PUBLIC DOCUMENT

ORIGINAL

UNITED STATES OF AMERICA
BEFORE THE FEDERAL TRADE COMMISSION

In the Matter of	)	
ECM BioFilms, Inc., a corporation, also d/b/a Enviroplastics International	)	**Docket No. 9358**
	)	**PUBLIC DOCUMENT**

COMPLAINT COUNSEL'S OPPOSITION TO RESPONDENT'S MOTION FOR LEAVE TO SERVE SUBPOENA *DUCES TECUM* ON DR. STEPHEN MCCARTHY

Complaint Counsel respectfully opposes Respondent's Motion for Leave to Serve Subpoena *Duces Tecum* on Dr. Stephen McCarthy (the "Motion") because Respondent's Motion fails to establish cause for additional document discovery beyond that already voluntarily provided. ECM's 21 Specifications are not narrowly drawn to produce information that would show bias. Instead, these redundant, unfounded, and overly-broad requests serve to harass the witness.

FACTUAL BACKGROUND

On June 4, 2014, Dr. McCarthy produced his expert report, along with over 150 documents that formed the basis of his opinions in this case. On June 27, ECM elicited approximately six hours of deposition testimony further exploring Dr. McCarthy's basis of opinions and possible biases. Shortly after the conclusion of the deposition, Complaint Counsel provided additional documents identified and discussed during the course of the deposition, including UMass' policy concerning commercialized intellectually property; two patents concerning biodegradable polymers that were licensed by UMass; and a copy of the standard assignment agreement. CCX-A, Email from K. Johnson to respondent's counsel dated July 7, 2014.

Despite this discovery, including Dr. McCarthy's deposition testimony that:

- he had no contact with Steve Mojo of BPI at least in the past year;[1]
- he had done no consulting work for BPI for at least two years;[2]
- he has no other contact with BPI members;[3]
- he has no knowledge that either BPI[4] or Metabolix[5] had any contact with the FTC;
- his earnings related to BPI and Metabolix are limited;[6]
- over 20 years, Metabolix has only funded about $1.7 million in research at UMass;[7]
- he has no knowledge of the specific products made by Metabolix under the licensed patent, he has never seen a finished product, nor any marketing;[8]
- he had seen no document prior to this case related to ECM;[9]
- he receives no personal financial remuneration from project funding accounts where he is principal investigator;[10] and
- he does not have the written assignment agreements regarding the patents—the university has them;[11]

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[1] CCX-B, McCarthy Dep. Transcript (June 27, 2014), at 96:16-17.
[2] *Id.* at 97:23-25.
[3] *Id.* at 96:18.
[4] *Id.* at 100.
[5] *Id.* at 67-68.
[6] Dr. McCarthy testified that the only income has presently earns from biodegradable plastics is through the Metabolix patent, for which he has only earned approximately $28,000 in 12 years, *id.* at 60:13. Moreover, he testified that his income through his certification work at BPI was only about $30,000 over 10 years, *id.* at 97:14-20, not the $40,000 claimed by ECM in its filings. He also identified another approximately $5,000 as an expert witness for Metabolix in two patent infringement cases (in 2002 and 2005), *id.* at 62.
[7] *Id.* at 66.
[8] *Id.* at 66.
[9] *Id.* at 66:18-24.
[10] *Id.* at 54. Dr. McCarthy also explained that, until this year, the research funding he brings into UMass had no bearing on his ability to get an increase in pay. *Id.* at 55:7-12. And, now, at most, he could obtain a ½% increase in his salary for merit. *Id.* 55:13-22.
[11] *Id.* at 58:17-20.

ECM still argues that there must be some documents left uncovered that support its bias theory. The additional document requests are completely untethered from the discovery obtained during the deposition or the course of the case.[12] Without any foundation for additional discovery, there is no cause to warrant Dr. McCarthy scouring his files for additional documents.

LEGAL STANDARD

Respondent is not *entitled* to the additional discovery it requests. Instead, the expert discovery procedures set forth in Rule 3.31A, confirmed in this Court's Order, require Respondent to apply to the Court and *show cause* to expand expert discovery beyond the report and deposition. 16 C.F.R. § 3.31A; Order Denying Without Prejudice Respondent's Motion for Leave to Serve Subpoenas *Duces Tecum* (June 10, 2014), at 3. Rule 3.31A— like its Federal analogue, Fed. R. Civ. P. 26(b)(4)—makes clear that litigants' primary tools for expert discovery must be the expert report and deposition. These limitations are in place to strike a "balance between sufficient expert disclosures and unfettered expert discovery . . . [and] were adopted to limit the undue burden and cost of expert discovery." *Morriss v. BNSF Ry. Co.*, No. 8:13CV24, 2014 U.S. Dist. LEXIS 3757, at *17 (D. Neb. Jan. 13, 2014) (denying certain requests to expand expert discovery beyond that permitted in Rule 26 because defendant failed to show a "compelling reason" for its requests). To justify use of extraordinary expert discovery, therefore, Respondent must show that it lacks information "relevant to the allegations of the complaint, to the proposed relief, or to the defenses" that it could not or did not obtain through the expert report and deposition. *See In the Matter of Basic Research, LLC, et al.*, No. 9318, Order on

[12] During this case, ECM has also issued broad subpoenas to BPI, Dr. Narayan, and Dr. Michel, and yet has not identified a single document demonstrating that Dr. McCarthy had any connection with these entities beyond what it has identified so far.

Complaint Counsel's Second Motion for Protective Order (Dec. 9, 2004), at 4. In this case, Respondent has not made the requisite showing.

ARGUMENT

I. Respondent Has Not Shown Cause for Additional Discovery.

Respondent requests leave to serve a 21-Specification subpoena *duces tecum* on Dr. McCarthy to "assess the full extent of Dr. McCarthy's bias." Motion, at 10. While ECM tries to paint these requests as narrowly tailored, they are not. This additional document discovery lacks cause for three reasons: (1) Complaint Counsel has voluntarily produced responsive documents to many of the specifications already, making those requests redundant; (2) Dr. McCarthy specifically testified he does not have several categories of documents sought in their proposed subpoena; and (3) ECM already has all of the arguably relevant evidence it seeks for the remaining specifications.

a. Responsive Documents Have Already Been Produced

Several of the Specifications in the proposed subpoena call for information and documents that have been in ECM's possession for months. For example, Specification 2 calls for "All documents, materials, correspondence, forms, marketing material, and testing used or reference to form any and all opinions you may offer in this case." Motion, Ex. RX-I, at 3. Similarly, Specification 14 calls for communications with the FTC concerning biodegradable plastics. Of course, pursuant to Rule 3.31A(c), Complaint Counsel already produced a comprehensive set of documents and materials relied upon by Dr. McCarthy in forming the basis for his expert opinion in this matter, including communications with Complaint Counsel.[14] 16

[14] Complaint Counsel also agreed to produce additional documents responsive to Specifications (1), (7), (9), (11), and (18) when it produced its report on June 4, 2014. *See* CCX-C, Complaint Counsel's Response and Objs. to ECM Subpoena.

C.F.R. § 3.31A(c). Respondent has not argued that Complaint Counsel failed to make the required production; indeed, Respondent provides no basis or explanation for these redundant requests.

Additionally, after Dr. McCarthy's deposition, we provided additional documents in Dr. McCarthy's possession that were specifically discussed and identified during his deposition. CCX-A. ECM makes no showing or even suggests that Complaint Counsel's production was incomplete, or that Dr. McCarthy did not adequately search his records for responsive materials.

b. ECM Continues to Request Information Dr. McCarthy Does Not Have.

In addition to calling for documents already in Respondent's possession, ECM's proposed subpoena requests documents that Dr. McCarthy has repeatedly stated he does not have. For example, Specification 10 calls for "All pleadings, expert reports, documents, and correspondence related to any law suit, administrative proceeding, or arbitration in which you served as a consulting witness or expert witness concerning biodegradable polymers and plastics." Motion, Ex. RX-I, at 5. Specification 21 similarly requests, "Regardless of date, if you have ever served as an expert in any other proceeding, copies of all expert reports and testimony given by you in those proceedings." *Id.* at 7.

During Dr. McCarthy's deposition, Respondent thoroughly covered the extent to which Dr. McCarthy possessed documents related to other matters in which he served as an expert witness. CCX-B, Tr. at 7:5-15:11. Dr. McCarthy testified that counsel in all matters except for the Display Technologies matter requested that he destroy the documents in his possession. *Id.* at 14:22-15:4. In light of this testimony, Specification 21 lacks cause. Dr. McCarthy testified under oath that he has no responsive documents except for those related to Display Technologies. Asking him to go back and double-check is a waste of time and resources.

c. ECM Already Has the Evidence It Seeks

Respondent has not shown a need for the information it requests in its proposed subpoena. Indeed, Respondent spends four pages of its eleven-page Motion laying out "substantial" evidence of Dr. McCarthy's alleged bias.[16] Motion at 6-10. Nonetheless, Respondent identifies several categories of documents that it purportedly requires to complete its "bias analysis." At least three of these categories, including "documents and correspondence between Dr. McCarthy and Metabolix, Inc.; Dr. McCarthy's financial interests in his patents that were assigned to UMass; [and] Dr. McCarthy's financial interests in grant or research money paid to him from ECM competitors" were thoroughly explored at Dr. McCarthy's deposition. CCX-B, Tr. at 51:20-69:7. Despite ECM's lengthy and detailed questioning of Dr. McCarthy, ECM does not posit that during the deposition Dr. McCarthy was elusive, or evasive; nor does it identify testimony supporting the existence of additional, responsive documents. ECM provides no basis grounded in the deposition that supports further discovery. ECM motion fails to show cause for its additional discovery requests. *See Behler v. Hanlon*, 199 F.R.D. 553, 562-563 (D. Md. 2001) (allowing additional discovery only after deposition, if it appeared expert witness had been elusive or did not make a good faith effort produce documents in his possession).

CONCLUSION

ECM's Motion articulates no cause for the subpoena to Dr. McCarthy other than a fishing expedition to bolster its flimsy "bias" argument, and to impose time and cost burdens on Dr. McCarthy and complaint counsel on the eve of trial. Respondent has not demonstrated it

[16] ECM dramatically claims that its "effort will not be complete unless and until this Court ensures that ECM's right to document discovery is not denied through administrative action." Motion at 10. Respondent has no such "right," as this Court made it very clear that "issuance of subpoenas by a litigant, *sua sponte*," is not a right afforded by Rule 3.31A. Order Denying Without Prejudice Respondent's Motion for Leave to Serve Subpoenas *Duces Tecum* (June 10, 2014), at 3.

requires additional discovery on this point. Therefore, for the foregoing reasons, the Court should deny ECM's for Leave to Serve Subpoena *Duces Tecum* on Dr. Stephen McCarthy.

Dated: July 17, 2014

Respectfully submitted,

/s/ Katherine Johnson

Katherine Johnson (kjohnson3@ftc.gov)
Jonathan Cohen (jcohen2@ftc.gov)
Arturo DeCastro (adecastro@ftc.gov)
Elisa Jillson (ejillson@ftc.gov)
Federal Trade Commission
600 Pennsylvania Ave., N.W. M-8102B
Washington, DC 20580
Phone: 202-326-2185; -2551; -2747; -3001
Fax: 202-326-2551

CERTIFICATE OF SERVICE

I hereby certify that on July 17, 2014, I caused a true and correct copy of the foregoing to be served as follows:

One electronic copy to the **Office of the Secretary**, and one copy through the FTC's e-filing system (although Complaint Counsel received an error message when attempting to file):

Donald S. Clark, Secretary
Federal Trade Commission
600 Pennsylvania Ave., NW, Room H-159
Washington, DC 20580
Email: secretary@ftc.gov

One electronic copy and one hard copy to the **Office of the Administrative Law Judge:**

The Honorable D. Michael Chappell
Administrative Law Judge
600 Pennsylvania Ave., NW, Room H-110
Washington, DC 20580

One electronic copy to **Counsel for the Respondent**:

Jonathan W. Emord
Emord & Associates, P.C.
11808 Wolf Run Lane
Clifton, VA 20124
Email: jemord@emord.com

Peter Arhangelsky
Emord & Associates, P.C.
3210 S. Gilbert Road, Suite 4
Chandler, AZ 85286
Email: parhangelsky@emord.com

Eric J. Awerbuch
Emord & Associates, P.C.
3210 S. Gilbert Road, Suite 4
Chandler, AZ 85286
Email: eawerbuch@emord.com

I further certify that I possess a paper copy of the signed original of the foregoing document that is available for review by the parties and the adjudicator.

Date: July 17, 2014

/s/ Katherine Johnson
Katherine Johnson (kjohnson3@ftc.gov)
Jonathan Cohen (jcohen2@ftc.gov)
Arturo DeCastro (adecastro@ftc.gov)
Elisa Jillson (ejillson@ftc.gov)
Federal Trade Commission
600 Pennsylvania Ave., N.W. M-8102B
Washington, DC 20580
Phone: 202-326-2185; -2551; -2747; -3001
Fax: 202-326-2551

Complaint Counsel Exhibit A
CCX-A

From:	Johnson, Katherine
To:	Peter Arhangelsky (PArhangelsky@emord.com); Jonathan Emord (JEmord@emord.com); Eric Awerbuch (EAwerbuch@emord.com)
Cc:	Cohen, Jonathan; Jillson, Elisa; Decastro, Arturo
Subject:	ECM Dkt 9358, Subpoena to Dr. McCarthy
Date:	Monday, July 07, 2014 11:36:00 AM
Attachments:	US20110020227[1].pdf US20080234754[1].pdf Easstar Bio.mht IntellecPropertyUML.pdf assignment.pdf

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Peter:

Based on the exploration of most of the various topics that are the basis of your subpoena at Dr. McCarthy's deposition, here are the responsive documents that Dr. McCarthy has in his possession. If there were other specific requests for documents made during the deposition, please let me know. I believe it was limited to (1) biodegradable patents that had been licensed; (2) assignment agreements; and (3) the C-14 testing report for Easstar bio. Dr. McCarthy has requested the executed assignment agreements from the University, but is awaiting a response.

For many of the remaining requests in your subpoena, Dr. McCarthy reported he had no responsive information. If you believe that there is good cause for additional discovery based on the information provided in his report or his deposition, please identify the specific requests and what the basis is for the request. My understanding of the rules and the court's order is that no additional discovery will be provided without good cause.

Katherine

Katherine E. Johnson, Attorney
Division of Enforcement
Bureau of Consumer Protection
Federal Trade Commission
600 Pennsylvania Avenue, NW
Mail stop M-8102B
Washington, DC 20580
Direct Dial: (202) 326-2185
Fax: (202) 326-2558
Email: kjohnson3@ftc.gov

Complaint Counsel
Exhibit B
CCX-B

In the Matter of:

ECM BioFilms, Inc., et al.

June 27, 2014
Stephen McCarthy, Ph.D.

Condensed Transcript with Word Index

For The Record, Inc.
(301) 870-8025 - www.ftrinc.net - (800) 921-5555

FEDERAL TRADE COMMISSION
I N D E X

FEDERAL TRADE COMMISSION

In the Matter of:)
ECM BioFilms, Inc.) Docket No. 9358
)

Friday, June 27, 2014

Federal Trade Commission
Constitution Center
400 7th Street, S.W.
Washington, D.C. 20024

The above-entitled matter came on for investigation hearing, pursuant to notice, at 9:00 a.m.

APPEARANCES:

ON BEHALF OF THE FEDERAL TRADE COMMISSION
Katherine Johnson, Esquire
Federal Trade Commission
600 Pennsylvania Avenue, N.W.
M-8102B
Washington, D.C. 20580

ON BEHALF OF ECM BIOFILMS, INC.
Jonathan Emord, Esquire
Emord & Associates
11808 Wolf Run Lane
Clifton, Virginia 20124

P R O C E E D I N G S

STEPHEN McCARTHY, Ph.D.,
being first duly sworn to tell the truth, the whole truth, and nothing but the truth, testified as follows:

MR. EMORD: This is before the Federal Trade Commission in the matter of ECM Biofilms, Inc., Public Docket 9358. This is the deposition of Dr. Stephen T. McCarthy. Shall we take the appearances of counsel?

MS. JOHNSON: Katherine Johnson for complaint counsel.

MR. EMORD: Jonathan Emord for ECM Biofilms.

EXAMINATION BY MR. EMORD:

Q. Now, Professor McCarthy, have you ever been deposed before?

A. Yes.

Q. How many times have you been deposed?

A. I would say approximately ten.

Q. Ten times?

A. Yes.

Q. Have you ever been deposed in a proceeding involving the Federal Trade Commission?

A. No.

Q. You understand then probably from your experience as a deponent that you are required to testify truthfully, and the understanding is that truth is not only the avoidance of a false statement, but also ensuring that you don't omit a material statement that is material to your answer. Do you understand that?

A. Yes.

Q. Now, if at any point during this deposition you wish to take a break, just indicate to me and we'll do it. The only requirement that I have for that is that if it's during the pendency of a question, you answer the question first before we take a break. But you should feel free at any point in time, if you need to use the restroom or replenish the water supply that you have, or anything else, you can certainly do that.

Are you on any medication that could affect your cognitive function?

A. No.

Q. And you have no physical disability that might in any way affect your cognitive function?

A. No.

Q. So you do not have a physical disability or mental disability that would affect your ability to testify here today?

MS. JOHNSON: Objection. Compound.

A. That's correct.

Q. Have you ever testified as an expert before?

A. Yes.

Q. And in how many proceedings have you testified as an expert before?

A. I'd say about seven.

Q. In those proceedings, were you appearing on behalf of specific corporations?

A. Do you mean was I representing some corporations?

Q. Actually, whether counsel for one of the parties happened to -- that called you happened to represent a corporation?

MS. JOHNSON: Objection. Vague.

Q. You can answer.

A. Yes.

Q. We'll get into the names of those corporations in just a second. When objections are made in the course of a deposition, it's routine. If an objection goes to privilege, you may be instructed not to answer. I don't want you

to answer a question if your counsel objects on the basis of privilege.

If she objects on other bases, under the Federal Rules, you are required to answer, unless she specifically instructs you otherwise, and we might discuss that. So if she registers an objection, you can continue to respond. Okay?

A. Okay.

Q. Now, can you name for me the corporations that were parties to the case, upon whose behalf you appeared?

A. I don't remember all of them.

Q. Can you tell me the ones you do remember?

A. One of them was EarthShell.

Q. EarthShell?

A. Yes. One of them was Lifetime. One of them was Hasbro. One of them was Metabolix. One of them was Biotech, I believe. One of them was Hasbro. One of them was National Starch. One of them was Evenflo. One of them was Display Technologies. I think that's all I can remember right now.

Q. Of the ones that you remember, which ones are in the business of selling products that are biodegradable?

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A. EarthShell, Metabolix, Biotech, National Starch.
Q. Now, how many times did you appear as an expert witness for Metabolix?
A. Twice.
Q. Do you remember the names of those cases?
A. The names of the --
Q. Parties.
A. Procter & Gamble.
Q. In both cases, it was Procter & Gamble?
A. Yes.
Q. You testified as an expert there. Did you testify as to issues related to biodegradability?
A. It was a biodegradable polymer, but the matter was composition -- it was a patent invalidity proceeding in Europe.
Q. And what patent did that involve?
A. It was a patent by Procter & Gamble.
Q. Have you produced the complaint, answer, other material related to that proceeding to complaint counsel?
A. No.
Q. Do you possess any of that material?
A. No.

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Q. So you have no written material whatsoever related to the Procter & Gamble suits that you just mentioned?
A. No. I was asked to destroy it.
Q. Do you have an expert report that you retained from those proceedings?
A. No.
Q. Do you remember what you testified about in those proceedings?
A. Again, it was a claim that, my testimony was that it was not novel.
Q. Did you testify as an expert on the issue of biodegradability in the EarthShell proceeding?
A. That was a biodegradable polymer, and it was a patent infringement case.
Q. Did it involve your patent?
A. No.
Q. Or one of your patents? Did you testify as to biodegradability?
A. It involved a biodegradable polymer, but the basis of the case was on the composition matter patent infringement.
Q. But did you testify as to biodegradability in the case?
MS. JOHNSON: Objection. Vague.

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A. I don't think so.
Q. You again testified as to novelty and that sort of thing?
A. Yes.
Q. Do you have copies of those case documents, complaint, answer?
A. No.
Q. Do you have a copy of your expert report in that proceeding?
A. No.
Q. Were you asked in that proceeding as well to destroy the documents?
A. Yes.
Q. Concerning the Biotech case, did that deal with biodegradability?
A. It was a biodegradable polymer.
Q. Did you testify as to biodegradability in that case?
A. I don't believe so.
Q. Did you produce an expert report in that case?
A. Yes.
Q. Do you still possess the expert report?
A. No.
Q. Were you asked to destroy the report?

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A. Yes.
Q. Do you have any documents related to the case?
A. No.
Q. Were you asked to destroy those documents?
A. Yes.
Q. In the National Starch case, did you testify concerning the biodegradability of a polymer?
A. I don't believe so.
Q. What did you testify about in the National Starch case?
A. In the National Starch case, it was a, sort of a production damages lawsuit.
Q. Do you have any of the paperwork associated with that case?
A. No.
Q. And you don't have your expert report?
A. No.
Q. And in this case as well, you were asked to destroy them?
A. Yes.
Q. Were the same lawyers representing all of these parties?

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A. No.
Q. All different law firms?
A. The Biotech and the EarthShell were the same lawyers.
Q. Who were the lawyers who represented the party that you testified on behalf of in those two cases, EarthShell and Biotech?
A. Workman Nydegger.
Q. N-i-d-e-g-g-e-r?
A. I think there's a Y.
Q. N-Y-G?
A. N-Y-D.
MS. JOHNSON: Can we go off the record for a second, so I can let my law clerk in?
MR. EMORD: Sure. Off the record.
(Off the record.)
BY MR. EMORD:
Q. So you said that Workman Nydegger represented EarthShell and who else?
A. Biotech.
Q. And then for Metabolix, who represents them?
A. I don't recall.
Q. You don't recall?
A. I don't recall. It was someone from

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England.
Q. And then with regard to National Starch?
A. It was Dan Guadaloupe, I believe.
Q. Do you remember the firm?
A. I don't remember the firm. It was something Harris. It was in New Jersey.
Q. And then Evenflo, did that involve issues of biodegradation?
A. No.
Q. What was that about?
A. That involved a product liability case.
Q. Dealing with what kind of a product?
A. It was a child's car seat.
Q. And then the Display Technologies case, did that deal with biodegradable polymers?
A. No.
Q. What was that about?
A. That was about a patent infringement.
Q. What product?
A. It was a molded carrier of soda to be used for displaying in convenience stores.
Q. In any of these cases that we've discussed, EarthShell, Lifetime, Hasbro, Metabolix, Biotech, National Starch, Evenflo and Display Technologies, do you possess the expert

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reports that you produced in those proceedings?
A. For Display Technologies.
Q. That's the only one?
A. That is the only one.
Q. In all other instances, were you asked by counsel to destroy the documents?
A. Yes.
Q. Including all of the case documents related to the complaint, the answer, and any other documents in the proceeding?
A. Except for the Display Technologies.
Q. Let's take a look at your CV and your expert report. Your CV is attached to your expert report. We're going to mark it for identification as Respondent's Exhibit 1, and I'll give you a copy.
(Whereupon, Respondent's Deposition Exhibit No. 1, expert report and attached CV, marked.)
BY MR. EMORD:
Q. Keep it next to you, because we'll be referring to it throughout the deposition. Now, you're a professor of plastics engineering at the University of Massachusetts Lowell, correct?
A. Yes.

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Q. And you're a tenured professor, right?
A. Yes.
Q. When did you become tenured?
A. I believe it was 1987 or `88.
Q. Are you a biochemist?
A. No.
Q. Are you a polymer material chemist?
A. I have training in polymer chemistry.
Q. Would you consider yourself a polymer material chemist?
A. I'm not sure what that means.
Q. Okay. But you have training in polymer chemistry?
A. Polymer chemistry, yes.
Q. Academic training?
A. Yes.
Q. Explain it to me, if you will.
A. I have a -- during my Ph.D., I took courses in polymer chemistry.
Q. Do you remember what those courses are, by any chance?
A. Polymer synthesis.
Q. What university?
A. Case Western Reserve University.
Q. Was this for -- this you said was for

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your Ph.D. Any other courses?
A. Yes. There was a course in polymer characterization.
Q. Material --
A. No. Polymer characterization.
Q. Any others?
A. There was a course in polymer physics. I also took two polymer courses for my master's degree.
Q. What were those?
A. One was mechanical properties of polymers. One was a polymer chemistry course.
Q. Any others?
A. Specifically in polymer chemistry?
Q. Correct.
A. In my undergrad, I took a course in polymer chemistry.
Q. What university?
A. Southeastern Massachusetts University.
Q. Any other courses?
A. In my undergrad, I took a course in textile chemistry.
Q. Any other courses?
A. Possibly.
Q. You can't remember at this point?

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A. It's been a while.
Q. I appreciate it. It's hard to remember all of these things over a long period of time. Are you a microbiologist?
A. No.
Q. Do you consider yourself an expert in the types of microorganisms that exist in landfills?
A. No.
Q. Do you consider yourself an expert in the formation of microorganism colonies in landfills?
A. No.
Q. Do you consider yourself an expert in the types and kinds of biochemical reactions produced by microorganisms in landfills?
A. I've done research in enzymatic degradation.
Q. Do you consider yourself an expert in enzymatic degradation?
A. I consider myself knowledgeable.
Q. But an expert?
A. Possibly.
Q. Now, the document that we've marked for identification as Exhibit 1, which appears to be your expert report, is that your expert report in this proceeding? You can take a look and make

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sure it's not missing pages.
A. Do you want me to go through this too?
Q. Just skim through it. Make sure it's your list of publications. You've completed your review of the document?
A. Yes.
Q. Is it a true and correct and complete copy of your expert report in this proceeding, to the best of your knowledge?
A. Yes.
Q. Now, did you draft every sentence in Exhibit 1?
MS. JOHNSON: Objection. You can answer.
A. The report was a collaborative effort between myself and complaint counsel.
Q. Can you show me content that was not drafted by you in the document? Can you go through and help me see which content was not your draftsmanship?
MS. JOHNSON: Objection. Asked and answered.
A. It was a collaborative effort that took place over many drafts, and so I agree -- I've reviewed it. I agree with the wording. And I don't know which ones I didn't draft.

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Q. So you don't -- even if you were to look at sentence by sentence, you're telling me that you could not tell whether it was content you drafted that -- excuse me -- content you drafted versus content that was drafted by someone else that you reviewed? Can you distinguish those two as we go through piece by piece or not?
A. I can say that I drafted a lot of this, and that there were multiple revisions, and that I agree with everything in here.
Q. Take, for example, footnote 1 in the document, which is on page 5. Who drafted footnote 1?
MS. JOHNSON: Objection.
A. This would have been a collaborative effort between myself and complaint counsel.
Q. Can you identify the content in footnote 1 that you drafted, to the best of your recollection?
A. No.
Q. Now, I'm going to have the court reporter excerpt the text of footnote 1 from page 14 -- excuse me -- from page 5 of the expert report, and place it in the transcript at this point for reference.

"Complaint Counsel asked me to assume that the unqualified marketing claim 'biodegradable' means that the entire treated plastic will completely break down and return to nature (i.e., decompose into elements found in nature) within one year after customary disposal (i.e., incinerator, landfill, or recycling). I use this definition and the scientific definition of biodegradable interchangeably in this Expert Report, because there is no substantive difference between the two that affects my analysis or my opinions."

Before complaint counsel asked you to use the definition of biodegradable -- first let me ask you, did complaint counsel ask you to use the definition of biodegradable that appears in footnote 1?

MS. JOHNSON: Objection. You can answer to the extent it doesn't get into our privileged communications.

A. This was the definition that I used with respect to this case.

Q. Let me understand that. You're saying this is the definition in footnote 1 that you used in this case. You did say in this case. You

don't use this in the outside world?

MS. JOHNSON: Objection. Mischaracterizes his testimony.

A. This was a specific marketing claim.

Q. That's not my question. My question is whether the definition of biodegradable that you include in footnote 1 of your expert report is a definition that you use only in this case, or that you use commonly or elsewhere outside of the case?

MS. JOHNSON: Objection.

Q. Do you know the distinction I'm drawing here? Do you understand?

A. No.

Q. Have you used the definition of biodegradable in footnote 1 anywhere else other than in this expert report?

A. Yes, I could use it in other cases.

Q. I didn't ask you whether you could. I asked you whether you have. Have you ever used the definition of biodegradable in footnote 1 in any other matter than this case, this report?

A. Any other legal case?

Q. No, any other matter, legal case or publication, anywhere. I'm asking you anywhere, other than in this case, can you cite for me proof

that you have used the definition of biodegradable that is contained in this expert report at footnote 1?

A. Perhaps.

Q. Perhaps. Okay, go ahead. Tell me where else you used the definition.

A. It may have been used in one of my papers.

Q. One of your papers?

A. Yes.

Q. What paper?

A. I'm just saying that -- of the publications.

Q. Do you know whether you used it in another paper?

A. It's possible.

Q. If I told you that I've read the papers that are appended to your CV and your Exhibit 1, and I did not see the definition contained in footnote 1 replicated there anywhere, do you think I'm mistaken?

A. Are you saying word for word the exact definition?

Q. Yes.

A. Or just the one here?

Q. Let's start word for word first.

A. Word for word, it's possible you're not mistaken.

Q. It's possible I'm not mistaken. And then let's take it up with the one year, the one-year limitation that exists in footnote 1, did you ever put a one-year limitation on the definition of biodegradation in any other instance in which you define the term in any publications?

A. Possibly.

Q. If I told you I've read your publications and I did not see a one-year limitation in association with the definition of biodegradation, would I be incorrect?

A. Possibly.

Q. You don't know?

A. I don't know.

Q. How about the limitation that exists there phrased in the terminology completely break down and return to nature, that is, decompose into elements found in nature, did you ever use that language or comparable language, complete breakdown, in any other definition of the term biodegradable that you've used in any context other than this report?

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MS. JOHNSON: Objection.
A. Again, possibly.
Q. Now, if I told you that I've read all of your papers that are listed in your listing of publications and I did not see a single instance in which the term biodegradable or biodegradation or biodegrade has been defined using language that includes the caveat within one year after customary disposal -- excuse me, uses the caveat will completely break down and return to nature, that is, decompose into elements found in nature, within one year after customary disposal, that is, incinerator, landfill or recycling, but I have not seen that language in any instance in which you have used the term biodegradation or biodegradable or biodegrade in any of your publications, would I be mistaken?
MS. JOHNSON: Objection.
A. You asked me just about the completely break down.
Q. Let's back up. We'll break it into elements. We talked about one year. Now, let's take the other part, will completely break down and return to nature, that is, decompose into elements found in nature.

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MS. JOHNSON: Objection. What's the question?
Q. Using that language, have you used that very language in the definition of the term biodegrade, biodegradation, biodegradable, in any definition appearing in any publication other than in this expert report?
A. And you're including all of the theses and dissertations?
Q. Yes.
A. I believe that similar language is in there.
Q. But the exact language is not?
A. Possibly.
Q. If I told that you I've read the papers that you have listed in your CV and that I did not see in any of those papers the use of that language, will completely break down and return to nature, that is, decompose into elements found in nature, would I be mistaken?
A. The exact language or similar language?
Q. Let's start with the exact language.
A. Possibly.
Q. Similar language?
A. Similar language, I would say probably you're mistaken.

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Q. We'll get into this a little more. With regard to the last part of it, within -- after customary disposal, that is, incinerator, landfill or recycling, have you ever used that language in the definition of biodegrade, biodegradable or biodegradation, in any publication, other than in this expert report?
A. Exact or similar?
Q. Exact.
A. Possibly.
Q. And if I told you that I've read all of your publications, and I do not see that language in any definition of the term, would I be mistaken?
A. Possibly.
Q. Now, in this expert report at footnote 1, the first sentence reads: Complaint counsel asked me to assume that the unqualified marketing claim "biodegradable" means, and so on. Is that a true and correct statement?
A. Yes.
Q. And do you stand by the definition in footnote 1?
MS. JOHNSON: Objection.

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A. Yes.
Q. You would not today have any basis or reason to change it in any way?
MS. JOHNSON: Objection.
A. Not right now.
Q. Now, if we start with the assumption that biodegradable means that the entire treated plastic will completely break down and return to nature, that is, decompose into elements found in nature, within one year after customary disposal. We'll start with that, just stated here. Is it true that if only 95 percent of a treated plastic breaks down and returns to nature, that plastic is not biodegradable?
MS. JOHNSON: Objection.
A. In what time frame?
Q. Let's say it happens within a year, but it's only 95 percent.
A. So it could be that if it's say six months at 95 percent, that --
Q. Let's say 364 days, and it's 95 percent, does it satisfy your definition of complete -- excuse me -- of biodegradable in footnote 1?
A. That would not satisfy the definition.
Q. Let's say that it biodegraded to 95

percent on 364 days, but on 366 days it went to 100 percent, would that satisfy the definition in footnote 1?

A. Possibly.

Q. Assuming that on day 365 it was only 95 percent still, but on day 366 it became 100 percent, would that satisfy the definition of biodegradable in footnote 1?

A. That wouldn't satisfy the exact definition.

Q. Now, can you cite for me today any peer-reviewed journal article that takes the position that if 100 percent of a treated plastic breaks down and returns to nature after a year, the treated plastic is not biodegradable?

A. Are you talking about a -- talking about a marketing claim?

Q. No. We're talking about a peer-reviewed journal. I'm asking if you are aware, can you cite for me today, any peer-reviewed journal article that takes the position that if 100 percent of a treated plastic breaks down and returns to nature after a year, the treated plastic is not biodegradable?

MS. JOHNSON: Objection.

A. I know of limitations concerning combustibility.

Q. That's not the question. My question is whether you know and can cite for me today a peer-reviewed journal article that takes the position that if 100 percent of a treated plastic breaks down and returns to nature after a year, the treated plastic is not biodegradable?

A. I don't know.

Q. Is there any evidence in the peer-reviewed journals that 100 percent of any treated plastic, including plastics made with your own patent '199, breaks down and returns to nature 100 percent?

A. What do you mean by my own patent?

Q. Your own patent, the '199 patent.

MS. JOHNSON: Objection. Foundation.

Q. We're going to get into that in a little bit. Let's exclude that. Let me rephrase the question for you and make it simple.

Is there any evidence in the peer-reviewed journals that 100 percent of any treated plastic breaks down and returns to nature?

MS. JOHNSON: Objection.

A. Any evidence that if 100 percent breaks

down and returns to nature?

Q. Correct.

A. Within one year?

Q. No. Ever. 100 percent. In the peer-reviewed literature, can you cite me a publication that stands for the proposition that 100 percent of any treated plastic breaks down and returns to nature, 100 percent?

A. I know of tests that have shown that.

Q. Wasn't there always some residual that doesn't break down?

A. I mean, there's biomass, and biomass is found in nature.

Q. But isn't there some residual, some residual, that doesn't break down completely --

MS. JOHNSON: Objection. Asked and answered.

Q. -- and return to nature?

A. Not for something like polylactic acid. There would be publications concerning --

THE REPORTER: I didn't hear the beginning of your answer.

A. I'm sorry. I don't remember the --

Q. You said polylactic acid could break down 100 percent with no residual, right?

MS. JOHNSON: Objection. Mischaracterizes his testimony.

Q. What form of plastic did you just mention that you said could break down 100 percent and return to nature?

A. Polylactic acid.

Q. Any other plastic that can break down 100 percent and return to nature?

MS. JOHNSON: Objection. Vague as to plastic.

A. I would say probably amylose.

Q. Any others?

A. Probably polydioxanone.

Q. How about PET?

A. I don't know of any publication that would say PET would.

Q. Now, in footnote 1 you write, and I'll quote from it, the last sentence, I use this definition and the scientific definition of biodegradable interchangeably in this expert report, because there is no substantive difference between the two that affects my analysis or my opinions, right? That's what you wrote?

A. That is correct.

Q. And what is the scientific definition of

biodegradable?
A. With respect to this marketing claim?
Q. No. What is the scientific definition of biodegradable that you use in your publications?
A. I'm using this one based on the marketing claim.
Q. That's not my question. My question is: What is the scientific definition of biodegradable you use in your scientific publications?
A. It would be probably the breakdown of the polymer chain by microorganisms.
Q. Is that it, full definition?
A. I probably use other parts.
Q. Did you use completely break down into -- completely break down and return to nature in your definitions that you published?
MS. JOHNSON: Objection.
A. Possibly.
Q. You don't remember?
A. I don't remember every word I wrote in all of my publications at this time.
Q. We'll get to that. Let's take a look at what we'll mark for identification as Exhibit 2, which is one of those publications, a chapter in a book called Biodegradable Polymers?

(Whereupon, Respondent's Deposition Exhibit No. 2, chapter 9 in Plastics and the Environment, marked.)
MR. EMORD: Off the record.
(Off the record.)
BY MR. EMORD:
Q. We've placed before the witness a document that we've marked as Respondent's Exhibit 2 from a book called Plastics and the Environment, and it is a chapter 9 entitled Biodegradable Polymers. It says the author, Stephen P. McCarthy, Department of Plastics Engineering, University of Massachusetts at Lowell. Is that your article, sir?
A. Yes, I believe so.
Q. Have you ever written in a peer-reviewed article or chapter in a book that biodegradable -- that the definition of biodegradable varies greatly?
MS. JOHNSON: Are you referring to something specific in here?
Q. Just generally now, starting out with a general question. Did you ever write in an article in a peer-reviewed publication or a book that the definition of biodegradable varies

greatly?
A. Are you referring to this book?
Q. I'm asking you, the universe of all the books and publications you've written, have you ever stated that the definition of the term biodegradable varies greatly?
A. Without the peer-reviewed? This one says that, but this was not peer-reviewed.
Q. Did you write this?
A. Yes.
Q. And it says, does it not, in the first sentence, the definition of biodegradable polymer varies greatly among scientists, manufacturers, and consumers, right?
A. Yes.
Q. You wrote that?
A. Yes.
Q. You wrote that in 2003?
A. This was published in 2003. I might have written it earlier than that. I'm not sure.
Q. And then in that same first paragraph, you give an ASTM definition for biodegradable, right?
A. Yes.
Q. And, as I see it here, there is no

reference to a one-year limit in that definition; is that true?
A. That's true.
Q. And in this definition that you list here from ASTM, there is no language in the definition that says completely break down and return to nature, that is, decompose into elements found in nature, right?
A. It says complete mineralization.
Q. Now, the quoted language from the ASTM, does that include the language complete mineralization in this page?
A. I don't see it in this portion of the definition.
Q. Now, do you know whether other scientists share the view you wrote in Exhibit 2, that the definition of biodegradable varies greatly among scientists, manufacturers, and consumers?
A. You're saying, do I know of any other scientists who share this?
Q. I'm sorry. I'll rephrase the question for you. Do you know whether other scientists share the view you wrote in Exhibit 2 here, that the definition of biodegradable varies greatly among scientists, manufacturers, and consumers?

A. As of --
Q. Today.
A. As of today?
Q. Yes.
A. Possibly.
Q. Let's go back a little bit to your CV. Now, if you look at just page 4 of your report --
A. Of my report or my CV?
Q. Sorry. Let's look at your report first, page 4 of your report, Exhibit 1. You list there that you are the editor of the Journal of Polymers and the Environment, right?
A. Yes.
Q. How long have you been the editor of The Journal of Polymers and the Environment?
A. The journal started out with a different name.
Q. What name was that?
A. I believe it was Journal of Polymer Degradation.
Q. When was that?
A. I'm not sure exactly.
Q. Approximately when?
A. The name change?
Q. No. Let's back up. When you first

became the editor of The Journal of Polymer Degradation.
A. Can I look at my CV?
Q. Sure.
A. 1991.
Q. Have you been the editor of The Journal of Polymer Degradation or The Journal of Polymer and the Environment consistently since 1991?
A. Yes.
Q. To the present?
A. Yes.
Q. What do you do as editor?
A. Currently?
Q. Let's say since 2000.
A. So there is roughly 30, around 30 submissions of publications that are submitted every week. And I review them and narrow it down to the best ones, which are probably around five or six. And then those are sent out to reviewers to review under the peer-review system. And then the reviewers' critiques come back, and it's either accepted for publication, rejected for publication, or sent back for modification.
Q. Who makes the determination of whether it's accepted for publication?

A. It would be my decision, but it would be based on the reviews.
Q. I understand. I'm going to show you an article that we copied from the journal published on June 29, 2011. We'll mark this as Exhibit 3.
(Whereupon, Respondent's Deposition Exhibit No. 3, Biodegradable Polymers - A Review on Recent Trends and Emerging Perspectives, marked.)
BY MR. EMORD:
Q. Do you recognize this article?
A. I recognize it as being an article in the journal.
Q. This is the journal that you edit?
A. That's correct.
Q. You would have seen the manuscript of this publication?
A. Yes.
Q. You would have approved it for publication in the journal?
A. Again, based on the peer review.
Q. But it wouldn't appear in the journal without your approval?
A. That's correct.
Q. If you'll turn to page 638, under the

heading definition of biodegradation in the left-hand column. Do you see that?
A. Yes.
Q. I'm going to have the court reporter excerpt from this page, under the title Definition of Biodegradation, the first two -- excuse me -- the entire paragraph, the first entire paragraph under the heading Definition of Biodegradation, and place it at this point in the deposition transcript.
"The various definitions of biodegradation depend on the field of application of the polymers (biomedical area or natural environment). Many different definitions have officially been adopted, depending on the background of the defining standard organizations and their particular interests. Van der Zee and Seal (11, 12) review all of the definitions found in different standards. Albertsson and Karlsson (13) defined biodegradation as an event that takes place through the action of enzymes and/or chemical decomposition associated with living organisms and their secretion products. It is also necessary to consider abiotic reactions like photodegradation, oxidation and hydrolysis, which

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may alter the polymer before, during or instead of biodegradation because of environmental factors. So, strictly speaking, 'biodegradation of a polymer' is defined as the deterioration of its physical and chemical properties and a decrease of its molecular mass down to the formation of CO2, H2O, CH4, and other low molecular-weight products under the influence of microorganisms in both aerobic and anaerobic conditions aided by abiotic chemical reactions like photodegradation, oxidation and hydrolysis (14)."

Now, as editor of the journal, did you ever tell the authors that you thought the section entitled Definition of Biodegradation should be changed in any way?

A. No, because I was not a reviewer.

Q. But you approved the article for publication, I think you said?

A. Based on the reviews.

Q. Now, did you tell the authors that they ought to alter the section entitled Definition of Biodegradation to specify that the term required complete breakdown and return to nature within one year of customary disposal?

MS. JOHNSON: Objection.

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A. If any of the reviewers had changes that they wanted made, I would have then relayed that to the -- and in order for it to be accepted, I would have relayed that back to the author. So that could be construed as me asking the author to make changes.

Q. But did you specifically ask either the authors or any of the reviewers to include within the definition of biodegradation the requirement that there be a complete breakdown and return to nature within one year of customary disposal?

A. No.

Q. Let's take look at another article of yours that is entitled Biodegradability and Miscibility of Blends Containing Poly(Hydroxybutyrate-co-Hydroxyvalerate) in the ANTEC 90 journal at 1439.

MR. EMORD: We'll mark this as Exhibit Number 4.

BY MR. EMORD:

Q. We're going to skip that for the moment. What is PET?

A. Do you mean what does the abbreviation PET stand for with respect to a polymer?

Q. Right.

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A. Polyethylene terephthalate.

Q. In your report, as I understand it, you say that PET is not biodegradable, correct?

A. Do you want me to check?

MS. JOHNSON: Are you referring to something specific?

Q. Do you consider PET biodegradable?

A. I do not consider PET to be biodegradable in normal composting.

Q. Is there any additive that you know, made by any company, that causes PET to become biodegradable?

MS. JOHNSON: Objection. What do you mean by biodegradable? What definition are you using?

A. I don't think so.

Q. Now, how much have you been paid by the FTC in this proceeding?

A. So far?

Q. Yes.

A. $7500.

Q. And what is your financial arrangement with the FTC?

A. It is $100 per hour, plus the deposition, which is something higher.

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Q. You're the director of the U Mass Lowell Bioplastics Institute and Medical Plastic Research Center, right?

A. Bioplastics and Medical Plastic Research Center, yes.

Q. With your permission, so I don't have to say that entire name and all of its parts every time I'm referring to it, shorten that to Bioplastics Research Center or Research Center. Is that okay?

A. Yes.

Q. So that we're both on the same page, if I use the term Bioplastics Research Center or Research Center, I'm referring to the U Mass Lowell Bioplastics Institute and Medical Plastics Research Center, okay?

A. Okay.

Q. Now, when was the Bioplastics Research Center established?

A. You're talking the bioplastics and medical plastics?

Q. Yes.

A. Do you want me to go through the history of --

Q. No.

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A. I would say two and a half years ago.
Q. 2011?
A. Yes.
Q. Now, you created it, right?
A. Yes.
Q. Does the Research Center include members?
A. Yes.
Q. What companies are industry members?
A. Metabolix, Echo Verde -- let me back up. There aren't really members.
Q. What are there?
A. There are companies that sponsor research.
Q. So these are the companies that sponsor research, Metabolix, Echo Verde. Who else?
A. MMM, Densified Solutions. Are you talking about just the bioplastics and medical plastics?
Q. Correct.
A. There might be some others.
Q. What's the annual operating budget of the center?
A. I'm not sure exactly.
Q. That's all right. A close approximation.
A. About $70,000 a year. I mean, that's

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total. That's what the university gets.
Q. I'm going to have you take a look at a document from Mass Lowell.
MR. EMORD: We'll mark this as exhibit.
(Whereupon, Respondent's Deposition Exhibit No. 4, document entitled Center for Biogradable Polymer Research at UML, marked.)
BY MR. EMORD:
Q. Now, do you recognize this document?
A. Yes.
Q. To your knowledge, is it accurate in its description of the Research Center?
A. No.
Q. It's not accurate. Where is it inaccurate?
A. This is not the Research Center.
Q. This is another center, Biodegradable Polymer Research Center is not the same as the center we were just talking about?
A. Right. That's why I asked you if you wanted me to go through the history.
Q. I appreciate that. This is a predecessor to it?
A. This is a predecessor to it.
Q. Now the history. When was the

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Biodegradable Polymer Research Center established?
A. I believe it was `93.
Q. 1993. Did you establish the center?
A. I established it with a colleague.
Q. Who is the colleague?
A. Richard Gross.
Q. He was your mentor?
A. Is that a question?
Q. Yes.
A. No.
Q. You studied in collaboration with him?
A. No.
Q. He has a background in biochemistry, right?
A. In chemistry.
Q. And he wrote articles in which you were also the co-author, right?
A. Yes.
Q. He did research on polymers, right?
A. Yes.
Q. And you worked with him on that research and published with him on that research. Were you the more junior person in that association?
MS. JOHNSON: Objection.
A. No.

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Q. You were the senior person?
A. Yes.
Q. When did he retire?
MS. JOHNSON: Objection. That assumes facts not in evidence.
Q. Has he not retired? Is he still at U Mass?
A. No, he's not at U Mass.
Q. But he's at another institution now?
A. Yes.
Q. What institution is that?
A. Rensselaer Polytechnic Institute.
Q. In France?
A. In Troy, New York.
Q. How much was the annual budget of the Biodegradable Polymer Research Center?
A. In what year?
Q. `93 to 2011?
MS. JOHNSON: Objection.
Q. Annual operating budget.
A. It varied.
Q. Give me the range.
A. I would say it varied from $30,000 to possibly maybe close to $200,000.
Q. A year?

A. Per year.
Q. Is Exhibit 4 a complete and accurate description of the Biodegradable Polymer Research Center, do you think?
A. It looks like this was a description as of 2008.
Q. And as of that year, is it accurate?
MS. JOHNSON: Objection.
A. I believe so.
Q. Let's take a look at another one of these. This one is an updated version. No. This one is the preceding version. We'll find out. We'll mark this as Exhibit 5.
(Whereupon, Respondent's Deposition Exhibit No. 5, document entitled Center for Biogradable Polymer Research at UML, marked.)
BY MR. EMORD:
Q. Can you tell me what is the, if you know, what is the year, this one, of this document? The other one was 2008.
MS. JOHNSON: Is this an excerpt of something? Where is the rest of the document?
MR. EMORD: He can tell us.
MS. JOHNSON: It's your exhibit.
MR. EMORD: This is all we have. I

don't -- I have these two documents. Whether there are other documents related to it, I'm sure there probably are.
MS. JOHNSON: Did you pull this off the website?
MR. EMORD: It's in our discovery materials. That's all I know.
MS. JOHNSON: There's no Bates number on it.
MR. EMORD: Right.
A. I'm not sure what this is.
Q. You don't know what year it is?
A. I mean, there is an indication that it's 2007.
Q. Is this an accurate description of the functioning and purpose of the center, that is, Exhibit 5?
A. At that time?
Q. At that time, roughly 2007/2008.
A. I'm not sure.
Q. You say in 2011 the center changed its name?
A. Yes.
Q. And is the purpose of the center since 2011 the same as it had been previously, or has it

changed?
A. In 2011, we expanded it to include medical plastics.
Q. So prior to that time, it didn't include medical plastics?
A. Not officially.
Q. Any other change of note in 2011 from the prior functioning of the organization?
A. Yes. It was a new location.
Q. Previously, it was located where?
A. 333 Aiken Street.
Q. And now it's located?
A. 1001 Pawtucket.
Q. Did you expand the size of the facility?
A. No.
Q. Roughly the same size?
A. No.
Q. Smaller?
A. Yes.
Q. What is your salary as a professor at U Mass?
A. Approximately $150,000.
Q. Do you have any other income related to biodegradable plastics?
A. In terms of anything?

Q. Anything.
A. The royalty.
Q. Royalty income from?
A. From a patent that's owned by the university.
Q. Now, you have been responsible for bringing several research grants to U Mass Lowell, right?
A. Yes.
Q. And as I understand it, it is the policy of U Mass Lowell, when a professor brings in a grant, to assign a portion of that grant money to do the research. That's the vast majority of it?
MS. JOHNSON: Objection. What's the foundation?
MR. EMORD: He can answer.
Q. The vast majority of it goes to the Research Center or whatever, the fund for the research. And then a portion goes to the university. Do I have that right? Correct me if I'm mistaken.
A. Let me maybe recharacterize the statement so that it's more factual.
Q. Thank you.
A. So there is, the total amount of the

money is split between direct costs and indirect costs. So there's an overhead rate of 54 percent that's applied to the research monies on the majority of grants.

Q. Now, the overhead rate, that goes to the university?

A. The university.

Q. And the remainder of the 100 percent, the --

MS. JOHNSON: 46.

Q. The 46 percent.

A. The remainder is spent on the research.

Q. Now, it goes into a research fund, right?

A. No.

Q. What account receives that 46 percent?

A. The project account.

Q. Who controls the project account?

A. The principal investigator or principal investigators.

Q. And are you in control of that account for research that you bring into the university?

MS. JOHNSON: Objection. What account?

Q. The project account you just mentioned.

A. So for projects in which I'm one the principal investigators, I have some control over

that.

Q. Do you have signatory authority over the account?

A. In some cases.

Q. Do you receive a salary out of funds that go into that account?

A. No.

Q. Do you receive any personal financial remuneration whatsoever from the funds that go into that account?

A. No.

Q. Now, in connection with the research money that you are able to land as grants from an institution, does the university ever give you an increase in salary based on its review of those grants?

A. So there are two promotions where there are raises. One is for associate professor and one is for full professor. And there are three areas that are important to achieve in order to get that promotion. One is teaching, one is service, and one is research. And in the research part, that would be where the sponsored research would be important.

Q. I see. So it's a factor taken into

account in determining salary?

MS. JOHNSON: Objection. Mischaracterizes his testimony.

A. Not in determining salary. In determining the promotion to associate or full professor.

Q. I see. Now, once you become a full professor, if you continue to get grant monies brought into the university, does that in any way affect the determination of whether to increase your pay?

A. No.

Q. It has no effect whatsoever?

A. Up until like this last year, it didn't really have an effect. It's not a good thing. It's because the union was -- it's a faculty union. Up to two years ago, I think there's .5 percent increase in salary. I'm just guessing. I'm not sure exactly. But I think right now there's .5 percent increase in salary that's possible from merit. And merit, that would enter into merit.

Q. Now, the university has a policy about professors inventing something and getting a patent for it, don't they?

MS. JOHNSON: Objection. Vague.

A. They encourage it.

Q. They have a policy related to patents?

A. They have many policies related to patents.

Q. If you invent something at the lab at the university, and you wanted to secure a patent for the invention, what would the university require?

A. If I wanted to secure a patent, it would probably have to not be done in the lab, and it would have to be something that's not related to any of my research.

Q. But if you did discover something in the lab, what would the university do? Would they say -- under the policy that exists -- would they say we'll get the patent, you can be co-owner of the patent, or how does that relationship work?

A. If it was something in the lab related to my research, I would not be allowed to get a patent on it.

Q. The university would get the patent?

A. The university -- if there was a patent to be issued, the university would own it. Or if I did get a patent, they would probably take me to court or something.

Q. Let's take a look at Patent Number 5,833,199 (sic), which we'll mark as Exhibit 6.

(Whereupon, Respondent's Deposition Exhibit No. 6, Patent Number 5,883,199, marked.)

BY MR. EMORD:

Q. Do you recognize this patent?

A. Do you want me to go through the whole thing?

Q. Go through each page and make sure it's a true and correct copy of your patent.

A. The question is -- I forgot.

Q. Is this your patent?

A. No, it's not my patent.

Q. Whose patent is it?

A. The University of Massachusetts.

Q. You're listed as one of the inventors?

A. Yes.

Q. The University of Massachusetts is listed as the assignee on the patent?

A. The assignee?

Q. Who assigned the patent to the assignee?

A. The university.

Q. The university assigned the patent to itself?

A. Again, the policy is if it's something

that's invented at the lab and it's related to research, the university owns the rights to that.

Q. Is there an agreement between you and the university concerning this patent?

A. Yes.

Q. Is it in writing?

A. Yes.

MR. EMORD: May we have a copy of the agreement?

MS. JOHNSON: I think he's referring to the general policy. I don't think there's a written signed agreement between the parties.

Q. Is there a written signed agreement between you and the university?

MS. JOHNSON: Not that I'm aware of.

A. You mean regarding the patent?

Q. Assignment of the patent, yes.

A. Yes.

MR. EMORD: Could we have that.

A. The university has it.

Q. And in addition, there are written policies that the university has that pertain to patents such as this?

A. Yes.

Q. And do you have access to those policies?

A. Yes.

MR. EMORD: May we have copies of those written policies?

MS. JOHNSON: Sure.

Q. What are the terms of the assignment agreement, as best you can remember, between you and the university?

A. That they have exclusive rights to it, to do whatever they want.

Q. Now, you receive royalties under the patent, right?

A. I receive a portion of the royalties.

Q. So the royalties are assigned to the university?

A. The royalties are paid to the university.

Q. And the university pays you a portion of the royalties?

A. The university pays a portion of the royalties to me.

Q. Is there a percentage breakdown? What percentage royalty, do you know, does the university get?

A. The university gets 70 percent of the royalties, and 30 percent is split between the inventors. And that is only on the profit. So

there's a long time where you're paying back the lawyer's fees, the prosecution, the maintenance fees, before you see a penny.

Q. I see. And the three people who split the 30 percent are the inventors listed in the patent?

A. That's correct.

Q. And they each receive what, 10 percent?

A. About that.

Q. How much money did you receive, let's say, in 2011, from your patent royalties? Let's make it a little easier, 2013. Closer in time.

A. Altogether it's been about $28,000.

Q. And in two-thousand --

A. No, for all time.

Q. All time. Okay. So approximately how much do you get a year, the range?

A. It varies. One year, I didn't get any, because it was a challenge and lawyers got involved. Nothing against lawyers. I think I got in the range of 4 to $5,000 this year.

Q. How much has Metabolix given to U Mass Lowell in grants for sponsored research that you did? Is the name Metabolix?

A. Yes, Metabolix.

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Q. What did I say? As in metabolic function.
A. Yes. That's exactly why they chose the name.
Q. Approximately how much money has Metabolix given to the center?
A. I'd say approximately 1.7 million dollars.
Q. And are they committed --
A. I mean, that's in sponsored research.
Q. Yes.
A. Okay.
Q. Is there another form of support they give?
A. Royalties.
Q. And any other form?
A. There was a -- there was also a grant that was written whereby they paid the university for equipment that was purchased by the university. So it was sort of a repayment for equipment that the university purchased.
Q. Are you paid as a consultant by Metabolix?
A. I was paid for the expert witness testimony.

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Q. How much were you paid?
A. For the two cases, approximately $5,000.
Q. For both cases or independently?
A. Both cases.
Q. And are you paid in any other way by Metabolix?
A. No.
Q. Are you paid by any other company personally?
A. Well, I'm compensated for the expert witness.
Q. Yes. But as a consultant to any other company, are you paid?
A. I don't think so.
Q. With Metabolix, are they going to continue to supply research grants to the center?
A. Honestly, I don't think so.
Q. Do you know today?
A. I don't know today.
Q. How many years have they supplied research grants to the center?
A. I don't know specifically, but I would estimate it to be over 20 years.
Q. And have they given funding annually over that 20 years?

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A. There may have been some years when they didn't fund anything.
Q. When you mentioned the 1.7 million, that's the total over that 20-year period?
A. Over the 20 years, yes.
Q. Now, this patent that we've marked for identification as Exhibit 6, is Metabolix the exclusive license holder?
A. Yes. They are the exclusive licensee with the option to sublicense.
Q. Have they sublicensed?
A. Yes.
Q. To which parties?
A. The ones I know about are the ASF, NatureWorks. Those are the ones that I definitely know about. I know they were talking to Georgia-Pacific, and to the Dixie people.
Q. Solo Cup?
A. If it's Solo.
Q. Maybe it's Dixie Cup.
A. International Paper.
Q. Are there biodegradable products on the market made under the '199 patent, Exhibit 6?
A. I believe so.
Q. What products are on the market?

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A. I don't know specifically.
Q. Do you have a general idea?
A. I believe it's mainly compostable -- plastic compost bags.
Q. Any other products?
A. I don't know. That's all Metabolix.
Q. Do you know whether those products are -- have labels or labeling associated with them that identifies them as compostable or biodegradable?
A. I do not.
Q. You've never seen the finished product?
A. No.
Q. And Metabolix has never supplied you with samples of finished product?
A. No.
Q. Have you ever seen advertising by Metabolix related to your patent?
A. No.
Q. Or products that are made under your patent?
A. No.
Q. Now, customers in the market for biodegradable plastics, compostable products, have a lot of choices out there?
MS. JOHNSON: Objection. Lacks

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foundation.
Q. Do you know?
A. They have -- I mean, there are more than a couple choices. It's not a huge amount.
Q. So you're not saying there's a monopoly associated with your '199 patent, it's a competitive marketplace, right?
MS. JOHNSON: Objection. Mischaracterizes his testimony.
Q. To your knowledge.
A. I mean, the '199 patent is primarily based on NatureWorks' product. And so if -- it would be a monopoly -- I mean, there could be other people who may produce polylactic acid, but they're minor compared to NatureWorks.
Q. But that particular product is in competition with other compostable and biodegradable products in the market, right?
A. Sure.
Q. So you wouldn't have to buy plastic bags that were compostable from NatureWorks, you could go to another company that uses another invention?
A. Yes.
Q. And you could get biodegradable plastic bags, you could get compostable plastic bags, you

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could get recyclable plastic bags, you have quite an array of products to choose from?
MS. JOHNSON: You mean products that are being marketed biogradable/compostable, not that they are in fact biodegradable/compostable?
Q. That are marketed as biodegradable, compostable, recyclable, there's quite an array that you can choose from, right, if you're a manufacturer interested in making those products available?
A. Yes.
Q. In other words, it's a competitive marketplace?
A. Yes.
MR. EMORD: Let's go off the record.
(Off the record.)
BY MR. EMORD:
Q. Now, have you seen any complaint or -- by complaint, I'm using that term broadly, not just a legal complaint in a court. I'm using the term really as a letter or an objecting document. Have you ever seen such a document before this case was filed that related to ECM Biofilms?
A. Before this case was filed, no.
Q. For example, you did not see an e-mail to

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Janice Frankel, an FTC attorney, from Brian Igoe?
MS. JOHNSON: Objection. Lacks foundation.
Q. Do you know Brian Igoe?
A. Yes.
Q. Is he with Metabolix?
A. No.
Q. Is he a lawyer?
A. He was with Mirel, when they first spun out Mirel, for a short time.
Q. When they first what?
A. When Metabolix first spun out Mirel.
Q. Before that, was he with Metabolix?
A. No.
Q. Are you familiar with or have you ever seen an e-mail to Janice Frankel from Brian Igoe complaining about ECM's claims and urging FTC to take action against ECM?
A. No, I don't believe so.
Q. Have you ever seen any other document, for example, any communication from Metabolix to the Federal Trade Commission concerning ECM?
A. I've seen the documents that were provided to me by complaint counsel. So I don't believe anything was from Metabolix.

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Q. Have you ever seen a document complaining about ECM Biofilms or its claims from Metabolix to the Federal Trade Commission?
MS. JOHNSON: Objection. Asked and answered.
A. Again, if it was in the documents supplied to me by complaint counsel.
Q. Do you have any specific recollection of a document from Metabolix to the FTC complaining about ECM BioFilms?
A. No.
Q. Do you know that Metabolix filed a complaint with the FTC about ECM BioFilms?
A. No.
Q. You haven't had any discussion with Metabolix about the filing of such a complaint?
A. No.
Q. They didn't ask you to review any content of the complaint or consult with you at all concerning the complaint?
A. No.
Q. What is Solutia?
A. I believe it's a spin-out from Monsanto.
Q. And has Solutia -- forgive me if I'm mispronouncing it -- has Solutia given grants to

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your center?
A. I'm not sure. Under the original incarnation of the center, Monsanto was a member of the center. They might have changed. I think the portion -- I don't think Solutia ever gave anything to the center. They donated a patent to the university.
Q. Now, in your '199 patent --
A. You mean the university's?
Q. Yes. When I use that term, we'll understand, however I refer to Exhibit 6, that actually it is held by the university.
Now, let me back up just a little bit here. Have you ever informed any of the parties that give grants to your center that you don't consider plastics biodegradable unless they completely break down and return to nature?
A. I don't believe so.
Q. Have you ever told them that you don't consider plastics biodegradable unless they do that, completely break down and return to nature within one year after customary disposal?
A. I don't believe so.
Q. Have you ever informed any of the corporate funders for the center that additives to

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plastics won't cause biodegradation?
MS. JOHNSON: Objection. Vague.
Plastics?
A. So we did a lot of work on additives, and typically we wanted them to be biodegradable to maintain the biodegradability of the total system.
Q. And in each of those instances, did you establish with proof that the additive caused the plastics to completely break down and return to nature, that is, decompose into elements found in nature, within one year after customary disposal?
A. I don't believe so.
Q. Let's take a look at paragraphs 17 and 37 of your expert report. Paragraph 17 is on page 7. Go ahead and read 17 and 37, if you will, first, 17 and 37 to yourself.
A. Okay.
Q. Now, is it the case that if we take a look at 17 and 37, it's your position that the additive in the ECM product is no more susceptible to a microbial -- excuse me, the plastic is no more susceptible, conventional plastic, no more susceptible to microbial attack after it's blended with the ECM additive than before?
A. As long as it's added to a

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nonbiodegradable polymer.
Q. So if it's a nonbiodegradable polymer under what you've identified in the report and the additive is added to it, it's no more biodegradable after it's been added than it is before; that's your opinion?
A. Yes.
Q. Now, can I be -- is this an accurate statement, that conventional plastics are not biodegradable?
A. That would be an accurate statement.
Q. What are conventional plastics?
A. Well, the majority of plastics, polyethylene, polypropylene, PVC, Teflon, PET, Azdel.
Q. And for all of those, is it your position that they're no more -- that they are not susceptible, any more susceptible to microbial attack after the ECM additive is added to them than before?
A. Yes.
Q. Is it further your position that there is no additive that you know of that could transform a conventional plastic into a biodegradable plastic?

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MS. JOHNSON: Objection.
Mischaracterizes his testimony. Assumes facts not in evidence.
A. One that degrades completely in one year?
Q. Right.
A. I don't know of one.
Q. Let's take a look at the patent again, Exhibit 6. As I understand the invention, and you can help me understand it better, or correct my misunderstanding, you start with polylactic acid, PLA, and you blend it with any other polyester, and the result is a biodegradable polymer; is that correct?
A. No.
Q. Tell me where I have that mistaken.
A. Do you want me to explain to you what the patent is?
Q. Sure.
A. The patent is a polylactic acid-based polymer or copolymer, and the polyester is an aliphatic diacid. So the first one is polylactic acid, and the second one is -- a number of them, could be C2 to C20 diacid with two more different aliphatic diacids. The group --
Q. I might draw your attention to paragraph

12 of the patent, under other embodiments, that might help.
A. Column 12?
Q. Yes. Under other embodiments. You see there are a listing that proceeds from 1 through 10?
A. Yes.
Q. Actually proceeding onto the next page to 25. Does that give an accurate summation of the claims --
A. Yes.
Q. -- and of the blends?
A. Yes.
Q. So that would be a complete and accurate summation of the blends?
A. This would be the -- what is claimed in the invention.
Q. In particular, if you look at column 6, lines 9 to 12. There it is stated, an example of an aromatic polyester that can be used (in up to 50 percent by weight) in the copolyester is polyethylene terephthalate. Other aromatic polyesters can be used.
That polyethylene terephthalate, that's PET, right?

A. It would be co-PET.
Q. Does it say that there?
A. It's a copolyester.
Q. Yes, copolyester is biodegradable and imparts --
A. So it would be something like polyethylene butyrate co-polyethylene terephthalate.
Q. As I understand it, the protocol that you've used -- let me back up just a little bit. The protocol that you used here, that is described in the patent to establish the biodegradability of the blend, blends, five blends, is your own testing methodology that you developed at U Mass Lowell, right?
MS. JOHNSON: Objection.
Q. It was your own testing methodology that you developed?
A. It was developed within the center, yes.
Q. And as I understand it, under column 10 of the patent, you have a description of that testing methodology, is that correct, example 3?
A. Yes.
Q. And that testing methodology is described as UML-7645, right?

A. Yes.
Q. And the results of your testing are shown at figure 11; is that right?
A. Yes.
Q. As I have read through this, I don't see any proof of biodegradation being supplied through use of 14C radiological testing; is that correct?
A. That's correct.
Q. Also, I do not see any representation in the patent that you established that the product, the blends, would completely break down and return to nature, that is, decompose into elements found in nature within one year after customary disposal; is that right?
A. This was not intended to -- yes, that's right.
Q. So your claim for this biodegradable plastic in the patent doesn't depend on proof of satisfaction of the definition of biodegradation or biodegrade in footnote 1 of your expert report; is that right?
MS. JOHNSON: Objection.
A. So one of these is polylactic acid, and I think I responded earlier to say that polylactic acid I believe would completely degrade in one

year in the correct environment.
Q. One of them is, but not all of them?
A. The Bionolle goes to 100 percent within 50 days.
Q. Right, but all five of the ones that are listed under figure 11 you have established would biodegrade within one year completely?
A. I believe they would.
Q. You believe so. But did you prove that? Did you test them to establish that?
MS. JOHNSON: Objection.
A. If the Bionolle goes by itself and the PLA goes, then any blend would go.
Q. But my question is more specific. Did you test your product to establish within a year that it would completely biodegrade?
A. No.
Q. You're extrapolating then from the 50 days in the study to the conclusion that they will eventually completely biodegrade; is that correct?
MS. JOHNSON: Objection. Mischaracterizes his testimony.
A. No. I'm using the pure Bionolle to establish that that goes to a hundred percent.
Q. The pure Bionolle. But as far as the

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remaining blends are concerned -- let me back up a little bit. There are a total of five blends, right?
A. Yes.
Q. For those five blends, you did not perform a test to determine if they would completely biodegrade within a year, right?
MS. JOHNSON: Objection, relevance.
A. I did not.
Q. If you look at Claim 1 of the patent, you can read along with me and correct me if I'm wrong, a biodegradable blend comprising of a first polylactic acid-based polymer or copolymer, and a second polymer consisting essentially of one or more polyesters, wherein said first and second polymers are present in a ratio of 9 to 1 to 1 to 9, right?
A. Yes.
Q. So your claim is directed at a biodegradable blend of polylactic acid polymer or copolymer with one or more polyesters, right?
A. Right.
Q. Now, you don't specify in the patent a limit on the kind of polyesters that can be used, as best I can tell. So any polyester under the

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patent could be used, right?
MS. JOHNSON: Objection.
A. There are patents that are listed -- I mean blends that are listed.
Q. The patent itself does not restrict itself to the listed polyesters, right? It doesn't restrict itself to biodegradable polyesters, right?
A. I think -- I'm pretty sure that if you said biodegradable blend and you then blended polylactic acid with say PET and the blend was not biodegradable, then that probably would not be covered by this patent.
Q. Now, when you look at column 11 of the patent, and look under that paragraph that begins, the soil degradation testing of the two polymers; do you see that?
A. Yes.
Q. As I understand it, the PLA degraded by about 14 percent after 45 days; is that right?
A. Yes.
Q. Now, if you look at figure 11, there you say that the polylactic acid biodegrades in soil but just not quickly, right? Let's see, where did it say that? If you see a reference to that part,

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holler, and we'll cut to the question.
If we go back to where we were at that paragraph, that probably will suffice. So what you're doing here, correct me if I'm wrong, is based on the 14 percent after 45 days, you're extrapolating to say that the thing is biodegradable, right, from the 14 percent after the 45 days?
MS. JOHNSON: Objection.
A. No. You really shouldn't extrapolate.
Q. You shouldn't. But, in this case, the only testing that is supplied by the patent is this test that you have identified in the patent by the code -- I can't remember the number offhand. But the test you used for the patent, which is revealed in figure 11, is for a period of 45 days, right?
MS. JOHNSON: Objection.
Q. You didn't use a year-long test?
A. In the patent specification, we relied on the knowledge that polylactic acid is biodegradable within a year.
Q. Right. But all of these blends, the five blends we're talking about, and the description given of the universe of blends that you're

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claiming under the patent, you didn't test all of those. You tested the five, right?
A. Right.
Q. And you extrapolate from the five to all of those, all those that you claim?
MS. JOHNSON: Objection.
A. No.
Q. To say they're biodegradable?
MS. JOHNSON: Objection.
A. No.
Q. So in other words, the patent is in error when it lists as claims, under other embodiments in paragraph 12, all of those different blends that are in excess of the five blends that you tested?
A. So you're saying there was an extrapolation in terms of composition of matter, not in terms of biodegradation rate.
Q. All right, let's start with that. There was an extrapolation with regard to composition of matter.
A. Yes.
Q. And you used the term, in reference to this patent, biodegradable?
A. Yes.

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Q. But the only testing you did, underlying this patent, is the testing that is described in figure 11 and in the patent?
A. No.
Q. You used testing to establish biodegradation for this patent other than what is described in the patent?
MS. JOHNSON: Objection.
A. You said any other testing.
Q. Is the testing, UML-7645, the testing you performed to support this patent?
A. We did that, plus we did other testing.
Q. In the patent you list UML-7645?
A. Right.
Q. And that test, UML-7645, was that test for a year?
A. No.
Q. It was for 45 days?
A. Yes.
Q. And the patent depends in figure 11 upon that testing, the 45-day testing?
MS. JOHNSON: Objection.
A. I don't think the patent depends on that. I don't think the -- I think the patent would still be as strong without that figure, because

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the main testing for the strength of the patent was the tensile testing.
Q. Tensile refers to strength?
A. Strength would be one characterization. The --
Q. Malleability? You explain it to me, Doctor.
A. The toughness is what it really gets at. So the toughness is the area under the curve. You could have a very strong polymer that breaks at a low elongation, which would have some applications. However, there's a need for a polymer to yield and not break and to deform by a shear deformation, which is actually ideal for garbage bags, because people tend to put in more garbage than they should.
Q. Now, if you look at page 15 of your expert report, if we go down to the bottom, F, test duration. There you say: The study must last long enough for the sample to reach at least 60 percent biodegradation. Right?
A. Yes.
Q. If we go back to your '199 patent, in column 11, lines 9 to 19, figure 11, it says in the second full paragraph that begins, the soil

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degradation testing. There you say: After degradation for 45 days, Bionolle#3000 degraded almost 100 percent. You didn't say 100 percent. But you said almost 100 percent. While polylactic acid degraded only about 14 percent by loss in weight. For blends with 70 and 50 percent Bionolle#3000, the degradation rate was relatively fast. After 45 days, the A30B70, A50B50 and A70B30 blends degraded about 77 percent, 65 percent, and 25 percent respectively by loss in weight. Figure 11 shows the polylactic acid biodegrades in soil, but just not quickly. And the addition of the second aliphatic polymer such as Bionolle#3000 increases the biodegradation rate.
There you're saying the PLA biodegrades in soil under the test, based on a finding that it degraded by only 14 percent after 45 days, right?
MS. JOHNSON: Objection.
A. When this patent was filed, we knew that polylactic acid biodegraded.
Q. I understand. But in this patent, that's what you're saying, 14 percent after 45 days, right?
A. We're saying the 14 percent is the rate

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after 45 days. So it's not as fast as the Bionolle.
Q. If you look at page 16 of your report, under proper controls. As I understand this, there you're saying that a polymer biodegradation test is invalid unless you use a negative control. Is that right, or am I misunderstanding what you're saying?
A. So for the purposes of the patent --
Q. No. I'm asking about the report now. In the report, under G, proper controls, there you're saying, are you not, that the absence of a negative control makes the biodegradation test invalid?
MS. JOHNSON: Objection.
Q. Is that what you're saying, or are you not saying that?
A. What I'm saying there is to prove that a plastic is biodegradable, a test to prove it, then you would need a negative control.
Q. When I look at the '199 patent, Exhibit 6, I don't see any negative control listed.
A. Well, our negative control was the PLA, and our positive control was the Bionolle. Because those weren't covered by our patent. So

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the negative was a PLA, the positive was Bionolle, and we're looking at the mixture of those two, which were covered by the patent.

Q. I hear you. But in the patent itself --

MS. JOHNSON: Objection. Let him finish answering the question.

Q. Do you have anything more to add?

A. No.

Q. But as I read that patent, I find no reference in that patent to a negative control. Is the language negative control in the patent at all?

MS. JOHNSON: Objection. He already answered your question.

Q. You can answer. My question is: In the patent itself, do you specify anywhere in there by name a negative control?

A. I don't believe there's a negative control mentioned in the patent.

Q. Now, if you look at paragraph 55 of your expert report. As I understand 55, and correct me if I'm wrong, you're stating that extrapolation from a short test to the conclusion a polymer is biodegradable in the environment is improper; is that right?

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A. Yes.

Q. And in particular, the reason you give is, for the prohibition on extrapolation, is that there's no evidence that biodegradation is a linear process, and in fact the rate of biodegradation is likely to slow because of the recalcitrants, right?

A. That is correct.

Q. Let's take a look at the '199 patent, in that same column we've been looking at, which is number 11, and the 45 days. Now, as I understand it, the only test report that is given in the patent is the one related to the test we discussed, the UML -- help me now -- 7456. That was the only test that you performed, that is reported upon in the patent, right?

A. No.

Q. For the purpose of establishing that biodegradation in figure 11?

MS. JOHNSON: Objection.

A. No.

Q. You used another test?

A. Yes.

Q. What was the other test?

A. 7645.

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Q. That's it. Thank you. That's the one. My numbers were wrong. Thank you. So that was the test, UML-7645, that was the test that you used in the patent, right?

A. That's correct.

Q. And that was a 45-day test?

A. I really don't know whether -- we might have gone further than 45 days. And maybe at the time of the patent we only had the 45-day data.

Q. At the time of the patent you only had the 45-day data. You might have gone further. How much further?

A. I don't know. I'd have to look.

Q. Was it a year?

A. It could have been. I don't know.

Q. Do you have documentation to establish the amount of time that you tested?

A. Possibly.

MR. EMORD: If he has any documentation showing the length of that test, may we have it?

MS. JOHNSON: We'll talk about it after this.

MR. EMORD: And may we have all the empirical data underlying UML-7645?

MS. JOHNSON: We can talk about all of

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these clean-up items after this deposition.

MR. EMORD: I just want to make it known on record that we're requesting all of the empirical data underlying UML-7645.

BY MR. EMORD:

Q. Now, I didn't see in here, in the patent, Exhibit 6, I don't see in there any reporting of testing being done on the combination of the PLA and the PET?

MS. JOHNSON: Objection.

A. You mean the PET copolymer?

Q. Yes. And it's not listed in figure 11, and I can't see it anywhere else in the patent. Is it in there?

A. The test is not in here. The PET copolymer is not in here. I know that it works.

Q. I understand. Now, in the '199 patent, you did not use ASTM D644 as the testing methodology, right?

MS. JOHNSON: Objection.

A. Which one?

Q. ASTM D6400?

A. No.

Q. You used your own protocol which we discussed, UML-7645?

A. Yes.
Q. In footnote 11 of your report, what do you say there? Let's take a look at footnote 11. If you look at the last sentence of footnote 11, and I'll have the footnote 11, at this point in the deposition transcript, I would like footnote 11 from his expert report which was marked as Exhibit 1 excerpted and placed in the transcript right at this point.
"Each test protocol is conducted inter-laboratory or intra-laboratory in order to obtain the precision and bias of the test. If the inter-laboratory tests obtain similar precision and bias results under the test method, conducted for the same duration, the test method is considered validated for those factors. Tests conducted outside of these validated parameters cannot be considered reliable."
In that footnote 11 in the last sentence, what does it say?
A. Do you want me to read it?
Q. Sure.
A. The tests conducted outside of these validated parameters cannot be considered reliable.

Q. And the tests that you're referring to are those that are contained in the paragraph 49, is that right, ASTM D5210, ASTM D5511 and ASTM D5526; is that right?
A. That is correct.
Q. Let's take a look at paragraph 60 of your report at page 24. There you state, and correct me if I'm wrong, that absent an approved ASTM specification, 14C radiological testing should be used, right?
A. Can you say that again?
Q. If you look at paragraph 60, absent -- your position is absent an approved ASTM specification, it's your opinion that 14C radiological testing should be used, right?
MS. JOHNSON: Objection. For what?
A. So what I'm referring to is, if you have an additive that you add to a plastic that has not been proven to be biodegradable.
Q. Okay. That's what I need to hear, a full explanation. Now, I think we previously established that regardless, in your '199 patent, you didn't use 14C radiological testing, right?
A. No.
Q. In paragraph 24 of your report, you

explain that aerobic biodegradation -- let's look at 24. You explain that aerobic biodegradation leads to CO2 formation, right?
A. That is correct.
Q. Now, are you able to write out for me on a sheet of paper the chemical structures and the transformation of those structures that leads to methane CH4 and CO2 and specifically how the carbon in the polymer is converted to CH4 and CO2? Can you write that out for me?
MS. JOHNSON: Objection. What polymer?
Q. It's described in paragraph 24.
MS. JOHNSON: There's no polymer described in paragraph 24.
Q. Can you write out what takes place in paragraph 24 for me using chemical structures?
A. You mean in terms of the respiration of microorganisms?
Q. The chemical structures that lead, the pathway that leads from -- that is aerobic biodegradation, showing the chemical structures and what it leads to and specifically how the carbon in the polymer is converted to CH4 and CO2?
MS. JOHNSON: Objection. What polymer? Lacks foundation.

A. For which polymer?
Q. In 24, are you referring to any polymer?
A. No.
Q. Can you identify this pathway for me and write it out so I can see the process?
A. I have references. I haven't memorized it. But I've seen it, and I can find it for you.
Q. Today, sitting here today?
A. I haven't memorized it.
Q. In your '199 patent for biodegradable polymer blend, have you filed any amendments to it with the USPTO?
A. No.
Q. Have you informed the USPTO of the definition of biodegradation or biodegradable contained in footnote 1 of your expert report?
MS. JOHNSON: Objection.
A. Have I sent that -- just sent a letter --
Q. Right, to the patent examiner.
A. No, I haven't.
Q. Do the '199 patent plastics, the ones that are out there, do they biodegrade in landfills?
MS. JOHNSON: Objection.
A. Perhaps.

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Q. Let's shift to the Biodegradable Products Institute. What is the Biodegradable Products Institute?

A. The portion of the Biodegradable Products Institute that I have been associated with is the certification of compostability for particular plastics.

Q. How are you associated with them in that regard?

A. I'm one of -- I was one of the examiners of the testing that took place at certified labs, such that the results would then meet the specifications of compostability.

Q. The specifications of BPI for compostability?

A. Of D6400.

Q. And you would do that determination. Would your determination then result in either a certification or not certified determination?

A. Yes.

Q. And when a company receives the BPI certification, are they, to your knowledge, authorized then to place a logo or other form of certification on the products?

A. I believe so.

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Q. What does that certification or logo provide; do you know?

A. It provides a certification that it meets the standard of the D6400 -- that it has met.

Q. And does it indicate that it's compostable or biodegradable?

A. Compostable.

Q. And is there any other, to your knowledge, information on the logo other than BPI certified and compostable?

A. I don't know.

Q. Earlier we had discussed Metabolix grants to the center. And I want to present you with a copy of a document that's from UML Education News.

(Whereupon, Respondent's Deposition Exhibit No. 7, article dated 06/30/2010, marked.)

BY MR. EMORD:

Q. What I would like to do is have you take a look at that. It's a short one-page document. And inform me if the content presents an accurate description or is inaccurate in any respect?

A. Could I correct prior testimony?

Q. Go ahead.

A. I apparently misspoke when I said that Brian Igoe was an employee of Mirel. He was actually an employee of Telles, which was a spinoff of Mirel into bioplastics.

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Q. Thank you for that.

Anything else about this -- anything about this that is an inaccurate representation, to your knowledge?

A. I think the 2.5 million is wrong. It should be 1.5. That's about it.

Q. So the figure is wrong. Any other change you would make to ensure its accuracy?

A. No.

Q. Let's look at another similar document.

(Whereupon, Respondent's Deposition Exhibit No. 8, UML.EDU News document dated 3/14/12, marked.)

BY MR. EMORD:

Q. Take a moment. This is a two-page document. It is a UML.EDU news document again. Take a moment and look at that and inform me if there's anything to your knowledge that's inaccurate about the content of that article.

A. I don't see anything wrong. The patent holder is not me.

Q. Other than that?

A. No.

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Q. Who is Steve Mojo?

A. Steve Mojo is the, I believe, the head of BPI.

Q. Do you have a good relationship with Steve?

A. Yes.

Q. How frequently do you guys talk by phone, for example?

A. Not often.

Q. E-mail, how frequently do you exchange e-mails?

A. Not often.

Q. In the last month, how many times have you interacted with Steve Mojo?

A. Zero.

Q. Last year?

A. Zero.

Q. Is there anyone else at BPI that you interact with regularly?

A. No.

Q. Are you on BPI's international advisory board?

A. I don't believe so.

Q. If they list you on their international advisory board, that would be news to you?

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A. That would be news to me.
Q. Are you a member of BPI?
A. No.
Q. Are you or have you ever been an officer of BPI?
A. No.
Q. Previously you said you have not done consulting work for BPI?
A. I did certification that we went through.
Q. So that was consulting work?
A. That was --
Q. Were you paid?
A. I was reimbursed for that.
Q. How much were you paid?
A. For the whole certification of each company it was $1,000.
Q. Per company or for every company?
A. Per company.
Q. How many companies did you certify?
A. About 30, over the ten years or so.
Q. Do you continue to perform that function?
A. No.
Q. When did you discontinue performing that function?
A. I believe it was two years ago.

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Q. So from what period to what period did you perform the certification for BPI?
A. Probably 2001 to 2011.
Q. Who did you interact with at BPI related to that?
A. Steve Mojo.
Q. How frequently did you interact with Steve concerning the certification issues?
A. It would be on average about three per year. So it would have been like probably four times per certification.
Q. Did you contact Steve or did Steve contact you first in relationship to this job?
A. Steve contacted me. He had a series, a whole list of reviewers.
Q. Do you know who recommended you for that position?
A. No.
Q. Steve didn't mention that?
A. No.
Q. Has Steve ever recommended you for other work?
A. I don't believe so.
Q. Has Steve ever been responsible for referring companies to give grants to your center?

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A. No.
Q. Have you ever referred companies to Steve for certification or for becoming a member of BPI?
A. No.
Q. Do you speak at BPI conferences?
A. No.
Q. Have you ever spoken at any event involving BPI?
A. I spoke at a conference in India that Steve Mojo also spoke at.
Q. Were you paid in association with that?
A. No.
Q. Did they pay for your transportation to and from?
MS. JOHNSON: Objection.
A. BPI?
Q. BPI.
A. No.
Q. Anyone else, a corporation?
A. I think that I had to pay for the air fare to India, and then they covered the hotel, the Indian SIPIT they called it, sponsored the conference.
Q. What is BEPS?
A. BioEnvironmental Polymer Society. That's

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a society for promoting biodegradable and environmentally degradable polymers. Not promoting them, but to discuss the science around biodegradable and environmentally degradable polymers.
Q. Did BPI create BEPS?
A. No.
Q. It's independent?
A. Independent.
Q. Are you a founding member of BEPS?
A. Yes.
Q. When was that created?
A. That's a good question. I think it was `93. No. `92 or `93.
Q. Is Metabolix a member or supporter of BEPS?
A. No.
Q. I think previously I asked you about complaints, with regard to your knowledge of whether BPI had filed complaints against ECM. Do you know whether BPI filed comments concerning the FTC's green guides?
A. Comments in -- no.
Q. You weren't involved with the filing of any comments by BPI, if it did file them, with the

FTC?
A. That's correct.
Q. Let's take a look at paragraph 22 of your report. Now, there you refer to hydrolic cleavages. What are hydrolic cleavages?
A. Actually, it should be hydrolytic.
Q. Okay, thank you. There you explain that microorganisms secrete enzymes that adhere to the surface of the organic materials and cause fissures in the molecular chain known as hydrolic cleavages, and you meant to say?
A. Hydrolytic.
Q. These cleavages make long-chain molecules shorter, resulting in the release of carbon and energy (heat). Now, assuming I'm a student or whatever, I would like for you to do the same thing, can you take a piece of paper for me and draw the chemical reaction pathway with chemical structures that would illustrate the chemical process that you're defining here in paragraph 22?
A. Yes.
Q. Let's get a piece of paper. Can you draw that for me?
MS. JOHNSON: A specific polymer?
MR. EMORD: I'm looking for the chemical

reaction pathway with chemical structures that illustrate the process defined in that paragraph.
MS. JOHNSON: He can choose whatever --
MR. EMORD: Yes.
Q. Just go right ahead.
A. So this is the polymer.
Q. Can you, with appropriate detail, show me how that chemical structure with identification of specific enzymes leads to the hydrolytic cleavage of the polymer chain, and also the release of the elemental carbon and the energy.
A. So this is the cleavage, and then if this -- that was a chain, then this molecule would then be metabolized by the microorganism and converted, used as fuel for heat and release the carbon dioxide.
Q. Have you identified the specific enzymes there?
A. So this would be a lipase.
Q. Can you write out the chemical structure for the lipase, the chemical structure?
A. Of the enzyme?
Q. Yes.
A. Seriously? Do you know how complex enzymes are?

Q. No, I don't. Let's make this an exhibit.
(Whereupon, Respondent's Deposition Exhibit No. 9, hand-drawn document, marked.)
BY MR. EMORD:
Q. On page 9 of your report, in paragraph 25 you write that degradation and biodegradation are not identical processes. As explained above, biodegradation involves microorganisms breaking down material into its constituent elements, that is, elements found in nature. Degradation (or disintegration) involves fragmenting of the polymer chain due to mechanical stress or chemicals.
Page 9, paragraph 27, you go on to state: Notably, the critical difference between degradation and biodegradation is significant to my opinions herein, because ECM's testing materials sometimes conflate these two distinct concepts, and erroneously infer that biodegradation has occurred merely because ECM plastic has disintegrated.
If I understand you correctly, you're saying that these two processes, one being biotic, biodegradation, and the other being abiotic, degradation, are understood in science to be

distinct and that a proper scientific analysis would never conflate the two concepts and consider the two part of biodegradation; is that a fair summary?
MS. JOHNSON: Objection.
A. They are two separate processes. They may occur at the same time, but the disintegration, the chemical and basically the oxidation would occur abiotically, whereas the biodegradation has to occur with microorganisms.
Q. Would it be an error for a scientist to characterize an abiotic process as part of biodegradation?
A. It would be more proper to separate the two, but the abiotic process could lead to degradation that may enhance biodegradation.
Q. Are you aware within the last -- are you aware of the existence of any article within the Journal of Polymer Environment, which identifies abiotic processes as a part of biodegradation?
A. Not specifically, but you probably have one.
Q. And if you read an article that did do that, would you consider it to be appropriate to publish in the journal?

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A. Again, I don't censor the articles. So if it's someone's opinion that abiotic -- I mean, if they're calling it abiotic, then obviously it's not biodegradation, because it's abiotic.
Q. So if someone were to call something abiotic, it would be an error to then include that as a part of biodegradation, in your view?
MS. JOHNSON: Objection. Asked and answered.
A. Again, unless it promoted biodegradation.
Q. Is it possible that a first stage process of biodegradation would be depolymerization of the macro molecules into shorter chains?
A. Yes.
Q. And does that normally occur outside the organism due to the size of the polymer chain and the insoluble nature of many polymers?
A. Mostly.
Q. Is it fair to say that extracellular enzymes and/or exoenzymes and abiotic reactions are responsible for the polymeric chain cleavage?
A. Yes.
Q. And what does abiotic mean?
A. It does not involve microorganisms.
Q. Nonbacterial?

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A. Right.
Q. I notice in your expert report, in those paragraphs that we've mentioned, that you did not cite any peer-reviewed publication or any publication at all in support of the descriptions of degradation and biodegradation that you give in paragraphs 25 and 27; is that right?
A. I have my publications, which I have attached to my CV.
Q. Right. But as far as giving me a specific citation in paragraph 25 and 27, you give none, right?
A. I give no specific one.
Q. Can you name for me a single peer-reviewed journal article that describes degradation and biodegradation as you have in paragraphs 25 and 27?
A. So the biodegradation is very similar to what I've described in the Andrady book.
Q. You're pointing to Exhibit Number --
A. 2.
Q. So that's the definition for biodegradation. Now let's take a look at degradation. And we're specifically looking for this concept of it being distinct from

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biodegradation as you've described in paragraph 27 and 25.
A. I would have to go through the publications.
Q. But as you sit here today, you can't recall a specific publication?
A. Not the specific one.
Q. That's all right. Now, you have other -- perhaps U Mass Lowell has other patents that you were an inventor on, right?
A. Yes.
Q. I have patent number 5,439,985 dated 1995. What is that patent for?
A. Which one?
Q. 5,439,985?
A. That's biodegradable and hydrogradable diblock copolymers composed of poly(b-hydroxyalkanoates) and poly(lactones) or poly(lactide) chain segments.
Q. Is there an exclusive licensee for that?
A. I don't think so.
Q. Is it licensed at all?
A. I don't think so.
Q. How about patent 5,440,007, 1995.
A. Composition of and method for forming

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high molecular weight predominantly syndiotactic substituted-poly(b-Propioesters).
Q. Is there a licensee for that one?
A. I don't believe so.
Q. And patent number 6,093,792, dated 2006?
A. That's bioresorbable copolymers.
Q. Is that one licensed?
A. I don't believe so.
Q. Are there any other patents that you have, that is, that you are the inventor or that you hold?
A. I don't hold any of them. There's a list here.
Q. Are any of those licensed? A list here, you're pointing to the back of your report document, which is publications, and you're looking under patents issued in that appendix. Are any of those, other than the '199, licensed?
A. So the 7,763,663 is licensed.
Q. To whom or to what?
A. To Anterios.
Q. What is that patent?
A. That's Polysaccharide-containing block copolymer particles and uses thereof.
Q. What is it about?

A. It's about a copolymer -- a block copolymer between pullulan and polycaprolactone.
Q. Is that for a compostable plastic?
A. It's not licensed for a compostable. That's not what the company is using it for.
Q. What is it for?
A. It's for transdermal delivery.
Q. Okay. Like a patch?
A. No, a cream. Do you want to know what the active ingredient is?
Q. Sure.
A. Botox.
Q. Any others that were licensed?
A. The second one down, Novel biodegradable bone plates and bonding systems, that one was licensed to a company, and that license has been discontinued, and it's currently being offered to another company.
Q. Who is it being offered to? Who had it and who is it being offered to?
A. Dartmouth Medical, and I can't remember the name of the company -- I don't know whether it has been licensed yet. But as soon as it is, I'll know.
Q. The 7,763,663 patent, who is the licensee

there?
A. 7,763,663?
Q. Yes.
A. I've already mentioned that, Anterios.
Q. Any others that are licensed?
A. So the ones that all say -- from surface finishing, to molded article, anything with Tom Ellison in it, were licensed to Valtech. But that company I don't think exists anymore.
Q. And are any of those biodegradable or compostable type products?
A. No.
Q. The novel plates were biodegradable?
A. Yes.
Q. And how about the 7,763,663?
A. Yes.
Q. Any others?
A. Any others that are biodegradable and licensed?
Q. Yes, or compostable.
A. And licensed.
Q. And licensed. You did mention 5,440,007, `95 patent, and the 5,439,985, but those are not licensed?
A. No.

Q. And the 6,093,792, and that's not licensed either?
A. Right.
Q. So the two that are licensed are 7,963,663, and what was the number for the novel biodegradable bone plates?
A. 0234754 A1.
MR. EMORD: For those two, Counsel, I would like to ask that they be -- that the patents be produced and any underlying documentation that the witness has or can acquire be produced.
Q. Let's go on to a couple of questions about the report. Is it your contention that plastics are free of impurities, additives and processing aids?
A. You mean in terms of --
Q. In the real world, plastics have impurities, additives, processing aids in them, right?
A. There are some plastics used for medical applications that are free of those impurities.
Q. Are they completely free of impurities, additives and processing aids?
A. Some of them are.
Q. But for the rest of the market, the

plastics contain impurities and processing aids and additives?
A. To some degree.
Q. Do you contend that these impurities, additives, processing aids that are in plastics generally do not create hospitable environments for microorganisms?
A. There could be some additives that are degradable.
Q. Aside from that, just, not additives that specifically are for the purpose of degradation, but just in the normal processing of virtually all plastics, the impurities, the additives, the processing aids, generally, do those in your view create a hospitable environment for microorganisms?
MS. JOHNSON: Objection. Vague as to hospitable.
Q. You can answer.
A. I would say the vast majority would not fall into that category.
Q. And in paragraph 37 of your expert, report you describe there to be -- you use the language, overwhelming scientific consensus that conventional plastics are not biodegradable after

customary disposal. I saw no specific citation for that proposition in paragraph 37. Can you cite for me a peer-reviewed scientific publication that supports that proposition that there is an overwhelming scientific consensus that conventional plastics are not biodegradable after customary disposal?

A. This article.

Q. Exhibit Number 2?

A. Yes.

Q. Where in Exhibit Number 2?

A. 9.2.

Q. And specifically where?

A. Page 360, 9.2.

MS. JOHNSON: Are you referring to the whole section?

A. Yes. The justification section.

Q. And there you say that the specific -- the entire section then stands for the proposition that there is an overwhelming scientific consensus that conventional plastics are not biodegradable after customary disposal?

A. Yes, and there's references too, number 2 in particular, environmental issues and opportunities.

Q. Number 2, and the reference is on page 370 you're referring to?

A. Yes.

Q. Anything else?

A. There's probably more.

Q. Are you aware any of publications that conclude that conventional plastics are biodegradable?

A. By conventional plastics, do you mean the biodegradable plastic subset?

Q. You tell me what conventional plastics, what that term is generally understood to mean?

A. Typically, it is the inexpensive plastics that we use every day, the vast majority of -- the large quantity plastics.

Q. And as I say, you're not familiar with any peer-reviewed journal articles that discuss the biodegradability of conventional plastics?

MS. JOHNSON: Objection.

A. Within one year?

Q. No. I'm not using that definition. Just the term biodegradability as it's used in the scientific publications. As used in the scientific publications, are you familiar with any scientific publications peer-reviewed that stand for the proposition that conventional plastics do indeed biodegrade?

A. Yes.

Q. Now, what publications are you familiar with that stand for the proposition that conventional plastics biodegrade?

A. There are publications concerning polyethylene.

Q. Any other plastic? In particular polyethylene terephthalate, polyvinylchloride, polystyrene, polypropylene?

A. I think there are some on polypropylene. I think there's one on PET.

Q. And these stand for the proposition that these plastics are biodegradable?

A. No. Some -- not completely, but there's some degradation.

Q. There's some biodegradation taking place?

A. That's their assumption.

MR. EMORD: Let's mark for identification Exhibit 10, a copy of an article in the International Journal of Molecular Sciences dated 2009.

(Whereupon, Respondent's Deposition Exhibit No. 10, Biodegradability of Plastics,

marked.)

BY MR. EMORD:

Q. My question is whether you have seen this article before?

A. Yes.

Q. When did you first see this article?

A. I'm not sure.

Q. Was it only in connection with this proceeding, or was it before this proceeding?

A. I believe it was in connection with this proceeding.

Q. Prior to this proceeding, you had not seen that article?

A. I don't believe so.

Q. If you look at paragraph 67 of your report, in particular on page 27, the last -- the second to the last statement. This is contrary to widely accepted scientific knowledge regarding how such microorganisms function with respect to conventional plastic. Do you see that sentence?

A. Yes.

Q. There is no citation specifically listed for that sentence, correct?

A. That is correct.

Q. Can you cite for me a peer-reviewed

journal article which concludes that it is contrary to widely accepted scientific knowledge that microorganisms work synergistically to produce enzymes that metabolize plastic?

A. Well, this one that you just handed me says that conventional plastics such as polyethylene, polypropylene, polystyrene, polyvinylchloride, and PET are nonbiodegradable.

Q. However, does the article conclude that those plastics are entirely impervious to biodegradation?

A. I mean, that's what it says, that they're nonbiodegradable.

Q. Elsewhere in the article, does that it reveal any information that indicates that those plastics do biodegrade?

MS. JOHNSON: Objection. Just the plain plastic or untreated conventional plastics?

MR. EMORD: Here the article is concerning untreated plastics.

A. I think that this author, the conclusion is that they're nonbiodegradable.

Q. That's your view of that article. Does the author of the article indicate that the plastics undergo a conversion that makes them

biodegradable, that is, the nonbiodegradable plastics undergo a conversion that can make them biodegradable? In particular, there is an alteration from short-chain low-molecular weight to some other form as a result of interactivity with microorganisms between the microorganisms and plastics?

MS. JOHNSON: Objection.

Q. I don't want to lock you into 10 for a response to this question. Let me ask you this question.

Is it your opinion that short-chain low-molecular-weight polymers are metabolized by some microorganisms?

A. I would say some short-chain low-molecular-weight polymers are metabolized by microorganisms.

Q. If you look at footnote 20 of your report on page 29, you recite in footnote 20 that there has been one documented instance of a particular strain of fungi capable of biodegrading a petroleum-based plastic. And you do provide a citation for that.

Then you say, there's no evidence that any of these strains exist in the United States or

in landfills in the U.S. But you do not provide a citation for that.

First, let me ask you this, is it your proposition then that there is only one strain of fungi capable of biodegrading plastic?

MS. JOHNSON: Objection. Mischaracterizes his testimony.

A. No.

Q. What is your opinion as to whether fungi can biodegrade plastic?

A. There are plastics that can be degraded by fungi. This here is a particular -- this is the only documented thing that I've seen, is that this strain lived totally on this polymer, which was unique.

Q. And upon what evidentiary basis do you rely for the proposition that there is no evidence that any of these strains, you used the words these strains in reference to the fungi, you referred previously to a particular strain, but then you say these strains exist in the U.S. and landfills in the U.S. What is your evidentiary basis for the proposition that there is no evidence that any of these strains exist in the U.S. or in landfills?

A. Because I haven't found any evidence of it.

Q. But you have no affirmative evidence in the form of peer-reviewed literature in the area of biochemistry or microbiology that establishes that these strains are not extant in the continental confines of the United States?

A. So --

Q. In other words, do you have affirmative proof that these strains don't exist in the United States?

A. That's my opinion.

Q. But you have no specific proof?

A. This is a biodegradable polymer anyway.

Q. But you have no specific proof that those strains don't exist in the United States?

A. My statement is I haven't seen evidence that they exist in the United States.

Q. But you haven't seen evidence that they affirmatively do not exist in the United States?

MS. JOHNSON: Objection. Asked and answered.

A. I haven't seen evidence that they do exist.

Q. Or that they do not exist in the United

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States?
MS. JOHNSON: Objection.
A. I don't know what kind of evidence would be that they do not exist.
Q. Such as in a peer-reviewed journal article related to this field of study, in which there was a specific conclusion that these strains do not exist in the United States?
A. I have not seen that.
Q. Now, if we turn to paragraph 86 of your report.
(Recess.)
BY MR. EMORD:
Q. Is polycaprolactone a biodegradable plastic?
A. Yes.
Q. Are polyolefins biodegradable?
A. Most of the evidence says no. There is some evidence, I think, from Ann-Christine Albertsson that maybe one percent degrades in I think it was a couple years from the carbon 14. There are some other indications that possibly the low-molecular-weight oxidized polyethylene may be degradable.
Q. Now, are you familiar with the

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peer-reviewed works of Ying Zheng on plastic waste biodegradation?
A. I believe it's one of the papers that I reviewed.
Q. Did you know of the existence of that article before the litigation in this case?
A. I don't believe so.
Q. Did you know of the existence of that article before you wrote your expert report in the case?
A. I don't know.
Q. You have no specific recollection?
A. No.
(Whereupon, Respondent's Deposition Exhibit No. 11, A Review of Plastic Waste Biodegradation, marked.)
BY MR. EMORD:
Q. Is this the article that you mentioned you saw in connection with this litigation?
A. Yes.
Q. Now, does it refresh your recollection as to whether you've seen it before you wrote your expert report?
A. I don't remember.
Q. Now, in the abstract part of it, which is

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a summary, Dr. Zheng writes, this review looks at the technological advancement made in the development of more easily biodegradable plastics and the biodegradation of conventional plastics by microorganisms.
Do you see that on the front page?
A. Yes.
Q. I know you said you've become familiar with this through the course of the litigation, but I'd like you to take moment before I ask you questions and look at the article, and when you have done that, just let me know. I want you to refresh your recollection as to its content. If you need to look at something in particular and take more time, we can do that.
A. Okay.
Q. Now, I wanted to ask you whether you agree with the author, and more particularly, is there anything in this article with which you disagree?
A. This is a review of other work.
Q. Right. My question is: As far as the content of the article is concerned, is there any specific aspect of it that you find to be in error?

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A. I mean, there may be some of the work that he's citing that may be in error.
Q. But as far as his analysis and conclusions are concerned, do you find anything remiss?
A. His statement about -- I'm not sure that he has the thermoset plastics such as aliphatic polyester.
Q. Where are you looking at now?
A. In the middle of the abstract.
Q. What page?
A. Page 243.
Q. In particular what part?
A. The middle.
Q. Where he refers to thermoset plastics such as and so forth?
A. Yes.
Q. What do you find in error?
A. I think he might have meant thermoplastic plastics.
Q. Instead of thermoset plastics?
A. Yes.
Q. Anything else?
A. Not that I've found.
Q. Let me ask you this question: Can you

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name for me the kinds of enzymes used by microbial life to degrade plastics?
MS. JOHNSON: Objection.
A. You mean the general classes?
Q. The different classes of enzymes that are used.
A. There's basically hydrolases and oxydases.
Q. And can you give me some specific kinds of hydrolases that are used by microorganisms to degrade plastics?
MS. JOHNSON: Objection to plastics.
A. Biodegradable plastics?
Q. Well, yes.
A. Lipases and proteinases and oxidases, peroxidases.
Q. Anything else in the hydrolase category?
A. I've worked a lot with proteinase K. I'm sure there's lots of them that I've seen. I don't have them memorized.
Q. Is it fair to say that your work has focused on a subset of the universe of all of the hydrolases?
A. Sure.
Q. And you mentioned proteinase K. Is there

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another hydrolase that you've worked with?
A. Possibly, but I don't recall at this time.
Q. The one you do distinctly recall is proteinase K. How about in the oxidases, can you name for me the oxidases?
A. I haven't worked with any of the oxidases.
Q. You really can't name oxidases that might be involved in --
A. Well, there's horseradish peroxidase. That's a common one.
Q. Any others?
A. I'm sure I've seen them, but I haven't memorized them.
Q. Now, have you read -- I have to spell out his name, B-H-A-R-D-W-A-J -- Bhardwaj, perhaps, his article on Microbial Population Associated with Plastic Degradation?
A. I believe I have.
Q. Did you read that before you wrote your expert report, or is that something that has come to your attention since the drafting of your expert report?
A. If it wasn't provided to me by complaint

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counsel, it probably would have been after.
MR. EMORD: So let's mark this as an Exhibit 12.
(Whereupon, Respondent's Deposition Exhibit No. 12, Microbial Population Associated with Plastic Degradation, marked.)
BY MR. EMORD:
Q. Go ahead and take a moment to read the article. It's not that long.
A. Okay.
Q. If we look at paragraph 2 under the introduction on the first page, a definition is given for biodegradation. Did you agree with that definition?
A. Again, this is a review article that's just reporting 7, 8, 9, 10 and 11.
Q. It is a review article, and there are many articles reviewed as a part of that. He gives a definition for biodegradation in the second paragraph. The question is whether that definition, which is in the first sentence, is one with which you agree or disagree?
A. Well, I disagree with the polyethylene, polystyrene.
Q. Any other aspect of it?

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A. I think he's combining both biodegradation and environmental degradation.
Q. He is.
A. Yes.
Q. Thank you for pointing that out. When it comes to this sentence, I want you to tell me whether you agree or disagree with this statement. Microorganisms degrade the polymers like polyethylene, polyurethane by using it as a substrate for their growth. Do you agree with that?
A. No.
Q. What is your opinion as to that sentence?
A. It doesn't indicate a mechanism. By using it for their growth is not a mechanism for degradation.
Q. He explains the mechanism here shortly, and we'll get into that. So you disagree with that. Is there a specific source that you would base your disagreement upon? I notice he lists a source as footnote 8, and in footnote 8 he lists Glass JE, Swift G, Agricultural and Synthetic Polymers, Biodegradation and Utilization, ACS Symposium Series 433, American Chemical Society, Washington, D.C., for the proposition that you

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just stated in challenging it. Do you have a source that you would rely upon?
A. The one you gave me from Tokiwa.
Q. You would use that as a source? Specifically what in Tokiwa would you rely upon?
A. Plastics such as polyethylene, polystyrene, polypropylene polyvinylchloride are nonbiodegradable.
Q. So as a general proposition, many scientists take the position that is articulated there. That is with regard to the, is it hydrophobic versus, the hydrophilic versus hydrophobic aspects, correct?
MS. JOHNSON: Objection.
Q. When you start off with PE and PP from a hydrophilic source to a hydrophobic source, does that enable -- that transformation enable otherwise nonbiodegradable polymers to become biodegradable?
A. No.
Q. So can microorganisms transform the surfaces of say PP and PE from hydrophilic to hydrophobic?
A. I don't believe so.
Q. You're not aware of any scientific

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evidence on that transformation?
A. I am not.
Q. Now, if you look at page 2 of the article under the heading mechanism of enzymatic biodegradation. I'll have the court reporter insert into the transcript at this point the entire content of the paragraph under the heading mechanism of enzymatic biodegradation as a point of reference.
"Mechanism of Enzymatic Biodegradation.
"The most attractive plastic waste treatment method is enzymatic degradation. Polyethylene degradation through microbial enzymes comprises two steps. Firstly enzyme adheres to the polyethylene substrate and then catalyzes a hydrolic cleavage. Intracellular and extracellular depolymerases in fungi and bacteria degrade the polyethylene. Endogenous carbon content by the accumulating bacteria themselves is hydrolyzed through intracellular degradation while the utilization of exogenous carbon source not necessarily by accumulating microorganisms is the extracellular degradation. Complex polymers disintegrate into short chains of oligomers, dimers, and monomers which can pass through the

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bacterial membranes and act as a source of carbon and energy. This process is referred as depolymerization. And mineralization is the degradation process in which the end products are carbon dioxide (CO2), water (H2O), or methane (CH4) are produced. Temperature, pressure and moisture are the physical parameters which mechanically damage the polymers due to which the biological forces like enzymes and other metabolites produced by microbes induce the process. The mechanism of the biodegradation of plastics can be easily understood by following the flow chart (Figure 1)."
Now, there Dr. Bhardwaj describes in some detail his view of the mechanism of enzymatic degradation, and I want to go through it in parts. I want to take parts of it and get your opinion. He says, the most attractive plastic waste treatment method is enzymatic degradation. Would you agree with that?
A. No.
Q. What is your opinion?
A. My opinion would be production of enzymes for treating waste would probably be very expensive.

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Q. Now, when you take a look at the next part of his analysis there, he starts off, he gives two parts, polyethylene degradation through microbial enzymes comprises two steps. First, enzyme adheres to the polyethylene substrate and then catalyzes a hydrolytic cleavage. Do you agree with that?
MS. JOHNSON: I think it says hydrolic cleavage.
Q. Okay. Do you agree with that?
A. No.
Q. And what is your opinion?
A. My opinion is that he's wrong.
Q. In what respect?
A. That this would be the mechanism for a polyester.
Q. Then he says, intracellular and extracellular depolymerases in fungi and bacteria degrade the polyethylene. Do you disagree with that?
A. Where is that?
Q. The very next sentence.
A. I disagree with that.
Q. In what respect do you disagree with that?

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A. He's referring to reference 31.
Q. Which is?
A. Which is degradation of microbial polyesters. I think he's talking about polyesters.
Q. It's your opinion that he did not mention but should have mentioned that he meant or should have meant polyesters?
A. I mean, that's what he gives as proof, and if he did say microbial polyesters, it would all make sense.
Q. But he doesn't limit it in that way?
A. He doesn't say it.
Q. Then he goes on to say, endogenous carbon content by the accumulating bacteria themselves is hydrolyzed through intracellular degradation, while the utilization of exogenous carbon source not necessarily by accumulating microorganisms is the extracellular degradation.
A. Again, that would be correct for microbial polyesters.
Q. But he is talking about extracellular degradation, and he is talking about an abiotic process there, no?
MS. JOHNSON: Objection.

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Q. Is that a biotic or an abiotic process?
A. This would be biotic.
Q. Complex polymers disintegrate into short chains of oligomers, dimers and momomers which can pass through the bacterial membranes and act as a source of carbon and energy.
Do you agree with that or is it again in your view restricted to polyesters?
A. I think he's talking about polyesters.
Q. You wouldn't agree with that general proposition unless it was cabined with language referring to polyesters?
MS. JOHNSON: Objection.
A. Yes. I think he's misquoted the reference.
Q. His own reference?
A. Not his own.
Q. Well, the one that he cites?
A. Yes.
Q. He says, this process is referred to as depolymerization, and then he says, and mineralization is the degradation process in which the end products are carbon dioxide, water or methane, that they are produced. Again is this the same thing, this occurs with polyesters but

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not with others?
MS. JOHNSON: Objection.
Mischaracterizes his testimony.
A. That's my conclusion. This is enzymatic biodegradation of polyester.
Q. Then he refers to temperature, pressure and moisture are the physical parameters which mechanically damage the polymers due to which the biological forces like enzymes and other metabolites produced by microbes induce the process. Here it seems he's talking about a synergistic or a complementary circumstance between biotic and abiotic processes. Do you disagree with that characterization?
A. Yes.
Q. Because you would say that they have to be considered distinct, right?
A. No.
Q. Why would you disagree?
A. I wouldn't consider temperature, pressure and moisture to be a form of mechanical damage.
Q. What would you consider it?
A. It would be more of a chemical degradation due to the enzymes. Enzymes only catalyze the reaction.

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Q. And look at his figure 1. Is his figure 1, in your judgment, remiss in any respect?
A. Figure 1 is, I think, a reasonable pathway for some degradation of biodegradable polymers.
Q. Which ones do you think it wouldn't apply to?
A. Polylactic acid.
Q. Any others?
A. Polydioxanone.
Q. Any others?
A. Polyglycolic acid.
Q. Any others?
A. Polyvinyl alcohol.
Q. Any others? Let's do it this way. Would you say that this figure 1 is applicable to most polymers or to only a minority of them?
MS. JOHNSON: Objection. Plastic polymers?
A. Minority.
Q. Are the surfaces of polypropylene and polyethylene plastics hydrophilic or hydrophobic?
A. Hydrophobic.
Q. Can microorganisms transform polypropylene and polyethylene plastics from

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hydrophilic to hydrophobic?
MS. JOHNSON: Objection.
A. By themselves? I don't believe so.
Q. By themselves is rather stringent, because they're in the environment. I don't mean by themselves, I mean, does this occur?
A. No. You said do microorganisms cause it.
Q. Can microorganisms transform the surfaces of polypropylene and polyethylene from hydrophilic to hydrophobic?
A. No.
Q. Are you familiar with the work of Dr. J. Arutchelvi, A-R-U-T-C-H-E-L-V-I?
A. I have seen that.
Q. Did you see that before you wrote your expert report or afterwards?
A. Again, if it wasn't produced by complaint counsel, then it would have been after.
MR. EMORD: Let's mark it for identification as Exhibit 13.
(Whereupon, Respondent's Deposition Exhibit No. 13, Biodegradation of Polyethylene and Polypropylene, marked.)
BY MR. EMORD:
Q. Have you read this article?

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A. Yes, I have.
Q. And if you'll look on page 10, which is the second page in, under the title of mechanism of biodegradation, and I would ask that the court reporter insert at this point in the deposition the entirety of the content of page 10 under the mechanism of biodegradation heading.
"Mechanism of Biodegradation.
"Biodegradation of polymers involves following steps:
1. Attachment of microorganism to the surface of the polymer.
2. Growth of microorganism utilizing the polymer as the carbon source.
3. Primary degradation of the polymer and
4. Ultimate degradation.
Microorganisms can attach to the surface, if the polymer surface is hydrophilic. Since PP and PE have only CH2 groups, the surfaces are hydrophobic. Initial physical or chemical degradation leads to the insertion of hydrophilic groups on the polymer surface making it more hydrophilic (insertion of hydrophilic groups also decreases the surface energy). Once the organism gets attached to the surface, it starts growing by

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using the polymer as the carbon source. In the primary degradation, the main chain cleaves, leading to the formation of low-molecular-weight fragments (oligomers), dimers or monomers. The degradation is due to the extracellular enzymes secreted by the organism. These low-molecular-weight compounds are further utilized by the microbes as carbon and energy sources. Small oligomers may also diffuse into the organism and get assimilated. The ultimate products of degradation are CO2, H2O and biomass under aerobic conditions. Anaerobic microorganisms can also degrade these polymers under anoxic conditions. The primary products then are CO2, H2O, CH4 and biomass under methanogenic condition or H2S, CO2 and H2O under sulfidogenic condition. The environmental conditions decide the group of microorganisms and the degradative pathway involved. Ultimate degradation of recalcitrant synthetic polymers may take several hundred years. Additives, antioxidants and other stabilizers added to commercial polymers may be toxic to the organisms or may slow down the rate of biodegradation."
Dr. McCarthy, I would like you to focus

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on that section, and I'm going to ask you a question. He explains here in the first part of the paragraph, biodegradation of polymers involves the following steps, and then he lists four steps. Do you agree with that representation of the steps of biodegradation of polymers?
A. No.
Q. In what respect do you disagree with it?
A. Typically, the microorganism would secrete the extracellular enzyme to degrade the polymer. The one we went through in, I think, it was the last one.
Q. Where do you think that is germane to your criticism of what he's written?
A. He doesn't have it in there.
Q. And you say it should be in there?
A. Yes.
Q. Now, if you look at the sentence beginning microorganisms can attach to the surface if the polymer surface is hydrophilic. Do you agree with that?
A. I'm not sure. It may be easier if it's hydrophilic, but they can probably attach if it's hydrophobic too.
Q. Is this really a matter that is outside

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of your area of expertise as a plastics engineer, more in the zone of a microbiologist or biochemist?
A. No. This is --
Q. You feel comfortable with this?
A. Yes.
Q. Now, it says since PP and PE have only CH2 groups, the surfaces are hydrophobic. Initial physical or chemical degradation leads to the insertion of hydrophilic groups on the polymer surface making it more hydrophilic. Insertion of hydrophilic groups also decreases the surface energy. Do you agree or disagree with that?
A. I disagree with that.
Q. What is your opinion?
A. That the -- that this insertion of hydrophilic groups is not --
Q. Not important?
MS. JOHNSON: Objection.
A. I don't think it's realistic.
Q. It doesn't happen?
A. I don't think it happens.
Q. Then he says, once the organism -- excuse me. You don't think it happens. Can you cite for me a source in the peer-reviewed literature that

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concludes that it does not happen, specifically that that does not happen?
A. I think the Tokiwa paper.
Q. Now, specifically -- what's the number on the front of that one?
A. 10.
Q. Exhibit 10. You think that paper establishes that this process does not take place. You're nodding your head yes?
A. Yes.
Q. Any other source?
A. There are probably other sources.
Q. Is there any original research that you've performed on this issue in your lab?
A. No.
Q. Now, if we go on to the next sentence, once the organism gets attached to the surface, it starts growing by using the polymer as the carbon source. Do you see that part?
A. Yes.
Q. Do you disagree with that?
A. Yes.
Q. Do you have a source that would stand for that proposition? The same thing, Tokiwa?
A. There's many sources that microorganisms

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can't -- that the large high-molecular-weight polymers that are solid, so in order to have a surface, it has to be solid, that the microorganisms cannot then -- cannot take that in -- it's just not realistic.
Q. If the microorganism were to be able to transfer a polymer surface to hydrophilic, which would lower necessarily the weight, molecular weight, right?
MS. JOHNSON: Objection.
A. No. It says they're inserting hydrophilic groups.
Q. Would this lower the molecular weight or have no effect on the molecular weight?
A. No effect.
Q. Now, it then proceeds with, in the primary degradation the main chain cleaves leading to the formation of low-molecular-weight fragments (oligomers), dimers, and monomers. You disagree with that. Is that true? In the primary degradation the main chain cleaves leading to the formation of low-molecular-weight fragments.
A. So the next sentence -- he doesn't give a mechanism for the cleavage of the main chain. He just says the main chain cleaves, which isn't

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realistic.
Q. You don't think that happens?
A. I think that he should have put the next sentence before that. Without the extracellular enzymes, the chain is not going to cleave by itself.
Q. And he cites for this proposition number 24, Vasile C, Degradation and Decomposition, in the Handbook of Polyolefins and Properties in 1993. Are you familiar with that publication?
A. I don't believe so.
Q. Let's go on to the next sentence. The degradation is due to the extracellular enzymes secreted by the organism. Do you agree or disagree with that?
A. That would be how it would degrade if it was a polyester.
Q. But only if it was a polyester?
A. Or an oxidized low-molecular-weight polyethylene.
Q. Anything else?
A. Polyurethane, polyether.
Q. Anything else?
A. There's a whole bunch.
Q. You're referring now to your patent?

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A. No.
MS. JOHNSON: What exhibit?
A. This is Number 10.
Q. Okay. Page what of Number 10?
A. Page 3726. So poly(ethylene adipate), polycaprolactone, poly beta-propiolactone, poly(butylene succinate), polyethylene succinate, aliphatic aromatic copolyester. Poly 3 hydroxybutyrate. And polyurethanes and nylon 6, and nylon 4.
Q. That would be then the entire universe of polymers that would be affected?
MS. JOHNSON: Objection.
A. It was just one set that you asked for. There probably are others.
Q. If you look at the remainder of that section under mechanism of biodegradation, can you indicate for me whether you agree or disagree with content and your reasons?
A. Starting where?
Q. Starting with the degradation is due to the extracellular enzymes secreted by the organism and forward.
A. I agree with respect to biodegradable polymers.

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Q. But not polymers generally?
A. Not polymers generally.
Q. Now, I'm going to identify a couple articles just to see if you have familiarity with them. If you don't, of course we're not going to ask you about them. I just want to check to see if you've read them before or are familiar with them.
Have you read the peer-reviewed article by Mueller RJ entitled Biological Degradation of Synthetic Polyesters Enzymes as Potential Catalysts for Polyester Recycling and Process Biochemistry?
MS. JOHNSON: Objection. Do you have a copy of the article?
MR. EMORD: No. I'm just seeing if he knows that as a familiar source.
A. Yes.
Q. You're familiar with that article?
A. Yes.
Q. What does that article stand for?
A. Basically what you read as the title, that he found an enzyme that was able to hydrolytically cleave PET.
Q. Okay. Thank you. Do you think synthetic plastics biodegrade in and of themselves?

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A. Some of them.
Q. Have you read the peer-reviewed article by Shaw, et al. entitled Biological Degradation of Plastics, a Comprehensive Review in Biotechnology Advances, 2008?
A. I believe so.
Q. Do you recall the substance of that article?
A. I think it was another review like these reviews.
Q. Do you recall what the gist or proposition of that article?
A. It was just reporting on what other people have reported.
Q. About the biological degradation of plastics?
A. Yes.
Q. Now, does low density PE biodegrade?
A. High-molecular-weight low density polyethylene does not biodegrade.
Q. Have you read the peer-reviewed article by P-R-A-M-I-L-A, R, et al. entitled Biodegradation of Low Density Polyethylene (LDPE) by Fungi Isolated from Municipal Landfill Areas,

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in the Journal of Microbiological Biotechnology Research 2011?
A. I think so.
Q. Do you remember what that was about?
A. I think it was a report of small amounts of degradation.
Q. Does low density polyethylene biodegrade?
A. I don't believe so.
Q. You mention in your report radiological --
A. Do you mean biodegrade at all or just --
Q. Biodegrade at all. Do you want to answer again?
A. In all these polymers there's molecular weight distribution and there could be some low-molecular-weight chains that could be oxidized that may be able to be degraded.
Q. I appreciate that. Now, radiological marker C testing. Now, in your report you identify that -- you said there's one test that you would deem essentially -- and correct me if I'm wrong -- dispositive as to whether additives like ECMs cause biodegradation of plastics containing them, and that test is 14C, right?
A. Carbon 14, yes.

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Q. And just for context, in paragraph 60 on page 24 you write, absent an approved ASTM specification, it is my opinion that to scientifically prove a claim that the plastic - not merely the additive and inoculum - is biodegrading, the claimant must support its claim with at least one test with positive results from 14C labeling of the conventional plastic, right?

A. Yes.

Q. And are you aware of any peer-reviewed journal article that identifies radiological marker C testing as the only definitive test to establish biodegradation of plastics?

MS. JOHNSON: Objection.

A. So when Eastman was introducing their copolyester that's PET with the aliphatic polyester, they did get some results that there was biodegradation. And it was believed that PET did not degrade. And so they labeled the benzene ring in the PET and then did the degradation test and proved that the -- because they didn't want the benzene rings to be just not degrading in the environment. So they proved that the benzene rings degraded.

Again, as long as it was enough -- I

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think it was 50 percent aliphatic polyester. And that was a very affordable test.

Q. My question really is different, in that I'm looking for whether there is -- whether you're aware of a peer-reviewed journal article that has identified radiological marker C testing as the only definitive test to establish biodegradation of plastics?

A. Yes, I think that resulted in a peer-reviewed article.

Q. Did it identify radiological marker C testing as the only definitive test?

A. Yes. Because it was unclear --

Q. Let's get the citation for that. When was it published?

A. I'm not sure.

Q. Do you have that article?

A. Let me see. It was around the time of my patent. Not my patent. The university's patent. Yes, around `98 or `97.

Q. Where was it published?

A. I don't know.

Q. In a peer-reviewed journal?

A. Yes.

Q. Do you have a copy of it?

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A. Not on me.

Q. Do you have it back in Lowell?

A. Probably.

Q. May we have a copy of that article? Did you say it was Eastman?

A. Yes.

Q. Do you remember who the authors were?

A. Charles Buchanan.

Q. B-U-C-H-A-N-A-N?

A. Yes.

Q. Anyone else?

A. I'm sure there were others.

Q. Where is Charles Buchanan?

A. I'm just guessing. He's probably on his farm in Tennessee because he's retired. Or he's in Florida where everybody else goes.

Q. Has the 14C radiological marker that you recommended as a confirmatory test already been used to prove that polyethylene biodegrades?

A. It's been used to prove that a small portion of polyethylene biodegrades.

Q. Do you remember what the source is for that information?

A. That's the Albertsson paper.

Q. Are you familiar with that article?

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A. Yes.

Q. Let's take a look at it.

(Whereupon, Respondent's Deposition Exhibit No. 14, Biodegradation of Synthetic Polymers. II. A Limited Microbial Conversion of 14C in Polyethylene to 14CO2 by Some Soil Fungi, marked.)

BY MR. EMORD:

Q. Now, did you become familiar with that article before this litigation or after?

A. Before.

Q. And what's going on here? She's got polyethylene film. She does what with it, and how does this C14 process work? What were the results?

A. So they bought carbon 14 labeled ethylene and then polymerized it to polyethylene. And then studied the release of carbon 14 labeled carbon dioxide from that polyethylene.

Q. They're really studying the gas release, the carbon dioxide release?

A. That's correct.

Q. What did they determine?

A. They determined that they get .4 percent degradation in 800 days.

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Q. If we look at the synopsis, and can you tell me if the synopsis is in any way not an accurate reflection of the remainder of the article? It says both the soil and the different mold cultures reflected with very good agreement a definite liberation of 14CO2 from the 14C labeled polyethylene film, significantly above that produced abiotically from aging samples. This is interpreted as due to an enzymatic cleavage and oxidative conversion of synthetic polymeric or oligomeric alkanes with limited chain length, accessible for biodegradation, right?

A. Yes.

Q. In your judgment did that 14C marker provide definitive proof in this study of that effect?

A. Of .5 percent in two years?

Q. Right. Of biodegradation.

MS. JOHNSON: Objection. Do you mean to completion?

Q. No. Of biodegradation.

A. Right. Again, as I stated earlier, there's a distribution of molecular weight. There probably is some low molecular weight that could then be oxidized and then degraded to a very small

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extent.

Q. That's your theory there. But that theory isn't supported in the article itself, is it?

MS. JOHNSON: If you need to read the whole thing, feel free.

A. Yes. It says it is assumed that the source of the carbon 14 metabolization in these degradational experiments must have been mainly low-molecular-weight polyethylene.

Q. Can you show me the page for that?

A. Sure. 3432.

Q. And where are you?

A. The last paragraph.

Q. However, that's not stated as a specific test finding, correct? It is stated that -- to read the entire sentence, it is assumed that the source of 14C metabolization in these degradational experiments must have been mainly low-molecular-weight polyethylene. But this conclusion must be corroborated by further study, especially on material of a more accessible form, for example, powder, possessing a high-surface volume ratio compared with polyethylene film, right? Would you agree with that?

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A. I agree with the statement that it's low-molecular-weight polyethylene.

Q. Would you agree that there needs to be a caveat based on the study that this conclusion must be corroborated by further study?

A. I mean, it's a reasonable conclusion.

Q. Now, I just want to see if you are familiar with this next one, Exhibit 15, also by Albertsson.

(Whereupon, Respondent's Deposition Exhibit No. 15, Biodegradation of Synthetic Polymers. III. The Liberation of 14CO2 by Molds Like Fusarium redolens from 14C Labeled Pulverized High-Density Polyethylene, marked.)

BY MR. EMORD:

Q. Just take a moment and read the -- first of all, did you see this article before you wrote your expert report?

A. Yes.

Q. And are you familiar with its contents?

A. Yes.

Q. Just go ahead and take a moment to look at the synopsis and then I'll ask you a question.

A. Okay.

Q. What is -- what do you understand the

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proof to be, based on this article; what happened? We have again 14C labeling. And what is the test dealing with fungi and molds?

A. This time they looked at powders.

Q. And how did this test result differ from the prior Albertsson study, 14?

A. They -- I think they got slightly higher degradation.

Q. They also had a somewhat remarkable finding in that there are two unidentified bacteria strains as well as Acremonium kiliense, Aspergillus versicolor and Verticillium lecanii were all thriving on the sparse media and enhanced to some extent the degradative CO2 liberation, especially in mixed cultures together with F. redolens. What is that all about?

A. Basically this was a similar finding to the carbon 14 labeled polymeric alkane.

Q. So they found that there was degradation taking place?

A. Yes. There's the low molecular weight.

Q. Further proof. In your own peer-reviewed publications you explain the use of testing methods as reviewing biodegradation that are other than 14C, right?

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A. Yes.
Q. And you're a co-author of Poly(b-hydroxybutyrate) Stereoisomers: A Model Study of the Effects of Stereochemical and Morphological Variables on Polymer Biological Degradability, a 1992 article in Macromolecules.
(Whereupon, Respondent's Deposition Exhibit No. 16, Poly(b-hydroxybutyrate) Stereoisomers: A Model Study of the Effects of Stereochemical and Morphological Variables on Polymer Biological Degradability, marked.)
BY MR. EMORD:
Q. We've listed this as Exhibit 16. Does this refresh your recollection, having it before you?
A. Yes.
Q. Looking at the third paragraph of that article, beginning the susceptibility of bacterial polyesters.
MS. JOHNSON: Where is this?
Q. The third paragraph, first page, under introduction. The susceptibility of bacterial polyesters to microbial degradation has been demonstrated by various methods and by different laboratories. Do you see that?

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A. Yes.
MR. EMORD: Now, madam reporter, please place in the transcript at this point in the deposition the exact content of what we've marked as Exhibit 16, paragraph 3, page 5927.
"The susceptibility of bacterial polyesters to microbial degradation has been demonstrated by various methods and by different laboratories. Researchers at Imperial Chemical Industries showed that natural origin PHB was biodegradable in the soil, anaerobic and aerobic sewage, seawater, and estuarine sediment. Delafield et al. carried out the isolation of 16 strains of soil microorganisms which were capable of growing under aerobic conditions with PHB as the sole source of carbon. The bacterial strains Pseudomonas lemoignei (ATCC 17989) and Alcaligenes faecalis T1, isolated from soil and activated sewage sludge, respectively, have been identified as being capable of using PHB as an exogenous source of carbon by excreting extracellular enzymes that depolymerize it. In our laboratory, we have successfully isolated and purified to electrophoretic homogeneity a PHB depolymerase exoenzyme from the fungus Penicillium funiculosum.

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It has been determined that the protein has an M value of 38,000. The enzyme has an isoelectric point of 5.8, a pH optimum range of 5.5-6.2, and a temperature optimum range of 30-35 degrees Celsius. In-laboratory simulations of natural environments have also been utilized in our laboratories to demonstrate the degradability of bacterial copolyesters. Since the kinetics of PHB enzyme degradation with isolated enzymes such as that from P. funiculosum may be much more rapid than nonbiologically mediated chemical hydrolysis (see above and corresponding references), enzyme-mediated hydrolytic degradation events are easily measured in the absence of appreciable chemical hydrolysis of PHB."
When we look at that third paragraph and the cited peer-reviewed journal articles which are referenced within it, and it also has corresponding references on page 5934, that's where the references are, I would like you to tell me whether any of the peer-reviewed articles referenced for that paragraph involve, to your knowledge, 14C radiological testing?
A. Any of these references?
Q. Right.

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A. Let me just look for the name Albertsson. I don't see any specifically.
Q. In this report on your testing of degradability, the test you performed to determine the effects of PHB stereochemistry and crystalline morphology on enzymatic degradability did not use 14C, right?
A. That is correct.
Q. And in the summary and result section of the article, on page 5933, in the second to the last sentence you explain your assessment of biodegradability based on the test you performed, right?
A. The second to the last sentence on the paper?
Q. Yes. It's above acknowledgment. The relative degradability of these PHB stereoisomers has interesting implications on the acceptability of stereochemical sequences in the biodegradation of PHB.
A. Yes.
Q. There in the second sentence you describe -- on 5933 -- it's actually under the heading summary of results on 5933. There in that second sentence you explain, the relative

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degradability of these PHB stereoisomers was studied with a PHB depolymerase enzyme isolated form P. funiculosum. And then show me where in the remainder of this you reach your conclusion as to the degradation and then just describe for me the conclusion.

A. The question is to --

Q. Here we have your results. I guess the best way to do this is just to allow you to explain to me the summary of the results, the essential nature of the test, the summary of the results that came from the test.

Perhaps another way of doing this is to just ask you is there any aspect of this summary that you find in any way in error, the summary of the results, or is it in your view an accurate reflection of the test and the results?

A. I believe it's an accurate reflection.

Q. Did you establish in this study that the test article completely biodegrades in the environment within one year of customary disposal?

A. No.

Q. Does a 14C radiological test reveal the time period required for plastic decomposition?

A. In what way?

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Q. I don't know. I'm asking you.

A. It could.

Q. It could?

A. Yes.

Q. Does a 14C radiological test reveal the loss of properties in weight of a plastic resulting from a biological process?

A. It could.

Q. Does a 14C radiological test reveal the extent to which the decomposition process results in the formation of toxic metabolic intermediaries?

A. It could.

Q. Does a 14C radiological test reveal the extent to which decomposition occurs with complete mineralization of the plastic?

A. It could.

Q. Does a 14C radiological test reveal the environmental exposure conditions required to sustain biodegradation?

A. Say that again.

Q. Does a 14C radiological test reveal the environmental exposure conditions required to sustain biodegradation?

A. Not by itself.

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Q. I'm going to give you another article.

(Whereupon, Respondent's Deposition Exhibit No. 17, A Respirometric Method to Measure Mineralization of Polymeric Materials in a Matured Compost Environment, marked.)

BY MR. EMORD:

Q. Let's take a moment to refresh your recollection. This is one of your articles, right?

A. Yes.

Q. Do you recall whether in this article you said that a single test method would not provide all of the answers to the time period, loss of properties and weight, formation of toxic intermediaries, complete mineralization and variable environmental exposure conditions. Take a look at page 294.

A. Okay.

Q. Now, is it your position in this article that a single test method does not provide all the answers to those questions you delineate in the first full paragraph on page 294, and you enumerated questions?

MS. JOHNSON: What was the question?

MR. EMORD: The question is whether it is

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his position in this article that a single test method would not provide all of the answers to the questions that he specifies enumerated in the first full paragraph on page 294.

A. It would not -- this could not be, that's correct.

Q. That in fact stated there as the last sentence, furthermore, a single test method will not provide all of the answers to the questions above.

A. That's correct.

Q. And you still stand by that view today?

A. Yes.

Q. Let's take a look at another of your articles. This one is Exhibit 18.

(Whereupon, Respondent's Deposition Exhibit No. 18, Advances in Properties and Biodegradability of Co-Continuous, Immicisible, Biodegradable, Polymer Blends, marked.)

BY MR. EMORD:

Q. Now, in this study you measured soil degradation rates of polylactic acid, right? It looks like, and you can tell me, it looks like this may have something to do with your patent. Am I mistaken? By your patent I mean the U Mass

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Lowell's patent based on your invention?
A. The question was?
Q. It looks like in this study you measured soil degradation rates of polylactic acid, and is this the study that is the principal study underlying your '199 patent?
A. No.
Q. This is one in a series of them?
A. This is the biodegradability with the proteinase K, the soil and the composting, for the blends which are the basis of the patent that U Mass owns.
Q. As I understand it, under this study you base your determination of biodegradation principally upon a measure of weight loss; is that right?
A. I believe the Proteinase -- it's true for the proteinase K and the composting. I don't recall how we did it for the soil.
Q. If you look on page 72 under biodegradability, the second paragraph. It looks like the patent description in the '199 patent with regard to biodegradation testing in the soil. I'm going to have the court reporter put into the transcript at this point the second full paragraph

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under the title biodegradability on page 72 of Exhibit 18 as a point of reference.
"The biodegradation testing in soil, Figure 10, shoed the biodegradation rate of Bio#3000 was extremely fast, while the rate of PLA was relatively slow. After degrading for 45 days, Bio#3000 degraded almost 100%, while PLA only degraded about 14%. For the blends with 70 and 50 wt % Bio#3000, the degradation rate is relatively fast. After 45 days, the A30/B70 blend degraded about 77%, the A50/B50 blend degraded about 65%. These values are equal to those expected on the basis of additivity rule. However, for blends with less than 30 wt% Bio#3000, the degradation percentage values are less than those expected on the basis of additivity rule."
Now, as I understand it from this study, you did not use 14C radiological testing, right?
A. That is true.
Q. And I also do not see anywhere in here reliance upon an ASTM standard test method?
A. That is correct.
Q. Did you use your own laboratory test method here?
A. It was the test method of the center.

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I'm not sure there was an ASTM test method at that time.
Q. What was the test method at the center?
A. There's three of them. One is the compost; one is the enzymatic; and one is the soil.
Q. You concluded that the biodegradation did occur in the test sample plastic, and it is listed there, is it not, in the second paragraph under the title biodegradability on page 72, for each of the blends and for the PLA?
A. So the question is the numbers are listed?
Q. Right. Is that an accurate summarization of the biodegradability or biodegradation results of the study listed on page 72 in paragraph 2 under the title biodegradability?
A. Yes. That's what we found.
Q. And you stand by those test results today?
A. Well, at the time, those were the best results that we had. It would have been better to do a measurement of carbon dioxide.
Q. But as for the tests that you did do, they're satisfactory for establishing the

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biodegradation of the test sample?
MS. JOHNSON: Objection.
A. I mean, at the time -- I mean, they're not the best tests. The weight loss is problematic, as we later found out.
Q. Now, when it comes to proof in this thing, you didn't prove that the test sample plastic completely biodegrades within one year of customary disposal, right?
A. Not with this test.
Q. Let's take a look at another one of your articles. This one is Exhibit 19.
(Whereupon, Respondent's Deposition Exhibit No. 19, Biodegradable Polymer Blends of Poly(lactic acid) and Poly(ethylene glycol), marked.)
BY MR. EMORD:
Q. Now we've marked for identification an article of Dr. McCarthy's as Respondent's Exhibit 19, Biodegradable Polymer Blends of Polylactic Acid and Polyethylene Glycol. This is one of your articles?
A. Yes.
Q. Part of the article explains an enzymatic degradation test, right?

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A. Part of the material was exposed to an enzyme.
Q. Correct me if I'm wrong, but it looks to me that you measured enzymatic degradation on pages 1500 and 1501 based on a weight loss calculation; is that correct?
A. Yes.
Q. Did you rely on any other measure for determining the degradation in this study, other than weight loss?
A. No.
Q. And you didn't use in this study an ASTM standard; is that correct?
A. I don't think one existed at the time.
Q. And you didn't use 14C radiological testing?
A. No.
Q. And let me ask you, do you extrapolate from your lab tests to conclusions about the actual environment in landfills?
A. Do I currently?
Q. Have you ever?
A. I don't know.
Q. You don't remember?
A. I don't remember.

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Q. Let's take a look at another article here. I'll mark this as Exhibit 20.
(Whereupon, Respondent's Deposition Exhibit No. 20, Degradation Ranking of Plastics in a Landfill Environment, marked.)
BY MR. EMORD:
Q. This article is entitled Degradation Ranking of Plastics in a Landfill Environment. You appear to be one of the authors; is that correct?
A. Yes.
Q. If we look at page 867, and that's right on the front there, in the second full paragraph, you appear to define the purpose of the study, right?
A. Yes.
Q. And you write, the purpose of this paper is to compare on a relative scale the degradation of various plastic materials in an accelerated test which is correlatable to the actual degradation in actual landfills, right?
A. Yes.
Q. So it's fair to say from this study that the accelerated control tests you performed in the lab in this study you correlated to actual

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landfill conditions in the outside world, right?
A. No. We didn't. We weren't able to. I mean, we tried to. That was the purpose of it, but it never happened.
Q. Now, in this study you didn't use 14C radiological testing?
A. No.
Q. And what method did you use to measure biodegradability?
A. It looks like weight loss.
Q. In the third full paragraph of the study on the front, you write, in this preprint we present preliminary results which correlate plastics degradation with the biological environment in the simulator, and provide comparative rates for the degradation of plastics and materials typically placed in landfills, right?
A. Right.
Q. Are you extrapolating here from the lab tests to the real world environment of landfills?
MS. JOHNSON: Objection.
A. No.
Q. In the third paragraph, you describe the method you used here, it's not 14C radiological

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testing, to present it as a, quote, a methodology for the routine analysis for plastics degradation under leachate-recycled landfill conditions, end quote. Do you see that?
A. Yes.
Q. So you believe that that methodology, at the time you wrote this article, you believed that the methodology you used, is that a fair statement, for the routine analysis for plastics degradation under leachate-recycled landfill conditions?
A. That was what we had hoped.
Q. But the method used you describe as the routine analysis for plastic degradation?
MS. JOHNSON: Objection. Asked and answered.
Q. As routine?
A. No.
Q. At the time you wrote this, you didn't believe it was routine?
A. No. We presented a methodology that we had hoped could be used in routine analysis, and ended up not being able to do it.
Q. Now, you also evaluated the appearance of samples to determine if they looked weathered; is

that correct?
A. Do you know where that is?
Q. If you look under results and discussion, the second full paragraph, cellophane and PHBV appeared extensively weathered from exposures in simulators G, E and H. Cellophane turned black and disintegrated into small fragments; in fact, none could be recovered from simulator G. PHBV became brittle, opaque and extensively eroded on the surface; only small remnants of PHBV could be recovered after an exposure of 127 days. In all simulators, polypropylene became discolored and somewhat embrittled, but films showed no signs of surface erosion.
A. This was the problem with the weight loss is that they fragmented, and it was not accurate.
Q. Exhibit 10, page 293, if you look there in the first paragraph, 293, it reads, there is increased recognition that biodegradable plastics can serve an important role in the design of an intelligent, integrated solid waste disposal scheme. Do you believe that statement to be true when you made it?
A. Yes.
Q. And is it true today?

A. I believe so.
Q. The same article on the same page, right column, you write, biodegradable disposable-plastic articles can be designed such that they will be entirely converted by microbial activity in a biologically active environment to biogas (CO2 and CH4/CO2 under aerobic and anaerobic conditions, respectively), biomass and biological byproducts. Do you believe that statement to be true when you made it?
A. Yes.
Q. Do you believe it to be true today?
A. If I was to write it today, I would say just use aerobic and add biomass.
Q. Now, two years after you wrote these words, and two years later would be 1995, and you wrote in another article,Laboratory-Scale Composting Test Methods to Determine Polymer Biodegradability: Model Studies on Cellulose Acetate, which we will mark as Exhibit 21.
(Whereupon, Respondent's Deposition Exhibit No. 21, Laboratory-Scale Composting Test Methods to Determine Polymer Biodegradability: Model Studies on Cellulose Acetate, marked.)
BY MR. EMORD:

Q. Look at that. This is one of your articles, right?
A. This is an article and I'm one of the authors.
Q. If you'll look an page 614, the first full paragraph under the title Introduction, there is an increased recognition that biodegradable plastics can serve an important role in the design of an intelligent, integrated, solid waste disposal scheme. When you wrote this article, did you believe the statement to be true?
A. Well, this article was written by Rich Gross.
Q. Do you don't take credit for that statement?
A. I don't take credit for it. But I agree with it.
Q. Is it true today?
A. I think so.
Q. Again, as you wrote in the prior article and again write here in the next sentence, the third sentence of the first paragraph under the title Introduction, biodegradable disposable-plastic articles can be designed such that they will be entirely converted by microbial

activity in a biologically active environment to biogas (CO2 and CH4/CO2 under aerobic and anaerobic conditions, respectively), biomass, and biological byproducts. That was what you wrote then?
A. Yes.
Q. Was that statement correct when you wrote it?
A. Yes.
Q. And is it correct today?
A. Yes.
Q. Now, let's look at another article that you wrote, and we'll mark it as Exhibit 22.
(Whereupon, Respondent's Deposition Exhibit No. 22, Reactive Compatibilization of Biodegradable Blends of Poly(lactic acid) and poly(e-caprolactone), marked.)
BY MR. EMORD:
Q. It's entitled Reactive Compatibilization of Biodegradable Blends of Poly(lactic acid) and poly(e-caprolactone). If you'll look at page 161 in the full sentence under the title Introduction you write, PLA and PCL are well known biodegradable polymers, right?
A. Yes.

Q. And you stand by that statement today, right?
A. Yes.
Q. Before you wrote that statement, did you establish that PLA and PCL plastics completely break down and return to nature, that is, decompose into elements found in nature within one year after customary disposal?
MS. JOHNSON: Objection.
A. Possibly. I possibly had seen studies showing that.
Q. But you're not sure whether you have or have not?
A. I mean, this was `98.
Q. Now, let's take a look at the next article. Certainly nowhere in this article do you refer to the biodegradation of PLA and PCL as being the result of a complete breakdown and return to nature of those elements and doing so within one year, right?
A. I don't know.
Q. Go ahead and take a look. If you find a spot in there where you did say that, let me know.
(Whereupon, Respondent's Deposition Exhibit No. 23, Biodegradable Blends of Bacterial

Polyesters with Polyethylene and Polystyrene, marked.)
BY MR. EMORD:
A. It doesn't appear to be in here.
Q. Let's take a look at this one, Number 23, which appears to be another article in which you're a co-author. This one is entitled Biodegradable Blends of Bacterial Polyesters with Polyethylene and Polystyrene. Here you identify polyethylene and polystyrene polymer blends as biodegradable, right?
MS. JOHNSON: Objection.
A. Well, Bhalakla does.
Q. You were a co-author. You disagreed?
A. I wouldn't have characterized the blend as biodegradable. I would have characterized the PHB as biodegradable.
Q. Now, if you look at the first paragraph it says, these polymers belong to a family of microbially degradable thermoplastics which are readily biosynthesized by a bacterial fermentation process, right?
A. Yes.
Q. Do you agree with that statement?
A. It's referring to the PHB proponents,

yes.
Q. You do. Okay. Before you wrote that statement did you establish that the polyethylene and polystyrene blend completely break down and return to nature, that is, decompose into elements found in nature within one year after customary disposal?
MS. JOHNSON: Objection.
A. I didn't write this.
Q. Did anyone who was involved with the writing of this, to your knowledge, establish that the polyethylene and polystyrene blends completely break down and return to nature within one year after customary disposal?
A. I don't think so.
Q. If we look at Exhibit 24.
(Whereupon, Respondent's Deposition Exhibit No. 24, The Effect of Hyperbranched Polymers on Processing and Thermal Stability of Biodegradable Polyesters, marked.)
BY MR. EMORD:
Q. Now, this is entitled The Effect of Hyperbranched Polymers on Processing and Thermal Stability of Biodegradable Polyesters. You're one of the co-authors?

A. Right.
Q. You identified poly-hydroxy-butyrate in the left column, end of the first paragraph, under the title Introduction, as fully biodegradable, right?
A. That's right.
Q. And do you stand by that statement today, that it is fully biodegradable?
A. Under certain disposal methods.
Q. Now, before this statement of it being fully biodegradable, it is contained in the last full sentence of the first full paragraph under the title Introduction, did you establish that poly-hydroxy-butyrate completely breaks down and returns to nature, that is, decomposing into elements found in nature within one year after customary disposal?
MS. JOHNSON: Objection.
A. I believe that was demonstrated.
Q. Was it demonstrated in the context of this article?
A. I don't believe so.
Q. Did any of the authors in this article recite that they had determined that existence of biodegradation predicated upon establishment that

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the poly-hydroxy-butyrate completely broke down and returned to nature decomposing into elements found in nature within one year after customary disposal?

A. No.

(Whereupon, Respondent's Deposition Exhibit No. 25, Biodegradation of Natural/Syndiotactic Poly(3-hydroxybutrate) Blends, marked.)

BY MR. EMORD:

Q. This is entitled Biodegradation of Natural/Syndiotactic Poly(3-hydroxybutrate) Blends. Here you identified P3HB in the first paragraph as a biodegradable material, right?

A. This is the polymer preprint again. That's not peer-reviewed that's written by this student. But I agree with that.

Q. It's identified as such in the first paragraph, right, as a biodegradable material?

A. Yes.

Q. Do you stand by that identification that P3HB is a biodegradable material?

A. Yes.

Q. Is it anywhere referenced in this article that P3HB completely breaks down and returns to

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nature, that is, decomposes into elements found in nature within one year after customary disposal?

A. The reference would be it does -- if it does state it, it would be reference to it.

Q. So it might be in the reference; there might be information germane to that point in reference?

A. Right.

Q. But you're not sure, or are you sure?

A. It says that it mineralizes. The question is one year.

Q. Right. One year. So you think that reference to establish is that it occurs within one year?

MS. JOHNSON: Objection. Mischaracterizes his testimony.

Q. Go ahead and explain.

A. I think it could. I just don't know.

Q. But there's no reference in the article itself to a standard that would indicate that the P3HB completely breaks down and returns to nature, decomposes into elements found in nature within one year after customary disposal?

A. It could be in number 2.

Q. Other than number 2, there's no express

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reference in the article?

A. Right.

MR. EMORD: Now this one is 26.

(Whereupon, Respondent's Deposition Exhibit No. 26, Microwave-Assisted Solvent-Free or Aqueous-Based Synthesis of Biodegradable Polymers, marked.)

BY MR. EMORD:

Q. This one is entitled,Microwave-Assisted Solvent-Free or Aqueous-Based Synthesis of Biodegradable Polymers.

A. Yes.

Q. This is another of your articles?

A. Yes.

Q. And you write here polysaccharides themselves are inherently biodegradable, right?

A. Yes.

Q. And you stand by that statement today, right?

A. Yes.

Q. Now, I don't find any reference in here to an assessment that would find that polysaccharides completely break down and return to nature as decomposing elements found in nature within one year after customary disposal. Does

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such a determination exist in the article?

A. Polysaccharides are found in nature.

Q. Is there such a determination, in other words, in the use of the term biodegradable in the article, is it defined anywhere in here as requiring satisfaction of those two elements?

A. Because polysaccharides are found in nature, they would in fact be elements found in nature immediately.

Q. So that's why you say it's inherently biodegradable, because it's already found in nature and it doesn't really have to degrade; it's already in a state of degradation?

A. No. It does degrade.

Q. If it does degrade, is it the case that in this article there has been established or written here the point that it would degrade necessarily and return to elements, break completely down and turn to elements in nature?

MS. JOHNSON: Objection.

Q. Or do you consider polysaccharides themselves to be an element in nature?

A. Well, the degradation of polysaccharides occurs in nature. So any biodegradation -- the biodegradation of products would be found in

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nature.
Q. How about the polyesters, with respect to biodegradation of the polymers that are referenced in this article, does it establish that those polymers would biodegrade such that they would break down and return to nature decomposing into elements found in nature within one year after customary disposal?
A. No.
Q. Now, does all paper completely break down and return to nature, that is, decompose into elements found in nature within one year after customary disposal, all paper products?
A. No.
Q. Does a banana peel?
A. Does a banana peel --
Q. Does it completely break down and return to nature, that is, decompose into elements found in nature within one year after customary disposal?
A. I'm not sure.
Q. If it didn't within a year, would it still be biodegradable?
A. There would probably be some conditions where it would degrade within one year.

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Q. But assuming that a part of the banana peel doesn't biodegrade within a year or that the whole banana peel didn't biodegrade within a year but it biodegraded two years later, would that in your judgment exclude it from being appropriately considered biodegradable?
A. Well, it would exclude it from being claimed as biodegradable within a year.
Q. I'm asking not about claims. I'm asking just as a scientist. Would you consider a banana peel not to be biodegradable?
A. I don't know. I don't know whether it degrades completely.
Q. Would you consider a tree trunk to be biodegradable?
MS. JOHNSON: Objection.
Q. Is a tree trunk biodegradable?
A. I would consider it biodegradable.
Q. Does a tree trunk completely degrade in nature within one year of customary disposal?
A. If it's sliced thin enough.
Q. So if it falls in the woods and it isn't sliced, it's not biodegradable because it might not biodegrade within one year?
A. Again, it would biodegrade within the

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year if you sliced it.
Q. Say you don't slice it. A tree falls in the woods, is it biodegradable?
A. Yes, it's biodegradable.
Q. Even if it doesn't completely return to elements found in nature within one year?
A. Right.
Q. Is an orange peel biodegradable?
MS. JOHNSON: Objection. How many more of these do we have to go through?
Q. Is an orange peel biodegradable?
A. I think so.
Q. Even if it doesn't biodegrade within one year?
A. I think it could be sliced thin enough so it would.
Q. Is there a difference between verification and validation?
MS. JOHNSON: Objection. Vague.
A. Yes, there is.
Q. What is the difference?
A. So validation is the validity of the test.
Q. And verification is?
A. And I think verification is that the

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material passes.
Q. Do you know whether the EPA and the United States Department of Defense use validation rather than verification when conditions in the field and in the lab are complex and heterogeneous?
MS. JOHNSON: Objection.
A. I do not know.
Q. Have you read the Guidance on Environmental Data Verification and Data Validation, EPA document?
A. I don't believe so.
Q. And have you read the U.S. Army Corps of Engineers Guidance for Evaluating Performance-Based Chemical Data?
A. I don't believe so.
Q. Now, your report states that you reviewed all the tests conducted by the independent labs on ECM plastics, right?
MS. JOHNSON: Objection.
A. I reviewed all of the data that was supplied to me by complaint counsel.
Q. Did that data include Eden Labs and Northeast Labs test results?
A. Yes.

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Q. You reviewed those Eden lab tests and those Northeast lab tests?
A. Yes.
Q. Did you run any statistics for the D5511 test of Eden Labs and Northeast Labs?
A. No.
Q. You were provided the raw data from the Eden Labs and Northeast Labs tests?
MS. JOHNSON: Objection. Assumes facts not evidence in that there is no raw data for the Eden Labs.
Q. Did you receive any raw data for the Eden Labs and the Northeast Labs tests?
A. I did not receive raw data from Eden Labs.
Q. You didn't get any raw data supplied to you by complaint counsel?
A. I did not.
MS. JOHNSON: If you have raw data, please share it with us, because we didn't receive any.
Q. So this probably goes without saying, but you didn't calculate mean CO2 in milliliters for the substrate in those tests?
A. I have not.

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Q. Or the mean CH4 in milliliters for the inoculum?
A. I have not.
Q. Or the mean CO2 and the milliliter for the inoculum?
A. I have not.
Q. You didn't calculate the ratio of the mean methane yield of the substrate to the mean inoculum yield?
A. Calculate the mean?
Q. The mean methane yield of the substrate to the mean inoculum yield?
MS. JOHNSON: Objection. What substrate?
A. Yes. What substrate?
Q. What substrate? I don't know. Now, but basically you didn't do any calculations, because you didn't have the raw data. You weren't supplied with the raw data so you didn't do any calculation.
A. I wasn't supplied with the raw data from Eden.
Q. Were you supplied with raw data from Northeast Labs?
A. There was sort of raw data that was not the real raw data. It was numbers that I guess

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were like average. So there were a lot of the same number in most of the tests. So it wasn't the real raw data.
Q. Now, I think you said you weren't a biochemist, so if this is outside of your area, you can say, but can you name for me each of the species of microbial life that dwell in a landfill?
A. No.
Q. And could you explain the life cycle of those critters in the landfill?
A. No.
Q. You couldn't explain how they reproduce and feed and colonize and that sort of thing?
A. No.
Q. Can you explain for me what stimulates microbial life forms to produce enzymes?
A. It would be the food source.
Q. Is that the only thing that would stimulate them to --
A. I'm not sure.
Q. That's outside of your area?
A. Yes.
Q. Is a biological -- is a biodegradation test finding that is stated as no conclusion can

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be drawn the same as a finding that no biodegradation was observed?
MS. JOHNSON: Objection.
Q. Is it the same?
A. I'm not sure of the context.
Q. Right. If you were to read within a study test a finding that stated no conclusion can be drawn, would that be the same in your mind as a finding that no biodegradation was observed?
A. I can see instances where it could be the same.
Q. And you can see instances when it would not be the same?
A. Probably.
Q. Is a biodegradation test finding that no statistically significant biodegradation was found the same as a finding of no biodegradation?
MS. JOHNSON: Objection.
A. I could see cases where they would be the same.
Q. And you can see cases when they would not be the same?
A. Yes.
MS. JOHNSON: Are we talking about specific tests?

MR. EMORD: I have no further questions.
MS. JOHNSON: Let's just take a couple-minute break.
(Recess.)
EXAMINATION BY MS. JOHNSON:
Q. Dr. McCarthy, when were you retained?
A. Over two years ago.
Q. In that time, what volume of information have you reviewed, would you say?
A. Monstrous.
Q. And so is it possible that some of the articles that have been placed before you today as exhibits you may have reviewed before you prepared your expert report in this case?
A. Definitely.
MS. JOHNSON: No further questions.
(Proceedings concluded at 3:15 p.m.)

CERTIFICATION OF REPORTER
DOCKET/FILE NUMBER: 9358
CASE TITLE: ECM BioFilms, Inc.
DEPOSITION DATE: June 27, 2014

I HEREBY CERTIFY that the transcript Contained herein is a full and accurate transcript of the notes taken by me at the hearing on the above cause before the FEDERAL TRADE COMMISSION to the best of my knowledge and belief.

DATED: 7-7-14

_____
Linda A. Crockett

C E R T I F I C A T E O F P R O O F R E A D E R

I HEREBY CERTIFY that I proofread the transcript for accuracy in spelling, hyphenation, punctuation and format.

_____
Edward Grandes

CERTIFICATE OF DEPONENT

I hereby certify that I have read and examined the foregoing transcript, and the same is a true and accurate record of the testimony given by me.
Any additions or corrections that I feel are necessary, I will attach on a separate sheet of paper to the original transcript.

_____
Stephen McCarthy, Ph.D.

I hereby certify that the individual representing himself/herself to be the above-named individual, appeared before me this_____ day of _____,_____, and executed the above certificate in my presence.

_____
NOTARY PUBLIC IN AND FOR _____

MY COMMISSION EXPIRES:_____

WITNESS: STEPHEN McCARTHY, Ph.D.
DATE: JUNE 27, 2014
CASE: ECM BIOFILMS, INC.

Please note any errors and the corrections thereof on this errata sheet. The rules require a reason for any change or correction. It may be general, such as "to correct stenographic error," or "to clarify the record," or "to conform with the facts."

Page	Line	Correction & Reason for Change

N

Complaint Counsel
Exhibit C
CCX-C

UNITED STATES OF AMERICA
BEFORE THE FEDERAL TRADE COMMISSION

In the Matter of	)	
ECM BioFilms, Inc., a corporation, also d/b/a Enviroplastics International	)	**Docket No. 9358**

COMPLAINT COUNSEL'S OBJECTIONS AND RESPONSES TO THE SUBPOENA *DUCEUS TECUM* TO DR. STEPHEN MCCARTHY

Pursuant to Rules 3.34 and 3.38A of the Federal Trade Commission's Rules of Practice for Adjudicative Proceedings, Complaint Counsel hereby submits the following objections and responses to Respondent's Subpoena *Duces Tecum* ("Subpoena") to Dr. Stephen McCarthy ("Expert").

GENERAL OBJECTIONS

1. Complaint Counsel objects to the Subpoena to the extent that it is invalid and unenforceable for lack of Commission Seal.

2. Complaint Counsel objects to the Subpoena to the extent that it is invalid and unenforceable because it is issued directly to Complaint Counsel's expert and not to Complaint Counsel.

3. Complaint Counsel objects to the Subpoena to the extent that it calls for the discovery of information beyond the scope of § 3.31A of the Commission's Rules of Practice and the ALJ's Scheduling Order in this case. *See also In the Matter of Basic Research*, No. 9318, 2004 FTC LEXIS 237, *9 (F.T.C. Dec. 9, 2004); *In re Dura Lube*, No. 9292, 1999 FTC LEXIS 254 (F.TC. Dec. 15, 1999).

4. Complaint Counsel objects to the Subpoena to the extent that it seeks information before expert disclosures are required in accordance with § 3.31A of the Commission's Rules of Practice and the ALJ's Scheduling Order in this case.

5. Complaint Counsel objects to the Subpoena to the extent that it seeks information that is not relevant to the subject matter of the litigation and/or not reasonably calculated to lead to the discovery of information relevant to the allegations of the complaint, to the proposed relief, or to Respondent's defenses.

6. Complaint Counsel objects to the Subpoena to the extent that it is overly broad, unduly burdensome, vague or ambiguous.

7. Complaint Counsel objects to the Subpoena to the extent that it is unreasonably cumulative or duplicative, or is obtainable from some other source that is more convenient, less burdensome, or less expensive.

8. Complaint Counsel objects to the Subpoena because the burden and expense of the proposed discovery outweigh its likely benefit.

9. Complaint Counsel objects to the Subpoena to the extent it seeks information that is subject to the attorney-client privilege, the attorney work-product privilege, the investigative privilege, the non-testifying expert privilege, the deliberative privilege, the law enforcement privilege, the informant privilege, and the joint prosecution privilege, that is exempt from disclosure pursuant to confidentiality provisions set forth in the FTC Act, that is protected from disclosure by the privilege for information given to the FTC on a Pledge of Confidentiality, that is protected from disclosure under principles of financial privacy, that is subject to a protective order from another litigation, or that is subject to other applicable legal protection or privilege.

10. Complaint Counsel objects to the Subpoena to the extent that it calls for materials outside the scope of discovery pursuant to Rule 3.31(c)(2).

11. By providing information in response to the Subpoena, Complaint Counsel does not concede that the Subpoena is valid, appropriate, or that such information is relevant, material, or admissible in evidence.

12. Complaint Counsel's objections and responses to the Subpoena are based on information now known to Counsel. Complaint Counsel has not yet completed its discovery of the facts in this case or prepared for trial and therefore reserves its rights under the Commission's Rules of Practice to amend, modify, or supplement its objections and responses if it learns of new information.

13. Complaint Counsel will not produce information responsive to any request that Respondent previously has produced to Complaint Counsel at any point during the investigation or prosecution of this matter.

14. Complaint Counsel will not produce information responsive to any request that has been provided to Respondent previously at any point during the investigation or prosecution of this matter.

15. Each of the foregoing General Objections is incorporated in each of the Responses hereinafter set forth. Subject to and without waiving these objections, Complaint Counsel provides the following responses.

OBJECTIONS AND RESPONSES TO SUBPOENA SPECIFICATIONS

1. All documents received or possessed before you were engaged as an expert (consulting or testifying) in FTC Docket No. 9358 that concern ECM BioFilms, Inc., any past and present employee or principal of ECM, and/or the ECM additive.

   RESPONSE: Complaint Counsel hereby objects to this Request to the extent that it seeks information not likely to lead to relevant evidence, and to the extent that this unlimited request is overbroad and burdensome under 16 CFR § 3.31(c)(2)(i)-(iii).

Complaint Counsel objects to this Request because it seeks information beyond the scope of information to be produced under Rule 3.31A and Paragraph 19 of the Court's Scheduling Order. Subject to and without waiving the foregoing General and specific objections, Complaint Counsel will produce all responsive, non-privileged documents within the scope of Rules 3.31 and 3.31A, and in accordance with the Scheduling Order and the Commission Rules.

2. All documents, materials, correspondence, forms, marketing material, and testing used or referenced to form any and all opinions you may offer in this case. Production of all responsive materials should be submitted in accordance with the Commission's Rules of Practice and the ALJ's Scheduling Order in this matter.

   RESPONSE: Complaint Counsel objects to this Request because it seeks information required to be produced under Rule 3.31A(c) and Paragraph 19 of the Court's Scheduling Order. Complaint Counsel therefore objects to this Request because it unilaterally changes the scheduling order and advances Complaint Counsel's deadline for production of Rule 3.31A(c) expert information by two months. The Scheduling Order dictates the time and manner of production for information covered by this Request. Subject to and without waiving the foregoing General and specific objections, Complaint Counsel will produce all responsive, non-privileged documents within the scope of Rules 3.31 and 3.31A, and in accordance with the Scheduling Order and the Commission Rules.

3. All contracts, retainers, or engagement letters between you and any public or private firm that manufactures and/or produces biodegradable and/or compostable products.

   RESPONSE: Complaint Counsel objects to this Request because it seeks information beyond the scope of information to be produced under Rule 3.31A and Paragraph 19 of the Court's Scheduling Order. Complaint Counsel further objects to this Request to the extent that it seeks information not likely to lead to relevant evidence, and to the extent that this unlimited request is overbroad and burdensome under 16 CFR § 3.31(c)(2)(i)-(iii).

4. All reports, analyses, assessments, tests, data, summaries, and conclusions issued to any public or private firm that manufactures and/or produces biodegradable and/or compostable products concerning the biodegradability of plastics manufactured by those companies.

   RESPONSE: Complaint Counsel hereby incorporates by reference each General Objection as if set forth here in full. Complaint Counsel hereby objects to this Request to the extent that it seeks information not likely to lead to relevant evidence, and to the extent that this unlimited request is overbroad and burdensome under 16 CFR § 3.31(c)(2)(i)-(iii). Complaint Counsel objects to this Request because it seeks information beyond the scope of information to be produced under Rule 3.31A and Paragraph 19 of the Court's Scheduling Order.

5. All correspondence between you and any firm that manufactures and/or produces a product or substance in competition generally with other biodegradable plastic products

(to wit, ECM's additive) concerning the biodegradability of plastics manufactured with plastic additives.

RESPONSE: Complaint Counsel hereby objects to this Request to the extent that it seeks information not likely to lead to relevant evidence, and to the extent that this unlimited request is overbroad and burdensome under 16 CFR § 3.31(c)(2)(i)-(iii). Complaint Counsel objects to this Request because it seeks information beyond the scope of information to be produced under Rule 3.31A and Paragraph 19 of the Court's Scheduling Order.

6. All correspondence and sections of contracts, retainers, and/or agreements with the University of Massachusetts, Lowell ("Umass") concerning funding (including research grants) of research related to biodegradable plastics or polymers.

RESPONSE: Complaint Counsel hereby objects to this Request to the extent that it seeks information not likely to lead to relevant evidence, and to the extent that this unlimited request is overbroad and burdensome under 16 CFR § 3.31(c)(2)(i)-(iii). Complaint Counsel objects to this Request because it seeks information beyond the scope of information to be produced under Rule 3.31A and Paragraph 19 of the Court's Scheduling Order.

7. All your pending or existing patents that involve or relate to plastics and or biodegradable and compostable substances, products, and technologies, including those patents for which you are the assignor.

RESPONSE: Complaint Counsel hereby objects to this Request to the extent that it seeks information not likely to lead to relevant evidence, and to the extent that this unlimited request is overbroad and burdensome under 16 CFR § 3.31(c)(2)(i)-(iii). Subject to and without waiving the foregoing General and specific objections, Dr. McCarthy has disclosed his complete Curriculum Vitae, which includes a list of all his patents. Subject to and without waiving the foregoing General and specific objections, Complaint Counsel will produce all responsive, non-privileged documents within the scope of Rules 3.31 and 3.31A, and in accordance with the Scheduling Order and the Commission Rules.

8. All licensing or royalty agreements involving or concerning patents identified *supra* in response to Request 7, and all such agreements involving intellectual property related to biodegradable and compostable products.

RESPONSE: Complaint Counsel hereby objects to this Request to the extent that it seeks information not likely to lead to relevant evidence, and to the extent that this unlimited request is overbroad and burdensome under 16 CFR § 3.31(c)(2)(i)-(iii). Complaint Counsel objects to this Request because it seeks information beyond the scope of information to be produced under Rule 3.31A and Paragraph 19 of the Court's Scheduling Order. Subject to and without waiving the foregoing General and specific objections, Dr. McCarthy has disclosed his complete Curriculum Vitae, which includes a list of all his patents.

9. Copies of all contracts, grant documents (including proposals) for the following research projects you were involved in:

    a. Metabolix, "Development of Novel of Biodegradable Materials, $1,500,196

    b. NSF Center for Biodegradable Polymer Research, $1,200,000 Industrial Members (8/93-present), Principal Investigator

    c. Polymer Degradation Research Center, $475,000, Industrial Members (8/89-8/93)

    d. Digital, "Plastics Materials Research", $458,706

    e. Metabolix Inc., Performance of PHA Derived Chemicals and Polyols in Polyurethane, $141,465

    f. 3M, "Composting Research", $155,000

    g. Warner Lambert, "Biodegradable Polymer Research", $116,591

    h. National Science Foundation, "Biodegradable Polymer Research Center", $110,000 (8/93-8/95)

    i. Department of the Army, "Polymer Degradation Research", $104,000

    j. Institute for Plastics Innovation, "Injection Molding Research", $75,000

    k. Massachusetts Centers of Excellence, "Institute for Plastics Innovation", $75,000

    l. Metabolix Inc., Performance of Polyhydroxyalkanote Derived Chemicals and Polyols in Polyurethane, $71,465

    m. Battelle, "Biodegradable Packaging Development", $59,865

    n. DuPont Corian, $50,000

    o. Invista, "Evaluation of Plasticizers", $ 28,000

    p. Massachusetts Centers of Excellence, "Polymer Degradation Research", $25,000

RESPONSE: Complaint Counsel hereby incorporates by reference each General Objection as if set forth here in full. Complaint Counsel hereby objects to this Request to the extent that it seeks information not likely to lead to relevant evidence, and to the extent that this unlimited request is overbroad and burdensome under 16 CFR § 3.31(c)(2)(i)-(iii). Complaint Counsel objects to this Request because it seeks information beyond the scope of information to be produced under Rule 3.31A and Paragraph 19 of the Court's Scheduling Order.

10. All documents concerning any testing or product evaluations involving biodegradable and/or compostable plastics in which you participated on behalf of, or as a member of, the BioEnvironmental Polymer Society and/or the Society of Plastics Engineers.

    RESPONSE: Complaint Counsel hereby objects to this Request to the extent that it seeks information not likely to lead to relevant evidence, and to the extent that this unlimited request is overbroad and burdensome under 16 CFR § 3.31(c)(2)(i)-(iii). Complaint Counsel objects to this Request because it seeks information beyond the scope of information to be produced under Rule 3.31A and Paragraph 19 of the Court's Scheduling Order.

11. All correspondence between you and any employee and/or consultant of the Biodegradable Products Institute ("BPI").

    RESPONSE: Complaint Counsel hereby objects to this Request to the extent that it seeks information not likely to lead to relevant evidence, and to the extent that this unlimited request is overbroad and burdensome under 16 CFR § 3.31(c)(2)(i)-(iii). Complaint Counsel objects to this Request because it seeks information beyond the scope of information to be produced under Rule 3.31A and Paragraph 19 of the Court's Scheduling Order.

12. All correspondence with Dr. Ramani Narayan.

    RESPONSE: Complaint Counsel hereby objects to this Request to the extent that it seeks information not likely to lead to relevant evidence, and to the extent that this unlimited request is overbroad and burdensome under 16 CFR § 3.31(c)(2)(i)-(iii). Complaint Counsel objects to this Request because it seeks information beyond the scope of information to be produced under Rule 3.31A and Paragraph 19 of the Court's Scheduling Order.

13. All correspondence with any employee or contracting employee of O.W.S., Inc. related to biodegradable plastics.

    RESPONSE: Complaint Counsel hereby objects to this Request to the extent that it seeks information not likely to lead to relevant evidence, and to the extent that this unlimited request is overbroad and burdensome under 16 CFR § 3.31(c)(2)(i)-(iii). Complaint Counsel objects to this Request because it seeks information beyond the scope of information to be produced under Rule 3.31A and Paragraph 19 of the Court's Scheduling Order.

14. All correspondence (not subject to attorney client or work-product privilege and received before engagement as an expert in FTC Docket No. 9358) with any employee and/or representative of the Federal Trade Commission concerning biodegradable plastics.

RESPONSE: Complaint Counsel hereby objects to this Request to the extent that it seeks information not likely to lead to relevant evidence, and to the extent that this unlimited request is overbroad and burdensome under 16 CFR § 3.31(c)(2)(i)-(iii). Complaint Counsel objects to this Request because it seeks information beyond the scope of information to be produced under Rule 3.31A and Paragraph 19 of the Court's Scheduling Order.

15. All correspondence with any witness, person, and/or consultant used to help form any opinion you have in this case. Production of all responsive materials should be submitted in accordance with the Commission's Rules of Practice and the ALJ's Scheduling Order in this matter.

RESPONSE: Complaint Counsel objects to this Request because it seeks information required to be produced under Rule 3.31A(c) and Paragraph 19 of the Court's Scheduling Order. Complaint Counsel therefore objects to this Request because it unilaterally changes the scheduling order and advances Complaint Counsel's deadline for production of Rule 3.31A(c) expert information by two months. The Scheduling Order dictates the time and manner of production for information covered by this Request. Subject to and without waiving the foregoing General and specific objections, Complaint Counsel will produce all responsive, non-privileged documents within the scope of Rules 3.31 and 3.31A, and in accordance with the Scheduling Order and the Commission Rules.

16. All documents revealing shares of stock or ownership interests held by you in any company that sells, manufactures, or markets plastics, biodegradable technologies, and/or compostable technologies.

RESPONSE: Complaint Counsel hereby objects to this Request to the extent that it seeks information not likely to lead to relevant evidence, and to the extent that this unlimited request is overbroad and burdensome under 16 CFR § 3.31(c)(2)(i)-(iii). Complaint Counsel objects to this Request because it seeks information beyond the scope of information to be produced under Rule 3.31A and Paragraph 19 of the Court's Scheduling Order.

17. A listing of all consultant, executive, or corporate positions you held concerning work or employment related to the biodegradability of plastics over the past ten years.

RESPONSE: Complaint Counsel hereby objects to this Request to the extent that it seeks information not likely to lead to relevant evidence, and to the extent that this unlimited request is overbroad and burdensome under 16 CFR § 3.31(c)(2)(i)-(iii). Complaint Counsel objects to this Request because it seeks information beyond the scope of information to be produced under Rule 3.31A and Paragraph 19 of the Court's Scheduling Order. Subject to and without waiving the foregoing General and specific objections, Dr. McCarthy has disclosed his complete Curriculum Vitae, which includes a list of all his positions related to biodegradability of plastics over the past ten years.

18. All documents and correspondence between you and the authors of the article Gómez, EF, Michel Jr., FC. "Biodegradability of conventional and bio-based plastics and natural fiber composites during composting, anaerobic digestion and long-term soil incubation" Polymer Degradation and Stability, Vol. 98 (December 2013): 2583-2591.

    RESPONSE: Complaint Counsel hereby objects to this Request to the extent that it seeks information not likely to lead to relevant evidence, and to the extent that this unlimited request is overbroad and burdensome under 16 CFR § 3.31(c)(2)(i)-(iii). Subject to and without waiving the foregoing General and specific objections, Dr. McCarthy has disclosed his complete Curriculum Vitae, which includes a list of all his scientific publications, papers, or presentations. Subject to and without waiving the foregoing General and specific objections, Complaint Counsel will produce all responsive, non-privileged documents within the scope of Rules 3.31 and 3.31A, and in accordance with the Scheduling Order and the Commission Rules.

19. Copies of all scientific publications, papers, or presentations that you authored concerning the rate or extent of biodegradable (including compostable) polymers when measured in a laboratory environment or in situ.

    RESPONSE: Complaint Counsel hereby objects to this Request to the extent that it seeks information not likely to lead to relevant evidence, and to the extent that this unlimited request is overbroad and burdensome under 16 CFR § 3.31(c)(2)(i)-(iii). Subject to and without waiving the foregoing General and specific objections, Dr. McCarthy has disclosed his complete Curriculum Vitae, which includes a list of all his scientific publications, papers, or presentations. Subject to and without waiving the foregoing General and specific objections, Complaint Counsel will produce all responsive, non-privileged documents within the scope of Rules 3.31 and 3.31A, and in accordance with the Scheduling Order and the Commission Rules.

20. All conflict of interest forms or agreements completed or signed by you in association with your work at the Umass, or as a testifying witness in this case.

    RESPONSE: Complaint Counsel hereby objects to this Request to the extent that it seeks information not likely to lead to relevant evidence, and to the extent that this unlimited request is overbroad and burdensome under 16 CFR § 3.31(c)(2)(i)-(iii). Complaint Counsel objects to this Request because it seeks information beyond the scope of information to be produced under Rule 3.31A and Paragraph 19 of the Court's Scheduling Order.

21. All documents concerning ASTM, including correspondence, in which you presented a proposal, voted on a proposal, or opposed a proposal concerning biodegradable plastics standards or test methods.

    RESPONSE: Complaint Counsel hereby objects to this Request to the extent that it seeks information not likely to lead to relevant evidence, and to the extent that this unlimited request is overbroad and burdensome under 16 CFR § 3.31(c)(2)(i)-(iii). Complaint Counsel objects to this Request because it seeks information beyond the scope

of information to be produced under Rule 3.31A and Paragraph 19 of the Court's Scheduling Order.

22. If you have ever served as an expert in any other proceeding involving the Federal Trade Commission, copies of all expert reports and testimony given by you in those proceedings. Production of all responsive materials should be submitted in accordance with the Commission's Rules of Practice and the ALJ's Scheduling Order in this matter.

    RESPONSE: Complaint Counsel hereby objects to this Request to the extent that it seeks information not likely to lead to relevant evidence, and to the extent that this unlimited request is overbroad and burdensome under 16 CFR § 3.31(c)(2)(i)-(iii). Complaint Counsel objects to this Request because it seeks information beyond the scope of information to be produced under Rule 3.31A and Paragraph 19 of the Court's Scheduling Order. Complaint Counsel objects to this Request because it seeks information required to be produced under Rule 3.31A(c) and Paragraph 19 of the Court's Scheduling Order. Complaint Counsel therefore objects to this Request because it unilaterally changes the scheduling order and advances Complaint Counsel's deadline for production of Rule 3.31A(c) expert information by two months. The Scheduling Order dictates the time and manner of production for information covered by this Request. Subject to and without waiving the foregoing General and specific objections, Dr. McCarthy has disclosed all prior cases in which the Expert has testified or has been deposed within the preceding four years. Complaint Counsel will produce all responsive, non-privileged documents within the scope of Rules 3.31 and 3.31A, and in accordance with the Scheduling Order and the Commission Rules.

23. If you have ever served as an expert in any other legal proceeding involving plastics technologies, produce copies of all expert reports and testimony given by you in those proceedings. Production of all responsive materials should be submitted in accordance with the Commission's Rules of Practice and the ALJ's Scheduling Order in this matter.

    RESPONSE: Complaint Counsel hereby objects to this Request to the extent that it seeks information not likely to lead to relevant evidence, and to the extent that this unlimited request is overbroad and burdensome under 16 CFR § 3.31(c)(2)(i)-(iii). Complaint Counsel objects to this Request because it seeks information beyond the scope of information to be produced under Rule 3.31A and Paragraph 19 of the Court's Scheduling Order. Complaint Counsel objects to this Request because it seeks information required to be produced under Rule 3.31A(c) and Paragraph 19 of the Court's Scheduling Order. Complaint Counsel therefore objects to this Request because it unilaterally changes the scheduling order and advances Complaint Counsel's deadline for production of Rule 3.31A(c) expert information by two months. The Scheduling Order dictates the time and manner of production for information covered by this Request. Subject to and without waiving the foregoing General and specific objections, Dr. McCarthy has disclosed all prior cases in which the Expert has testified or has been deposed within the preceding four years. Complaint Counsel will produce all responsive, non-privileged documents within the scope of Rules 3.31 and 3.31A, and in accordance with the Scheduling Order and the Commission Rules.

Dated: April 25, 2014

Respectfully submitted,

/s/ Katherine Johnson

Katherine Johnson (202) 326-2185
Jonathan Cohen (202) 326-2551
Elisa K. Jillson (202) 326-3001
Division of Enforcement
Bureau of Consumer Protection
Federal Trade Commission
600 Pennsylvania Avenue, NW
Mailstop M-8102B
Washington, DC 20580

CERTIFICATE OF SERVICE

I hereby certify that on April 25, 2014, I caused a true and correct copy of the paper original of the foregoing document to be served as follows:

One electronic copy to **Counsel for the Respondent**:

Jonathan W. Emord
Emord & Associates, P.C.
11808 Wolf Run Lane
Clifton, VA 20124
Email: jemord@emord.com

Peter Arhangelsky
Emord & Associates, P.C.
3210 S. Gilbert Road, Suite 4
Chandler, AZ 85286
Email: parhangelsky@emord.com

Lou Caputo
Emord & Associates, P.C.
3210 S. Gilbert Road, Suite 4
Chandler, AZ 85286
Email: lcaputo@emord.com

I further certify that I possess a paper copy of the signed original of the foregoing document that is available for review by the parties and the adjudicator.

April 25, 2014

/s/ Katherine Johnson
Katherine Johnson