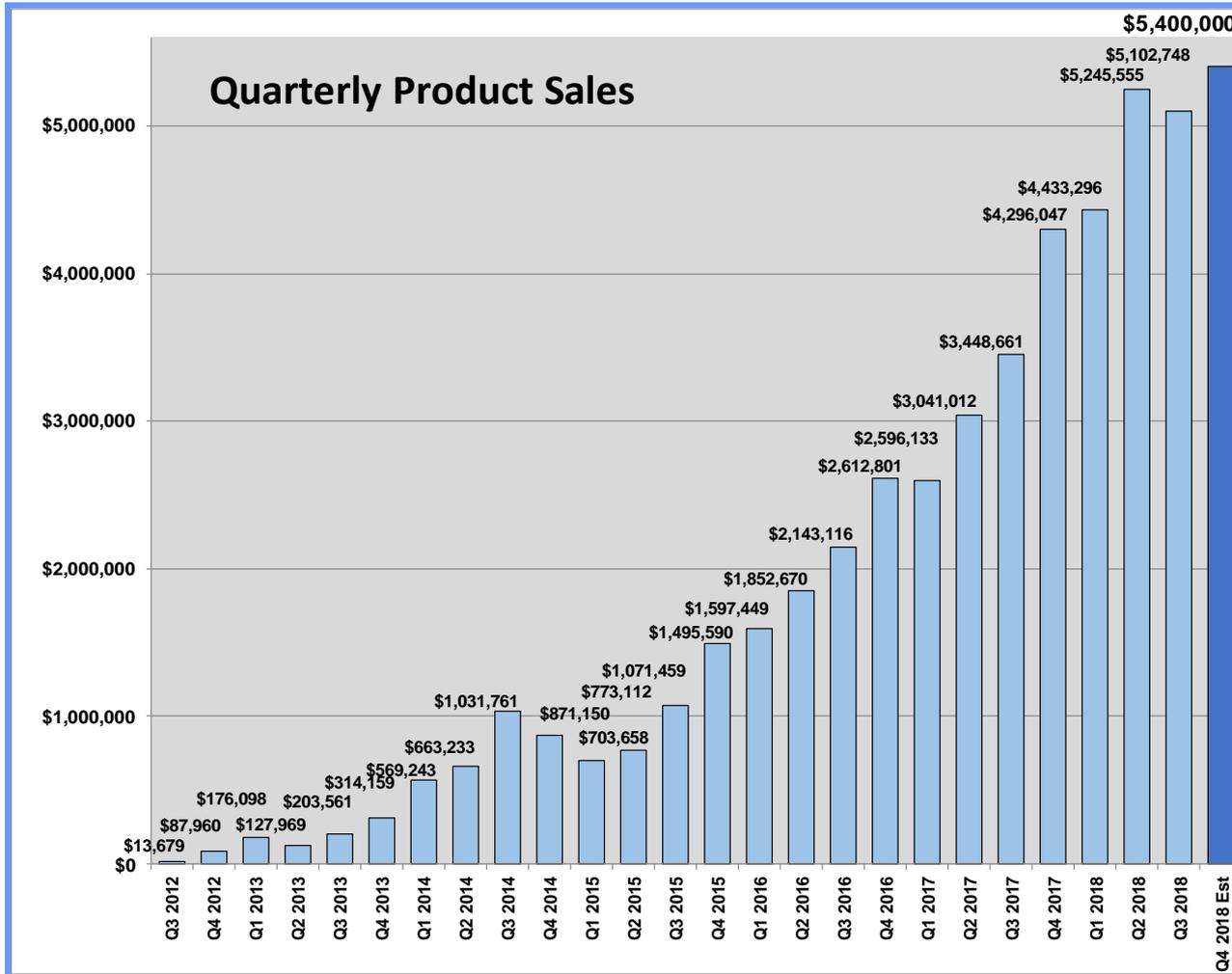
Partnered with leading multinational corporations:

Fresenius Medical Care, Terumo Cardiovascular, Biocon Ltd, and Dr. Reddy's Laboratories

* Companies listed here are used simply as examples of companies in these respective verticals. We make no other representations as to our relationship with any of these companies.

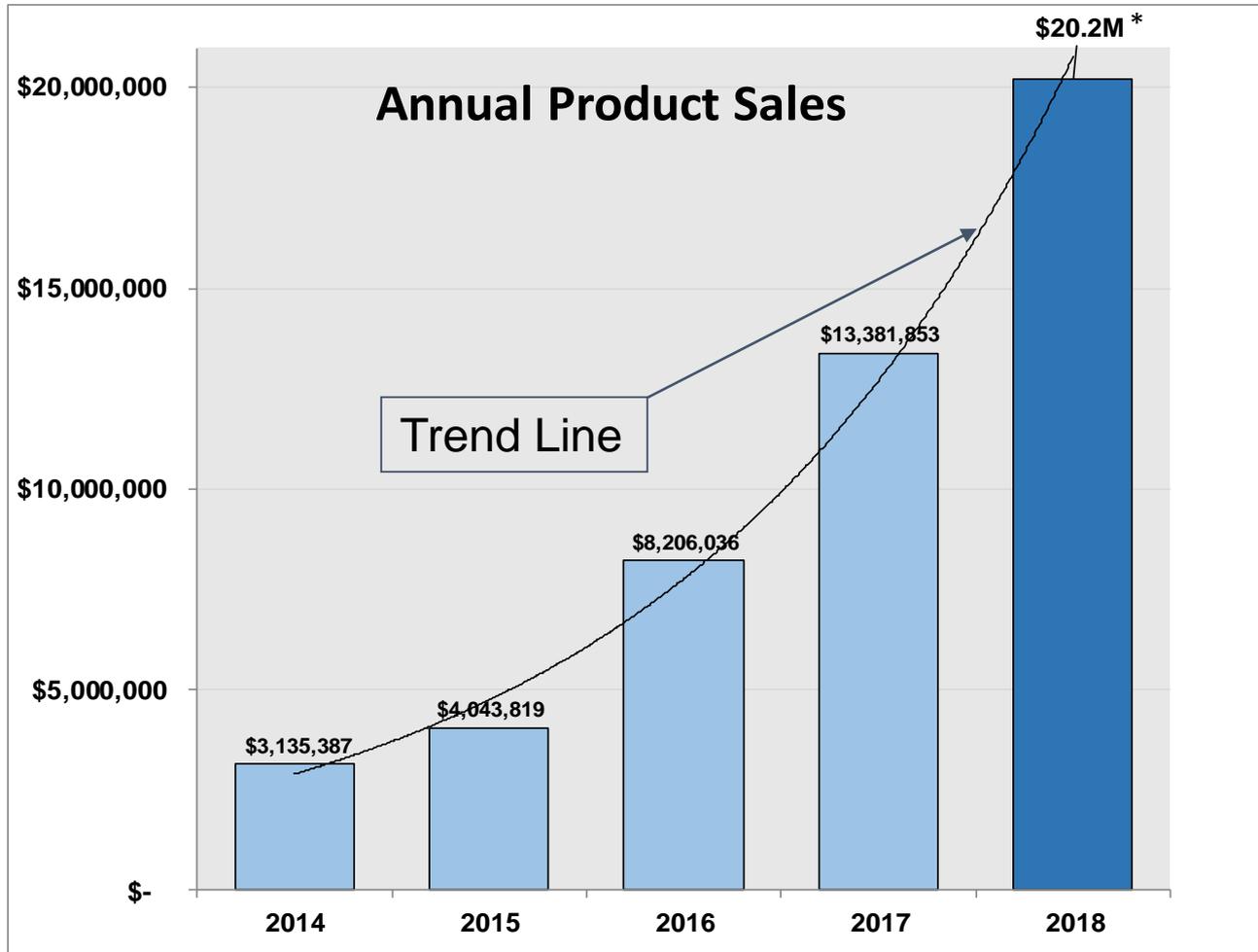
Quarterly Product Sales

26 Consecutive Quarters of Year-over-Year Sales Growth



\$20M in Annual Product Sales

Twenty-six consecutive quarters of year-over-year product sales growth, with a three-year compound growth rate of return (“CAGR”) of 71%



*Estimated

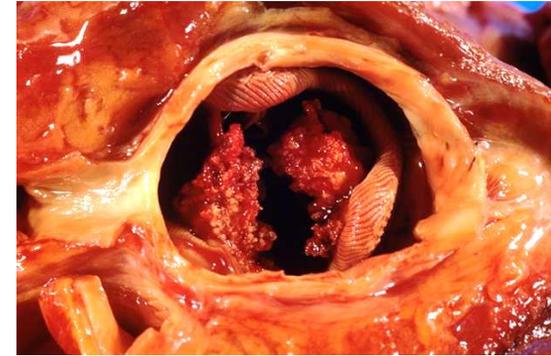
REFRESH 2-AKI Pivotal Trial Targets U.S. Approval

- Heart disease is the leading killer worldwide, driving 1.5M open heart surgeries each year and fueled by the aging baby boomer generation
- High risk invasive cardiac surgery generates inflammatory toxins (e.g. free hemoglobin and activated complement) that can cause post-operative inflammation and organ injury such as acute kidney injury (AKI). CytoSorb reduces these toxins
- The development of even mild AKI after surgery predicts 1 and 5 year mortality and progression to chronic kidney disease
- REFRESH 2-AKI is a pivotal, multi-center RCT using CytoSorb intraoperatively to reduce the incidence or severity of AKI in high risk cardiac surgery
 - Up to 400 patient from 25 centers
 - Expected study completion: 2020 with potential 2021 FDA approval
 - Cost: Approximately \$12M spread out over 3 years
- Good progress in ramping the study, working with many excellent sites
 - 19 active sites, with four additional sites to be added soon – targeting 25 total trial sites
 - 39 patients enrolled by beginning of January, up from 24 at the beginning of December. Targeting enrollment of 1 patient/site/month



German Govt Funding REMOVE Endocarditis Trial

- Infective endocarditis (heart valve infection) occurs when bacteria seeds a heart valve from IV drug abuse and dirty needles, or from dental procedures
- The incidence of endocarditis is rising due to the opiate crisis
- Patients often require open heart surgery valve replacement but are very hemodynamically unstable before, during, and after surgery due to a combination of sepsis and heart valve destruction
- Intraoperative CytoSorb has been used to help stabilize such patients peri-operatively with good success
- The German Federal Ministry of Education and Research is funding a 250 patient, multi-center, randomized, controlled study (REMOVE) using CytoSorb during valve replacement open heart surgery in patients with infective endocarditis
- Primary endpoint is improvement of SOFA score
- SAB and DSMB recommended continuation of trial after first 50 patient interim analysis on reduction of inflammatory mediators

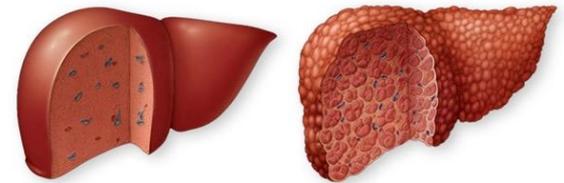


Expanded Label Targets Liver Failure and Trauma

Recently received European approval to expand the use of CytoSorb in liver disease to reduce bilirubin, and in trauma to reduce myoglobin – both very large markets

- **Liver disease**

- 850 million people suffer from chronic liver disease due to viral hepatitis, alcoholism, and non-alcoholic fatty liver (NASH), and other causes leading to 1 million deaths from chronic liver disease, and another 1 million from hepatic cancer
- CytoSorb has been used as a liver dialysis therapy in numerous acute exacerbations of liver disease including acute-on-chronic liver failure, alcoholic hepatitis and others showing both bilirubin and bile acid reduction, and important clinical benefits such as hepatic coma reversal



- **Trauma**

- 56 million hospitalizations in trauma worldwide each year with approximately 5 million deaths. Severe crush injury of muscle releases myoglobin, called rhabdomyolysis, which can precipitate kidney failure, and increase the risk of death

CAR-T Cell Immunotherapy and CRS

- CAR-T cell cancer immunotherapy is a blood cancer treatment breakthrough.
- However, ~40-50% of patients can develop severe, high grade cytokine release syndrome (CRS), a cytokine storm that can lead to rapid organ failure and potentially death
- CytoSorb® was specifically designed to control cytokine storm and CRS and has already successfully treated a dozen cases of the closely related disease hemophagocytic lymphohistiocytosis (HLH)
- With FDA and E.U. approvals of Kymriah (Novartis) and Yescarta (Gilead), we are positioning CytoSorb® to be used as an alternative to, or in conjunction with, tocilizumab and steroids
- In 2017, the pioneer of CAR T-cell immunotherapy, Dr. Carl June at University of Pennsylvania, joined our Scientific Advisory Board



Near-Term Potential Catalysts

- Expected significant growth in sales and usage of CytoSorb, driven by:
 - Clinical data in more applications
 - Reimbursement in key territories
 - Investments in infrastructure and human capital to support our direct, distributor, and partner sales
- 2019 blended product gross margin expansion to 80% on a quarterly basis
- Potential new partnerships and expansion of existing partnerships
- Ramping of pivotal REFRESH 2-AKI and REMOVE studies
- Start to HemoDefend pivotal US Trial
- Publications of clinical and research data
- Expanded institutional ownership and analyst coverage



CytoSorbents Investment Summary

CytoSorbents is strongly positioned and on track to have strong growth in 2019 and beyond

- Established, well-run U.S. medtech but with a biotech profile, nearing critical mass
- Strategically positioned to address some of the largest, most visible, unmet medical needs worldwide in critical care, cardiac surgery, cancer immunotherapy, and others
- Highly profitable “razorblade” in someone else’s “razor” business model
- Significant CytoSorb® sales growth and expected gross margin expansion and near-term operating profitability
- Excellent validation by customers, partners, and government agencies
- Gaining momentum in institutional ownership and poised for greater awareness
- Creating optionality on multiple potential exits for investors



Providing Hope
in a helpless situation



HELPING PATIENTS SURVIVE CRITICAL ILLNESSES WORLDWIDE



CytoSorbents™

Working to Save Lives Through Blood Purification

NASDAQ: CTSO

Dr. Phillip Chan, MD, PhD – CEO

pchan@cytosorbents.com