

MICHIGAN STATE UNIVERSITY

May 20th, 2020

To: Materials Licensing Branch
U.S. Nuclear Regulatory Commission
2443 Warrenville Road, Suite 210
Lisle, IL 60532-4352

From: Bryan N. Harris
Radiation Safety Officer
Michigan State University

Re: License No. 21-00021-29
Request for Amendment

I request to amend NRC License No. 21-00021-29 as follows:

Change item 12. A to reflect a new Radiation Safety Committee Chairperson.

The current listed chairperson, Christopher M. Waters, Ph.D., will step down effective July 1st, 2020.

The new Chairperson shall be Dr. Claire Vieille, Ph.D. and will assume responsibilities as of July 1st, 2020. Dr. Vieille's C.V. is attached for reference.

Please contact Bryan Harris, Radiation Safety Officer, at 517-884-3309 for additional information.

Signed,



Bryan Harris
e. harri126@msu.edu
o. 517.884.3309
c. 585-754-2058



**Vice President
for Research and
Graduate Studies**

Office of
Environmental
Health & Safety

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Claire Vieille, PhD

Departments of Microbiology & Molecular Genetics (MMG) and Biochemistry & Molecular Biology (BMB)
Biomedical Physical Sciences Building, Room 6172, 567 Wilson Road
Michigan State University (MSU)
East Lansing, MI 48824-1101
(517) 884-5392 | vieille@msu.edu

EDUCATION

1991	PhD in microbiology; Paris University 7 at Pasteur Institute; Paris, France
1986	MS in microbiology; Paris University 7 at Pasteur Institute; Paris, France
1986	BS in agricultural engineering; National Agronomy Institute Paris-Grignon; Paris, France

PROFESSIONAL EXPERIENCE

2015–present	Associate Professor with a dual appointment in MMG and BMB, MSU
2008–2014	Assistant Professor (tenure track), MMG and BMB, MSU
2005–2008	Research Associate Professor, BMB, MSU
1998–2004	Research Assistant Professor, Zeikus Laboratory, BMB, MSU
1994–1997	Laboratory Manager, Zeikus Laboratory, BMB, MSU
1992–1994	Postdoctoral Research Fellow, Zeikus Laboratory, BMB, MSU
1991–1992	Postdoctoral Research Fellow, Biotechnology Department, Pasteur Institute; Paris, France
1989–1992	Microbiology Instructor, National Agronomy Institute Paris-Grignon; Paris
1989	Microbiology Instructor, Pasteur Institute; Paris

ADMINISTRATIVE ASSIGNMENTS

2017–present	Associate Director, BioMolecular Sciences (BMS) Gateway Program.
2006–2017	Cocreator and Associate Director, MSU Quantitative Biology (QB) interdisciplinary PhD program.
2010–2017	Chair, QB recruiting committee

OTHER SERVICE TO MICHIGAN STATE UNIVERSITY

University and Departmental Committees

2018–2019	MMG seminar committee, in charge of the MMG 892 seminar class
2018	Faculty Grievance panel (one panel)
2016–2019	Radiation Safety Committee
2015–2018	Women’s Advisory Committee to the Provost
2015–2017	MMG Faculty Advisory Committee
2014–present	Mentoring Committee for Matt Schrenk, MMG
2014–2015	BMB synthetic biology faculty search committee
2014–2017	Genetics Program Executive Committee
2013–2017	MMG curriculum committee
2012–2013	MMG microbial ecology faculty search committee
2011–2015	MMG Undergraduate Student Club advisor
2011–2014	BMB Comprehensive Examination Committee, departmental representative
2010–2011	BMB Faculty Advisory Committee
2010–2011	MMG Seminar Committee
2010–2017	QB Executive Committee
2007–2010	QB Recruitment Committee
2006–2010	MSU Quantitative Biology Initiative Executive Committee (QBI). The QBI developed interdisciplinary graduate training programs, awarded graduate fellowships, seeded new interdisciplinary projects, and organized interdisciplinary conferences and seminars in structural biology, systems biology, bioinformatics, and evolutionary modeling.
2006–2009	QBI Fellowship Committee
2004–present	37 Graduate committees (6 as departmental representative) for students in 8 PhD programs

Other

2019–present College of Natural Science Cultural Competency facilitator
2013–2017 Mentor for BMB postdoctoral researcher Ramya Rajagopalan
2010 Mentor, underrepresented minority BMB alumna Olynthia Chancy
2009–2011 Outreach, helped underrepresented minority faculty member Bertrand Hankoua, Delaware State University, a minority-serving institution, with grant applications to USDA
2008 Facilitator, Alumni Presentations in Life Sciences and Engineering, CIC/SROP Conference, East Lansing, MI
2007, 2018, 2019 Recruitment of minority graduate students at the HBCU-UP National Conference (2007), ABRCMS (2007), and the SACNAS national conference (2018, 2019)

SERVICE TO THE SCIENTIFIC COMMUNITY

Grant Proposal Review Panel Member

2018 NSF EPSCoR
2012 Mock grant reviewer and review panel leader, ASM Kadner Institute
2009 USDA CSREES SBIR, Biobased Products and Bioenergy Program
2007 USDA CSREES NRI 71.2, Biobased Products and Bioenergy Program
2004 NIH Center for Scientific Review: postdoctoral fellowship applications

Ad-hoc Grant Proposal Reviewer

NSF: 2019 (1 EPSCoR grant), 2016 (1 grant), 2010 (1 career grant), 2009 (2 grants); MSU AgBioResearch: 2015 (1 grant), 2018 (1 grant); South African National Research Foundation: 2014 (1 grant); USDA: 2014 (1 SBIR), 2011 (1 SBIR), 2010 (1 SBIR), 2005 (1 SBIR), 2002 (3 grants); Civilian Research and Development Foundation (CRDF) Global: 2013 (1 grant); Sun Grant Initiative: 2011 (1 grant); Dutch Technology Foundation: 2009 (1 grant)

Reviewer for Scientific Journals

2015–present Editor, *Applied and Environmental Microbiology*
2013–2015 Editorial board member, *Applied and Environmental Microbiology*
Since 2000, *Ad-hoc reviewer for Applied Biochemistry and Biotechnology; Applied and Environmental Microbiology; Biotechnology and Bioengineering; Biotechnology Journal; Biochimica et Biophysica Acta; Biochemistry; Enzyme and Microbial Technology; FEBS Journal; FEMS Microbiology Ecology; FEMS Microbiology Letters; Infection and Immunity; ISME Journal; Journal of Bacteriology; Journal of Chemical Information and Modeling; Journal of Molecular Biology; Molecular Catalysis B: Enzymatic; Molecular Microbiology; Nature Biotechnology; Nucleic Acids Research; Protein Engineering, Design and Selection; Protein expression and Purification; Plasmid; Process Biochemistry; Protein Science; PLOS ONE; Trends in Biotechnology*

External Reviewer

2016 One tenure letter, Shanghai Jiao Tong University
2016 PhD thesis external reviewer for one student in Pakistan and one student in South Africa
2014 One promotion letter, University of Pretoria, South Africa
2013 MS thesis external reviewer for one student in South Africa

RELEVANT PROFESSIONAL DEVELOPMENT WORKSHOPS

Leadership training

2020 AACU Diversity, Equity, and Student Success conference, March 19-21, New Orleans
2019–2020 MSU AAN Leadership fellow
2019 Leadership Institute: Effective Decision Making & Running Efficient Meetings
2019 Train the Trainer, Cultural Competency for Personal, Organizational, and Community Change
2019 Learning Narratives from First Generation Students in STEM Classrooms
2018 Living and Working the Daring Way

2018	Mindful Self Compassion
2018	Emotional Resilience and Psychological Flexibility
2016	Workshop on Leadership Networks
2012	Workshop on Implicit Bias

Teaching workshops and conferences

Between 2007 and 2018, attended eleven workshops through the Teaching Essentials for MSU STEM Faculty, the American Society of Microbiology Conference for Undergraduate Educators, Bethesda, MD (2016), and the HHMI-Sponsored National Academies Summer Institute on Undergraduate Education Biology (2007)

AWARDS

2016–2017 MSU College of Natural Science Undergraduate Teaching Award

PUBLICATIONS

Peer-reviewed research and review articles (*C Vieille corresponding author)

1. Ligaba-Osena A, J Jones, E Donkor, S Chandrayan, F Pole, C-H Wu, C Vieille, M Adams, and B Hankoua. 2018. Novel bioengineered cassava expressing an archaeal starch degradation system and a bacterial ADP-glucose phosphorylase for starch self-digestibility and yield increase. *Front. Plant Sci.* 9:192.
2. Bsharat O, MM Musa, I Karume, C Vieille, M Takahashi, and SM Hamdan. 2018. Expanding the substrate specificity of *Thermoanaerobacter pseudoethanolicus* secondary alcohol dehydrogenase by a dual site mutation. *Eur. J. Org. Chem.* 798–805.
3. Bsharat O, MM Musa, C Vieille, SA Oladepo, M Takahashi, and SM Hamdan. 2017. Asymmetric reduction of substituted 2-tetralone by *Thermoanaerobacter ethanolicus* secondary alcohol dehydrogenase. *ChemCatChem* 9:1–8.
4. Beauchamp J, and *C Vieille. 2015. Activity of select dehydrogenases with Sepharose-immobilized N⁶-carboxymethyl-NAD. (Invited addendum to “Characterization of *Thermotoga maritima* glycerol dehydrogenase for enzymatic production of dihydroxyacetone.”) *Bioengineered* 6:106–110.
5. Schindler BD, RV Joshi, and *C Vieille. 2014. Respiratory glycerol metabolism of *Actinobacillus succinogenes* 130Z for succinate production. *J. Ind. Microbiol. Biotechnol.* 41:1339–1352.
6. Beauchamp J, PG Gross, and *C Vieille. 2014. Characterization of *Thermotoga maritima* glycerol dehydrogenase for enzymatic production of dihydroxyacetone. *Appl. Microbiol. Biotechnol.* 16:7039–7050.
7. Joshi RV, BD Schindler, N McPherson, K Tiwari, and *C Vieille. 2014. A markerless gene knockout method for *Actinobacillus succinogenes* 130Z based on natural transformation. *Appl. Environ. Microbiol.* 80:3053–3061.
8. Park JJ, S Lechno-Yossef, CP Wolk, and *C Vieille. 2013. Cell-specific gene expression in *Anabaena variabilis* grown phototrophically, photoheterotrophically, and heterotrophically. *BMC Genomics* 14:759.
9. Musa MM, RS Phillips, M Laivenieks, C Vieille, M Takahashi, and SM Hamdan. 2013. Racemization of enantiopure secondary alcohols by *Thermoanaerobacter ethanolicus* secondary alcohol dehydrogenase. *Org. Biomol. Chem.* 11:2911–2915.
10. McKinlay JB, M Laivenieks, BD Schindler, AA McKinlay, S Siddaramappa, JF Challacombe, SR Lowry, A Clum, AL Lapidus, KB Burkhardt, V Harkins, and *C Vieille. 2010. A genomic perspective on the potential of *Actinobacillus succinogenes* for industrial succinate production. *BMC Genomics* 11:680.
11. Krishnamurthy H, K Munro, H Yan, and *C Vieille. 2009. Dynamics in *T. neapolitana* adenylate kinase. ¹⁵N relaxation and hydrogen-deuterium exchange studies of a hyperthermophilic enzyme highly active at 30 °C. *Biochemistry* 48:2723–2739.
12. Song SH, and *C Vieille. 2009. Recent advances in the biological production of mannitol. *Appl. Microbiol. Biotechnol.* 84:55–62. Invited review.

13. McKinlay JB, and *C Vieille. 2008. ^{13}C -metabolic flux analysis of *Actinobacillus succinogenes* fermentative metabolism at different NaHCO_3 and H_2 concentrations. *Metab. Engin.* 10:55–68.
14. Musa MM, KI Ziegelmann-Fjeld, C Vieille, and RS Phillips. 2008. Activity and selectivity of W110A secondary alcohol dehydrogenase from *Thermoanaerobacter ethanolicus* in organic solvents and ionic liquids: Mono- and biphasic media. *Org. Biomol. Chem.* 6:887–892.
15. Song SH, N Ahluwalia, Y Leduc, L Delbaere, and *C.Vieille. 2008. *Thermotoga maritima* TM0298 is a highly thermostable mannitol dehydrogenase. *Appl. Microbiol. Biotechnol.* 81:485–495.
16. McKinlay JB, Y Shachar-Hill, JG Zeikus, and *C Vieille. 2007. Determining *Actinobacillus succinogenes* metabolic pathways and fluxes by NMR and GC-MS analyses of ^{13}C -labeled metabolic product isotopomers. *Metab. Engin.* 9:177–192.
17. McKinlay JB, C Vieille, and JG Zeikus. 2007. Prospects for a bio-based succinate industry. *Appl. Microbiol. Biotechnol.* 76:727–740.
18. Ziegelmann-Fjeld KI, MM Musa, RS Phillips, JG Zeikus, and *C Vieille. 2007. A *Thermoanaerobacter ethanolicus* secondary alcohol dehydrogenase mutant highly active and stereoselective on phenylacetone and benzylacetone. *Protein Engin. Des. Select.* 20:47–55.
19. Epting KL, C Vieille, JG Zeikus, and RM Kelly. 2005. Influence of divalent cations on the structural thermostability and thermal inactivation kinetics of class II xylose isomerases. *FEBS J.* 272:1454–1464.
20. Kang S, C Vieille, and JG Zeikus. 2005. Identification of *Pyrococcus furiosus* amylopullulanase catalytic residues. *Appl. Microbiol. Biotechnol.* 66:408–413.
21. Krishnamurthy H, H Lou, A Kimple, C Vieille, and RI Cukier. 2005. Associative mechanism for phosphoryl transfer: A molecular dynamics simulation of *Escherichia coli* adenylate kinase complexed with its substrates. *Protein: Struct. Funct. Genet.* 58:88–100.
22. McKinlay JB, JG Zeikus, and *C Vieille. 2005. Insights into *Actinobacillus succinogenes* fermentative metabolism in a chemically defined growth medium. *Appl. Environ. Microbiol.* 71:6651–6656.
23. Kim P, M Laivenieks, JB McKinlay, *C Vieille, and JG Zeikus. 2004. Construction of a shuttle vector for the overexpression of recombinant proteins in *Actinobacillus succinogenes*. *Plasmid* 51:108–115.
24. Kim P, M Laivenieks, *C Vieille, and JG Zeikus. 2004. Effect of overexpression of *Actinobacillus succinogenes* phosphoenolpyruvate carboxykinase on succinate production in *Escherichia coli*. *Appl. Environ. Microbiol.* 70:1238–1241.
25. Park DH, C Vieille, and JG Zeikus. 2003. Bioelectrocatalysts: engineered oxidoreductase system for utilization of fumarate reductase in chemical synthesis, detection, and fuel cells. *Appl. Biochem. Biotechnol.* 111:41–53.
26. Sriprapundh D, C Vieille, KL Epting, RM Kelly, and JG Zeikus. 2003. Directed evolution of *Thermotoga neapolitana* xylose isomerase for enhanced activity on glucose at 60°C and in acidic conditions. *Protein Engin.* 16:683–690.
27. Vieille C,* HH Hyun, H Krishnamurthy, A Savchenko, H Yan, and JG Zeikus. 2003. *Thermotoga neapolitana* adenylate kinase is highly active at 30°C. *Biochem. J.* 372:577–585.
28. Bandlish RJ, M Hess, KL Epting, C Vieille, and RM Kelly. 2002. Glucose to fructose conversion at high temperatures with xylose (glucose) isomerases from *Streptomyces murinus* and two hyperthermophilic *Thermotoga* species. *Biotechnol. Bioeng.* 80:185–194.
29. Savchenko, A, C Vieille, S Kang, and JG Zeikus. 2002. *Pyrococcus furiosus* α -amylase is stabilized by calcium and zinc. *Biochemistry* 41:6193–6201.
30. Vieille C, KL Epting, RM Kelly, and JG Zeikus. 2001. Divalent cations and amino acid composition contribute to the unusual thermostability of the *Bacillus licheniformis* xylose isomerase. *Eur. J. Biochem.* 268:6291–6301.
31. Vieille C,* D Sriprapundh, A Savchenko, S Kang, H Krishnamurthy, and JG Zeikus. 2001. Thermostability mechanisms in enzymes from *Thermotoga neapolitana* and *Pyrococcus furiosus*. *J. Microbiol.* 39:245–249.
32. Vieille C, and JG Zeikus. 2001. Hyperthermophilic enzymes: sources, uses, and molecular mechanisms for thermostability. *Microbiol. Mol. Biol. Rev.* 65:1–43.

33. Sriprapundh D, C Vieille, and JG Zeikus. 2000. Molecular determinants of xylose isomerase thermal stability and activity: analysis by site-directed mutagenesis. *Protein Engin.* 13:259–265.

Twenty four more peer-reviewed publications since 1987, eight book chapters, and eight US patents

TALKS AT CONFERENCES AND UNIVERSITIES

- 2016 University of Michigan-Flint, Flint, MI
- 2015 Catholic University of Korea, Seoul, South Korea
- 2015 USDA-NIFA AFRI Bioenergy PD meeting, Denver, CO
- 2015 2015 International Symposium & Annual Meeting of the Korean Society for Microbiology and Biotechnology, Gyeongju, South Korea
- 2013 Indiana University, Bloomington, IN
- 2013 25th Anniv. Meeting of the Association for the Advancement of Industrial Crops, Washington, DC
- 2013 35th Symposium on Biotechnology for Fuels and Chemicals, Portland, OR
- 2012 Grand Valley State University, Grand Rapids, MI
- 2010 University of Marseille, Marseille, France
- 2010 MEDC Bioeconomy Symposium, MSU, East Lansing, MI
- 2010 Cyanobacterial Molecular Biology Workshop; Lake Arrowhead UCLA Conference Center, CA
- 2009 Great Lakes Bioenergy Center Annual Retreat, South Bend, IN
- 2009 Great Lakes Bioenergy Center Hydrogen Group retreat, Brook Lodge, MI
- 2008 Institut Français du Pétrole, Rueil-Malmaison, France
- 2007 University of Wisconsin–Madison, Madison, WI
- 2005 Biotechnology Symposium, Annual Meeting of the American Chemical Society, San Diego, CA
- 2004 Symposium on the Evolution of Biomolecular Structure, Center for Biological Modeling, MSU
- 2002 Annual Retreat of the MSU Center for Biological Modeling, MSU
- 2002 Pfizer Inc., San Diego, CA
- 2001 2001 International Meeting of the Microbiological Society of Korea, Seoul, South Korea
- 2001 University of Foreign Studies, Yongin, South Korea
- 2001 Kwangju Institute of Science and Technology, Kwangju, South Korea
- 2000 Miller Brewing Company, Milwaukee, WI
- 1998 Thermophiles '98, Brest, France

FUNDING

Pending Tuning Enantioselectivity of Secondary Alcohol Dehydrogenase from *Thermoanaerobacter ethanolicus* Through Site Directed Mutagenesis. Saudi Ministry of Education, Research and Development Office, \$480,000 total costs. MM Musa (PI), with C Vieille one of three co-PIs.

Completed

- 2011–2016 Engineering succinate production by *Actinobacillus succinogenes* on glycerol. US Department of Agriculture (USDA) National Institute of Food and Agriculture (NIFA), \$957,582 total costs. C Vieille (PI). Ranked first of the one hundred grant finalists.
- 2010–2014 Interdisciplinary Bioelectronics Training Program. US Dept. of Education, Graduate Assistance in Areas of National Need, \$656,325. RM Worden (PI). C Vieille one of several co-PIs.
- 2009–2010 Development of a knockout method to engineer *A. succinogenes* into a performing industrial succinate producer. Michigan Economic Development Corporation, \$37,500. C Vieille (PI).
- 2008–2011 Nanostructured interfaces for bioelectrocatalysis. National Science Foundation (NSF) CBET-0756703, \$417,907. Mark Worden (PI), S Calabrese Barton (co-PI), and C Vieille (co-PI).
- 2008–2011 Molecular design of oxidoreductases for the biosynthesis of carbohydrate-based industrial polyols. USDA CSREES, \$500,000. C Vieille (PI) and RM Worden (co-PI).

- 2009 Resequencing of *Actinobacillus succinogenes* after evolution for fast growth on hemicellulosic sugars and crude glycerol. US Department of Energy (DOE) Joint Genome Institute Community Sequencing Program. No funding provided. C Vieille (PI).
- 2008–2010 Great Lakes Bioenergy Research Center. DOE, T Donohue (University of Wisconsin–Madison, PI), multiple co-PIs, C Vieille (collaborator). \$76,000/yr to Vieille.
- 2003–2006 Metabolic engineering of succinate production in *Actinobacillus succinogenes*; NSF, \$500,000. JG Zeikus (PI), C Vieille (collaborator, wrote the proposal).
- 2001–2004 Biomolecular and engineering studies of extremely thermophilic xylose (glucose) isomerase; NSF; renewal, \$298,279. JG Zeikus (PI), and C Vieille (co-PI, wrote the MSU section of the proposal), in collaboration with RM Kelly (co-PI), North Carolina State University (NCSU).
- Before 2000, wrote proposals as co-PI or laboratory manager that brought over \$1,200,000 to the Zeikus laboratory from NSF (two proposals), USDA (one proposal), DOE (one proposal), and MSU Research Excellent Funds Centers (five proposals)

LABORATORY PERSONNEL MENTORED

Seven postdoctoral researchers, and twenty seven undergraduate students

Ten Graduate students (rotation students not included)

Rajasi Joshi (MMG, 2010–2017); Nik McPherson (Genetics, 2008–2017), Rajasi Joshi, (MS in Industrial Microbiology, 2008–2010); Justin Beauchamp (CMB, 2008–2015); Bryan Schindler (MMG, 2006–2011); Richard W. Tobey (BMB, 2002–2004); Karla I. Ziegelman-Fjeld (BMB, 2002–2007); James B. McKinlay (MMG, 2002–2006); Harini Krishnamurthy (CMB, 1999–2006); Dinlaka Sriprapundh (Food Science and Human Nutrition, 1997–2002)

TEACHING AT MSU

Main teaching responsibilities

- MMG 421 Prokaryotic Cell Physiology (3 cr); Fall 2019; Organizer, co-taught with Drs. Walker and Martinez-Gomez, 21 lectures
- MMG 301 Introductory Microbiology (3 cr); 2010–2017 lecture format; co-organizer, 21 lectures, one section of 350 to 450 students; 2018 spring and fall, hybrid format; one section of 100 students.
- MMG 803 Topics in Integrative Microbial Biology: Animal symbionts: the gut and beyond (2 cr); 2016; organizer, co-taught with Dr. Zhiyong Xi, 8 lectures
- QB 826 Introduction to Quantitative Biology Techniques (1 cr); 2008–2016; co-creator, organizer, main instructor (over 60%)
- MMG 803 Topics in Integrative Microbial Biology: Microbial Products (2 cr); 2009; 28 lectures
- CHE 883 Multidisciplinary Bioprocessing Laboratory (3 cr); 2007, 2009, 2011; 1 lecture, plus supervising 2–3 students who did research in my laboratory.

Other teaching (one or two lectures each)

BMB 495, Senior Undergraduate Seminar, 2005–2012; BMB 960, From Systems Biology to Metabolic Engineering, 2006, 2007; MMG 801 Integrative Microbial Biology, 2011–2016; BMB 101, Frontiers in Biochemistry, 2009, 2012; BDL 801, Biomedical Laboratory Diagnostics Seminar, 2011; CHE 481, Biochemical Engineering, 2010; CHE 883, Multidisciplinary Bioprocessing Laboratory, 2019, 2020; BMS 800, Research Forum 2019

Song, Taehoon

From: Harris, Bryan <harri126@msu.edu>
Sent: Wednesday, May 20, 2020 9:16 AM
To: Parker, Bryan
Subject: [External_Sender] Michigan State University License 21-00021-29 license amendment addition
Attachments: 20200520 License Amendment - Chair.pdf

Hello Bryan,

As per our conversation, please see the attached addition to the previously submitted amendment.

Regards,

Bryan Harris, MBA BS
Radiation & Laser Safety Officer
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