

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

VANTAGE SPECIALTY CHEMICALS, INC.,
Petitioner

v.

CARGILL, INC.,
Patent Owner

Case No. IPR2023-00589
Patent No. 11,248,245

**DECLARATION OF NANCY E. ADAMS Ed.D.
IN SUPPORT OF PETITIONER VANTAGE SPECIALTY CHEMICALS,
INC.'S REPLY TO PATENT OWNER'S RESPONSE**

I. INTRODUCTION

I, Nancy E. Adams Ed.D., do hereby declare as follows:

1. I have been retained as an independent expert witness on behalf of Vantage Specialty Chemicals, Inc. (“Petitioner”) for proceedings before the United States Patent and Trademark Office (“PTO”) regarding the authenticity and public availability of certain references in relation to U.S. Patent No. 11,248,245.

2. I am being compensated for my work in this matter at my customary hourly rate, which is \$250/hour. I am also reimbursed for any reasonable expenses associated with my work on this matter. My compensation is not contingent on the results of my study, the substance of my opinions, or the outcome of this matter.

3. I understand that this Declaration accompanies Petitioner’s Reply to Patent Owner’s Response in the *Inter Partes* Review (“IPR”) involving U.S. Patent No. 11,248,245 (“the ’245 patent”) (**EX1001**). The ’245 patent resulted from U.S. Patent Application No. 14/578,075 (“the ’075 application”), filed on December 19, 2014. I understand that the ’075 application does not claim priority to any prior provisional or non-provisional patent applications (**EX1001, EX1002**), and therefore the priority date for the ’245 patent is December 19, 2014, which is the date I refer to throughout this declaration.

A. Qualifications and Professional Experience

4. My complete qualifications and professional experience are described in my curriculum vitae (**Appendix A**). The following is a brief summary of my relevant qualifications and professional experience.

5. I am the Assistant Dean of Foundational Sciences at Penn State College of Medicine and Librarian for Education and Instruction at Harrell Health Sciences Library. I have held this combined position since July of 2017. Prior to that, I held the position of Associate Director of the Harrell Health Sciences Library, which began in 2010. Prior to that, I held numerous Librarian positions at the University level, such as Harrisburg University of Science and Technology, The University of Maine, and Wayne State University. I have accumulated a total of 27 years of experience working in an academic library and medical library. I hold an Ed.D. in Adult Education from Pennsylvania State University and a Masters in Library and Information Science from Wayne State University.

6. I am an expert on library cataloging, classification, and searching. I have published contributed chapters to editions on this subject, *Curriculum Mapping: A Match Made for Librarian Skill* (2020), and *Making it better: library and student services collaboration at a new university* (2012). I have taught workshops on literature searching to a myriad of undergraduate students, graduate students, and advanced-degree professionals for decades. I have

given presentations, such as “Searching PubMed like an Expert: The Evolution, a PubMed Searching Discussion Forum.” I have served as the search specialist on a systematic review team in which my role was to formulate, execute, and document an exhaustive search of the literature answering a specific research question.

7. I am familiar with metadata schematic design and implementation. As a librarian, I routinely use the metadata associated with publications to answer reference questions or track down items that researchers rely on for their work. I have used online cataloging systems to create new catalog records for materials archived by libraries.

8. I am personally familiar with many online catalogs, databases, and search engines, including all of the particular catalogs, databases, and search engines that I relied upon in forming my opinions herein.

B. Scope of This Declaration

9. I have been asked to offer an opinion on the authenticity and public-availability date of the following documents:

- Deng, Li et al., *Synthesis of Wax Esters by Lipase-catalyzed Esterification with Immobilized Lipase from Candida sp.* 99-125, 19 CHINESE J. CHEM. ENG. 6 (2011) (EX1032, “Deng”);
- Hills, Geoffrey, *Industrial use of lipases to produce fatty acid esters*, 105 EUR. J. LIPID SCI. TECH. 601 (2003) (EX1033, “Hills”);

- Lei, Qiong and Li, Tianhu, *Functional monoesters of jojoba oil can be produced by enzymatic interesterification: Reaction analysis and structural characterization*, 117 EUR. J. LIPID SCI. TECH. 630 (2015) (EX1035, “Lei”);
- M.C. De Zoete, et al., *Ammonolysis of Carboxylic Esters Catalyzed by Lipases*, included as a chapter in Jonathan S. Dordick et al., *Enzyme Engineering XIII*, ANNALS OF THE NEW YORK ACADEMY OF SCIENCES, Vol. 799, New York Academy of Sciences (October 12, 1996) (EX1038, “De Zoete”); and
- Kirk-Othmer, *Concise Encyclopedia of Chemical Technology*, United Kingdom, Wiley (1999) (EX1039, “Kirk-Othmer”).

C. Evidence Considered in Forming My Opinions

10. In preparing this Declaration, I have reviewed the documents and webpages I reference herein, and each of these is a type of material that experts in my field of library cataloging and reference classification would reasonably rely upon when forming their opinions.

II. AUTHENTICITY AND PUBLIC AVAILABILITY OF PUBLICATIONS

A. EX1032: *Deng*

11. EX1032 is a true and correct copy of Deng, Li et al., *Synthesis of Wax Esters by Lipase-catalyzed Esterification with Immobilized Lipase from Candida sp.* 99-125, 19 CHINESE J. CHEM. ENG. 6 (2011) (“*Deng*”) that I purchased from the ScienceDirect online platform. I began my research by searching ScienceDirect by the article title for records, and a retrieved record from Science Direct at <
<https://www.sciencedirect.com/science/article/abs/pii/S1004954111600803?via%3Dihub>>. This record shows that *Deng* was “Received 10 May 2011, Accepted 29 September 2011, Available online 9 January 2012” and included in Volume 19, Issue 6 (December 2011) of Chinese Journal of Chemical Engineering.

12. I then followed a link at the above URL to purchase and download the full text of *Deng*. The article was delivered electronically via email. A receipt showing this purchase is provided at **Exhibit A** to this Declaration. This purchased copy of *Deng* is presented as **EX1032** in this proceeding.

13. I am familiar with ScienceDirect, which is Elsevier’s online platform of peer-reviewed scholarly literature. I am also familiar with Elsevier, a leading scientific publisher and data analytics company. I have experience using

ScienceDirect in my practice and find ScienceDirect to be a reliable source of the publications contained in its catalog.

14. In **EX1032**, page 1 shows the title, author, journal volume (19), year of journal volume (2011), and page numbers (978-982) from the volume in which the article was included. **EX1032** has a total of 5 pages, including 25 references. This information is consistent with the information provided for *Deng* by ScienceDirect at the above URL.

15. **EX1032** is in a condition that does not create suspicion about its authenticity. Specifically, it is not missing any intermediate pages, the text on each page appears to flow seamlessly from one page to the next, and there are no visible alterations to the document. Accordingly, I see no reason to question the authenticity of this copy of *Deng*.

16. My knowledge of library cataloging informs my opinion that *Deng* was published in the December 2011 edition of the Chinese Journal of Chemical Engineering and available online January 9, 2012 as indicated on the face of **EX1032** and by the ScienceDirect at the above URL.

17. Based on the above, it is my professional opinion that *Deng* would have become publicly accessible no later than when it was published online January 9, 2012 (**EX1032**), before December 19, 2014.

B. EX1033: *Hills*

18. **EX1033** is a true and correct copy of Hills, Geoffrey, *Industrial use of lipases to produce fatty acid esters*, 105 EUR. J. LIPID SCI. TECH. 601 (2003) (“*Hills*”) that I obtained from the Wiley Online Library. I began my research by searching Wiley Online Library by the title of *Hills* for records, and a retrieved record in Wiley Online Library accessed via Penn State University at < <https://doi-org.ezaccess.libraries.psu.edu/10.1002/ejlt.200300853> > (**Exhibit B**), which is also available at < <https://onlinelibrary.wiley.com/doi/10.1002/ejlt.200300853> >, led me to the full text of *Hills*. This record shows that *Hills* was published in the European Journal of Lipid Science and Technology on September 29, 2003. I then followed the PDF link at the above URL to download the full text of *Hills*. This published copy is presented as **EX1033** in this proceeding.

19. I am familiar with the Wiley Online Library, which is an online library with digital copies of various printed publications, including journals, as maintained by John Wiley & Sons, Inc. I have experience using the Wiley Online Library in my practice and find Wiley Online Library to be a reliable source of the publications contained in its catalog.

20. In **EX1033**, page 1 shows the title, author, journal volume (105), year of journal volume (2003), and page numbers (601-607) from the volume in which the article was included. **EX1033** shows that *Hills* has a total of 7

pages, including 9 references. This information is consistent with the information provided by Wiley Online Library at the above URL.

21. **EX1033** is in a condition that does not create suspicion about its authenticity. Specifically, this copy is not missing any intermediate pages, the text on each page appears to flow seamlessly from one page to the next, and there are no visible alterations to the document. Accordingly, I see no reason to question the authenticity of this copy of *Hills*.

22. My knowledge of library cataloging informs my opinion that *Hills* was published in 2003 in the European Journal of Lipid Science and Technology as indicated on the face of **EX1033** and by Wiley Online Library. For example, the catalog records in the Penn State University Libraries catalog at < <https://catalog.libraries.psu.edu/catalog/42935319> > (**Exhibit C**) provide that the European Journal of Lipid Science and Technology was a monthly publication that was published in Weinheim, German by Wiley-VCH Verlag beginning in January 2000. This publication information is further confirmed by WorldCat, one of the world's largest library catalogs, at < <https://search.worldcat.org/title/43602575> > and < <https://search.worldcat.org/title/5151467047> >.

23. Based on the above, it is my professional opinion that *Hills* would have become publicly accessible when it was published on September 29, 2003 (**EX1033**), before December 19, 2014.

C. EX1035: *Lei*

24. **EX1035** is a true and correct copy of Lei, Qiong and Li, Tianhu, *Functional monoesters of jojoba oil can be produced by enzymatic interesterification: Reaction analysis and structural characterization*, 117 EUR. J. LIPID SCI. TECH. 630 (2015) (“*Lei*”) that I obtained from the Wiley Online Library. I began my research by searching Wiley Online Library by the title of *Lei* for records, and a retrieved record in Wiley Online Library accessed via Penn State University at < <https://doi-org.ezaccess.libraries.psu.edu/10.1002/ejlt.201400458> > (**Exhibit D**), which is also at < <https://onlinelibrary.wiley.com/doi/10.1002/ejlt.201400458> >, led me to the full text of *Lei*. This record shows that *Lei* was first published in the European Journal of Lipid Science and Technology on December 22, 2014. I then followed the PDF link at the above URL to download the full text of *Lei*. This published copy is presented as **EX1035** in this proceeding.

25. As I noted above, I am familiar with the Wiley Online Library, which is an online library with digital copies of various printed publications, including journals, as maintained by John Wiley & Sons, Inc. I have experience using the Wiley Online Library in my practice and find Wiley Online Library to be a reliable source of the publications contained in its catalog.

26. In **EX1035**, page 1 shows the title, author, journal volume (117), year of journal volume (2015), and page numbers (630-636) from the volume in which the article was included. **EX1035** shows that *Lei* has a total of 7 pages, including 33 references. Page 1 also shows that the *Lei* was “Received: September 15, 2014,” “Revised: October 29, 2014,” and “Accepted: October 31, 2014.” All this information is consistent with the information provided by Wiley Online Library at the above URL, which also shows that the “Version of Record online” is dated December 22, 2014.

27. **EX1035** is in a condition that does not create suspicion about its authenticity. Specifically, this copy is not missing any intermediate pages, the text on each page appears to flow seamlessly from one page to the next, and there are no visible alterations to the document. Accordingly, I see no reason to question the authenticity of this copy of *Lei*.

28. My knowledge of library cataloging informs my opinion that *Lei* was received by the European Journal of Lipid Science and Technology September 15, 2014, revised October 29, 2014, accepted for publication October 31, 2014, published (online) by Wiley December 22, 2014, and subsequently included in volume 117 of the European Journal of Lipid Science and Technology (2015) as indicated on the face of **EX1035** and by Wiley Online Library. For example, the catalog records in the Penn State University Libraries catalog at <

<https://catalog.libraries.psu.edu/catalog/42935319>> (**Exhibit C**) provide that the European Journal of Lipid Science and Technology was a monthly publication that was published in Weinheim, German by Wiley-VCH Verlag beginning in January 2000. This publication information is further confirmed by WorldCat, one of the world's largest library catalogs, at < <https://search.worldcat.org/title/43602575> > and < <https://search.worldcat.org/title/5824044026> >.

29. Based on the above, it is my professional opinion that *Lei* would have become publicly accessible when it was published on December 22, 2014 (**EX1035**), and was received by the European Journal of Lipid Science and Technology, and subsequently revised, on September 15, 2014, and October 29, 2014, respectively, prior to publication.

30. I have also examined **EX1042** in this proceeding, and it appears to be identical to **EX1035**.

D. EX1038: *De Zoete*

31. **EX1038** in this proceeding is a true and correct copy of the chapter titled *Ammonolysis of Carboxylic Esters Catalyzed by Lipases* by M.C. De Zoete, et al. contained in Jonathan S. Dordick et al., *Enzyme Engineering XIII*, Annals of The New York Academy of Sciences, Volume 799, New York Academy of Sciences (October 12, 1996) ("*De Zoete*") that I downloaded from the Penn State University Library System. I obtained this copy by searching the Penn State

University Libraries' catalog at < <http://libraries.psu.edu> > for the title of **EX1038**, which linked me to the bibliographic record in the New York Academy of Sciences database at < <https://doi-org.ezaccess.libraries.psu.edu/10.1111/j.1749-6632.1996.tb33224.x> > (**Exhibit E**). I downloaded *De Zoete* from a link on this webpage. The information at this URL is also available at < <https://nyaspubs.onlinelibrary.wiley.com/doi/10.1111/j.1749-6632.1996.tb33224.x> >.

32. Information about *Enzyme Engineering XIII* is available at the URL < <https://nyaspubs.onlinelibrary.wiley.com/toc/17496632/799/1> > provided by the New York Academy of Sciences. The records at this URL show the page numbers of *De Zoete* within *Enzyme Engineering XIII* (pages 346-350), as well as the publisher (New York Academy of Sciences, New York, NY), and copyright date (1996) and first publication date (October 1996) of *De Zoete* and *Enzyme Engineering XIII*. In my practice, I find the Penn State University Library System and the New York Academy of Sciences to be reliable sources of publication data. This information is also consistent with information provided by WorldCat at < <https://search.worldcat.org/title/36137054> >.

33. **EX1038** is in a condition that does not create suspicion about its authenticity. Specifically, it is not missing any intermediate pages, the text on each page appears to flow seamlessly from one page to the next, and there are no

visible alterations to the document. Accordingly, I see no reason to question the authenticity of this copy of *De Zoete* or **EX1038**.

34. My knowledge of library cataloging informs my opinion that *De Zoete* was published October 1996. This publication information is confirmed by the records at the above URLs.

35. Based on the above, it is my professional opinion that *De Zoete* would have become publicly available no later than October 1996, before December 19, 2014.

E. EX1039: *Kirk-Othmer*

36. **EX1039** in this proceeding is a true and correct copy of an excerpt from *Kirk-Othmer Concise Encyclopedia of Chemical Technology*, United Kingdom, Wiley, 1999 (“*Kirk-Othmer*”) that I created by scanning selected pages from a hardcopy of *Kirk-Othmer* I obtained from the Pattee-Paterno Library of the Penn State University Library System. I obtained this hardcopy by searching the Penn State University Libraries catalog by the title of *Kirk-Othmer* for records and retrieving a record at < <https://catalog.libraries.psu.edu/catalog/1842919> > indicating that a copy was available at the Pattee-Paterno Library. I obtained the hardcopy by shipment to my workplace library at the Penn State College of Medicine. **Exhibit F** is an image of the library record for the volume, indicating

that the Pattee-Paterno Library's copy is "checked out," that is, is not available for public use due to being checked out to me as a library patron.

37. In **EX1039**, pages 3-4 show the title, publisher (Wiley-Interscience Publication, New York), and edition copyright date (1999) of *Kirk-Othmer*. This information is consistent with the information provided by the Penn State University Libraries catalog at the above URL.

38. The hardcopy from which I created **EX1039** was in a condition that does not create suspicion about its authenticity. Specifically, the copy was not missing any intermediate pages, the text on each page appeared to flow seamlessly from one page to the next, and there were no visible alterations to the document. Accordingly, I see no reason to question the authenticity of this copy of *Kirk-Othmer* or **EX1039**.

39. My knowledge of library cataloging informs my opinion that *Kirk-Othmer* was published in 1999. This publication information is further confirmed by the copyright page of the book (**EX1039**) and the MARC (MACHine Readable Cataloging) record of the book in the Penn State University Library catalog (**Exhibit G** and also publicly available at https://catalog.libraries.psu.edu/catalog/1842919/marc_view >). In MARC field 264, the copyright date of 1999 appears.

40. The third entry for the MARC field 949 provides metadata for the copy of *Kirk-Othmer* held at the Pattee-Paterno Library of the Penn State University Library System from which I created **EX1039** (the first two entries for MARC field 949 correspond to metadata for copies of *Kirk-Othmer* held at other locations in the Penn State University Library System). In this third MARC field 949, subfield “u|” provides the library acquisition date of April 9, 2003—the date the library received the copy that I obtained and scanned to create **EX1039**. Once acquired by the Pattee-Paterno Library, this copy would have been processed and locally catalogued and shelved shortly thereafter. That process would have taken days to weeks. I further note that subfield “u|” of the two other MARC field 949’s show that the Schuylkill and Scranton libraries of the Penn State University Library System acquired copies of the book two years prior, on April 13, 2001.

41. Based on the above, it is my professional opinion that *Kirk-Othmer* would have become publicly available no later than May 2003, shortly after it was shelved at the Pattee-Paterno library at Penn State University, before December 19, 2014.

III. LIST OF DOCUMENTS CONSIDERED

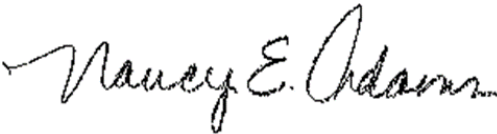
42. In addition to the documents attached to this Declaration, the documents I considered in formulating my opinions are as follows:

Exhibit No.	Description
1001	U.S. Patent No. 11,248,245
1002	File History of U.S. Patent No. 11,248,245
1032	Deng, Li et al., <i>Synthesis of Wax Esters by Lipase-catalyzed Esterification with Immobilized Lipase from Candida sp.</i> 99-125, 19 CHINESE J. CHEM. ENG. 6 (2011), 978-982
1033	Hills, Geoffrey, <i>Industrial use of lipases to produce fatty acid esters</i> , 105 EUR. J. LIPID SCI. TECH. 601 (2003)
1035	Lei, Qiong and Li, Tianhu, <i>Functional monoesters of jojoba oil can be produced by enzymatic interesterification: Reaction analysis and structural characterization</i> , 117 EUR. J. LIPID SCI. TECH. 630 (2015)
1038	M.C. De Zoete, et al., <i>Ammonolysis of Carboxylic Esters Catalyzed by Lipases</i> , included as a chapter in Jonathan S. Dordick et al., <i>Enzyme Engineering XIII</i> , ANNALS OF THE NEW YORK ACADEMY OF SCIENCES, Vol. 799, New York Academy of Sciences (October 12, 1996)
1039	Kirk-Othmer, <i>Concise Encyclopedia of Chemical Technology</i> , United Kingdom, Wiley (1999)
1042	Exhibit 6 to the Deposition Transcript of Thomas M. Schultz, <i>Vantage Special Chemicals, Inc. v. Cargill, Inc.</i> PTAB Proceeding No. IPR2023-00589, February 15, 2024 (Lei, et al. “Functional monoesters of jojoba oil can be produced by enzymatic interesterification: reaction analysis and structural characterization,” <i>European Journal of Lipid Science and Technology</i> , 117(5) (2015))

IV. CONCLUSION

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

Respectfully submitted,

A handwritten signature in black ink that reads "Nancy E. Adams". The signature is written in a cursive style with a large, stylized "N" and "A".

Date: February 21, 2024

Nancy E. Adams, Ed.D.

APPENDIX A

Nancy E. Adams Curriculum Vitae

59 Hellam Dr.
Mechanicsburg, PA 17055
717-315-8302
nancyeadams@hotmail.com

Education

EdD, Penn State Harrisburg, Harrisburg, PA, 2016.
Major: Adult Education
Dissertation Title: Dialog about Psychosocial Issues in Problem-Based Learning Sessions in Medical Education

MLIS, Wayne State University, Detroit, MI, 1996.
Major: Library and Information Science

BS, Magna cum laude, Harding University, Searcy, AR, 1990.
Major: Chemistry

Professional Positions

Academic

Assistant Dean, Foundational Sciences, MD Program, Penn State College of Medicine and Librarian for Education and Instruction, Harrell Health Sciences Library, Penn State College of Medicine. (July 2017-Present).

Associate Director, Harrell Health Sciences Library, Penn State College of Medicine. (July 2010-June 2017).

University Librarian and Director of Student Services, Harrisburg University of Science and Technology. (December 1, 2009 - June 25, 2010).

University Librarian, Harrisburg University of Science and Technology. (July 1, 2008 - December 1, 2009).

Reference and Instruction Librarian, Harrisburg Area Community College. (September 2006 - June 2008).

Librarian II, University of Maine. (September 1998 - December 2000).
Reference and instruction in patent and trademark information, science, and engineering.

Librarian I, Wayne State University Shiffman Medical Library. (October 1996 - August 1998).
Lead instructor of grant-funded program that trained high school vocational healthcare students in the use of health sciences information resources; reference and instruction services at an academic medical center.

Science Teacher, Edsel Ford High School, Dearborn, MI. (August 1993 - June 1994).
Taught high school physical science, chemistry, and life science.

Science Teacher, Harding Academy, Memphis, TN. (August 1992 - June 1993).

Taught high school physics and physical science.

Science Instructor, Harding University. (August 1991 - May 1992).

Taught chemistry and physical science.

Science Instructor, Crowley's Ridge College, Paragould, AR. (January 1991 - August 1991).

Taught college botany, chemistry, and biology.

Awards and Honors

Exceptional Teacher mention, Penn State College of Medicine Office for Respectful Learning Environment. (December 2020 - Present).

Penn State University Libraries Teaching Award, Penn State University Libraries. (May 24, 2016 - April 30, 2017).

Top 20 Library Instruction Article, Library Instruction Round Table, American Library Association. (January 2016 - December 2016).

Innovation in Instruction Award, Association of College and Research Libraries. (1998).

Outstanding Academic Staff Contributor Award, Wayne State University, Academic Staff Professional Development Committee. (1998).

TEACHING ACTIVITIES, SELECTED

Co-Director and Instructor of Record of Credit-Bearing Course

HMN 797, Foundations of Health Humanities, Fall 2021, MD Program, Penn State College of Medicine

Lead Faculty Member, Evidence-Based Medicine Unit of MED 797b, Science of Health Systems

Small Group Facilitator in Required Courses in the MD Curriculum

HMN 713, Medical Humanities

HMN 715, Science of Mind and Body

TMS 721 Transition to Medical School

HMN 723 Communication

MED 797b Science of Health Systems

Interprofessional education sessions in Science of Health Systems and Foundations of Patient-Centered Care

Course-Integrated Information Literacy Instruction

Evidence-Based Medicine OSCE Assessor, Family and Community Medicine Residency

Scientific Principles of Medicine Course, Searching PubMed like an Expert Module

RESEARCH

Intellectual Contributions

Articles Published in Refereed Journals

- Moniz, T., Golafshani, M., Gaspar, C., Adams, N. E. (Co-Author, 10%), Haidet, P., Sukhera, J., Volpe, R., de Boer, C., & Lingard, L. (2021). The Prism Model: Advancing a theory of practice for arts and humanities in medical education. *Perspectives in Medical Education*, 8 pages. DOI: <https://doi.org/10.1007/s40037-021-00661-0>
- Moniz, T., Golafshani, M., Gaspar, C., Adams, N. E. (Co-Author, 10%), Haidet, P., Sukhera, J., Volpe, R., de Boer, C., & Lingard, L. (2021). How are the arts and humanities used in medical education?: Results of a scoping review of published literature. *Academic Medicine*, 96(8), 1213-1222. DOI: 10.1097/ACM.0000000000004118
- Moniz, T., Golafshani, M., Gaspar, C., Adams, N. E. (Co-Author, 10%), Haidet, P., Sukhera, J., Volpe, R., de Boer, C., & Lingard, L. (2021). The Prism Model for integrating arts and humanities into medical education. *Academic Medicine*, 96(8), 1225. DOI: 10.1097/ACM.0000000000003949
- Duca, N., Adams, N. E. (Co-Author, 40%), Glod, S., & Haidet, P. (2020). Barriers to Teaching Clinical Reasoning in the Medicine Clerkship: A Qualitative Study of Medicine Clerkship Students. *Medical Science Educator*, 30, 1495–1502. DOI: <https://doi.org/10.1007/s40670-020-01069-x>
- Nicholson, J., Spak, J. M., Kovar-Gough, I., Lorbeer, E., & Adams, N. E. (Co-Author, 20%) (2019). Entrustable Professional Activity 7: Opportunities to Collaborate on Evidence-Based Medicine Teaching and Assessment of Medical Students. *BMC Medical Education*, 19(330).
- Volpe, R., Hopkins, M., Haidet, P., Wolpaw, D., & Adams, N. E. (Co-Author, 25%) (2019). Is research on professional identity formation biased? Early insights from a scoping review and metasynthesis. 53(2), 119-132.
- Richard, D., Felix, T., Zimmermann, J., Adams, N. E. (Co-Author, 10%), Knehans, A., & Faber, S. (2017). Individualized Patient-Centered Care: A Physician Assistant Curriculum in Information Mastery, Clinical Reasoning, and Shared Decision Making. *Journal of Physician Assistant Education*, 28(3), 158-163.
- Adams, N. E. (Co-Author, 40%), Gaffney, M., & Lynn, V. A. (2016). The role of evidence-based practice in collaborations between academic librarians and education faculty. *portal: Libraries and the Academy*, 16(4), 697-720.
- Haidet, P., Jarecke, J., Adams, N. E. (Co-Author, 5%), Stuckey, H. L., Greene, M. J., Shapiro, D., Teal, C. R., & Wolpaw, D. R., et al. (2016). A Guiding framework to maximize the power of the arts in medical education: A systematic review and metasynthesis. *Medical Education*, 50(3), 320-331. ISBN/ISSN: 10.1111/medu.12925
- Adams, N. E. (2015). Asking a Great Question: A Librarian Teaches Critical Thinking Skills to First Year Medical Students. *Medical Reference Services Quarterly*, 34(4), 418-427.
- Adams, N. E. (2015). JMLA 101: Bloom's Taxonomy of Cognitive Learning Objectives. *Journal of the Medical Library Association*, 103(3), 152-153.
- Adams, N. E. (2014). A Comparison of Evidence-Based Practice and the ACRL Information Literacy Standards: Implications for Information Literacy Practice. *College and Research Libraries*, 75(2), 232-248.
- Tomasko, J. M., Adams, N. E. (Secondary Author, 20%), Garritano, F. G., Santos, M. C., & Dillon, P. C. (2014). Collaborating to Increase Access to Clinical and Educational Resources for Surgery: A Case Study. *Journal of Surgical Education*, 71(1), 32-5.

Adams, N. E. (Co-Author, 50%), & Young, J. B. (2010). Users learning from users: building a learning commons from the ground up at a new university. *College & Undergraduate Libraries*, 17(2 & 3), 149-159.

Parts of Books

Kovar-Gough, I., & Adams, N. E. (Co-Author, 50%) (2020). Curriculum Mapping: A Match Made for Librarian Skills. In Lindsay Alcock and Kelly Thormodson (Eds.), *The Engaged Health Sciences Library Liaison* Chicago, IL: Medical Library Association.

Adams, N. E. (Primary Author, 95%), & Olivetti, J. K. (2012). Making it better: library and student services collaboration at a new university. In Lisa Janicke Hinchliffe and Melissa Wong (Eds.), *Environments for Student Growth and Development: Libraries and Student Affairs in Collaboration* (pp. 57-72). Chicago, IL: Association of College and Research Libraries.

Instructional Material, Instructor's Manual

Felix, T., Richard, D., Faber, F. S., Zimmermann, J., & Adams, N. E. (Co-Author, 5%) (2015). CoffeeTalks: An Innovative Approach to Teaching Clinical Reasoning and Information Mastery to Medical Students. *MedEdPortal*. Association of American Medical Colleges. DOI: 10.15766/mep_2374-8265.10004

Journal Article, In House

Robinson, C. K., & Adams, N. E. (Co-Author, 50%) (2011). Understanding the impact of health information and evidence based practice. *Interview*, 5(24), 1.

Magazine/Trade Publication

Chappell-Williams, L., Adams, N. E. (Co-Author), & Wang, J. (2018). "Creating an inclusive medical education curriculum." *INSIGHT Into Diversity*. (December 2018), (pp. 2).

Technical Report

Bivens-Tatum, W., & Adams, N. E. (Co-Author, 10%), et al. (2017). ACRL Environmental Scan 2017.

White Paper released by National Professional Organization

Howley, L., Gaufberg, E., King, B., et al. & Adams, N. E. (2020). *The Fundamental Role of the Arts and Humanities in Medical Education*. (pp. 3). Washington, DC: Association of American Medical Colleges.

Research Reports to Sponsor

Moniz, T., Golafshani, M., Haidet, P., Lingard, L., Adams, N. E., Apramian, T., Arntfeld, S., de Boer, C., Dell, E., Gaspar, C., Sukhera, J., Volpe, R., *Final Report: Scoping review on the use of arts and humanities in the education of physician and interprofessional learners across the developmental spectrum*. 169 pp. Final Report, Association of American Medical Colleges. (January 15, 2020).

Presentations Given, Selected

Adams, N. E., & Cirelli, M. C. (June 14, 2019). "Searching PubMed like an Expert: The Evolution," PubMed Searching Discussion Forum, ACRL Health Sciences Interest Group, Virtual, 250 in attendance, peer-reviewed/refereed. International.

Glendinning, D. (Rutgers Robert Wood Johnson Medical School), Willett, L. (Rutgers Robert Wood Johnson Medical School), Moser, E. (Penn State College of Medicine), Kim, S. (Rutgers Robert Wood Johnson Medical School), & Adams, N. E. (June 2018). "Moser, E., Kim, S., Adams, N. Discriminant Validation of new test of Evidence-based Medicine." Annual Meeting, IAMSE, Las Vegas, NV, peer-reviewed/refereed. International.

Adams, N. E. (Co-Author), Collins, H., Kovar-Gough, I., Lorbeer, E., Nicholson, J., Spak, J., Brennan, E., Ogawa, R., Rambo, N., Thormodson, K., & von Isenburg, M. (May 20, 2018). "Identifying the Role of the Medical Librarian in Clinical Competency Entrustment," Annual Meeting, Medical Library Association, Atlanta, GA, peer-reviewed/refereed. National.

Collins, H. (University of Kansas Medical Center), Adams, N. E., & Brennan, E. (Medical University of South Carolina (MUSC) Library, Medical University of South Carolina). (November 7, 2017). "Competency-Based Medical Education & the Role of Medical Librarians: Trends, Challenges, and Opportunities," Association of American Medical Colleges Annual Meeting, Boston, MA, peer-reviewed/refereed. National.

Adams, N. E., & (AAHSL Task Force Evaluating AAMC Core EPAs). (May 29, 2017). "AAHSL Task Force on Evaluating AAMC Core EPAs," Annual Conference, Medical Library Association, Seattle, WA, peer-reviewed/refereed. National.

Adams, N. E., Gaffney, M. A., & Lynn, V. A. (March 24, 2017). "What Counts as Knowledge?: Concrete Examples of an Abstract Concept from the ACRL Framework for Information Literacy," Biannual Conference, Association of College and Research Libraries, Baltimore, MD, peer-reviewed/refereed. National.

Adams, N. E., & Members (AAHSL Task Force on Evaluating AAMC Core EPAs). (March 23, 2017). "Can I Trust You?: Librarians' Involvement in Competency-Based Medical Education," Biannual Conference, Association of College and Research Libraries, Baltimore, MD, peer-reviewed/refereed. National.

Collins, H. (University of Kansas Medical Center), Adams, N. E., & Brennan, E. (Medical University of South Carolina (MUSC) Library, Medical University of South Carolina). (November 13, 2016). "AAHSL Task Force Investigating Librarian Involvement in AAMC Core EPA," Association of American Medical Colleges Annual Meeting, Seattle, WA, peer-reviewed/refereed. National.

Adams, N. E. (April 8, 2016). "Dialog about Psychosocial Topics in Problem-Based Learning Sessions," Annual Meeting, North East Group on Educational Affairs, Providence, RI, 40 in attendance, peer-reviewed/refereed. Regional.

Adams, N. E. (May 11, 2015). "Design and implementation of a performance-based assessment of information management and critical appraisal skills for medical students," Pennsylvania Regional Innovations In Medical Education Meeting, Thomas Jefferson School of Medicine, Philadelphia, PA, 25 in attendance, Invited. Local.

Adams, N. E. (Panel Member), Lonn, S. (University of Michigan), & Fransen, J. (University of Minnesota). (March 2015). "Learning Analytics and Privacy: Multi-Institutional Perspectives on Collecting and Using Library Data," Biannual Conference, Association of College and Research Libraries, Portland, OR, peer-reviewed/refereed. National.

Adams, N. E. (Author and Presenter, Penn State Hershey George T. Harrell Health Sciences Library). (May 18, 2014). "Theory-based Techniques for Active Learning in the Evidence-Based Medicine Classroom," Annual Conference, Medical Library Association, Chicago, IL, peer-reviewed/refereed.

Adams, N. E. (Co-Presenter, Penn State Hershey George T. Harrell Health Sciences Library), Adelman, A. (Penn State Hershey), & Zimmerman, J. (Penn State Hershey). (May 4, 2013). "Flipping The Classroom – A Method to Transform Your Lectures," 46th STFM Annual Spring Conference, Society of Teachers of Family Medicine, Baltimore, MD, 80 in attendance, peer-reviewed/refereed. National.

Tomasko, J. M. (Penn State Hershey), Adams, N. E. (Co-Author), Foley, T. T. (Penn State Hershey), Goyal, N. (Penn State Hershey), Garritano, F. (Penn State Hershey), Santos, M. C. (Penn State Hershey), Wilson, M. Z. (Penn State Hershey), Han, D. (Penn State Hershey), & Dillon, P. (Penn State Hershey). (March 22, 2012). "Designing a Single Portal eLibrary Site to Facilitate Surgical Education," Annual Conference, Association for Surgical Education, San Diego, CA. National.

Contracts, Grants, and Sponsored Research

Grants, Selected

Adams, N. E. (Co-Investigator), Volpe, R. (Principal Investigator), Wolpaw, D. R. (Co-Investigator), Grant, 10% credit, "Investigating professional identity formation across professions to inform medical education: A systematic review," Arnold P. Gold Foundation [MP], Nonprofit Foundations. Total requested: \$4,923.00, Total Anticipated: \$5000, Amount Funded (Total or To Date, as applicable): \$5000. (Submitted: July 12, 2016, date funding awarded: October 24, 2016, total start and end of funding: September 1, 2016 - August 31, 2017.

Adams, N. E. (Co-Investigator), Green, M. J. (Co-Investigator), Shapiro, D. E. (Co-Investigator), Stuckey, H. L. (Co-Investigator), Wolpaw, D. R. (Co-Investigator), Grant, 10% credit, "Developing a Conceptual Model to Guide Implementation and Study of the Arts in Medical Education," Arnold P. Gold Foundation [MP], Nonprofit Foundations. Total requested: \$6,000.00, Total Anticipated: \$6000, Amount Funded (Total or To Date, as applicable): \$5000. (Submitted: June 10, 2013, date funding awarded: August 21, 2013, total start and end of funding: August 30, 2013 - February 28, 2015.)

Adams, N. E. (Co-Principal Investigator), Glendinning, D. (Co-Principal Investigator), O'Rourke, K. (Co-Investigator), Moser, E. (Co-Investigator), Grant, "Development and validation of a new tool to assess knowledge and skills in Evidence-based Practice.," Northeast Group on Educational Affairs, Associations, Institutes, Societies and Voluntary Health Agencies. Total requested: \$4,808.00, Amount Funded (Total or To Date, as applicable): \$4808. (Submitted: September 30, 2014, date funding awarded: December 8, 2014.)

Adams, N. E. (Co-Investigator), Faber, F. Samuel (Co-Investigator), Felix, T. M. (Principal Investigator), Richard, D. C. (Co-Investigator), Grant, 25% credit, "Enhancing Teaching Methods and Evaluation of EBM and Clinical Reasoning: Faculty Development through Educational and Collaborative Efforts at McMaster's University, University," Woodward Endowment, Nonprofit Foundations. Total requested: \$9,820.00, Total Anticipated: \$9812, Amount Funded (Total or To Date, as applicable): \$9812. (Submitted: April 3, 2012, date funding awarded: April 3, 2012, total start and end of funding: April 1, 2012 - March 31,

2013).

Adams, N. E. (Principal Investigator), Grant, 100% credit, "Attendance at Supporting Clinical Care: An Institute in Evidence-Based Practice for Medical Librarians," Woodward Endowment, Nonprofit Foundations. Total requested: \$1,420.00, Total Anticipated: \$1420, Amount Funded (Total or To Date, as applicable): \$1420. (Submitted: May 16, 2011, date funding awarded: May 16, 2011, total start and end of funding: May 15, 2011 - May 14, 2012.)

Adams, N. E. (Principal Investigator), Grant, "Library Services and Technology Act Award," Office of Commonwealth Libraries, PA, State. Total requested: \$19,400.00, Amount Funded (Total or To Date, as applicable): \$19000. (Submitted: September 11, 2009, total start and end of funding: May 1, 2010 - May 31, 2011.)

Robinson, C. K. (Co-Principal Investigator), Adams, N. E. (Co-Principal Investigator), Brennan, D. P. (Co-Principal Investigator), Grant, 33% credit, "Improved Access to Biomedical Information Resources via E-book Readers," National Networks of Libraries of Medicine, Middle Atlantic Region, Federal. Total requested: \$7,128.00, Amount Funded (Total or To Date, as applicable): \$7128. (Submitted: August 2010, total start and end of funding: September 15, 2010 - March 30, 2011.)

SERVICE, SELECTED

Committee Work at Penn State College of Medicine and Penn State University Libraries

Curriculum Working Group, Diversity and Inclusion Task Force, Co-Leader (June-July 2020).

Propose strategic priorities for PSCOM curricula to address anti-bias and structural and system racism.

Physician Assistant Curriculum Committee (PAMPEC) (2020-present)

Oversees and advises regarding curriculum in the Penn State College of Medicine Physician Assistant Program.

Student Educator Award Selection Committee, Woodward Endowment for Medical Education, Committee Member. (January 2019 - Present).

Review portfolios of student educators who are nominated for awards at College of Medicine; select final awardees with committee.

Curriculum Committee for Undergraduate Medical Education. (2017-present).

Decision-making body for curriculum offerings and policies of the MD program of the Penn State College of Medicine.

College of Medicine Admissions Team, Member. (October 2015 - 2017).

Select candidates for admission to College of Medicine.

Medical School Applicant Interviewer. (September 2014 - present).

Reviewed application materials and submitted written evaluations for these students.

Liaison Committee for Medical Education Accreditation SubGroup, Penn State college of Medicine, Committee Member. (December 2015 - July 2017).

Collect data and write narrative for 2017 institutional self-study for the medical program of study. Lead two small subgroups for Standards 6 & 7.

Surgery Education Committee, Member. (June 2011 - July 2017).

Meet monthly to discuss issues with and improvements to surgery education at College of Medicine, specifically clerkships for medical students and surgical residency program.

AD-14 Committee, AD-14 Committee for Review of Dean of Libraries, Penn State University Provost's Office, Member. (October 2015 - January 2016).

Interviewed individuals and compiled survey data from faculty, staff, and students relating to performance of Dean of University Libraries. Synthesized information into a report that was presented to the Provost.

Evidence-Based Medicine (EBM) Curriculum Task Force, Member. (July 2015 - October 2015).

To review EBM curriculum and recommend changes to how this thread is taught in the Science of Health Systems course (required of all medical students) and other longitudinal changes integrated throughout the curriculum. Currently the only librarian on the task force; all other members are physicians and basic scientists.

Participation in Development/Fundraising Activities

Penn State College of Medicine Development, Presenter. (May 2019 - Present).

Meet with donors for the College of Medicine and present a session in which they experience a problem-based learning session as "learners."

Faculty Development

Instructor, Health Systems Science Academy. (2018-present)

Teach a session on adult education theory, including how to write effective learning objectives. This session prepared attendees to be more effective in providing training, which often is part of health care systems improvement projects.

Facilitator for Focused Teaching Project, Junior Faculty Development Program, Facilitator. (February 15, 2019).

Facilitate small groups of participants as they present a mini-teaching session to others in group; provide constructive feedback to each participant.

Junior Faculty Development Program, Mentor. (December 1, 2014 - May 2015).

Asked to serve as mentor for junior faculty in Penn State College of Medicine in formal Junior Faculty Development Program.

Search Committee for Harrell Health Sciences Library Associate Dean, Member. (July 2018 - November 2018).

Faculty Governance

Library Faculty Organization, Chairperson, Elected. (May 1, 2013 - April 29, 2014).

Heard concerns of library faculty (130 throughout Commonwealth) and worked to resolve them through means available to LFO. Oversaw several standing committees of LFO and communicated with library faculty throughout system. All told, a three-year commitment including chair-elect and immediate past chair.

Service to the Disciplines and to the Profession

External evaluator for teaching award

Reviewer, Case Western Reserve Scholarship in Teaching Award, Case Western Reserve University School of Medicine, External Reviewer, Regional. Cleveland, Ohio. (January 2019 - Present).

Review applicant descriptions of teaching projects to evaluate their scholarly approach to the project according to stated criteria. I have done this in 2019 and 2020.

Organizing Conferences and Service on Conference Committees

Medical Library Association, Garfield Research Fellowship Jury, Chairperson, International. (June 1, 2016 - May 31, 2017).

Select recipients of this competitive fellowship award.

Adult Education Research Conference, Co-Chairperson, National. Hershey, PA USA. (January 2013 - June 4, 2014).

Co-chaired and planned this one-day pre-conference with Dr. Elizabeth Tisdell of Penn State Harrisburg.

Association of College and Research Libraries, Professional Development Coordinating Committee, Virtual Institutes Committee, Member, National. (Virtual). (January 2010 - July 2012).

Create, implement, and evaluate ACRL virtual institute for 2012. Develop theme(s), identify co-sponsor(s), draft call for participation and selection criteria.

Participation in or Service to Professional and Learned Societies

AAHSL Task Force on Competency-Based Medical Education, American Association of Health Sciences Libraries, Member, National. (May 30, 2016 - November 2018).

- Identify AAHSL libraries that are participating to a significant degree in incorporating Core EPAs in the medical education curriculum, through design, development, teaching, evaluation, and/or similar engagement.

- Develop a methodology to characterize the nature and depth of the participation.

- Map and cross-reference existing ACGME, AAMC, LCME, and other evidence-based medicine competencies as identified by the Task Force. Identify gaps in EBM competencies.

- Compose a white paper or similar work for publication on the state of the art of librarians' roles and involvement in all phases of competency-based medical education. Include recommendations for additional work that is needed (e.g., developing standard definitions of EBM concepts, translating EBM concepts into teachable components, evaluation of the effectiveness of EBM curriculum.)

Association for College and Research Libraries Research Planning and Review Committee, Vice Chair, National. (July 1, 2017 - August 30, 2017).

Responsible for creating and updating a biennial environmental scan for the association that encompasses trends in academic librarianship, higher education, and the broader environment, e.g., economic, demographic, political, for release at the ACRL conference. Identifies the "ACRL Top 10 Trends" for release every two years in non-ACRL conference years.

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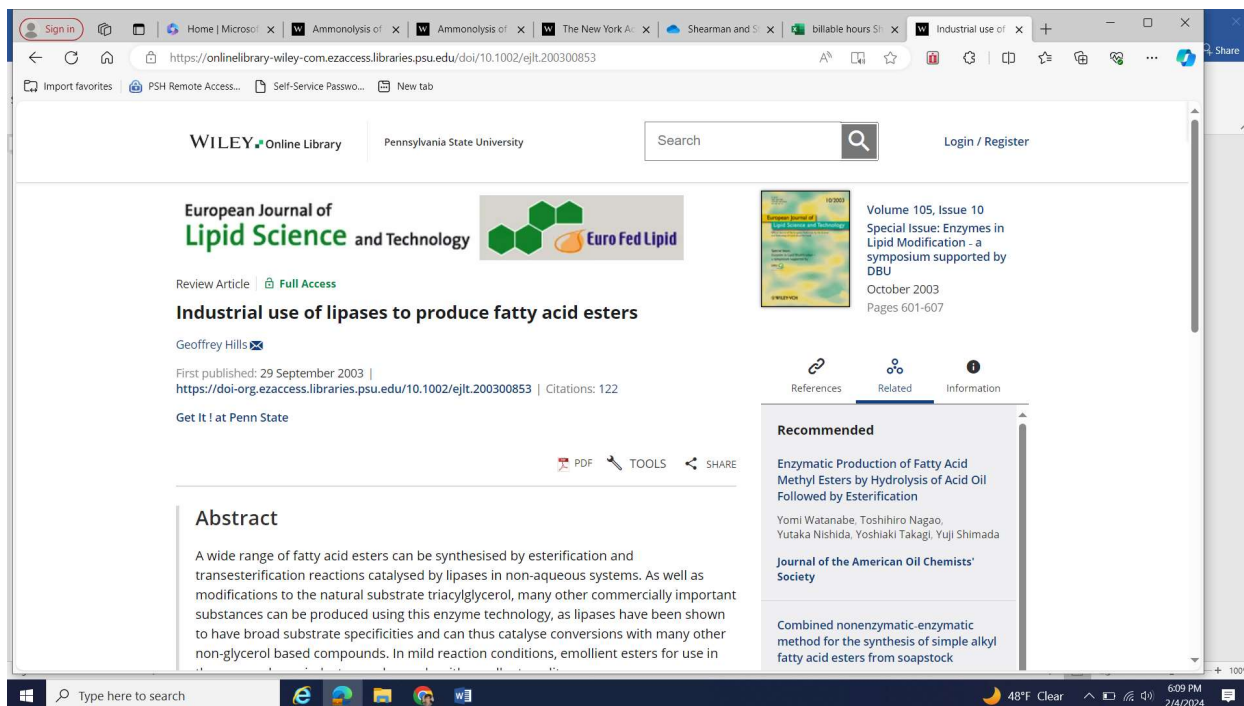
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Hills: Screenshot of Wiley Online Library bibliographic record showing that it is through Penn State University Libraries' subscription (Pennsylvania State University denoted at top; URL in middle of image shows PSU.edu)



Screenshot of Penn State University Libraries' catalog database with Hills article as 1st result, left column

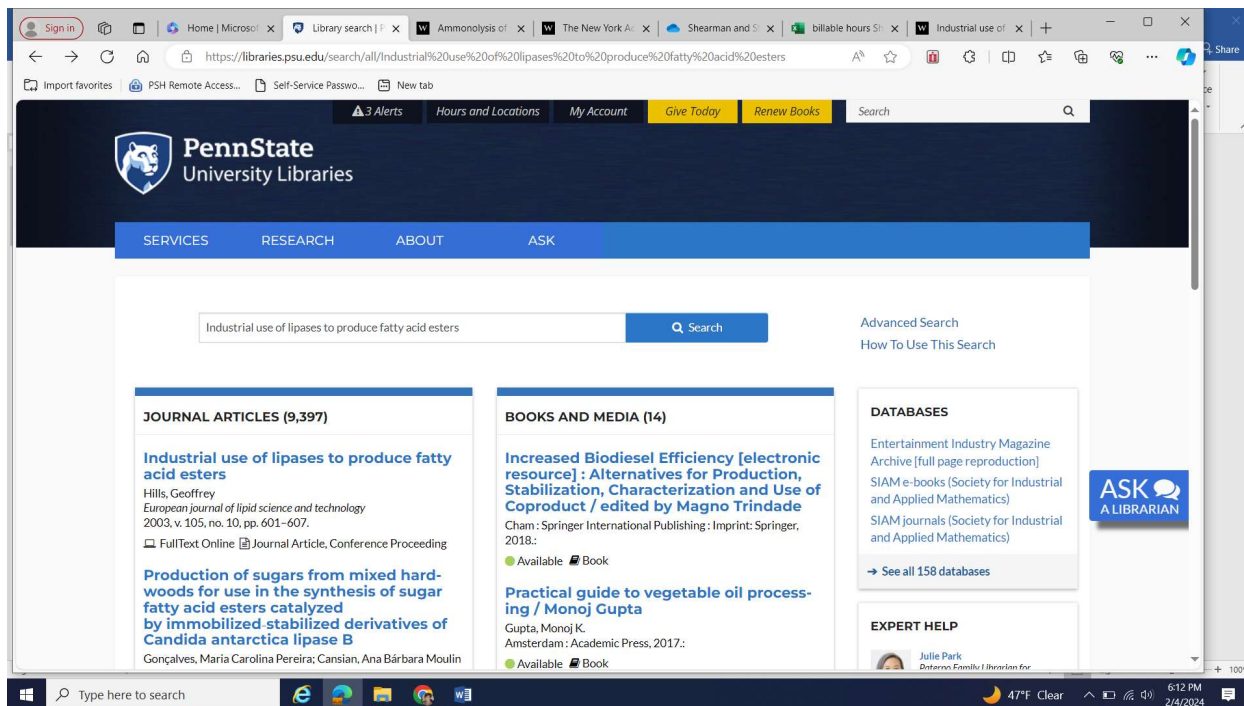


Exhibit C



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Subject(s):

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- [Lipids](#)

Genre(s):

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ISSN:

1438-9312

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Title from table of contents screen (Wiley InterScience; viewed: 10/12/2006).

Technical Details:

Mode of access: World Wide Web.

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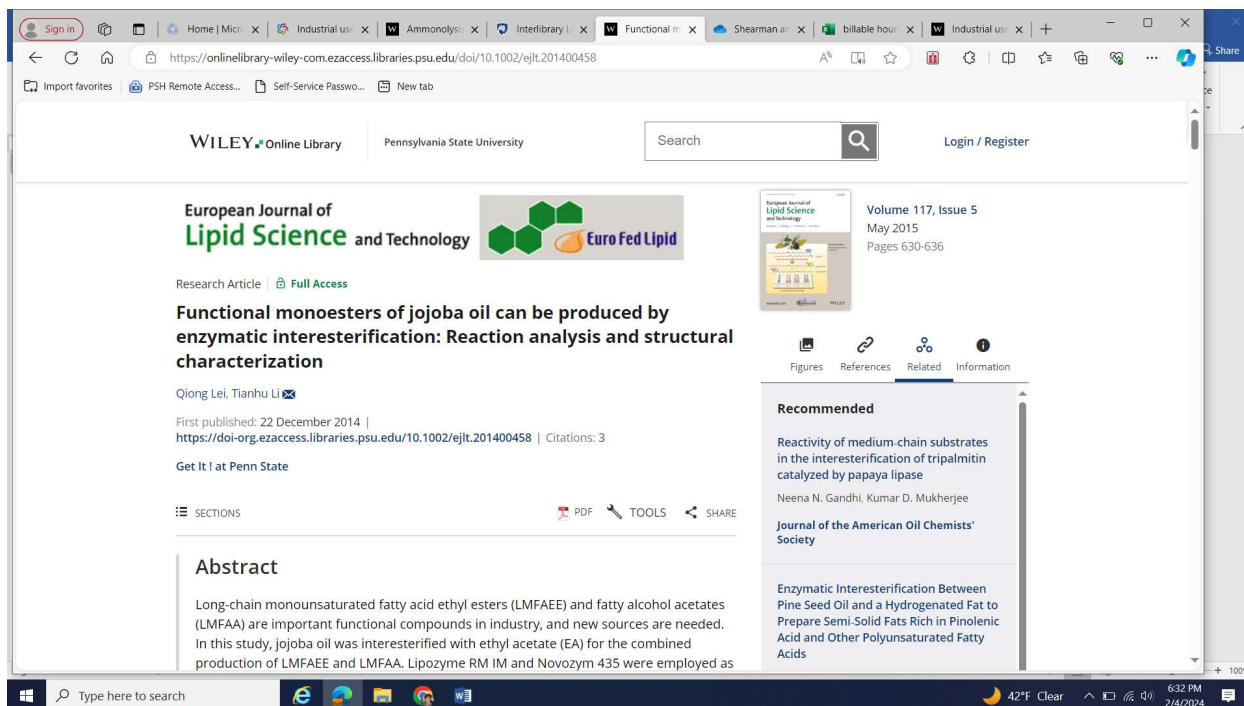
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Lei: Screenshot of Wiley Online Library bibliographic record showing that it is through Penn State University Libraries' subscription (Pennsylvania State University denoted at top; URL in middle of image shows PSU.edu)



Screenshot of Penn State University Libraries' catalog database with Lei article as 1st result

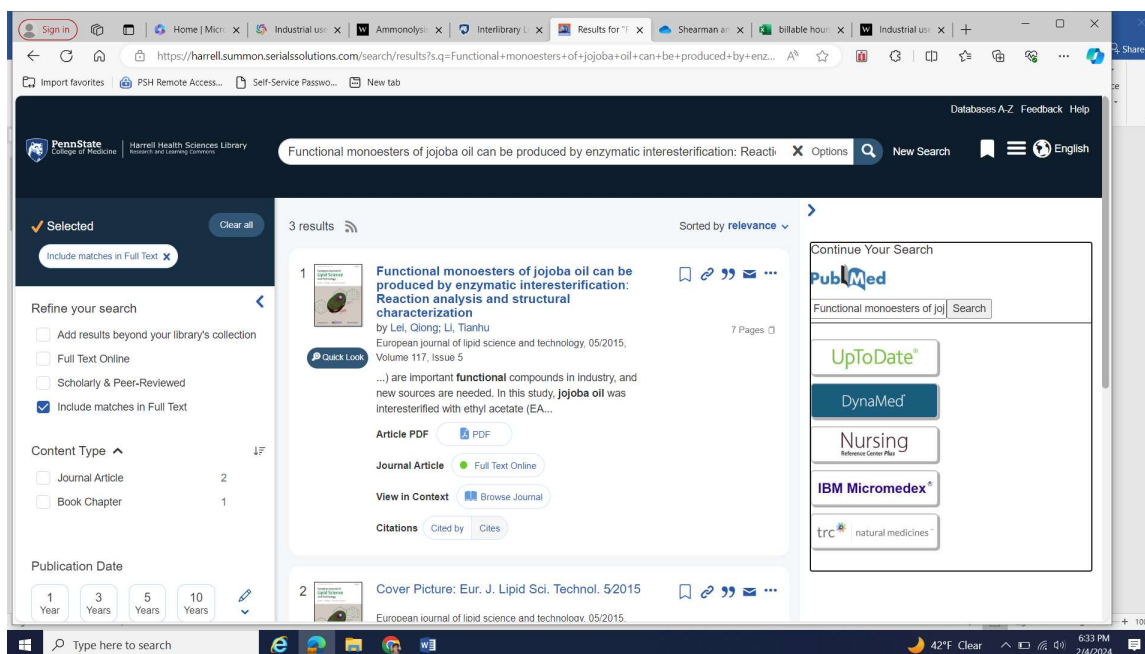


Exhibit E

Ammonolysis of Carboxylic Esters Catalyzed by Lipases

Synthesis of Fatty Acid Amides

M. C. DE ZOETE, A. C. KOCK-VAN DALEN, F. VAN RANTWIJK, R. A. SHELDON

First published: October 1996

<https://doi-org.ezaccess.libraries.psu.edu/10.1111/j.1749-6632.1996.tb33224.x>

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References

- 1 For a review, see: De Zoete, M. C., F. VanRantwijk and R. A. Sheldon. 1994. *Catal. Today* 22: 563–590.

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- 2 De Zoete, M. C., A. C. Kock-Van Dalen, F. Van Rantwijk and R. A. Sheldon. 1993. *J. Chem. Soc. Chem. Commun.*, p. 1831–1832; DE ZOETE, M. C., A. C. KOCK-VAN DALEN, F. VAN RANTWIJK and R. A. SHELDON. 1994. *Biocatalysis* 10: 307-316; DE ZOETE, M. C., F. VAN RANTWIJK and R. A. SHELDON. 1995. *PCT Int. Appl. WO* 95/07359.

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- 3 Garcia, M. J., F. Rebolledo and V. Gotor. 1993. *Tetrahedron. Lett.* 34: 6141–6142; CHEN, S-T., M-K. JANG and K-T. WANG. 1993. *Synthesis*, p. 858-860.

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Symposium Series Volume 389. J. R. Witaker and P. E. Sonnet, Eds.: 158-172. Amer. Chem. Soc. Washington, District of Columbia.

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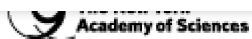
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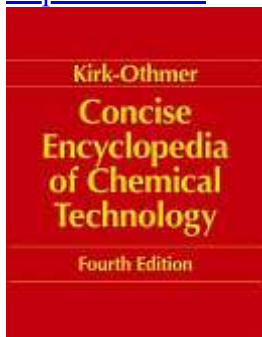
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