

October 12, 2007

Mail Stop 6010

Richard Randall
President and Chief Executive Officer
TranS1, Inc.
411 Landmark Drive
Wilmington, NC 28412-6303

**Re: TranS1, Inc.
Amendment No. 3 to Registration Statement on Form S-1
Filed October 9, 2007
File No. 333-144802**

Dear Mr. Randall:

We have reviewed your filing and have the following comments. Where indicated, we think you should revise your document in response to these comments. If you disagree, we will consider your explanation as to why our comment is inapplicable or a revision is unnecessary. Please be as detailed as necessary in your explanation. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure. After reviewing this information, we may raise additional comments.

We welcome any questions you may have about our comments or any other aspect of our review. Feel free to call us at the telephone numbers listed at the end of this letter.

AxiaLIF Clinical Data Summary, page 54

1. Expand to disclose the material terms of the consulting agreements entered into with the lead investigators for each study, and disclose the number of shares that underlie the options granted to them and the exercise prices.

Exhibit 5.1

2. We note the language in the second paragraph. Please update the opinion prior to effectiveness to remove the contingency about proceedings “proposed to be taken...in connection with the authorization...” We note that as of June 30, 2007, there were 17.1 million shares authorized. We also note disclosure on page 89 that states there will be more than 18.7 million shares outstanding after the offering. Counsel’s opinion must state without qualification that the securities are duly authorized.

3. Also delete the qualifying language that the opinion is “subject to compliance with applicable state securities laws.”

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As appropriate, please amend your registration statement in response to these comments. You may wish to provide us with marked copies of the amendment to expedite our review. Please furnish a cover letter with your amendment that keys your responses to our comments and provides any requested information. Detailed cover letters greatly facilitate our review. Please understand that we may have additional comments after reviewing your amendment and responses to our comments.

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes all information required under the Securities Act of 1933 and that they have provided all information investors require for an informed investment decision. Since the company and its management are in possession of all facts relating to a company’s disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

In addition, please be advised that the Division of Enforcement has access to all information you provide to the staff of the Division of Corporation Finance in connection with our review of your filing or in response to our comments on your filing.

You may contact at David Burton at (202) 551-3626 or Kevin Vaughn, Accounting Branch Chief, at (202) 551-3643 if you have questions regarding comments on the financial statements and related matters. Please contact Geoffrey Kruczek at (202) 551-3641 or me at (202) 551-3800 with any other questions.

Sincerely,

Peggy Fisher
Assistant Director

cc (via fax): Bruce Feuchter, Esq.—Stradling Yocca Carlson & Rauth
Michael A. Hedge, Esq.—Stradling Yocca Carlson & Rauth