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## CytoSorbents Corporation (NASDAQ/CTSO)

November 6, 2019

### BUY: Cytosorbents 2020 “Faster Growth Ahead”

Cytosorbents reported that there have now been 73,000 “Cytosorb” treatments delivered cumulatively, up from 51,000 a year ago. Steady growth in Europe even with foreign exchange headwinds which shaved \$239k from the top-line. Remember that the current revenues are really just a bridge, to the real upside that is still in-front of the company. We also note \$16M in reported cash on the balance sheet plus access to additional capital (ATM).

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Current Price \$5.05  
 Price Target \$15.00

Estimates	F2019E	F2020E	F2021E
<b>Expenses (\$000s)</b>	\$ 42,363	\$ 45,649	\$ 58,619
1Q March	\$ 9,475	\$ 10,499	\$ 13,482
2Q June	\$ 9,862	\$ 10,956	\$ 14,069
3Q September	\$ 11,722	\$ 11,869	\$ 15,241
4Q December	\$ 11,304	\$ 12,325	\$ 15,827

	F2019E	F2020E	F2021E
<b>EPS (diluted)</b>	\$ (0.63)	\$ (0.32)	\$ 0.44
1Q March	\$ (0.15)	\$ (0.07)	\$ 0.10
2Q June	\$ (0.11)	\$ (0.08)	\$ 0.11
3Q September	\$ (0.21)	\$ (0.08)	\$ 0.12
4Q December	\$ (0.15)	\$ (0.09)	\$ 0.12

EBITDA/Share (\$0.55) (\$0.35) \$0.49

EV/EBITDA (x) 0.0 0.0 0.0

#### Stock Data

52-Week Range \$3.68 - \$12.00

Shares Outstanding (mil.) 32.3

Market Capitalization (mil.) \$163

Enterprise Value (mil.) \$143

Debt to Capital 0%

Book Value/Share \$0.35

Price/Book 15.2

Average Three Months Trading Volume (K) 65

Insider Ownership 5.4%

Institutional Ownership 26.6%

Short interest (mil.) 8.1%

Dividend / Yield \$0.00/0.0%

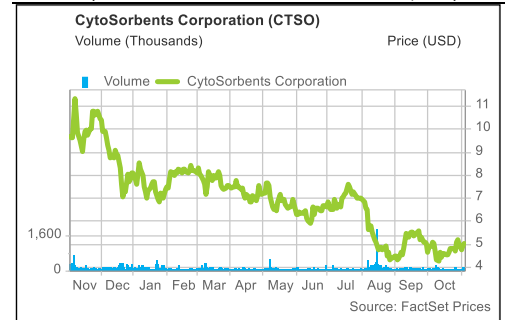
#### Investment Highlights

Cytosorbents reported a solid quarter which, if adjusted for Fx was in-line with street expectations, BUT we would not focus on the quarter to quarter sales and instead would focus on both clinical progress and new indications (for example, removing blood thinners in the event of an emergency), which ultimately can drive substantial higher revenues. Fourth-quarter is expected to be strong, and the company is focused on blended margins of 80%.

**The specifics.** Topline revenues were \$6.0M (including grant revenues), but as noted, Fx shaved \$239K which if added back, would have contributed to very solid growth, qtr to qtr. Expenses were in-line with expectations, which resulted in a loss of 0.21 cents per share. The company noted \$16M in cash on the balance sheet and access to ATM facility, which may be used (judiciously) to preserve the balance sheet.

#### Multiple Catalysts Ahead:

- The “**Remove Endocarditis**” trial in Germany. The trial has now enrolled 250 patients (and plans to add another 15 to account for any drop-outs). Enrollment should complete by year-end with Date by mid. 2020
- Advancement of the **U.S. pivotal REFRESH 2-AKI** trial, currently at 144 patients enrolled versus a planned total of 400 patients and positioned to exceed end-of-year enrollment target of 150. An interim analysis is planned at N=200, estimated to occur by the end of 1Q20.
- **UK TISORB study** (company-sponsored) is evaluating the use of Cytosorb to remove anti-platelet drugs (ticagrelor) in emergency cardiac surgery patients. We note this is a global \$20B market.
- **HemoDefend IDE.** The IDE is expected to be filed by year-end, which could make a 2020 approval possible as this is expected to be a DeNovo 510-K (two-site, n=20 person trial) to support the filing.



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- HemoDefend background. Recall that there has been ongoing controversy on whether there is a difference between "old" blood and "new" blood or blood that has been stored for some time in a refrigerated compartment versus blood that has been freshly donated by a person. Although current studies show contradicting results (independent studies were highly varied in approach), it is undisputed that biological changes occur during RBC storage, although unknown if they are beneficial/harmless or detrimental changes. Whether or not aged blood is bad, HemoDefend is still advantageous when storing donated blood. Not only will it keep donated blood fresh and extend the shelf-life of blood, but it will also remove the many contaminants that may be present in donated blood, or from the changes, RBCs undergo while in storage. This is to minimize the current 1-5% risk chance patients have of developing a transfusion reaction, which could be as mild as a fever to as severe as death.
  - The HemoDefend technology can be implemented in two ways; as an in-line filter between the blood bag and the patient during transfusion, or in an approach called "Beads in a Bag." Beads in a Bag is CytoSorbents' innovative, patent-pending technology that will purify blood during the entire refrigerated storage period. CytoSorbents' biocompatible beads are perfect for this use for several reasons: the beads can have extended contact with blood without causing damage to the RBCs, they are neutrally buoyant and will suspend in blood so that the blood storage bag does not need to be mixed, and during transfusion, an integrated filter will keep the beads in the bag. HemoDefend won't require any extra machine, electricity, energy source, or any other manipulation to be used, so it won't cost much to possibly save a life.

**Valuation.** We use a series of therapeutic models across the various indications and geographies and project product revenues for the company out to the year 2030. In our U.S. therapeutic models, we apply a 30% risk cut (70% success probability) that both U.S. approvals and our market share forecasts can be realized. For us, valuation becomes an interesting question when we discuss the appropriate "r" risk-rate to use in our three model metrics, free cash flow to the firm (FCFF), Discounted EPS and Sum-Of-The-Parts (SOP) models, which are equal-weighted, averaged and rounded to the nearest whole number. Typically for early-stage companies with no revenues, we use 30%, and for companies with established products and revenues, we use a lower 15%. Cytosorbents arguably is somewhere in the middle, as products are approved and selling in Europe but not yet in the U.S. If we select a conservative 30%, we drive a \$9.00 price target. If we select a more aggressive 15%, we arrive at a \$28.00 target. If we select a mid-point (22.5%), we derive a \$15.00 target. Given their unique position of approval in Europe, established proof of concept and a product that works, we select the mid-point of 22.5% and set our target for CytoSorbents at \$15.00.

**Risk.** Market risks, Regulatory risks, Financial risks and Commercialization risks

**Modeling Assumptions**

1. We assume continued steady growth for Cytosorb in the current key EU direct sales countries of Germany, Austria and Switzerland.
2. We assume a selling price per cartridge of \$1,000 for direct sales and \$600 for distribution sales. We estimate that each patient will require an average of five units (CytoSorb cartridges) for sepsis treatment and three units for cardiac treatment.
3. We conservatively assume that CytoSorb can achieve a ten percent market share of the market in Germany, Austria and Switzerland, and 3% of the market in the rest of the EU by 2030.
4. Our model includes CytoSorb revenues in the U.S. for cardiac surgery and sepsis beginning in 2021 upon commercialization. To these revenues, we apply a 70% probability of success (or 30% risk cut).

**Exhibit 1. CytoSorb sepsis EU direct sales (Germany, Austria, and Switzerland)**

CytoSorb - Direct Sales (Germany, Austria, Switzerland)	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
EU population	506,327,109	507,441,029	508,557,399	509,676,225	510,797,513	511,921,267	513,047,494	514,176,199	515,307,386	516,441,062	517,577,233	518,715,903	519,857,078
Germany population	81,202,563	81,632,936	82,065,591	82,500,539	82,937,791	83,377,362	83,819,262	84,263,504	84,710,100	85,159,064	85,610,407	86,064,142	86,520,282
Austria population	8,446,189	8,448,723	8,451,257	8,453,793	8,456,329	8,458,866	8,461,404	8,463,942	8,466,481	8,469,021	8,471,562	8,474,103	8,476,646
Switzerland population	8,098,152	8,115,158	8,132,200	8,149,277	8,166,391	8,183,540	8,200,726	8,217,947	8,235,205	8,252,499	8,269,829	8,287,196	8,304,599
Critical care population (Sepsis included)	488,509	500,804	503,110	505,428	507,759	510,101	512,455	514,822	517,200	519,591	521,994	524,410	526,838
Percent of patients with access to hospitals with Cytosorb	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Total patients	249,254.60	250,401.88	251,555.07	252,714.20	253,879.30	255,050.41	256,227.55	257,410.75	258,600.06	259,795.49	260,997.08	262,204.88	263,418.89
Market penetration	1.2%	1.7%	1.8%	3.0%	4.0%	5.0%	6.0%	7.0%	8.0%	9.0%	10.0%	10.0%	10.0%
Total addressable patients	2,991	4,257	4,528	7,581	10,155	12,753	15,374	18,019	20,688	23,382	26,100	26,220	26,342
Estimated units per patient	5	5	5	5	5	5	5	5	5	5	5	5	5
Total filter needed	14,955	21,284	22,640	37,907	50,776	63,763	76,869	90,084	103,440	116,908	130,499	131,102	131,709
Cost of therapy	\$ 1,030	\$ 1,041	\$ 1,051	\$ 1,062	\$ 1,072	\$ 1,083	\$ 1,094	\$ 1,105	\$ 1,116	\$ 1,127	\$ 1,138	\$ 1,149	\$ 1,161
Change in price	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Revenue ('000)	\$ 15,408	\$ 22,148	\$ 23,795	\$ 40,239	\$ 54,439	\$ 69,046	\$ 84,070	\$ 99,520	\$ 115,405	\$ 131,735	\$ 148,520	\$ 150,699	\$ 152,911
Risk factor													
Total revenue ('000)	\$ 15,408	\$ 22,148	\$ 23,795	\$ 40,239	\$ 54,439	\$ 69,046	\$ 84,070	\$ 99,520	\$ 115,405	\$ 131,735	\$ 148,520	\$ 150,699	\$ 152,911

Source: Dawson James estimates

**Exhibit 2. CytoSorb sepsis EU sales by distributorship (excluding Germany, Austria, and Switzerland)**

CytoSorb - Distributor (Rest of EU)	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
EU population (Germany, Austria and Switzerland excluded)	408,580,205	409,244,211	409,908,351	410,572,616	411,237,001	411,901,499	412,566,104	413,230,806	413,895,600	414,560,479	415,225,435	415,890,462	416,555,551
Critical care population (Sepsis included)	2,083,759	2,087,145	2,090,533	2,093,920	2,097,307	2,100,698	2,104,087	2,107,477	2,110,868	2,114,258	2,117,650	2,121,041	2,124,433
Percent of patients with access to hospitals with Cytosorb	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
Total patients	833,503.62	834,858.19	836,213.04	837,568.14	838,923.48	840,279.06	841,634.85	842,990.84	844,347.02	845,703.38	847,059.89	848,416.54	849,773.32
Market penetration	0.2%	0.3%	0.4%	0.5%	0.6%	0.7%	0.8%	0.9%	1.0%	1.1%	1.2%	1.3%	1.4%
Total addressable patients	1,667	2,505	3,345	4,188	6,711	8,403	12,625	16,880	21,109	25,371	25,412	25,452	25,493
Estimated units per patient	5	5	5	5	5	5	5	5	5	5	5	5	5
Total filter needed	8,335	12,523	16,724	20,939	33,557	42,014	63,123	84,299	105,543	126,856	127,059	127,262	127,466
Cost of therapy	\$ 618	\$ 624	\$ 631	\$ 637	\$ 643	\$ 650	\$ 656	\$ 663	\$ 669	\$ 676	\$ 683	\$ 690	\$ 697
Change in price	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Revenue ('000)	\$ 5,153	\$ 7,819	\$ 10,546	\$ 13,336	\$ 21,587	\$ 27,297	\$ 41,422	\$ 55,871	\$ 70,651	\$ 85,766	\$ 86,763	\$ 87,771	\$ 88,790
Risk factor													
Total revenue ('000)	\$ 5,153	\$ 7,819	\$ 10,546	\$ 13,336	\$ 21,587	\$ 27,297	\$ 41,422	\$ 55,871	\$ 70,651	\$ 85,766	\$ 86,763	\$ 87,771	\$ 88,790

Source: Dawson James estimates

**Exhibit 3. CytoSorb U.S. sales for cardiac surgery**

CytoSorb Cardiac Surgery US	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
US population	327,296,502	329,587,577	331,894,690	334,217,953	336,557,479	338,913,381	341,285,775	343,674,775	346,080,499	348,503,062	350,942,583	353,399,182	355,872,976
Cardiac surgery	1,009,027	1,012,054	1,015,090	1,018,136	1,021,190	1,024,254	1,027,326	1,030,408	1,033,499	1,036,600	1,039,710	1,042,829	1,045,957
Market penetration	0.1%	0.1%	0.2%	0.3%	0.4%	0.5%	0.6%	0.7%	0.8%	0.9%	1.0%	1.1%	1.2%
Total addressable patients	1,018	2,042	3,073	4,109	5,152	6,200	7,250	8,300	9,350	10,400	11,450	12,500	13,550
Estimated units per patient	3	3	3	3	3	3	3	3	3	3	3	3	3
Total filter needed	3,054	6,127	9,218	12,328	15,456	18,600	21,750	24,900	28,050	31,200	34,350	37,500	40,650
Cost of therapy	\$ 2,500	\$ 2,513	\$ 2,525	\$ 2,538	\$ 2,550	\$ 2,563	\$ 2,576	\$ 2,589	\$ 2,602	\$ 2,615	\$ 2,628	\$ 2,641	\$ 2,654
Change in price	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Revenue ('000)	\$ 7,636	\$ 15,394	\$ 23,277	\$ 31,284	\$ 39,419	\$ 47,575	\$ 55,750	\$ 63,945	\$ 72,150	\$ 80,375	\$ 88,620	\$ 96,885	\$ 105,165
Risk factor													
Total revenue ('000)	\$ 5,345	\$ 10,776	\$ 16,294	\$ 21,899	\$ 27,593	\$ 33,375	\$ 39,247	\$ 45,210	\$ 51,262	\$ 57,405	\$ 63,648	\$ 69,891	\$ 76,234

Source: Dawson James estimates

**Exhibit 4. CytoSorb EU sales for cardiac surgery**

CytoSorb Cardiac Surgery EU	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
EU population	1,509,018	1,512,036	1,515,050	1,518,090	1,521,125	1,524,169	1,527,217	1,530,271	1,533,332	1,536,399	1,539,471	1,542,550	1,545,635
Cardiac surgery	0.09%	0.1%	0.2%	0.3%	0.4%	0.5%	0.6%	0.7%	0.8%	0.9%	1.0%	1.1%	1.2%
Total addressable patients	1,358	1,512	2,273	4,554	6,085	7,621	9,163	10,712	12,260	13,808	15,356	16,904	18,452
Estimated units per patient	3	3	3	3	3	3	3	3	3	3	3	3	3
Total filter needed	4,074	4,536	6,818	13,663	18,254	22,863	27,490	32,136	36,800	41,472	46,152	50,840	55,536
Cost of therapy	\$ 500	\$ 500	\$ 500	\$ 503	\$ 505	\$ 508	\$ 510	\$ 513	\$ 515	\$ 518	\$ 520	\$ 523	\$ 526
Change in price	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Revenue ('000)	\$ 2,037	\$ 2,268	\$ 3,409	\$ 6,866	\$ 9,218	\$ 11,604	\$ 14,022	\$ 16,474	\$ 18,959	\$ 21,475	\$ 24,022	\$ 26,599	\$ 29,217
Risk factor													
Total revenue ('000)	\$ 2,037	\$ 2,268	\$ 3,409	\$ 6,866	\$ 9,218	\$ 11,604	\$ 14,022	\$ 16,474	\$ 18,959	\$ 21,475	\$ 24,022	\$ 26,599	\$ 29,217

Source: Dawson James estimates

**Exhibit 5. CytoSorb U.S. sales for sepsis**

CytoSorb Cardiac Surgery US	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
US population	327,296,502	329,587,577	331,894,690	334,217,953	336,557,479	338,913,381	341,285,775	343,674,775	346,080,499	348,503,062	350,942,583	353,399,182	355,872,976
Severe sepsis patients	981,890	988,763	995,684	1,002,654	1,009,672	1,016,740	1,023,857	1,031,024	1,038,241	1,045,509	1,052,828	1,060,198	1,067,619
Market penetration	0.1%	0.2%	0.3%	0.4%	0.5%	0.6%	0.7%	0.8%	0.9%	1.0%	1.1%	1.2%	1.3%
Total addressable patients	1,013	2,019	3,033	4,047	5,061	6,075	7,089	8,103	9,117	10,131	11,145	12,159	13,173
Estimated units per patient	5	5	5	5	5	5	5	5	5	5	5	5	5
Total filter needed	5,013	10,097	15,195	20,291	25,387	30,483	35,579	40,675	45,771	50,867	55,963	61,059	66,155
Cost of therapy	\$ 2,500	\$ 2,525	\$ 2,550	\$ 2,575	\$ 2,600	\$ 2,625	\$ 2,650	\$ 2,675	\$ 2,700	\$ 2,725	\$ 2,750	\$ 2,775	\$ 2,800
Change in price	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Revenue ('000)	\$ 12,533	\$ 25,494	\$ 38,455	\$ 51,416	\$ 64,377	\$ 77,338	\$ 90,299	\$ 103,260	\$ 116,221	\$ 129,182	\$ 142,143	\$ 155,104	\$ 168,065
Risk factor													
Total revenue ('000)	\$ 8,773	\$ 17,846	\$ 26,919	\$ 35,992	\$ 45,065	\$ 54,138	\$ 63,211	\$ 72,284	\$ 81,357	\$ 90,430	\$ 99,503	\$ 108,576	\$ 117,649

Source: Dawson James estimates

**Valuation.** We use a series of therapeutic models across the various indications and geographies and project product revenues for the company out to the year 2030. In our U.S. therapeutic models, we apply a 30% risk cut (70% success probability) that both U.S. approvals and our market share forecasts can be realized. For us, valuation becomes an interesting question when we discuss the appropriate "r" risk-rate to use in our three model metrics, free cash flow to the firm (FCFF), Discounted EPS and Sum-Of-The-Parts (SOP) models, which are equal-weighted, averaged and rounded to the nearest whole number. Typically for early-stage companies with no revenues, we use 30%, and for companies with established products and revenues, we use a lower 15%. Cytosorbents arguably is somewhere in the middle, as products are approved and selling in Europe but not yet in the U.S. If we select a conservative 30%, we drive a \$9.00 price target. If we select a more aggressive 15%, we arrive at a \$28.00 target. If we select a mid-point (22.5%), we derive a \$15.00 target. Given their unique position of approval in Europe, established proof of concept and a product that works, we select the mid-point of 22.5% and set our target for CytoSorbents at \$15.00.

**Exhibit 6. FCFF Model**

Average \$	15
Price Target \$	15
Year	2019

**DCF Valuation Using FCF (min):**

units ('000)	2018A	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
EBIT	(17,830)	(17,160)	(11,025)	16,493	43,837	86,422	151,532	255,996	319,474	360,704	391,365	410,708	407,264
Tax Rate	0%	5%	8%	10%	12%	15%	18%	21%	24%	28%	33%	33%	33%
EBIT (1-t)	(17,830)	(16,302)	(10,143)	14,844	38,577	73,459	124,256	202,237	242,801	259,707	262,215	275,174	272,867
CapEx	(493)	(543)	(597)	(657)	(722)	(794)	(874)	(961)	(1,057)	(1,163)	(1,279)	(1,407)	(1,548)
Depreciation	391	138	-	-	-	-	-	-	-	-	-	-	-
Change in NWC	-	-	-	-	-	-	-	-	-	-	-	-	-
FCF	(17,932)	(16,706)	(10,740)	14,187	37,855	72,664	123,382	201,276	241,743	258,544	260,935	273,767	271,319
PV of FCF	(21,967)	(16,706)	(8,767)	9,454	20,593	32,268	44,727	59,563	58,399	50,985	42,006	35,977	29,106
Discount Rate	22.5%												
Long Term Growth Rate	1%												
Terminal Cash Flow	1,274,569												
Terminal Value YE2030	136,731												
NPV	494,335												
NPV-Debt	-												
Shares out ('000)	33,734												
NPV Per Share	15												

Source: Dawson James estimates

**Exhibit 7. Discounted EPS Model**

Current Year	2019
Year of EPS	2030
Earnings Multiple	15
Discount Factor	22.5%
Selected Year EPS	8.09
NPV	13.02

Source: Dawson James estimates

		Discount Rate and Earnings Multiple Varies, Year is Constant						
		13.02	5%	10%	15%	20%	25%	30%
Earnings Multiple	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	23.65	14.18	8.69	5.44	3.47	2.26	
	10	47.29	28.35	17.39	10.89	6.95	4.51	
	15	70.94	42.53	26.08	16.33	10.42	6.77	
	20	94.59	56.70	34.77	21.77	13.90	9.03	
	25	118.23	70.88	43.47	27.22	17.37	11.28	
	30	141.88	85.05	52.16	32.66	20.84	13.54	
	35	165.53	99.23	60.85	38.10	24.32	15.80	

Source: Dawson James estimates

**Exhibit 8. Sum of the Parts Model**

CytoSorbents	LT Gr	Discount Rate	Yrs to Mkt	% Success	Peak Sales (MMs)	Term Val
<b>CytoSorb - Sepsis Direct Sales(EU)</b>	1%	22.5%	0	70%	\$151	\$701
NPV						\$7
<b>CytoSorb - Sepsis Distributor (EU)</b>	1%	22.5%	0	70%	\$88	\$408
NPV						\$4
<b>CytoSorb (Cardiac surgery US)</b>	1%	22.5%	2	50%	\$68	\$318
NPV						\$1.43
<b>CytoSorb (Cardiac surgery EU)</b>	1%	22.5%	0	70%	\$17	\$79
NPV						\$0.7
<b>CytoSorb (Sepsis US)</b>	1%	22.5%	4	50%	\$271	\$1,262
NPV						\$3.8
Net Margin						45%
MM Shrs OS (2030E)						33
<b>Total</b>						<b>\$16</b>

Source: Dawson James estimates

## Risk Analysis

**Market Share Risk:** CytoSorbents' potential inability to further grow product sales in the EU will hinder its profitability as more capital is invested in clinical trials to bring CytoSorb to the U.S. market. The company's product represents a new treatment for critical care patients that may take longer for adoption than predicted.

**Regulatory Risk:** There may be certain regulatory risks related to CytoSorb approval in the U.S.

**Commercial Risk:** There is no guarantee that the company will be able to develop and expand sales operations to offset research and development costs. Delays in U.S. commercialization will be negatively reflected in its valuation.

**Financial Risk:** The company should be expected to raise capital in the near term. We assume a raise and dilution, but there is no guarantee that market conditions will be favorable.

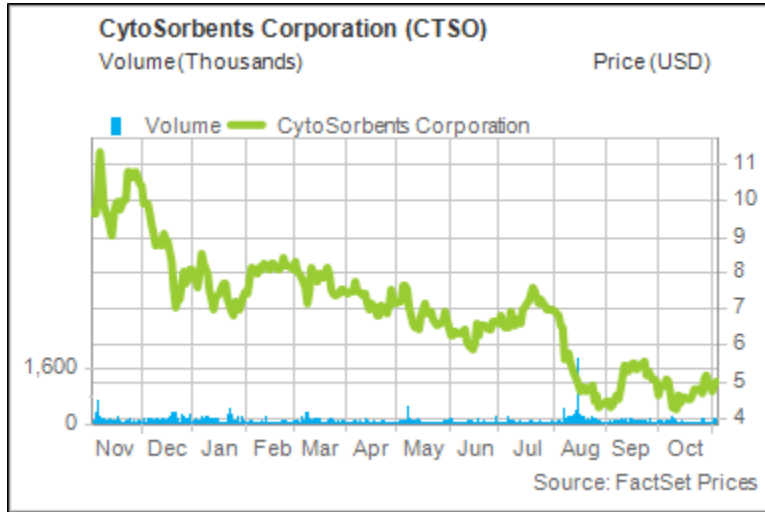
**Exhibit 9. Income Statement**

CTSO: Income Statement (\$000)																					
YE December 31	2018A	1Q19A	2Q19A	3Q19A	4Q19E	2019E	1Q20E	2Q20E	3Q20E	4Q20E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
<b>Revenue:</b>																					
CytoSorb Direct Sales (Germany, Austria, Switzerland)	20,143	4,576	5,850	5,648	6,200	22,148	4,945	5,160	5,590	5,805	21,500	40,239	54,439	69,046	84,070	99,520	115,405	131,735	148,520	150,699	150,699
CytoSorb Distributor (Rest of EU)			-				2,208	2,304	2,497	2,593	9,602	13,336	21,587	27,297	41,422	55,871	70,651	85,766	86,763	87,771	87,771
CytoSorb (Cardiac surgery EU)							690	720	780	810	3,000	6,866	9,218	11,604	14,022	16,474	16,589	16,705	16,822	16,940	16,940
CytoSorb (Cardiac surgery US)							-	-	-	-	-	5,345	10,776	16,294	21,899	27,593	66,755	67,290	67,829	68,373	68,373
CytoSorb (sepsis US)												8,773	17,846	45,376	92,302	187,755	200,508	223,353	246,919	271,225	271,225
VetResQ							35	36	39	41	150	158	165	174	182	191					
Other Sales	109			80		80															
<b>Total Product Sales</b>	<b>20,252</b>	<b>4,576</b>	<b>5,850</b>	<b>5,728</b>	<b>6,200</b>	<b>22,354</b>	<b>7,878</b>	<b>8,220</b>	<b>8,906</b>	<b>9,248</b>	<b>34,252</b>	<b>74,717</b>	<b>114,031</b>	<b>169,790</b>	<b>253,897</b>	<b>387,404</b>	<b>469,908</b>	<b>524,849</b>	<b>566,853</b>	<b>595,008</b>	<b>595,008</b>
Royalty (HemoDefend US)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grant revenue	2,252	615	382	367		1,364															
Other revenue	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Revenue</b>	<b>22,504</b>	<b>5,191</b>	<b>6,232</b>	<b>6,095</b>	<b>6,200</b>	<b>23,718</b>	<b>7,878</b>	<b>8,220</b>	<b>8,906</b>	<b>9,248</b>	<b>34,252</b>	<b>74,717</b>	<b>114,031</b>	<b>169,790</b>	<b>253,897</b>	<b>387,404</b>	<b>469,908</b>	<b>524,849</b>	<b>566,853</b>	<b>595,008</b>	<b>595,008</b>
<b>Expenses:</b>																					
Costs of Goods Sold	7,489	1,738	1,834	1,696	1,725	6,993	1,576	1,644	1,781	1,850	6,850	14,943	22,806	33,958	50,779	77,481	93,982	104,970	113,371	119,002	119,002
<b>%COGS</b>	<b>37%</b>	<b>38%</b>	<b>29%</b>	<b>28%</b>	<b>28%</b>	<b>28%</b>	<b>20%</b>	<b>20%</b>	<b>20%</b>	<b>20%</b>	<b>20%</b>	<b>20%</b>	<b>20%</b>	<b>20%</b>	<b>20%</b>	<b>20%</b>	<b>20%</b>	<b>20%</b>	<b>20%</b>	<b>20%</b>	<b>20%</b>
Research and Development	7,723	2,418	2,930	3,185	2,839	10,513	2,660	2,775	3,007	3,122	11,564	12,721	13,993	15,392	16,931	18,624	20,487	22,536	24,789	27,268	29,995
<b>%R&amp;D</b>	<b>38%</b>	<b>53%</b>	<b>50%</b>	<b>56%</b>	<b>46%</b>	<b>47%</b>	<b>34%</b>	<b>34%</b>	<b>34%</b>	<b>34%</b>	<b>34%</b>	<b>17%</b>	<b>12%</b>	<b>9%</b>	<b>7%</b>	<b>5%</b>	<b>4%</b>	<b>4%</b>	<b>4%</b>	<b>5%</b>	<b>5%</b>
Selling, General and Administrative	20,874	4,758	4,506	6,108	6,200	21,572	5,706	5,954	6,450	6,698	24,807	28,528	31,381	32,009	32,649	33,302	33,968	34,647	35,340	36,047	36,768
<b>%SG&amp;A</b>	<b>103%</b>	<b>104%</b>	<b>77%</b>	<b>107%</b>	<b>100%</b>	<b>96%</b>	<b>72%</b>	<b>72%</b>	<b>72%</b>	<b>72%</b>	<b>72%</b>	<b>38%</b>	<b>28%</b>	<b>19%</b>	<b>13%</b>	<b>9%</b>	<b>7%</b>	<b>7%</b>	<b>6%</b>	<b>6%</b>	<b>6%</b>
Legal, financial and other counseling	2,002	561	592	733	541	2,427	558	582	631	655	2,427	2,427	2,427	2,427	2,427	2,427	2,427	2,427	2,427	2,427	2,427
<b>Total Expenses</b>	<b>38,088</b>	<b>9,475</b>	<b>9,862</b>	<b>11,722</b>	<b>11,304</b>	<b>41,504</b>	<b>10,499</b>	<b>10,956</b>	<b>11,869</b>	<b>12,325</b>	<b>45,649</b>	<b>58,619</b>	<b>70,607</b>	<b>83,786</b>	<b>102,786</b>	<b>131,834</b>	<b>150,863</b>	<b>164,579</b>	<b>175,927</b>	<b>184,743</b>	<b>188,191</b>
Operating Income (Loss)	(15,584)	(4,284)	(3,630)	(5,627)	(5,104)	(17,786)	(2,621)	(2,735)	(2,963)	(3,077)	(11,397)	16,098	43,424	86,005	151,111	255,571	319,045	360,270	390,927	410,264	406,817
Interest income (expense), net	(1,461)	(205)	(214)	(302)																	
Gain (loss) on foreign currency transactions	(785)	(393)	297	(956)																	
Change in warrant liability																					
Other income (expense), net																					
<b>Total Other Income</b>	<b>(2,246)</b>	<b>(598)</b>	<b>83</b>	<b>(1,258)</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Pretax Income</b>	<b>(17,830)</b>	<b>(4,882)</b>	<b>(3,547)</b>	<b>(6,885)</b>	<b>(5,104)</b>	<b>(17,786)</b>	<b>(2,621)</b>	<b>(2,735)</b>	<b>(2,963)</b>	<b>(3,077)</b>	<b>(11,397)</b>	<b>16,098</b>	<b>43,424</b>	<b>86,005</b>	<b>151,111</b>	<b>255,571</b>	<b>319,045</b>	<b>360,270</b>	<b>390,927</b>	<b>410,264</b>	<b>406,817</b>
Income Tax Benefit (Provision)	-	-	-	-	(255)	(889)	(210)	(219)	(237)	(246)	(912)	1,610	5,211	12,901	27,200	53,670	76,571	100,876	129,006	135,387	134,250
<b>Tax Rate</b>	<b>0%</b>	<b>0%</b>	<b>5%</b>	<b>5%</b>	<b>5%</b>	<b>5%</b>	<b>8%</b>	<b>8%</b>	<b>8%</b>	<b>8%</b>	<b>10%</b>	<b>10%</b>	<b>12%</b>	<b>15%</b>	<b>18%</b>	<b>21%</b>	<b>24%</b>	<b>28%</b>	<b>33%</b>	<b>33%</b>	<b>33%</b>
<b>GAAP Net Income (Loss)</b>	<b>(17,830)</b>	<b>(4,882)</b>	<b>(3,547)</b>	<b>(6,885)</b>	<b>(4,849)</b>	<b>(16,897)</b>	<b>(2,412)</b>	<b>(2,516)</b>	<b>(2,726)</b>	<b>(2,831)</b>	<b>(10,485)</b>	<b>14,488</b>	<b>38,213</b>	<b>73,104</b>	<b>123,911</b>	<b>201,901</b>	<b>242,474</b>	<b>269,394</b>	<b>261,921</b>	<b>274,877</b>	<b>272,567</b>
<b>GAAP-EPS</b>	<b>(0.58)</b>	<b>(0.15)</b>	<b>(0.11)</b>	<b>(0.21)</b>	<b>(0.15)</b>	<b>(0.52)</b>	<b>(0.07)</b>	<b>(0.08)</b>	<b>(0.08)</b>	<b>(0.09)</b>	<b>(0.32)</b>	<b>0.44</b>	<b>1.17</b>	<b>2.22</b>	<b>3.75</b>	<b>6.09</b>	<b>7.29</b>	<b>7.77</b>	<b>7.81</b>	<b>8.16</b>	<b>8.06</b>
GAAP-EPS (Dil)	(0.58)	(0.15)	(0.11)	(0.21)	(0.15)	(0.52)	(0.07)	(0.08)	(0.08)	(0.09)	(0.32)	0.44	1.17	2.22	3.75	6.09	7.29	7.77	7.81	8.16	8.06
Wgt'd Avg Shrs (Bas) - '000s	30,719	31,931	32,267	32,366	32,398	32,240	32,430	32,463	32,495	32,528	32,479	32,609	32,740	32,871	33,003	33,135	33,268	33,401	33,535	33,669	33,804
Wgt'd Avg Shrs (Dil) - '000s	30,719	31,931	32,267	32,366	32,398	32,240	32,430	32,463	32,495	32,528	32,479	32,609	32,740	32,871	33,003	33,135	33,268	33,401	33,535	33,669	33,804

Source: Dawson James estimates

**Important Disclosures:**

**Price Chart:**



Price target and rating changes over the past three years:

- Initiated – Buy – July 11, 2019 – Price Target \$15.00
- Update – Buy – August 12, 2019 – Price Target \$15.00
- Update – Buy – August 15, 2019 – Price Target \$15.00
- Update – Buy – August 19, 2019 – Price Target \$15.00
- Update – Buy – November 6, 2019 – Price Target \$15.00

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	# of Companies	% of Total	# of Companies	% of Totals
Market Outperform (Buy)	28	82%	4	14%
Market Perform (Neutral)	6	18%	0	0%
Market Underperform (Sell)	0	0%	0	0%
Total	34	100%	4	12%

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