

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ABBOTT LABORATORIES AND
ABBOTT DIABETES CARE INC.,

Petitioner,

v.

ALTIVERA LLC,

Patent Owner.

Case No. IPR2024-00425

Patent No. 7,969,307 B2

DECLARATION OF JOHN P. PEETERS, PHD

I, John P. Peeters, declare as follows:

1. I am submitting this declaration to provide information about the challenged patent, U.S. Patent No. 7,969,307 (“’307 Patent”) (EX-1001), on which I am the sole named inventor, as well as U.S. Patent No. 7,148,803 (“the ’803 Patent”) (EX-1005), on which I am also a named inventor.

2. I have personal knowledge of the facts set forth in this Declaration. All statements made in this Declaration are true to the best of my knowledge. If called on to testify, I could and would testify competently as to the topics addressed in this declaration.

3. In 1988, I obtained a Ph.D. in Applied Biology from the University of Cambridge (in the U.K.) on a scholarship from the Cambridge in America Foundation. I also hold a Master of Science degree in Genetics from the University of British Columbia and a Bachelor of Science degree in Biology (with Honors) from UMass Boston.

4. After receiving my doctorate, I worked as a Consultant for the National Academy of Sciences and thereafter worked for the U.S. Department of Energy (DOE) for more than a decade. I served various roles, including as a Program Manager and Division Director (Acting) in the Office of Occupational Medicine and Medical Surveillance; a Team Leader in the Office of International Health Studies; and a Program Manager in the Office of Epidemiology. My work at DOE gave me

detailed knowledge on human health, sensors, wireless technologies, and geolocation.

5. In 1998, I filed a patent application directed to DNA sequencing in a nanotube, which later issued as U.S. Patent No. 6,123,819. That patent issued in 2000, and was assigned to Protiveris, a Maryland start-up biotechnology company that I founded, focusing on micro-cantilever sensors.

6. In early 2001, I founded Gentag, Inc., a visionary IP and technology development company that combines its advanced knowledge in biology, chemistry, microelectronics, and artificial intelligence to convert consumer safety and health concerns into everyday disposable sensors that have revolutionized diagnostics, proactive medicine, nutrition, and the everyday lives of consumers worldwide. More specifically, Gentag's aims are to develop an advanced suite of disruptive cell phone-based sensor technologies that will transform diagnostics and empower consumers everywhere to self-detect medical or pre-medical health conditions. I still serve as President and CEO of Gentag today. Many of Gentag's patents, including the '307 Patent, are assigned to its IP holding company, Altivera, LLC (Patent Owner).

7. With more than three decades of experience, I am an expert on biomarkers, sensors, and nanotechnologies. I hold numerous issued U.S. and international patents. For example, I patented a number of key technologies well

before their time, including radar responsive sensor tags (US Patent No. 6,031,454), NFC cell phone sensor networks (US Patent No. 7,148,803), and the closed loop cell phone insulin delivery system or “artificial pancreas” (US Patent No. 8,077,042).

8. In response to Abbott’s Petition for *Inter Partes* review, I have been asked by counsel to describe my conception of the ’307 Patent and the extent of my contributions to the ’803 Patent. As set forth in detail below, the portions of the ’803 Patent cited by the Petitioner in support of its arguments reflect my work alone.

9. By the early 2000s, I had developed expertise in sensor technologies and was thinking about how radio frequency-addressed sensors could be used in connection with monitoring personal health and detecting threats or hazards. I started working with the Electrical Engineering Department at the University of Maryland on chip designs for sensors.

10. On May 5, 2003, Professor John Melngailis of the University of Maryland introduced me to the founders of Matrics, Dr. Bill Bandy and Mike Arneson. Matrics was an RFID chip company and was designing features of RFID systems that would allow for faster reading of large volumes of RFID tags and for reading of RFID tags from increased distances. Dr. Bandy and Mr. Arneson were chip designers and had no expertise in health issues, biomarkers, or diagnostic sensors.

11. The May 5, 2003 meeting was conducted under an NDA signed by Matrics and Gentag. Present at that meeting were Dr. Melngailis, Dr. Bandy, Mr. Arneson, and me. The founders of Matrics discussed their RFID chip technology, and I explained my background on sensors, health, threat detection, and wireless geolocation.

12. At the meeting, I conceived the idea of modifying cell phones to read RFID sensors, creating the basis for NFC cell phone sensor networks. Dr. Bandy and Mr. Arneson stated that this concept was feasible and we agreed to work together. Applications that were discussed were threat sensors and food safety.

13. I later asked Professor Melngailis to send me a summary of his recollections and notes from the meeting. I have reviewed EX-2003 (GEN-AB-0003666), and it is a true and correct copy of the email that Professor Melngailis sent to me (Scinet@aol.com) and Dr. Bandy, also reproduced below:

Subj: **On May 5, 2003 Meeting**
Date: 2/1/2005 8:56:15 AM Eastern Standard Time
From: melng@Glue.umd.edu
To: Scinet@aol.com, bbandy@matricsrfid.com, pbbandy@erols.com

John,

You asked that I record my recollections from our meeting at Matrics on May 5, 2003. I actually have notes from the meeting. It probably was the first time you were at Matrics. The participants were: Bill Bandy, Mike Arneson, you and I.

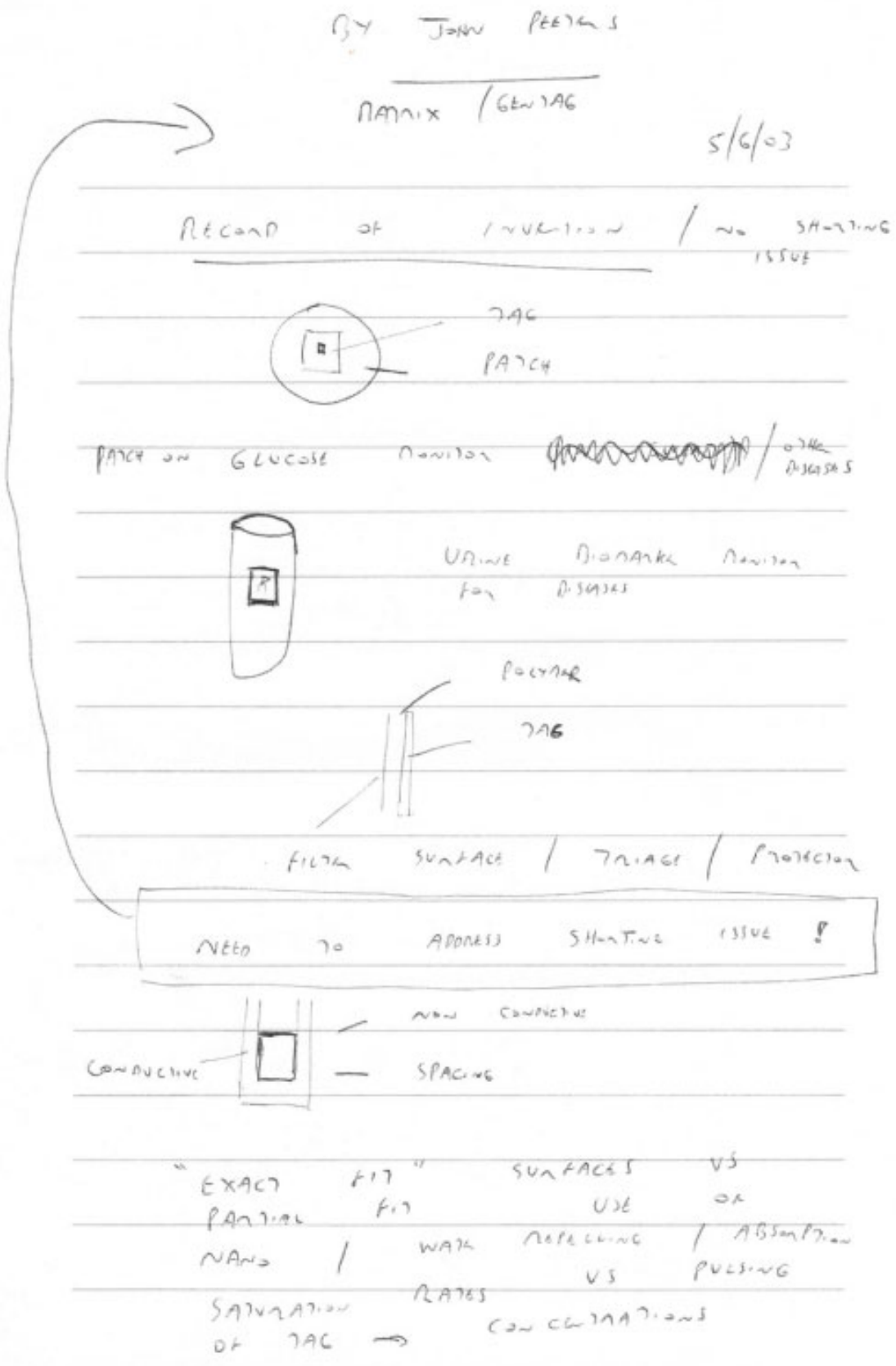
There was a lot of brainstorming about future applications. You described the use of cell phones for sensing and then locating the cell phone by triangulation. You mentioned Mike Lovejoy as someone who could participate in sensors and circuits and also someone named McGregor. We spoke of RFID Tags combined with sensors. The sensors were to be cheap and disposable. You brought up idea of using the cell phone as an RFID tag/sensor reader. A specific example of an application that I have documented in my notes is a portable sensor which communicates with a cell phone and which the user would insert into food to determine whether there are any specific allergy hazards in the food. This would, for example, be useful in a restaurant.

I hope my notes and recollections are helpful.

John

John Melngailis
Professor of Electrical
and Computer Engineering
University of Maryland
Energy Research Building
College Park, MD 20742-3511
Tel. 301-405-4916
Fax. 301-314-9437
e-mail: melng@umd.edu

14. I have also reviewed EX-2004 (GEN-AB-00001440), and it is a true and correct copy of notes I jotted down the day after the meeting. My notes are also reproduced below:



15. I was deeply excited about the implications of this new technology and continued brainstorming as to potential applications for it. On May 6, 2003 (the day after the Matrics meeting), I came up with the idea that a disposable wireless RFID sensor could be incorporated into a disposable diagnostic skin patch, which could be a disposable wireless glucose sensor read by a cell phone that would become a glucometer.

16. The following day, I wrote to Dr. Bandy and Mr. Arneson regarding our meeting and my new skin patch idea. I have reviewed EX-2005 (GEN-AB-0001441-1442), and it is a true and correct copy of the letter that I sent to Dr. Bandy and Mr. Arneson on May 7, 2003 (also reproduced below):



05/07/03

William R. Bandy, Ph.D.
Michael R. Arneson
Founders
Matrics
8850 Stanford Boulevard, Suite 3000
Columbia, MD 21045

Dear Bill and Michael:

I thought a great deal yesterday about matching your RFID tag technology with our cell phone platform technology and the market applications are in fact much larger than we first realized. I am very excited by the prospects.

While food testing is a huge market in itself there is an even bigger market which is medical diagnostics.

The issue that I see with a tag that is dipped into a liquid is shorting or saturation of the polymer or doped ink electrodes. There are ways around this but it will take some time and R&D to sort this out. On the other hand I thought yesterday of a much simpler way to get started in an area that I know well. The area is biomarkers and the application I envisioned yesterday is the following. You could easily create a skin stick on "patch" that includes your tag combined with proprietary receptors that will measure specific chemicals that are exuded from the skin as a result of applying the patch. The environment is not wet but semi wet and the patch could include an external color change indicating when the proper vapor saturation level has occurred. Testing excreta from the skin is a new and powerful area in medical diagnostics. Since it is non-invasive and very cheap this is a worldwide market. Furthermore FDA oversight may be very limited in this case. People could self-test themselves for pretty much anything including for tests that need to be done daily (diabetes, etc.). The medical and biomedical range goes from real time temperature monitoring of patients to sophisticated multiple disposable biomedical tests. As you know medical diagnostics is a multi-billion dollar market and cutting diagnostics costs is a top international priority.

I published two books on biomarkers with the National Academy of Sciences and have an excellent network of top scientists we can tap into immediately. For example people like the former White House physician would immediately join the team.

- Confidential -

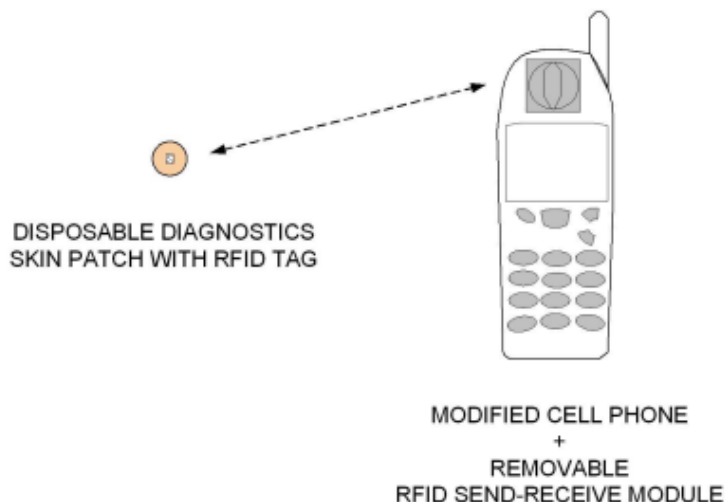
I consider the “patch” biomedical application a new technology. We could include it in the joint food testing patent we are presently contemplating or alternatively I will file yet another patent describing very specific biomedical applications and chemistries for this given technology. Again a key to the success of this given technology is to be able to use cell phones as the basic platform to do the calculations, to provide the power and to allow remote or local (on person) monitoring and surveillance.

The technology is really impressive because you can activate the cell phone and check on sensor values remotely or locally for pretty much any medical, biomedical or biotechnology application. What needs to be changed simply are the receptor chemistries on the disposable tag. The tag may include all the necessary IDs or alternatively that could be put into the matching “swappable module” on the cell phone. That is you could buy a “diabetes” cell phone kit, etc. The basic cell phone platform remains always the same. A key advantage of the technology is that it allows the electronic collection of “hard” data on patients. Other ultra low cost disposable technologies do not allow that.

This electronic letter serves as a record for this invention and this disclosure is made under our executed NDA. Please let me know how you want to proceed and if the medical diagnostics area is of interest to Matrics. I would be delighted to work with you to jointly get this technology and what we already discussed previously to market.

John P. Peeters, Ph.D.

MEDICAL DIAGNOSTICS APPLICATIONS



17. Matrics agreed to pay for the prosecution of the application for the '803 Patent in exchange for me writing the patent application and paying for a hand search at the USPTO for prior art. With guidance and assistance from outside counsel, I drafted the bulk of the patent application (and most of the graphics/drawings in the application), and then sent the draft application to Dr. Bandy for review. I have reviewed EX-2006 (GEN-AB-00002974-2977), and it is a true and correct copy of an email that I sent to Dr. Bandy (first page reproduced below):

Subj:	Joint Patent with Matrics - From John Peeters
Date:	8/19/2003 11:22:17 AM Eastern Daylight Time
From:	Scinet
To:	bbandy@matricsrfid.com
CC:	Mmargreen , mikelovejoy@gbronline.com , rkelly@dykema.com
File:	PATENT OUTLINE 2.doc (29184 bytes) DL Time (28800 bps): < 1 minute

Bill:

Attached is my first cut at the outline for the joint patent. This is shared with you under our NDA. As you will see I have come up with several novel ideas (e.g. to have a separate ID built in each RFID for the pulsing time required by the cell phone to get a full read for each given sensor technology). This ID also serves as the ID for the sensor type itself and we can build tables of references for the thousands of different types of sensors that will eventually be built. I am sure that we will refine this even further at our meeting tomorrow and beyond. Mike Lovejoy will help me refine the technology on the cell phone side. The key is to make the patent sufficiently robust to build upon it for sub-market applications (for example for my disposable band-aid diagnostics technology).

To allow Gentag to raise funding we need an upfront and clear profit sharing formula with Matrics for the joint technology. The markets are huge and if we structure this right we will both benefit. My view is that Matrics wins anyway since you will increase tremendously the market for your chips.

John

18. Dr. Bandy's contributions to the '803 Patent related to specific features for enhancing RFID systems, namely initialization of an RFID tag (as recited in claims 65, 81, and 83 of the '803 Patent, as originally issued) and a method for rapidly reading multiple tags. As Dr. Bandy did not have any background in medical

devices, biomarkers, or diagnostic sensors, he did not contribute to those aspects of the claims.

19. I contributed the remainder of the '803 Patent, including the concept of integrating RFID into cell phones, diagnostic applications, software download for analyzing sensor data, sensor networks based on cell phones and RFID sensors, specific types of sensors (MEMS sensors/microcantilevers, food sensors, pharma sensors, threat detection sensors, and antenna sensors), the use of reference sensors, on-person sensor cards or badges, wireless geolocation technologies, container monitoring and security, and smart shopping. Dr. Bandy did not contribute to any aspects of the '803 Patent relating to these features.

20. The exhibits referenced above corroborate my contributions to the '803 Patent. *See, e.g.*, EX-2003 (Feb. 1, 2005 email from Melngailis to Dr. Peeters and Dr. Bandy) (“You [Dr. Peeters] described the use of cell phones for sensing and then locating the cell phone by triangulation.”); *id.* (“You [Dr. Peeters] brought up [the] idea of using the cell phone as an RFID tag/sensor reader.”); EX-2005 (May 7, 2003 Letter from Dr. Peeters to Dr. Bandy and Mr. Arneson) at 1 (“I thought yesterday of a much simpler way to get started in an area that I know well. The area is biomarkers and the application I envisioned yesterday is the following. You could easily create a skin stick on ‘patch’ that includes your tag combined with proprietary receptors that will measure specific chemicals that are exuded from the skin as a result of

applying the patch.”); EX-2006 at 1 (Aug. 19, 2003 email from Dr. Peeters to Dr. Bandy et al.) (“As you will see I [Dr. Peeters] have come up with several novel ideas (e.g. to have a separate ID built in each RFID for the pulsing time required by the cell phone to get a full read for each given sensor technology).”); *id.* (referring to “my [Dr. Peeters’] disposable band-aid diagnostics technology”). I have also reviewed the Declaration of Dr. Bandy (EX-2001), which further comports with my recollection as to Dr. Bandy’s and my respective contributions.

21. I understand from counsel that Petitioner is citing passages and figures from the ’803 Patent as disclosing the limitations of Claims 1, 2, 3, 5, 9, and 10 of Dr. Peeters’ ’307 Patent. Independent claim 1 of the ’307 Patent recites:

1. A radio frequency (RF) addressable diagnostic sensor unit comprising:
 at least one sensor element;
 at least one reference sensor element;
 a unique identification ID number;
 a sensor interface having an analog to digital converter coupled to the at least one sensor and reference sensor element;
 at least one antenna;
 a substrate;
 an RF power and communication interface coupled to the at least one antenna and sensor interface;
 a controller coupled to the RF power and communications interface and the sensor interface; and
 a memory coupled to the controller and the sensor interface;
 wherein the RF addressable sensor communicates with a remote wireless device, said wireless device having multiple wireless

communication means, geolocation means and a unique ID, whereby said wireless device is coupled to at least one communications network linked to [a]t least one remote server; and

wherein the wireless device communicates with the RF addressable sensor interface to obtain the ID and sensor data;

wherein the remote server authenticates said unique sensor ID associated with said unique wireless device ID and communicates to said wireless device processed information relating to said sensor data and software related to the unique sensor ID, thereby allowing said wireless device to interpret said sensor anywhere worldwide.

The dependent claims add that “said wireless device is a cell phone” (claim 2); “said sensor unit is integrated into a disposable wireless skin patch for diagnostic applications” (claim 3); “said sensor is a chemical sensor” (claim 5); “a GPS means for geolocating said system” (claim 9); and “a non-GPS geolocation means for geolocating said system” (claim 10).

22. I invented all claims of the '307 Patent; to the extent that any of these features were disclosed in the '803 Patent, they were contributed by me.

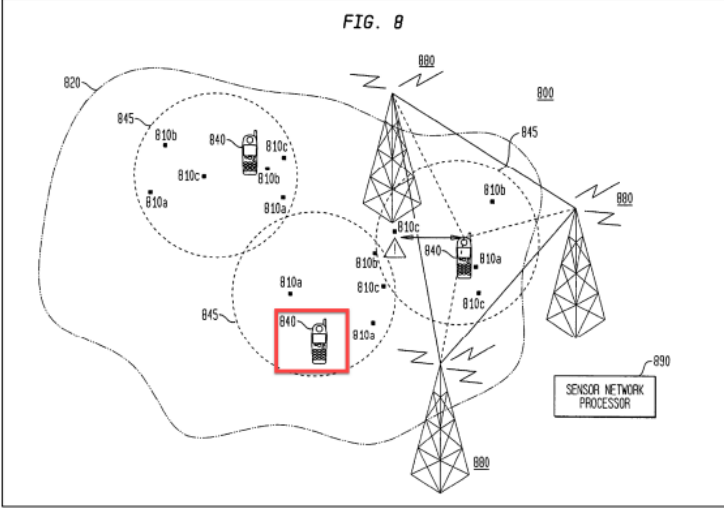
23. I understand that Petitioner is relying on certain portions of the '803 Patent as alleged prior art. I have reviewed the Petition. All portions of the '803 Patent upon which Petitioner relies were solely contributed by me, without any contribution from Dr. Bandy (see below table for details).

Page No(s).	Petitioner's characterization of the portions of the '803 Patent upon which Petitioner relies	Inventor
16-17	"Bandy discloses a distributed sensor network that 'includes one or more RF addressable sensors, one or more wireless sensor readers coupled to a communications network, and one or more optional end user devices coupled to the communications network.' Bandy at 1:58-62."	Peeters
17	"According to Bandy, such networks can provide 'real time monitoring and detection of hazardous materials and/or conditions in a highly cost effective way.' <i>Id.</i> at 1:45-47."	Peeters
17	"Bandy teaches that the RF addressable sensors include antennas 'for communicating with the wireless sensor reader,' which can be 'implemented in a wireless device such as a phone or PDA.' <i>Id.</i> at 2:9-10, 2:28-29."	Peeters
17-18	"For example, in wireless sensor network 100 shown in Figure 1, wireless sensor reader 140 'includes logic to interrogate the population of RF addressable sensors 102 and logic to read sensor data and RFID tag data transmitted by the RF addressable sensors 110. In an embodiment, wireless sensor reader 140 also includes logic to process the received sensor data.' <i>Id.</i> at 5:1-11." FIG. 1	Peeters

Page No(s).	Petitioner's characterization of the portions of the '803 Patent upon which Petitioner relies	Inventor
18	"Bandy discloses that 'some or all of the necessary information to handle and analyze the sensor is retrieved from processor 190.' <i>Id.</i> at 10:30-32. And '[s]oftware may also be downloaded directly and transparently into the cell phone or reader 140 to "train" the wireless device to recognize and analyze that given type of RFID-sensor.' <i>Id.</i> at 10:33-36."	Peeters
18	"Bandy explained that '[w]hen the necessary processing and analysis information is downloaded from a remote location, only the ID of the RFID-sensor is necessary, providing a highly streamlined solution for universal sensor analyses for wireless devices such as cell phones.' <i>Id.</i> at 10:37-41."	Peeters
Claim Element [1pre]: Preamble		
19	"Bandy discloses an RF addressable diagnostic sensor unit, including an 'RF addressable sensor network 100 for monitoring, detecting, and geolocating RF addressable sensors.' Bandy at 4:33-39, Fig. 1."	Peeters
19	"Bandy further discloses that '[t]he present invention can also be used for remote diagnostics monitoring.' <i>Id.</i> at 19:56-57. Referring to Figure 11, Bandy discloses a 'remote individual-specific monitoring network 1100,' that includes at least one addressable sensor with 'sensor elements for monitoring temperature, chemical composition, biological composition, or a combination of the above for an individual.' <i>Id.</i> at 19:59-60, 19:64-67."	Peeters
Claim Element [1a]: Sensor Element		
19-20	"Bandy discloses that RF addressable sensor 210 includes 'a plurality of sensor elements 291a-291n, 292a-292n, and 294a-294n.' Bandy at 6:58-60, Fig. 2. Bandy discloses sensor elements at numerous other locations throughout the disclosure. <i>See id.</i> at 17:17-22, 18:25-34, 19:59-63, 20:50-59, 21:19-23, 21:33-40, 21:67-22:1, 22:53-58, 23:4-7, 23:63-64, Figs. 8, 10-17."	Peeters

Page No(s).	Petitioner's characterization of the portions of the '803 Patent upon which Petitioner relies	Inventor
Claim Element [1b]: Reference Sensor Element		
20	"Bandy discloses 'a plurality of reference elements 295a-295n, 296a-296n, and 297a, 297n.' Bandy at 8:59-9:7, Fig. 2."	Peeters
Claim Element [1c]: Unique ID Number		
20	"Bandy discloses that 'memory 256 stores a sensor data table 258,' which 'may store a sensor element identification number' for 'all or a subset of sensor elements.' Bandy at 10:6-13."	Peeters
20-21	"Bandy also discloses that controller 242 includes memory 246 that 'stores the tag identification number for the RF addressable sensor.' Bandy at 11:19-29, Fig. 2. The memory 246 'may be separate or integrated with memory 256 of the sensor interface.' <i>Id.</i> This tag identification number can be unique to an individual sensor. <i>See id.</i> "	Peeters
Claim Element [1d]: Sensor Interface with an A/D Converter		
21	"Bandy discloses that '[s]ensor interface 250 includes a digitizer or an analog to digital converter (ADC) 252' that 'can be coupled directly to sensor elements implemented in integrated circuit 222 and is coupled to other sensor elements 292 and 294 via sensor pads 208.' Bandy at 9:26-32, Fig. 2; <i>see also id.</i> at 16:36-38, Fig. 7 ('[A]nalog sensor data is obtained by one or more sensor elements 291, 292 and/or 294 and communicated to ADC 252.')."	Peeters
Claim Element [1e]: Antenna		
21	"Bandy discloses that '[r]adio frequency addressable sensor 210 includes ... a plurality of antennas 206a through 206n.' Bandy at 6:55-57, Fig. 2; <i>see also id.</i> at 10:57-61 ('RF addressable sensor 210 may have one or more antennas configured to communicate with a conventional RFID reader and one or more antennas configured to communicate with wireless sensor reader 140 [of Fig. 1].')."	Peeters

Page No(s).	Petitioner's characterization of the portions of the '803 Patent upon which Petitioner relies	Inventor
Claim Element [1f]: Substrate		
22	"Bandy discloses that '[s]ensor elements 292a-n are included on the substrate 202.' Bandy at 6:61-7:10, Fig. 2."	Peeters
Claim Element [1g]: RF Power and Communication Interface		
22	"Bandy discloses an RF power and communication interface 230 'coupled to antennas 206.' Bandy at 11:30-34, Fig. 2. Additionally, Bandy discloses that the 'RF pads 204 are coupled to both the RF power and communications interface [230] and the sensor interface 250.' <i>Id.</i> at 8:11-13."	Peeters
Claim Element [1h]: Controller		
22-23	"Bandy discloses a RFID control module 240 with a controller 242 that is coupled to RF power and communications interface 230 and sensor interface 250. Bandy at 10:62-11:2, Fig. 2."	Peeters
Claim Element [1i]: Memory		
23	"Bandy discloses that memory 256 may be included as part of sensor interface 250 and also that memory 256 may be integrated with memory 246 of RFID control module 240. Bandy at 11:21-29, 9:63-66, Fig. 2."	Peeters
Claim Element [1j]: RF Sensor Communicates with a Wireless Device, which Communicates with a Remote Server		
23-24	"Bandy discloses that RF addressable sensors 120 are capable of communicating with remote wireless sensor reader 140, which 'can be any wireless device capable of communicating via air interface protocol with the population of RF addressable sensors 102' and 'could be a wireless phone, a personal digital assistant (PDA), a computer having wireless communications capabilities, or other type of mobile, handheld, and/or computing device.' Bandy at 5:6-18, Fig. 1"	Peeters

Page No(s).	Petitioner's characterization of the portions of the '803 Patent upon which Petitioner relies	Inventor
24	"Further, Bandy discloses that 'reader 140 and the population of sensors 102' can communicate via one or more protocols for RFID tag communications and sensor communications. Bandy at 5:24-30."	Peeters
24	"For example, the wireless sensor reader 140 is coupled to and wirelessly communicates with wireless communication network 170 'according to one or more protocols,' 'such as used in IS-41 or GSM wireless communications networks.' <i>Id.</i> at 5:45-63, Fig. 1."	Peeters
24	"Bandy also discloses that the wireless sensor reader 140 can communicate with RF addressable sensors 'via an air interface protocol,' yet another wireless communication means. <i>Id.</i> at 5:11-13."	Peeters
25-26	"For example, Bandy discloses that the wireless sensor reader 840, depicted as a cell phone in Figure 8, 'performs geolocation processing to determine the exact location of the RF addressable sensor,' and that such 'geolocation processing could use GPS-based or non-GPS based techniques.' Bandy at 17:62-67, Fig. 8; ... <i>see also</i> Bandy at 8:41-45 (describing that 'the wireless components and geolocation features are provided by the RFID tag and cell phone combination')." 	Peeters

Page No(s).	Petitioner's characterization of the portions of the '803 Patent upon which Petitioner relies	Inventor
26	"wireless sensor reader 140 and/or user device(s), such as "a wireless phone, a personal digital assistant (PDA), a computer having wireless communications capabilities, or other type of mobile, handheld, and/or computing device," (Bandy at 5:11-18)"	Peeters
27	"First, the wireless sensor reader can communicate over wireless communication network 170 (Bandy at 5:45-48), which in turn 'may be coupled to a publicly accessible data communications network 175 ... such as the Internet.' Bandy at 5:67-6:5."	Peeters
27-28	"Second, Bandy discloses '[s]ensor data processor 194 includes logic to receive sensor data from one or more RF addressable sensors 110, perform processing on the received data, and communicate information based on the processing to wireless reader 140 or an end user device 182.' Bandy at 6:42-46. That 'sensor data processor' is part of a 'sensor network processor 190,' which is linked to the wireless communication network 170 and is a remote server. <i>Id.</i> at 6:46-49, Fig. 1 (annotated below)"	Peeters

Page No(s).	Petitioner's characterization of the portions of the '803 Patent upon which Petitioner relies	Inventor
28	“Bandy also discloses that end user devices 182 can be coupled to communications network 180, which includes wireless communication network 170. Bandy at 4:50-65, Fig. 1. ‘[U]ser device 182 may both initiate a request for sensor data and receive and process the resulting sensor data.’ Bandy at 4:60-61.”	Peeters
28-29	“Bandy also discloses a wireless sensor reader 340 that includes a network communications module 342 and one or more antennas ‘configured for communication with wireless network 170.’ Bandy at 11:63-12:16, Fig. 3. The wireless sensor reader 340 also includes geolocation processing logic. <i>Id.</i> at 13:6-8.” (internal footnote omitted).	Peeters
Claim Element [1k]: Wireless Device Obtains ID and Sensor Data from Sensor Interface		
29	“Bandy discloses that ‘RF addressable sensor 110 communicates the digital sensor data to wireless sensor reader 140/340,’ which can ‘include both the tag identification number stored in memory 246 and the sensor data obtained by the sensor elements.’ Bandy at 16:41-51, Figs. 7A-7B. Bandy also discloses that ‘wireless sensor reader 140/340 receives the sensor data from the RF addressable sensor 110. Sensor data can include sensor element output data, sensor table data, reference data, and/or other data.’ Bandy at 15:23-26, Fig. 5. Further, ‘the sensor 110 identifies itself (e.g., by providing its identification number) and provides the cell phone reader with the necessary information for analyzing the sensor output.’ <i>Id.</i> at 10:14-32; <i>see also id.</i> at 13:1-13 (‘RFID tag processor 356 includes logic to interrogate and read RFID tag information from RF addressable sensors.’); ... <i>see also</i> Bandy at 4:56-65, 17:54-56, Figs. 8-16.” (emphasis omitted).	Peeters

Page No(s).	Petitioner's characterization of the portions of the '803 Patent upon which Petitioner relies	Inventor
Claim Element [11]: Remote Server Authenticates Sensor ID and Communicates Information and Software for the Sensor to the Wireless Device		
30	“Bandy teaches that ‘some or all of the necessary information to handle and analyze the sensor is retrieved from processor 190.’ Bandy at 10:29-32. ‘[W]hen a sensor 110 having data table 258 is activated by wireless sensor reader 140, the sensor 110 identifies itself (e.g., by providing its identification number) and provides the cell phone reader with the necessary information for analyzing the sensor output.’ <i>Id.</i> at 10:19-24. ‘Software may also be downloaded directly and transparently into the cell phone or reader 140 to “train” the wireless device to recognize and analyze that given type of RFID sensor.’ <i>Id.</i> at 10:14-51.”	Peeters
30-31	“‘When the necessary processing and analysis information is downloaded from a remote location, only the ID of the RFID-sensor is necessary, providing a highly streamlined solution for universal sensor analyses for wireless devices such as cell phones.’ <i>Id.</i> at 10:37-41. Bandy also discloses that the wireless communication device includes ‘means for receiving sensor processing information’ and that ‘the sensor processing information includes software for analyzing sensor data.’ Bandy at claims 29, 39, 40; As-Filed Bandy Application (Ex. 1006) at claims 30, 40, 41. Bandy concludes that ‘[u]sing this approach [of the disclosed system] a universal sensor platform is created based on RFID technology by allowing wireless devices such as phones to become ‘smart’ sensor reader devices.’ Bandy at 10:14-16.” (emphasis omitted).	Peeters

Page No(s).	Petitioner's characterization of the portions of the '803 Patent upon which Petitioner relies	Inventor
31	"A POSITA would have thus understood that Bandy disclosed and rendered obvious a remote server (e.g. sensor data processor 194) that authenticates the ID of the RFID-sensor (unique sensor ID) and in response to the authentication communicates to the wireless device (1) processed information relating to the sensor data and (2) software related to the unique sensor ID necessary for the wireless device to interpret the sensor anywhere worldwide as required by Petitioner's construction and the plain language of claim 1. Bandy at 10:6-13"	Peeters
Dependent Claim 2: Wireless Device is a Cell Phone		
32	"Bandy explains that 'wireless sensor reader 140 could be a wireless phone, a personal digital assistant (PDA), a computer having wireless communications capabilities, or other type of mobile, handheld, and/or computing device.' Bandy at 5:6-18; ... ¶203. Moreover, Bandy also discloses that providing the ability to download processing and analysis information from a remote location 'provid[es] a highly streamlined solution for universal sensor analyses for wireless devices such as cell phones.' Bandy at 10:14-51[.]"	Peeters ¹

¹ That this dependent claim was solely conceived by me is evidenced by, for example, Dr. Melngailis' February 1, 2005 email to me (cc-ing Dr. Bandy), which confirms that I described the "use of cell phones for sensing and then locating the cell phone by triangulation" and that I "brought up [the] idea of using the cell phone as an RFID tag/sensor reader." EX-2003.

Page No(s).	Petitioner's characterization of the portions of the '803 Patent upon which Petitioner relies	Inventor
Dependent Claim 5: Chemical Sensor		
32	"Bandy discloses that RF addressable sensor elements such as sensor elements 292a-292n may be 'chemical sensors.' Bandy at 7:57-66. Bandy goes on to explain that 'in chemical sensor elements, chemicals present in the air are absorbed differently by each of the thin film elements, changing the resistance of each and creating a characteristic electronic signature.' <i>Id.</i> "	Peeters ²
Dependent Claim 9: GPS Geolocation Means		
33	"Bandy discloses geolocation by GPS using structure that is the same or equivalent to the corresponding structure in the '307 patent and that performs the claimed function—a wireless sensor reader that is a cell phone, that executes GPS processing logic. As an initial matter, Bandy discloses this limitation because like the '307 patent, it incorporates by reference Lovejoy for disclosure relating to geolocation. <i>See</i> Bandy at 6:37-41; '307 patent at 17:21-24."	Peeters

² That this dependent claim was solely conceived by me is evidenced by, for example, my May 7, 2003 letter to Dr. Bandy and Mr. Arneson, in which I record my invention of "a skin stick on 'patch' that includes [Matrics'] tag combined with proprietary receptors that will measure specific chemicals that are exuded from the skin as a result of applying the patch." EX-2005 at 1; *see also* EX-2004 (my handwritten notes of May 6, 2003 including a drawing and discussion of the patch).

Page No(s).	Petitioner's characterization of the portions of the '803 Patent upon which Petitioner relies	Inventor
33-34	“Further, Bandy discloses that the wireless sensor reader 840, depicted as a cell phone in Figure 8, ‘performs geolocation processing to determine the exact location of the RF addressable sensor.’ Bandy at 17:62-67, Fig. 8... <i>see also</i> Bandy at 8:41-45 (describing that ‘the wireless components and geolocation features are provided by the RFID tag and cell phone combination’). Bandy also discloses a geolocation processor 192 that ‘includes logic to receive data from one or more RF addressable sensors 110 and to perform GPS and/or non-GPS geolocation of the RF addressable sensors 110 based on the received data and/or signals.’ Bandy at 6:16-36, Fig. 1; ... Bandy explains that ‘[i]n GPS based geolocation, location is determined using signals provided to wireless sensor readers 140 via geostationary satellites.’ Bandy at 6:16-36, Fig. 1. Bandy also discloses GPS-based geolocation is performed by geolocation processor 353 of wireless sensor reader 340. <i>Id.</i> at 13:6- 20, Fig. 3; ...; <i>see also</i> at Bandy claims 63 and 64 (claiming that ‘geolocation processor includes logic to perform GPS based geolocation’).”	Peeters
Dependent Claim 10: Non-GPS Geolocation Means		
34	“Bandy discloses a geolocation means that has the same or equivalent structure and performs the claimed function—a wireless sensor reader that is a cell phone, that executes non-GPS processing logic. As an initial matter, Bandy discloses this limitation because it incorporates by reference Lovejoy for disclosure relating to geolocation (Bandy at 6:37-41)—the '307 patent also incorporates by reference Lovejoy for disclosure relating to geolocation ('307 patent at 17:21-24). [¶] Further, as discussed above for claim 9, Bandy discloses that the geolocation processor performs non-GPS geolocation in addition to GPS geolocation. Bandy at 6:16-36, 8:41-45, 13:6-20, 17:62-67, Figs. 1, 3, and 8[.]”	Peeters

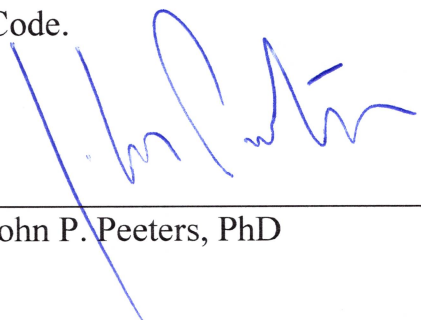
Page No(s).	Petitioner's characterization of the portions of the '803 Patent upon which Petitioner relies	Inventor
Dependent Claim 3: Sensor Integrated into Wireless Skin Patch (Challenge Based on the '803 Patent in View of Heller)		
36-37	"Bandy discloses that when used for 'remote diagnostics monitoring,' a sensor unit including RF addressable sensor is 'affixed to a person (or animal) such that the sensor elements of the RF addressable sensor are proximate to the surface of the skin. RF addressable sensor 1110 may include low power sensors to monitor certain conditions or characteristics such as the individual's vital functions.' Bandy at 19:56-20:10, Fig. 11."	Peeters

24. I have also reviewed the Declaration of Majid Sarrafzadeh (EX-1003) in support of the Petition and, in particular, his discussion of the '803 Patent (including paragraphs 98-105, 120-223). All portions of the '803 Patent upon which Sarrafzadeh relies in his Declaration were solely contributed by me, without any contribution from Dr. Bandy.

25. Dr. Bandy likewise did not contribute to any claims of the '307 Patent, on which I am the sole inventor. As corroborated by Exhibits 2004-2006 (discussed above), I conceived of the inventions claimed in the '307 Patent on or about May 6, 2003.

26. I declare under penalty of perjury under the laws of the United States of America that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true. I further declare that these statements are made with the full knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Executed on April 23, 2024



John P. Peeters, PhD