

Pluristem Therapeutics, Inc. (NASDAQ/PSTI)

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BUY: ARS Is Out but What About ARDS?
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Pluristem announced that the U.S. Biomedical Advanced Research and Development Authority (BARDA) has shifted its focus for the moment away from ARS and more towards the immediate needs associated with Flu. We had only assumed minimal revenues for PLX-R18 in ARS in our model, and applied a 50% discount. As such, removing ARS has little impact (\$0.25 and still rounds to \$12.00) on our valuation. Given the similarities in the mechanism of action between ARS and ARDS, we are hopeful to see Pluristem surface new opportunities in other countries, such as China. PLX-R18 remains in development for hematopoietic cell recovery.

Investment Highlights

Acute Radiation Syndrome (ARS). We have removed our estimates for PLX-R18 in ARS. The net effect is to lower our out-year valuation but just \$0.25. Our price target when rounding remains at \$12.00 per share. We are still hopeful to see PLX-R18 developed for hematopoietic indications related to Bone Marrow Transplants. We also see an opportunity for Pluristem to initiate with a partner, development programs for Acute Respiratory Distress Syndrome (ARDS), as we see a similar mechanism of action between these indications. Given recent events, a partner in China could be interested.

Our Focus Remains on Critical Limb Ischemia (CLI). Pluristem is currently in a Phase 3 trial for the treatment of CLI. We could see top-line data as early as next year. Our model assumes commercialization with a partner and 50% economics in Europe by 2023, with the U.S. the following year. Given the development of expedited pathways in the cell therapy space (U.S., Europe, and Japan) and the very strong established safety profile (as well as U.S. Fast Track Designation), our assumption that a second pivotal trial is required could be conservative. **So, the key question is, will it work?**

The Critical Limb Ischemia (CLI) Trial Design is Smart. Pluristem is doing a time-to-event analysis (with the event being either major amputation or all-cause mortality) between the placebo and treatment arms using Kaplan-Meier curves. For example, if the Treatment arm has few events in the early phase of the study, whereas the Control has considerable events in the early phase, even if the two arms have similar long-term outcomes (say at one year), an advantage is assigned to the treatment because it delays the onset of the event. **This design may have a certain advantage when one understands that cell therapy, in general, does not provide immediate relief as it is based on angiogenesis (growth of microcapillaries), which takes time.** An assumption that within a short period of time (e.g., a couple of months post-treatment), there will be a significant separation of the curves is not likely. We also recognize that there may be a possible tradeoff in some of the other assumptions.

1. A premise in the design is that most events happen initially (during the first half-year of treatment) and that the typical survival curves get almost flat by the end of the first year, could be flawed. Our analysis of the literature suggests that as time goes on, advanced CLI patients with multiple co-morbidities also have high mortality rates. So although the amputation rates might flatten out, death rates keep moving forward. It's hard to know until we see the data.

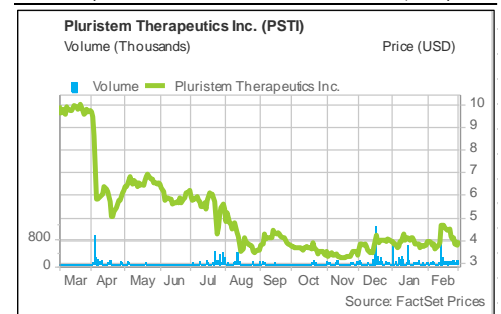
Current Price	\$3.96
Price Target	\$12.00

Estimates	F2020E	F2021E	F2022E
Expenses (\$000s)	\$ 29,095	\$ 30,346	\$ 31,559
1Q March	\$ 7,195	\$ 6,980	\$ 7,259
2Q June	\$ 7,300	\$ 7,283	\$ 7,574
3Q September	\$ 7,300	\$ 7,890	\$ 8,122
4Q December	\$ 7,300	\$ 8,193	\$ 8,604

	F2020E	F2021E	F2022E
EPS (diluted)	\$ (1.52)	\$ (0.86)	\$ (0.74)
1Q March	\$ (0.46)	\$ (0.28)	\$ (0.17)
2Q June	\$ (0.48)	\$ (0.18)	\$ (0.18)
3Q September	\$ (0.29)	\$ (0.20)	\$ (0.19)
4Q December	\$ (0.29)	\$ (0.20)	\$ (0.20)

EBITDA/Share	(\$1.43)	(\$0.83)	(\$0.78)
EV/EBITDA (x)	-1.8	-1.7	-1.6

Stock Data		
52-Week Range	\$3.11	\$10.20
Shares Outstanding (mil.)		17.9
Market Capitalization (mil.)		\$71
Enterprise Value (mil.)		\$52
Debt to Capital		0%
Book Value/Share		\$3.12
Price/Book		4.3
Average Three Months Trading Volume (K)		108
Insider Ownership		9.3%
Institutional Ownership		10.4%
Short interest (mil.)		0.5%
Dividend / Yield		\$0.00/0.0%



Critical Limb Ischemia (continued) from the prior page:

2. Pluristem believes that the Treatment arm will have an early advantage over Control in event rates and that the rate will be constant throughout the three-year follow-up. The literature suggests that Rutherford (R)-5 patients have higher kidney disease, chronic heart failure, coronary artery disease, and diabetes versus R4 patients. So, the idea that salvaging the leg will significantly lower the death rate in this cohort may not be logical, particularly when we consider the average age of the patients (70's) and the nature of the co-morbidities (kidney failure, heart disease).
3. Our concerns for being optimistic relate to (a) the KM curves may not flatten out after six months; (b) the synergistic effect between limb salvage and mortality may be real, but not enough to significantly affect mortality rates in a population that is elderly with significant co-morbidities; (c) the claim that the Treatment arm will have a quick advantage over the Control, which will be maintained over a three-year period, might be overly optimistic, and; (d) it's unknown if U.S. FDA will accept anything but AFS as a primary endpoint.

Valuation. We have removed all revenues associated with the ARS indication. These were minimal (\$0.25 cents) and had no impact on our \$12.00 target, which is rounded to the nearest whole number. We model the remaining indications and apply a 50% partnership plus a probability of just 50% of clinical success in our market models, which are projected out to 2030. Our models assume dilution and use an assumed 2030 share count. We apply a 30% discount rate and equal weight, average and round to the nearest whole number, our free cash flow to the firm (FCFF), discounted EPS (dEPS), and sum-of-the-parts (SOP) models to derive our 12-months price target of \$12.00.

Risks. (1) commercial; (2) regulatory; (3) clinical; (4) manufacturing; (5) financial; (6) liability; and (7) intellectual property. We review these and other risks in the risk section of this report.

Exhibit 1. Upcoming Milestones and Catalysts

Product	Event	Timing	Significance
PLX-Critical Limb Ischemia	Phase 3, N= 246 (US, EU & Israel) study underway	✓	-
PLX-Critical Limb Ischemia	CLI study half enrolled	Apr-19	-
PLX-Critical Limb Ischemia	Announce Top-line Results (EU)	2020	+++
PLX-Critical Limb Ischemia	Complete Data Set	2021	++
Muscle Injury - Hip Replacement	Phase 3 N=240 patient US, Germany, UK, Denmark & Israel Trial	✓	
Muscle Injury - Hip Replacement	Announce Top-line Results	1H21	++
PLX-R18	Hematologic Deficiencies	ongoing	+
PLX-R18	Phase 1, N=24 POC Study: Incomplete Hematopoietic Recovery following Transplant	2020	+

Stock Significance Scale: + of moderate importance; ++ higher level; +++ highly

Source: Dawson James Estimates.

Exhibit 2. Overview of the Ongoing CLI Phase 3 Study

Design	Phase III, randomized, Double-Blind, Placebo-controlled (2:1)
Study population	CLI subjects with minor tissue loss, unsuitable for revascularization
Countries	Germany, UK, U.S., Poland, Hungary, Czech republic, Bulgaria, Macedonia, Israel
Sample size	246 patients
Doses tested	300M cells vs. Placebo (randomization ratio 2:1)
Administration	IM injections in the affected leg, 2 treatments at 8-week interval
Primary efficacy endpoint	Time to occurrence of major amputation of leg or death (AFS)
Main Secondary & exploratory efficacy endpoints	Composite efficacy endpoint; Pain; Complete wound healing; Quality-of-life; Adjudicated amputations; TcPO2; cytokine levels
Follow Up length	52 Weeks
Expected Data	H1 2020 (Europe), H1 2021 (U.S.)

Source: Pluristem Therapeutics, Inc.

CLI Modeling Assumptions:
Critical Limb Ischemia:

1. We model commercial launch in FY23 in the EU, and FY24 in the U.S. with Japan too.
2. We model the addressable population to be the 40% of patients with CLI who are unsuitable for revascularization.
3. We place our entry price at \$30K for the U.S., \$20K for the EU, and \$25K for Japan, with price increases of 2%.
4. We apply a 50% success probability based on the stage of development and the complexity of CLI.
5. We assume a 50% profit share from a potential partner in the U.S., the EU and Japan.

Exhibit 3. U.S. Market for PLX-PAD in the Treatment of CLI

PLX-PAD in Critical Limb Ischemia (U.S.)	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
Total Population	327,745,577	330,039,796	332,350,075	334,676,525	337,019,261	339,378,396	341,754,045	344,146,323	346,555,347	348,981,235	351,424,103	353,884,072	356,361,260
Increase in population	0.70%	0.70%	0.70%	0.70%	0.70%	0.70%	0.70%	0.70%	0.70%	0.70%	0.70%	0.70%	0.70%
Incidence of CLI (0.075%)	245,809	247,530	249,263	251,007	252,764	254,534	256,316	258,110	259,917	261,736	263,568	265,413	267,271
Patients Unsuitable for Revascularization (40%)	98,324	99,012	99,705	100,403	101,106	101,814	102,526	103,244	103,967	104,694	105,427	106,165	106,908
Market Penetration				0.00%	0.00%	4.00%	8.00%	12.00%	16.00%	24.00%	28.00%	32.00%	35.00%
Total patients treated				-	-	4,073	8,202	12,389	16,635	25,127	29,520	33,973	37,418
Average price per treatment				\$ 30,000	\$ 30,600	\$ 31,212	\$ 31,836	\$ 32,473	\$ 33,122	\$ 33,785	\$ 34,461	\$ 35,150	\$ 35,853
Increase in Cost				2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Partner revenue ('000)				\$ -	\$ -	\$ 127,112	\$ 261,124	\$ 402,316	\$ 550,980	\$ 848,901	\$ 1,017,263	\$ 1,194,139	\$ 1,341,537
Royalty or profit share (50%)				\$ -	\$ -	\$ 63,556	\$ 130,562	\$ 201,158	\$ 275,490	\$ 424,450	\$ 508,632	\$ 597,069	\$ 670,768
Risk adjustment				50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Total Revenue ('000)				\$ -	\$ -	\$ 31,778	\$ 65,281	\$ 100,579	\$ 137,745	\$ 212,225	\$ 254,316	\$ 298,535	\$ 335,384

Source: Dawson James Estimates

PLX-PAD in Critical Limb Ischemia (EU)	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
Total Population	509,270,000	510,543,175	511,819,533	513,099,082	514,381,829	515,667,784	516,956,954	518,249,346	519,544,969	520,843,832	522,145,941	523,451,306	524,759,934
Increase in population	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%
Incidence of CLI (0.1%)	381,953	382,907	383,865	384,824	385,786	386,751	387,718	388,687	389,659	390,633	391,609	392,588	393,570
Patients Unsuitable for Revascularization (40%)	152,781	153,163	153,546	153,930	154,315	154,700	155,087	155,475	155,863	156,253	156,644	157,035	157,428
Market Penetration				0.00%	0.00%	4.00%	8.00%	12.00%	16.00%	24.00%	28.00%	32.00%	35.00%
Total patients treated				-	-	6,188	12,407	18,657	24,938	37,501	43,860	50,251	55,100
Average price per treatment				\$ 20,000	\$ 20,400	\$ 20,808	\$ 21,224	\$ 21,649	\$ 22,082	\$ 22,523	\$ 22,974	\$ 23,433	\$ 23,902
Increase in Cost				2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Partner revenue ('000)				\$ -	\$ -	\$ 128,760	\$ 263,327	\$ 403,898	\$ 550,675	\$ 844,639	\$ 1,007,633	\$ 1,177,549	\$ 1,316,987
Royalty or profit share (50%)				\$ -	\$ -	\$ 64,380	\$ 131,664	\$ 201,949	\$ 275,337	\$ 422,319	\$ 503,817	\$ 588,774	\$ 658,494
Risk adjustment				50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Total Revenue ('000)				\$ -	\$ -	\$ 32,190	\$ 65,832	\$ 100,975	\$ 137,669	\$ 211,160	\$ 251,908	\$ 294,387	\$ 329,247

Source: Dawson James Estimates

PLX-PAD in Critical Limb Ischemia (JP)	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
Total Population	126,873,000	126,746,127	126,619,381	126,492,761	126,366,269	126,239,902	126,113,663	125,987,549	125,861,561	125,735,700	125,609,964	125,484,354	125,358,870
Increase in population	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%
Incidence of CLI (0.1%)	95,155	95,060	94,965	94,870	94,775	94,680	94,585	94,491	94,396	94,302	94,207	94,113	94,019
Patients Unsuitable for Revascularization (40%)	38,062	38,024	37,986	37,948	37,910	37,872	37,834	37,796	37,758	37,721	37,683	37,645	37,608
Market Penetration				0.00%	0.00%	0.00%	0.00%	3.00%	6.00%	12.00%	15.00%	18.00%	25.00%
Total patients treated				-	-	-	-	1,134	2,266	4,526	5,652	6,776	9,402
Average price per treatment				\$ 25,000	\$ 25,500	\$ 26,010	\$ 26,530	\$ 27,061	\$ 27,602	\$ 28,154	\$ 28,717	\$ 29,291	\$ 29,877
Increase in Cost				2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Partner revenue ('000)				\$ -	\$ -	\$ -	\$ -	\$ 30,684	\$ 62,533	\$ 127,439	\$ 162,322	\$ 198,484	\$ 280,904
Royalty or profit share (50%)				\$ -	\$ -	\$ -	\$ -	\$ 15,342	\$ 31,266	\$ 63,719	\$ 81,161	\$ 99,242	\$ 140,452
Risk adjustment				50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Total Revenue ('000)				\$ -	\$ -	\$ -	\$ -	\$ 7,671	\$ 15,633	\$ 31,860	\$ 40,581	\$ 49,621	\$ 70,226

Source: Dawson James Estimates

Valuation: We model PLX-PAD in the treatment of critical limb ischemia and post-surgery hip fracture and PLX-R18 in Hematopoietic recovery. Our model is projected through 2030. We assume a partnership for commercialization with 50% economics. A risk adjustment is also applied to our therapeutic models. This is based on the clinical development stage and the associated risks we see. These include the complexity of the trial and the indication, and the historical precedents, to derive our 50% probability of success factor. Also, we apply a 30% discount rate to the Free Cash Flow, Discounted EPS and Sum-of-the-Parts models which are then equal-weighted and rounded to the nearest whole number to derive our 12-month price target of \$12.00.

Exhibit 4. Free Cash Flow Model

Average	\$	12.0
Price Target	\$	13.1
Year		2020

DCF Valuation Using FCFE (mln):

units (millions - \$)	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
EBIT	(29,095)	(30,346)	(31,559)	27,667	157,873	318,462	574,096	812,926	1,145,293	1,493,469	1,854,663
Tax Rate	0%	0%	5%	10%	15%	18%	18%	20%	20%	24%	28%
EBIT(1-t)	(29,095)	(30,346)	(29,981)	24,900	134,192	261,139	470,759	650,341	916,235	1,135,037	1,335,357
- Change in NWC											
Free Cash Flow to Firm (FCFF)	(29,095)	(30,346)	(29,981)	24,900	134,192	261,139	470,759	650,341	916,235	1,135,037	1,335,357
PV of FCFF	(29,095)	(23,415)	(17,850)	11,439	47,567	71,424	99,350	105,902	115,124	110,044	99,896
Discount Rate	30%										
Long Term Growth Rate	1%										
Terminal Cash Flow	352,779										
Terminal Value YE 2030	26,391										
NPV	616,777										
NPV-Debt	-										
Shares out (thousands)	47,219	2030									
NPV Per Share	13.1										

Source: Dawson James.

Exhibit 5. Discounted EPS Model

Current Year	2020
Year of EPS	2030
Earnings Multiple	5
Discount Factor	30%
Selected Year EPS	\$ 31.77
NPV	\$ 11.9

Source: Dawson James estimates

		Discount Rate and Earnings Multiple Varies, Year is Constant								
		2030 EPS								
Earnings Multiple		10	15	20	25	30	35	40	45	
		20%	\$51.32	\$76.98	\$102.63	\$128.29	\$153.95	\$179.61	\$205.27	\$230.93
		25%	\$34.12	\$51.18	\$68.23	\$85.29	\$102.35	\$119.41	\$136.47	\$153.53
		30%	\$23.05	\$34.57	\$46.10	\$57.62	\$69.15	\$80.67	\$92.19	\$103.72
		35%	\$15.80	\$23.70	\$31.61	\$39.51	\$47.41	\$55.31	\$63.21	\$71.11
		40%	\$10.98	\$16.48	\$21.97	\$27.46	\$32.95	\$38.45	\$43.94	\$49.43
		45%	\$ 7.73	\$11.60	\$15.47	\$19.33	\$23.20	\$27.07	\$30.94	\$34.80

Source: Dawson James.

Exhibit 6. Sum-of-the-Parts Model

Pluristem Sum of the Parts	LT Gr	Discount Rate	Yrs. to Mkt	% Success	Peak Sales MM's	Term Val
PLX-PAD in Critical Limb Ischemia (U.S.)	1%	30%	4	50%	\$671	\$2,313
NPV						\$4.29
PLX-PAD in Critical Limb Ischemia (EU)	1%	30%	4	50%	\$658	\$2,271
NPV						\$4.21
PLX-PAD in Critical Limb Ischemia (JP)	1%	30%	6	50%	\$140	\$484
NPV						\$0.53
PLX-PAD Muscle Repair U.S.	1%	30%	4	50%	\$300	\$1,034
NPV						\$1.92
PLX-R18 BARDA Contracts for ARS	1%	30%	5	0%	\$50	\$172
NPV						\$0.00
PLX-R18 Incomplete Bone Marrow Recovery	1%	30%	5	50%	\$25	\$86
NPV						\$0.12
Net Margin						50%
MM Shrs OS						47
Total						\$11

Source: Dawson James.

Risk Analysis

Investment Risk: The company faces multiple investment risks. These range from product management, market share adoption, regulatory, and commercialization to the competitive environment associated risks.

Clinical and regulatory risk: Pluristem is currently in the process of completing its FDA clinical trials. There is no assurance that their product will be approved by the FDA, and that even if approved if it will be reimbursed by insurance or successfully commercialized.

Commercial risk: The focus of the company is on successfully developing their products and eventually bringing them to the mass market. We can make no assurances that the company will be able to achieve a critical level of market share to become profitable in this indication and or in additional planned indications.

Employee risk: Pluristem's core management team is experienced, including its president and CEO, CBO, and CFO. Pluristem plans to bring their proposed products to market as efficiently as possible, and their success will depend heavily upon the experience, abilities, and continued services of its senior officers, sales staff, and key scientific personnel.

Financial risk: The company may need to raise additional capital in the marketplace to continue to fund operations through more trials and, eventually, an NDA and possible commercial launch. There can be no assurances that the company will be able to successfully raise capital and do so on favorable terms.

Intellectual property risk: The company may have to defend its patents and technical know-how, and there can be no assurances that the patents will not be infringed or will be held as valid if challenged, and the company may infringe on third party's patents.

Reimbursement and insurance payment risk: Insurance payment for products may be an additional hurdle for adoption.

Exhibit 7. Income Statement

Pluristem Income Statement (\$ '000)	June 2020	June 2021	June 2022	June 2023	June 2024	June 2025	June 2026	June 2027	June 2028	June 2029	June 2030
PSTI: YEAR June 30	2020E	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
PLX-PAD CLI- U.S.				31,778	65,281	100,579	137,745	212,225	254,316	298,535	335,384
PLX-PAD CLI- EU				32,190	65,832	100,975	137,669	211,160	251,908	294,387	329,247
PLX-PAD CLI- Japan				-	-	7,671	15,633	31,860	40,581	49,621	70,226
PLX-PAD Muscle Repair U.S.		-	-	6,189	51,010	105,102	216,552	278,865	430,930	591,926	762,252
PLX-PAD Muscle Repair EU		-	-	6,864	56,573	116,563	240,166	309,274	477,921	656,473	845,373
PLX-R18 BARDA Contracts for ARS		-	-	-	-	-	-	-	-	-	-
PLX-R18 Incomplete Bone Marrow Recovery		-	-	2,787	5,800	9,051	12,556	16,329	20,386	21,209	22,066
Revenues	-	-	-	79,809	244,496	439,941	760,321	1,059,712	1,476,042	1,912,151	2,364,549
Total Revenues (Product Sales, Grants & Milestones)	-	-	-	79,809	244,496	439,941	760,321	1,059,712	1,476,042	1,912,151	2,364,549
% Chg											
Expenses											
COGS	-	-	-	19,952	53,789	87,988	152,064	211,942	295,208	382,430	472,910
% COGS	30%	28%	25%	25%	22%	20%	20%	20%	20%	20%	20%
R&D	22,326	22,773	23,228	23,693	24,166	24,650	25,143	25,646	26,158	26,682	27,215
R&D Adjustment (participation Chief Scientist)	(1,794)										
SG&A (net)	7,213	7,574	8,331	8,498	8,668	8,841	9,018	9,198	9,382	9,570	9,761
Total costs & expenses	29,095	30,346	31,559	52,142	86,623	121,479	186,225	246,786	330,749	418,682	509,886
Operating Income (Loss) EBIT	(29,095)	(30,346)	(31,559)	27,667	157,873	318,462	574,096	812,926	1,145,293	1,493,469	1,854,663
Oper Margin											
Other Income expenses - Financial Expenses (net)	206	272	272	272	272	272	272	272	272	272	272
Pre-tax income	(29,189)	(30,618)	(31,831)	27,395	157,601	318,190	573,825	812,655	1,145,022	1,493,198	1,854,391
Taxes	-	-	(1,592)	2,740	23,640	57,274	103,288	162,531	229,004	358,367	519,229
Tax Rate	0%	0%	5%	10%	15%	18%	18%	20%	20%	24%	28%
Net Income (loss)	(29,189)	(30,618)	(30,239)	24,656	133,961	260,916	470,536	650,124	916,017	1,134,830	1,335,161
Net Margin											
Basic EPS	(1.52)	(0.86)	(0.74)	0.60	3.27	6.33	11.38	15.66	21.97	27.11	31.77
Basic Wght Average Shares Outstanding (thousands)	20,431	36,786	40,695	40,858	41,022	41,186	41,351	41,517	41,683	41,850	42,018
Fully Diluted Wght Avg Shrs outstanding (Thousands)	22,932	41,804	45,733	45,916	46,100	46,284	46,470	46,656	46,843	47,030	47,219

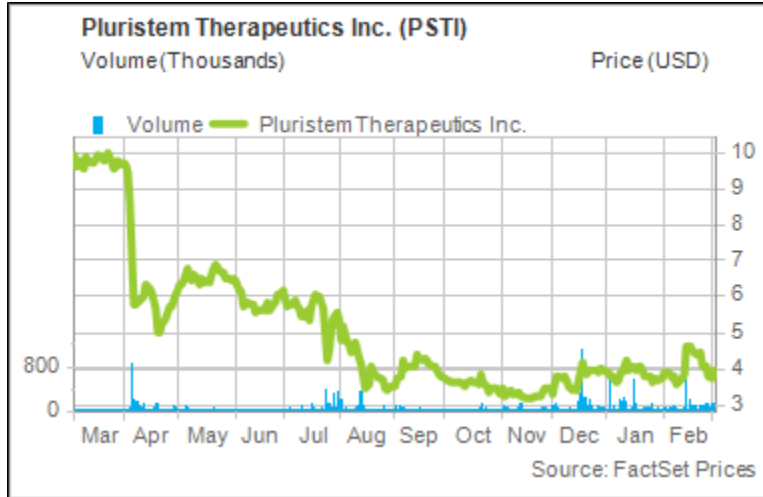
Source: Dawson James estimates.

Peer Companies to Pluristem

Athersys (ATHX-Buy Rated)
 Mesoblast (MESO-Not Rated)
 Brainstorm (BCLI-Buy Rated)
 Lineage (LCTX - Buy Rated)

Important Disclosures:

Price Chart:



Price target and rating changes over the past three years:

Initiated – Buy – December 16, 2019 – Price Target \$12.00
 Update – Buy – February 10, 2020 – Price Target \$12.00
 Update – Buy – March 4, 2020 – Price Target \$12.00

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Ratings Distribution	Company Coverage		Investment Banking	
	# of Companies	% of Total	# of Companies	% of Totals
Market Outperform (Buy)	22	85%	3	14%
Market Perform (Neutral)	4	15%	1	25%
Market Underperform (Sell)	0	0%	0	0%
Total	26	100%	4	15%

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