

# UNITED STATES INTERNATIONAL TRADE COMMISSION

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In the Matter of

Investigation No.

CERTAIN WEARABLE ELECTRONIC

337-TA-1266

DEVICES WITH ECG FUNCTIONALITY AND

COMPONENTS THEREOF

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## OPEN/CLOSED SESSIONS

Pages: 828 through 1101

Place: Washington, D.C.

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APPLE 1072

1 O P E N S E S S I O N

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3 COLLIN STULTZ, MD, PhD,

4 having been first duly sworn and/or affirmed  
5 on his oath, was thereafter examined and testified as  
6 follows:

7 THE WITNESS: I was muted. Yes, I do.

8 JUDGE ELLIOT: Very well. Counsel, could you  
9 please note your appearances?

10 MR. AMON: Yes, Your Honor. Michael Amon on  
11 behalf of Respondent.

12 MR. HOLMES: Andrew Holmes on behalf of AliveCor.

13 JUDGE ELLIOT: All right. So we are on the  
14 public record. Go ahead, Mr. Amon.

15 MR. AMON: Thank you, Your Honor.

16 DIRECT EXAMINATION

17 BY MR. AMON:

18 Q. Could you please introduce yourself to the Court?

19 A. My name is Collin Stultz. I'm a cardiologist at  
20 the Massachusetts General Hospital and a professor at the  
21 Massachusetts Institute of Technology.

22 Q. Dr. Stultz, did you prepare any slides to  
23 accompany your testimony today?

24 A. Yes, I did.

25 Q. Could we bring those up, please? And if we go to

1 RDX-3.2, can you briefly summarize your educational  
2 background starting with college?

3 A. Yes. My educational background is summarized on  
4 this slide. I went to Harvard College and got a bachelor's  
5 degree in mathematics and philosophy. Then went on to  
6 Harvard Medical School where I got my MD and also obtained a  
7 PhD in biophysics also from Harvard University. And then  
8 went on to my clinical training at the Brigham and Women's  
9 Hospital, first in internal medicine and subsequently in  
10 cardiology.

11 Q. And how long -- sorry. If we go to RDX-3.3,  
12 where do you work today, sir?

13 A. I work at the Massachusetts General Hospital and  
14 at MIT.

15 Q. How long have you been at Mass General?

16 A. I've been there for about five years.

17 Q. What do you do at Mass General?

18 A. I'm a staff cardiologist.

19 Q. You also said that you're a professor at MIT?

20 A. That is correct.

21 Q. And what is your title at MIT?

22 A. I'm an ENT and Robert H. Rubin Endowed Professor  
23 of Medical Engineering and Science and a professor of  
24 electrical engineering and computer science.

25 Q. I apologize. I failed to ask, before you were a

1 cardiologist at Mass General, did you practice cardiology  
2 someplace else?

3 A. Yes, I did.

4 Q. Where is that?

5 A. I was in Veterans Affairs System at the West  
6 Roxbury V.A. Hospital.

7 Q. How long were you a cardiologist at the Veterans  
8 Affairs Hospital in Roxbury?

9 A. About 14, 15 years.

10 Q. And so how long have you been a practicing  
11 cardiologist?

12 A. Approximately 20 years, and, if you include the  
13 time in my fellowship training, it's been over 20 years I've  
14 been caring for patients with cardiovascular disease.

15 Q. And returning to your position at MIT, what do  
16 you teach at MIT?

17 A. So I've taught a panoply of different classes,  
18 typically quantitative physiology where we model different  
19 physiologic systems using simple electrical circuits to  
20 relate the fundamental principles.

21 And more recently I've taught a class that is an  
22 introduction to electrical engineering and computer science  
23 from a medical perspective. It's run a gamut of different  
24 topics.

25 Q. How long have you been on the faculty at MIT?

1 A. Approximately 18 years.

2 Q. I believe you also said that you're on the  
3 faculty at Harvard?

4 A. That's right. I'm a member in the Harvard-MIT  
5 Division of Health Sciences and Technology.

6 Q. And what do you teach at Harvard?

7 A. So I've given lectures in a lot of different  
8 classes: anatomy, cardiovascular, pathophysiology,  
9 biochemistry, and such.

10 Q. And how long have you been on the faculty at  
11 Harvard?

12 A. Also approximately 18 years.

13 Q. If we go to RDX-3.4, are there any classes that  
14 you teach that are relevant to the subject matter in this  
15 case?

16 A. Yes. So the class I alluded to previously, 6.03,  
17 Introduction to Electrical Engineering and Computer Science,  
18 again, this is a course that introduces students to  
19 fundamental principles in electrical engineering and  
20 computer science as they relate to the clinical domain.

21 Q. And does that class include principles of ECG  
22 design and ECG sensors and data analysis?

23 A. Yeah. And that is what is expressed in this  
24 slide. If you look in the upper right-hand corner, at the  
25 electrocardiogram circuit, that is a very simple,

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