

January 3, 2006

VIA FEDERAL EXPRESS AND EDGAR

Mr. Jim B. Rosenberg
Senior Assistant Chief Accountant
Division of Corporation Finance
100 F Street N.E.
Washington, D.C. 20549

RE: CRYOLIFE, INC.
FORM 10-K FOR THE YEAR ENDED DECEMBER 31, 2004
FILED MARCH 3, 2005
FILE NO. 001-13165

Dear Mr. Rosenberg:

On behalf of CryoLife, Inc. ("CryoLife"), we transmit for filing CryoLife's responses to the Staff's letter of comment dated December 16, 2005. For your convenience, the comments contained in that letter are reprinted below in italics. Unless otherwise indicated, all page references are to the Form 10-K for the year ended December 31, 2004.

CryoLife's responses are as follows:

FORM 10-K FOR THE YEAR ENDED DECEMBER 31, 2004

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
NOTE 1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES
REVENUE RECOGNITION, PAGE F-9

1. Please provide us, in disclosure-type format your revenue recognition policy related to grant revenue. We noted that you received funds from the Department of Defense for the development of BioFoam in the third quarter and you will begin recording revenues related to this grant in the fourth quarter of 2005.

RESPONSE:

In the third quarter of 2005, CryoLife received \$231,500 from the Department of Defense ("DOD") for the development of BioFoam. As of September 30, 2005, CryoLife had not incurred any expenses related to this grant. In accordance with CryoLife's revenue recognition policy as stated on page F-9 of its Form 10-K, "Revenues from research grants are recognized in the period the associated costs are incurred", CryoLife will recognize the revenues as the related expenses are incurred which CryoLife anticipates to begin during the fourth quarter of 2005 and continue throughout 2006. Terms of the DOD grant require the Company to use the grant proceeds to fund the development of BioFoam.

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DEFERRED PRESERVATION COSTS, PAGE F-10

2. With regards to your accounting policy for preservation costs, please provide us, additional discussion in disclosure-type format, that explains the reason it is appropriate to defer the costs until revenue is recognized upon shipment.

RESPONSE:

By federal law, human tissues cannot be bought or sold. Therefore, the tissues CryoLife preserves and further processes cannot be held as inventory. Tissue is procured from

deceased human donors by organ and tissue procurement agencies, which consign the tissue to the Company for processing and preservation. Although the Company cannot own human tissue, the preservation process is a typical manufacturing process that is accounted for based on guidance provided in Accounting Research Bulletin #43 ("ARB 43") Chapter 4, Inventory Pricing. Preservation costs related to tissue held by the Company are deferred until revenue is recognized upon shipment of the tissue to the implanting facilities. Deferred preservation costs consist primarily of direct labor and materials including laboratory expenses, tissue procurement fees, freight-in charges and fringe benefits, and indirect costs including allocations of costs from departments that support processing activities and facility allocations. Deferred preservation costs are stated on a first-in, first-out basis.

Additionally, we refer to a similar comment (#7) issued in a previous SEC comment letter dated February 6, 2002. That comment was "Your policy states the preservation costs related to tissue held by the Company are deferred until shipment to the implanting hospital. You also say that you recognize revenue as services are performed. It appears that you may be recognizing revenue in advance of expensing the related costs. Please tell us your basis under GAAP for deferring the preservation costs."

Our response in a letter dated February 18, 2002 was as follows, "By federal law, human tissues cannot be bought or sold. Therefore, the tissues CryoLife preserves and further processes cannot be held as inventory. However, both the accumulation of the costs to process the tissues which are recorded "deferred preservation costs" on the balance sheet and the expensing of these costs as "cost of preservation services" at the time of shipment closely mirrors inventory and cost of sales as seen in a typical manufacturing environment.

... [Revenues from] CryoLife's preservation services are recognized when services are complete which is when the tissue is shipped to the customer. The deferred preservation costs and revenues associated with the tissue are recognized together at the time of shipment. This policy of matching revenues and expenses is consistent with Statement of Financial Accounting Concepts #5 paragraph 86a."

3. Please tell us why it is appropriate to defer the preservation costs since it appears based on the repeated write-offs that you are unable to make reasonable estimates. We noted the write-down for December 31, 2004 was \$6.6 million and \$1.3 million for the nine months ending September 30, 2005. In addition, your disclosure on page 54 states "management believes that its estimates approximate the actual costs of these services." This appears to conflict with the explanation provided on the same page that states "These charges reflect the write-down of the value of certain deferred tissue preservation costs that exceeded management's estimates of the tissue's market value..." Please reconcile these statements.

RESPONSE:

As discussed in #2 above, the Company follows the accounting guidance issued in ARB43. The write-down for December 31, 2004 of \$6.6 million and for the nine months ending September 30,

2005 of \$1.3 million primarily reflected current period tissue processing costs that exceeded current average service fees. Current average service fees are used as a basis to determine net realizable value of the tissues in accordance with ARB43. (Human tissues cannot be bought or sold, so the terminology average "service" fees is used rather than average sales price that would typically be found in a manufacturing environment.) The current period tissue processing costs exceeded market value for certain tissues primarily due to lower throughput and lower yields resulting from processing changes many of which were initiated as a result of FDA notices of observations, as discussed in Note 2 to the December 31, 2004 Form 10-K. CryoLife's continuing process improvement efforts have resulted in increased yields since the low point in mid 2003 and early 2004, thus resulting in lower write-offs in 2005 as compared to 2004. Additionally, CryoLife has increased its average service fees in 2005 and 2004, which has also contributed to the lower write-off in 2005 as compared to 2004. We refer you to the December 31, 2004 Form 10-K pages 56 - 59 for the discussion of the effect of price increases by product and page 60 under the header "Cost of Human Tissue Preservation Services" for a discussion of causes for the write-down and future anticipated effects of increases in the amount of tissues processed, in increases in yields of implantable tissue per donor, and in increases in average service fees due to prices increases implemented in July 2004 and January 2005. Similar discussions are presented on pages 28-32 of the September 30, 2005 Form 10-Q.

Our disclosure on page 54 "Management believes that its estimates approximate the actual costs of these services, ..." refers to the timing differences of raw materials and services related to deferred preservation costs that have been received, but not invoiced as of the close of the reporting period. In our disclosure "These charges reflect the write-down of the value of certain deferred tissue preservation costs that exceeded management's estimates of the tissue's market value based on recent average service fees," we used the word "estimate" to reflect that we are using current average service fees to reasonably predict future anticipated market value of these tissues to determine if an impairment exists under ARB43. As discussed above, the write-downs are primarily due to current period processing costs exceeding market value and not due to changes in estimates. The 2005 10-K will clarify that the write-downs are primarily due to excess current tissue processing costs that exceed market value based on recent average service fees.

4. In addition, please refer to page 54. With regards to your yield estimates, provide for us, in disclosure type format, the change in estimates for the periods presented and the reasons for the changes. If you deem these changes to be immaterial, so state and tell us your basis for determining materiality.

RESPONSE:

As the disclosure on page 54 states, "The Company applies a yield estimate to all tissues in process and in quarantine to estimate the portion of tissues that will ultimately become implantable." Yield estimates are reviewed and determined monthly. Tissue yields are derived from several factors, some of which remain relatively constant over a period of time and some of which are subject to more variation due to a variety of factors.

Factors that are relatively constant include physical anomalies of tissues, donor attributes, and results of serological testing on blood samples. The Company uses long-term historical data to determine an estimate of the percentage of tissues that will be rejected related to these factors.

The primary factor that is subject to more variability is tissue rejections due to microbial contamination testing. From

2002 to 2005, the Company implemented several changes to its processing procedures, some of which were a result of the FDA Order and subsequent FDA activities as discussed in Note 2 of the December 31, 2004 Form 10-K, and some of which were a result of the Company's own processing improvement initiatives. As a result of these changes, there was great

variability in the percentage of tissues rejected, which affects tissue yields, due to microbial contamination testing during the period. Results of microbial testing are generally received within 14-21 days. Therefore, at the end of each reporting period, an estimate for tissue rejections related to microbial contamination is made for those tissues processed within 14-21 days of period end based on recent data of microbial testing results.

Tissue yields resulting from the factors mentioned above in 2005, 2004, and 2003 were 52%, 46% and 41%, respectively. The Company does not disclose yield factors in detail as they are only one of many interrelated factors in the total determination of deferred preservation costs. Other factors include direct labor and materials including laboratory expenses, tissue procurement fees, freight-in charges and fringe benefits, and indirect costs including allocations of costs from departments that support processing activities and facility allocations, as disclosed on page F-11 of the December 31, 2004 Form 10-K. See page 60 of the December 31, 2004 Form 10-K and page 32 of the September 30, 2005 Form 10-Q under the header "Cost of Human Tissue Preservation Services" for a discussion of the effect of implementation of process changes and improvements in the Company's tissue processing yields on cost of human tissue preservation services.

CryoLife acknowledges that:

- o it is responsible for the adequacy and accuracy of the disclosure in the filings;
- o staff comments or changes to disclosure in response to staff comments do not foreclose the Commission from taking any action with respect to the filings; and
- o it may not assert staff comments as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

If you have any questions, please do not hesitate to contact me at (404) 873-8622.

Very truly yours,

ARNALL GOLDEN GREGORY LLP

/s/ T. Clark Fitzgerald III
T. Clark Fitzgerald III

cc: Sasha Parikh, Staff Accountant
Mary Mast, Review Accountant
Steven G. Anderson