UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

DIVISION OF
CORPORATION FINANCE

October 3, 2014

Via E-mail
Lawrence Mehren
President and Chief Executive Officer
Accelerate Diagnostics, Inc.
3950 South Country Club Road, Suite 470
Tucson, AZ 85714

Re: Accelerate Diagnostics, Inc.
Form 10-K for Fiscal Year Ended December 31, 2013
Filed March 7, 2014
Response dated September 9, 2014
File No. 001-31822

Dear Mr. Mehren:

We have reviewed your filing and have the following comments. In our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter within ten business days by amending your filing, by providing the requested information, or by advising us when you will provide the requested response. If you do not believe our comments apply to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing any amendment to your filing and the information you provide in response to the comments we may have additional comments.

Item. 1 Business

Overview, page 5

1. It appears from your response to prior comment 2 that you may be seeking regulatory approval for your identification system and your antibiotic susceptibility testing system on separate tracks. If you may not receive regulatory approval to commercialize the AST system until after your identification system is approved, please revise the disclosure in your future filings to indicate how that would affect your addressable market and your competitive position. Include risk factor disclosure as appropriate.

2. With a view towards revised disclosure in future filings, please also tell us what kind of studies you believe the FDA would require before it would approve your system and if pathogens added to your identification panel after initial FDA approval would require further studies and FDA approval.

3. Your response to prior comment 2 appears to indicate that you have an identification panel for the types of pathogens which you intend your system to identify. If so, please revise your future filings to identify the pathogens that are currently on your panel and those that are still in development. Please also clarify the size of the addressable market based on your current panel.

4. The first paragraph of your response to prior comment 3 provides context that appears necessary for an investor to understand your use of the term "culture-free process." Accordingly, please confirm that you will revise future filings, as appropriate, to provide appropriate explanatory disclosure or explain to us why you believe the information provided in your Form 10-K disclosure provides sufficient context for investors.

5. Our prior comment 3 noted that your study indicated that certain of the bacteria being studied were subcultured on sheep's blood agar. With a view towards revised future disclosure, please tell us whether your system uses a culture, or a growth medium, and how your system is able to use the different growth media for the different types of bacteria you are trying to identify.

6. We note from your response to prior comment 4 that the second step in your process is the immobilization of pathogens onto a surface such that they can be imaged and analyzed during the identification and antibiotic susceptibility testing before the sample undergoes the final process which you indicate in your response is the optical analysis of the change in the mass of the bacteria and monitoring of growth which we presume would require live bacteria. Since we also understand from your response that you use RNA probes in your FISH process to identify the target organisms, it is unclear at which point in the process you would break open the bacteria to be able to access the targeted sequences of RNA using your FISH process and then how you would have live bacteria for the final step in your process. Please tell us how you will clarify this for investors in your future filings.

7. We note from your response to prior comment 4 that the first step of your process uses a gel and controlled electrical current to separate live organisms from sample debris. We also note the disclosure in your 10-K that "[b]ased on internal lab data, [you] believe that the BACcel™ system will identify the organisms present in a patient's specimen and count the number of organisms of each type in less than one hour after receiving the specimen." With a view towards revised disclosure in your future filings, please tell us how long the gel separation process takes and if that time is included in your estimate that you can identify bacteria in less than one hour after receiving the specimen.

Products, page 6

8. We refer to your response to prior comment 6. Your prospective disclosure contained in the second bullet point suggests that the regulatory approval pathway has been determined; however, we note that the second paragraph of your response to prior

comment 2 indicates it has not been determined. Please confirm that your disclosures in future filings, as applicable, will explain clearly the status of your discussions with the FDA concerning whether a regulatory approval pathway has been determined.

Research and Development, page 6

9. We note your response to prior comment 8. Please confirm that you will revise future filings, as applicable, to clarify that the tests were not independent and that they were performed as part of your proof-of-concept testing.

10. We note your response to prior comment 10. To the extent that you discuss pilot clinical trials in your future filings, the nature and purpose of those studies should be clear to investors. Accordingly, please confirm that you will disclose your response to prior comment 10 to the extent that you include disclosure concerning pilot clinical studies.

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 the information the Securities Exchange Act of 1934 and all applicable Exchange Act rules require. 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 responding to our comments, please provide a written statement from the company acknowledging that:

- the company is responsible for the adequacy and accuracy of the disclosure in the filing;
- staff comments or changes to disclosure in response to staff comments do not foreclose the Commission from taking any action with respect to the filing; and
- the company 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.

Please contact Joseph McCann at (202) 551-6262 or Tim Buchmiller, Reviewing Attorney, at (202) 551-3635 with any questions.

Sincerely,

/s/ Tim Buchmiller for

Amanda Ravitz
Assistant Director

cc (via e-mail): Daniel M. Mahoney - Snell & Wilmer LLP