

PROMOTION RECOMMENDATION
UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL
DEPARTMENT OF PHARMACOLOGY

Christine E. Canman, Ph.D., assistant professor of pharmacology, Department of Pharmacology, is recommended for promotion to associate professor of pharmacology, with tenure, Department of Pharmacology, Medical School.

Academic Degrees:

Ph.D.	1992	University of Michigan
B.S.	1987	University of Illinois

Professional Record:

2004-present	Assistant Professor of Pharmacology, University of Michigan
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Summary of Evaluation:

Teaching: Dr. Canman is a very effective teacher and has participated in a number of departmental and Medical School courses including Cancer Biology 553, Pharm Nursing 210, and Dental Pharmacology. Her teaching includes lectures on Cancer Pharmacology and Targeted Cancer Therapeutics as well as activity outside her normal field on antimicrobials and antivirals for which she has spent considerable time to develop her teaching materials from the ground up. She interacts very easily with students and faculty, and her lectures are described as very well prepared and generally excellent. Specifically, Dr. Canman has earned high marks in terms of her organization; enhancing student understanding; providing useful handouts; and the respect and professional behavior she exhibits to students. While Dr. Canman has proved to be an excellent educator in the courses and activities she has taught, she has also excelled in graduate student mentoring of pre and post-doctoral fellows. Since returning to academia, Dr. Canman has participated in the teaching and mentoring of seven undergraduate students, one graduate student, and two post-doctoral fellows. In that capacity, Dr. Canman is recognized as an excellent teacher who is both energetic and interactive with peers and students alike. Additionally, Dr. Canman has served on six Ph.D. thesis committees and has participated on seven oral preliminary examination committees. She also is a facilitator for the DNA Repair Journal club.

Research: Dr. Canman is an outstanding scientist who has successfully established her own independent research program by making very original and insightful contributions to our understanding of DNA damage response and DNA synthesis. With her expertise in molecular pharmacology and cancer biology, she has developed novel approaches and strategies to further our understanding of radiation signaling and cancer treatment. During her years at the University of Michigan, Dr. Canman's primary research focus has been to identify and understand the mechanisms of post-replication repair and how different chemotherapeutic agents

work before certain pathways or proteins become drug targets. Recently, her work has focused on the role of translesion DNA polymerases in humans and characterizing their roles and actions in human and mammalian cells. Her most recent paper is an exemplary piece of research in regulating mammalian cellular stress responses. Both her previous work and her current research have many implications that could lead to improved understanding of how cells respond to DNA damage and the future modes of chemotherapy and radiation therapy in the treatment of cancer. During the past several years, Dr. Canman has published some seminal papers in the DNA repair field and has made a major contribution to the field by establishing functional siRNA systems to suppress REV1 and REV3.

Dr. Canman is also recognized for her ability to identify where the field is going and to publish ground-breaking papers that require substantial development of new tools and concepts. An examination of Dr. Canman's curriculum vitae indicates that she has an excellent record of productivity. She has 29 publications in high quality, peer-reviewed journals such as *Cancer Research*, *Biochemical Pharmacology*, *Molecular Pharmacology*, *Genes Development*, and *Science*. Due to a change in research emphasis from her training and perhaps more importantly her high scientific standards, the number of senior author publications since returning to the University of Michigan is lower than that of some of her peers. As was pointed out in her reviews by a highly accomplished leader in the field, two of Dr. Canman's senior authored publications could easily have been published as multiple papers. These two manuscripts are of exceptional quality and make many important, novel contributions to the field. It is a credit to Dr. Canman that she chose to present these findings as a cohesive unit that makes a larger advance in the field rather than if she had contributed her results over a number of smaller papers.

Dr. Canman continues to be invited to present her work at a number of scientific meetings including the 2010 Midwest DNA Repair Symposium where she won an award for First Place Junior Faculty Platform Presentation. She has also reported on her research studying the interactions of the DNA polymerase zeta with REV1 and FANCD2 at four major conferences including just recently, the Environmental Mutagenesis Society 42nd Annual Meeting in Montreal where she was an invited speaker. Dr. Canman currently has an R01 from the NCI, and serves as a co-investigator on an additional R01. She collaborates closely with research teams in Pharmacology, Radiation Oncology and the Department of Pathology.

Recent and Significant Publications:

Sharma S, Hicks JK, Chute CL, Brennan JR, Ahn J-Y, Glover TW, Canman CE: REV1 and polymerase ζ facilitate homologous recombination. *Nucleic Acids Res* doi: 10.1093/nar/gkr769, published online September 16, 2011.

Hicks JK, Chute CL, Paulsen MT, Ragland RL, Howlett NG, Guéranger Q, Glover TW, Canman CE: Differential roles for the DNA polymerases eta, zeta, and REV1 in lesion bypass of intrastrand versus interstrand DNA cross-links. *Mol Cell Biol* 30:1217-1230, 2010.

Morgan MA, Parsels LA, Zhao L, Parsels JD, Davis MA, Hassan MC, Arumugarajah S, Hylander-Gans L, Morosini D, Simeone DM, Canman CE, Normolle DP, Zabludoff SD,

Maybaum J, and Lawrence TS: Mechanism of radiosensitization by the Chk1/2 inhibitor AZD7762 involves abrogation of the G2 checkpoint and inhibition of homologous recombinational DNA repair. *Cancer Res* 70:4972-4981, 2010.

Parsels LA, Morgan MA, Tanska DM, Parsels JD, Palmer B, Booth, R.J., Denny WA, Canman, CE, Kraker AJ, Lawrence TS, Maybaum J: Gemcitabine sensitization by checkpoint kinase 1 inhibition correlates with inhibition of a Rad51 DNA damage response in pancreatic cancer cells. *Mol Cancer Ther* 8:45-54, 2009.

Derheimer FA, Hicks JK, Paulsen MT, Canman CE, Ljungman M: Psoralen-induced interstrand DNA cross-links block transcription and induce p53 in an ATR-dependent manner. *Mol Pharm* 75:599-607, 2009.

Service: Dr. Canman has contributed significantly in the area of departmental service. In addition to numerous thesis committees, she has served on the Rackham Graduate School Pre-doctoral Fellowship Selection Committee, the Pharmacology Graduate Student Program Committee, the Program in Biological Sciences Admission Committee, and the Department of Pharmacology Faculty Awards Committee. She has participated on the organizing committee for the Departmental Retreat and the Pharmacology Summer Fellowship Program. Dr. Canman has also served as an *ad hoc* reviewer for several national and international journals, including *Current Biology*, *Oncogene*, *EMBO Journal*, *Cancer Research*, *JBC*, *Molecular cell Biology*, and *Proceedings of the National Academy of Sciences* among others.

External Reviewers:

Reviewer A: “Dr. Canman has identified an important problem to study with many outstanding questions, and she has provided new insights into the field through her laboratory’s work. Although the number of her publications might be a tad low upon first glance, I think she has done very well given that she built this program from the ground up. I think this demonstrates her ability to really get something done. Dr. Canman compares well to her peers, and ranks on par with individuals promoted within the last five years at [three peer institutions].”

Reviewer B: “She has been called upon as a reviewer for a large number of the most prestigious journals in her field...I would argue for her promotion to tenure on the basis of the quality and significance of her most recent papers, which bode well for the continuing advancement of her professional status in her field. I feel that she is poised to make increasing contributions in upcoming years and that she is fully deserving of advancement to Associate Professor with tenure at this time.”

Reviewer C: “She has established herself as a key player in radiation signaling, especially in DNA damage response, establishing her own reputation for high caliber science and collaborating with recognized leaders in this field. Christine has been a productive scientist and her work has appeared in high impact peer-reviewed journals. Her molecular pharmacology and radiation biology studies have helped generate important information in the area of cell signaling and DNA repair.”

Reviewer D: “Dr. Canman’s scientific activity is clearly burgeoning and she promises to become a central figure in the genome stability field. Having served on the Promotions and Appointments Committee of our medical school, I can say without hesitation that Dr. Canman would have been promoted to Associate Professor with tenure in our institution.”

Reviewer E: “Although Christine has published fewer papers than some investigators at the time of the tenure decision, I want to emphasize the striking importance of Christine’s publications and also that she publishes really substantial papers, each of which addresses several related issues. Some investigators would have split the contents of the *MCB* and *NAR* papers...into multiple publications because so many concepts are addressed by these two papers...I regard Christine as one of the rising stars in the DNA repair field. Her work is characterized by its creativity, innovativeness, thoroughness, and meticulously careful experimentation.”

Reviewer F: “As an indication of her national recognition, I note that Dr. Canman received first place in the faculty platform presentations at last year’s Midwest DNA repair symposium. She is an invited symposium speaker for the Environmental Mutagen Society (EMS) meeting to be held in Montreal in October 2011, and she is a valuable participant in the society. Dr. Canman has been chosen as a Discussion Leader at a Gordon Research Conference. Based on her ongoing research achievements, I predict that she will receive many more invitations to speak about her work at meetings on DNA repair, replication and related fields.”

Summary of Recommendation:

Dr. Canman is an innovative and outstanding scientist as well as a sincere, articulate, and well respected teacher. She is recognized both nationally and internationally by her success in obtaining grant support, invitations to speak at national and international meetings, and publications in high caliber journals. She is a recognized expert in DNA damage response and cell cycle checkpoint regulation who has made a number of significant contributions to the field of cancer pharmacology. She has emerged as a leader in the areas of DNA repair and has continued her work characterizing DNA polymerases and understanding the role of DNA synthesis. She is recognized for her talents in molecular biology and pharmacology, and for developing innovative approaches to her research. She is an outstanding mentor and colleague, is heavily involved in the teaching, provides a strong and successful research program, and participates fully in every facet as a faculty member in the department and school. Dr. Canman will, without a doubt, continue to be successful in all research, teaching, and service activities, and I enthusiastically support her promotion to associate professor of pharmacology, with tenure, Department of Pharmacology, Medical School.



James O. Woolliscroft M.D.

Dean

Lyle C. Roll Professor of Medicine

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