

PROMOTION RECOMMENDATION
UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL
DEPARTMENT OF CELL AND DEVELOPMENTAL BIOLOGY

Diane C. Fingar, Ph.D., assistant professor of cell and developmental biology, Department of Cell and Developmental Biology, Medical School, is recommended for promotion to associate professor of cell and developmental biology, with tenure, Department of Cell and Developmental Biology, Medical School.

Academic Degrees:

Ph.D.	1995	Harvard University
B.S.	1990	Johns Hopkins University

Professional Record:

2004-present	Assistant Professor of Cell and Developmental Biology, University of Michigan
2004-2012	Assistant Professor of Internal Medicine, University of Michigan
2002-2004	Instructor, Department of Cell Biology, Harvard Medical School

Summary of Evaluation:

Teaching: Dr. Fingar is extensively involved in classroom and laboratory teaching. She presents lectures and leads small group discussion sections for CDB530 (Cell Biology 2005-2011), presents lectures in M1 Medical Histology (Winter 2008, 2009 and 2011), and is also a laboratory instructor in M1 Medical Histology (Winter 2008, 2009). Dr. Fingar has served or continues to serve on 16 graduate dissertation committees. In addition, Dr. Fingar served on 17 Ph.D. candidacy examination committees. In addition to classroom instruction, Dr. Fingar teaches extensively in her laboratory, providing hands on experience to a research assistant professor, postdoctoral fellows, graduate students, undergraduates and research assistants. One of her students, Bilgen Ekim, has received several prestigious awards including a Rackham International Student Fellowship, an American Heart Association pre-doctoral fellowship, a travel award for an American Association for Cancer Research meeting and a Rackham Barbour Scholarship. While in Dr. Fingar's laboratory, research assistant professor Dr. Ghada Soliman, M.D., Ph.D. received an American Heart Association (AHA) grant-in-aid. Dr. Soliman is now an assistant professor of nutrition in the Department of Family and Consumer Sciences at Western Michigan University.

Research: The central theme of Dr. Fingar's research is to determine the molecular mechanisms that regulate the mTOR kinase, a master regulator of cell metabolism. mTOR kinase controls cell growth. Disregulation of mTOR underlies numerous diseases including cancer and obesity. Moreover, inhibition of mTOR is used to induce immunosuppression during organ transplantation. Dr. Fingar and her laboratory have made several important discoveries. Dr. Fingar has identified several new, critical regulatory phosphorylation sites on mTOR, as well

as some sites on Raptor, an essential mTOR regulator. Moreover, she identified some of the upstream kinases that catalyze this reversible phosphorylation. Dr. Fingar's studies have the potential to greatly expand our view of how mTOR regulates cell metabolism. Indeed, Dr. Fingar has been a highly sought collaborator. Dr. Fingar has published in highly respected journals including *Molecular Cell Biology* and the *Journal of Biological Chemistry*. She is sought after as a speaker at national conferences as well as at public and private academic institutions.

Recent and Significant Publications:

Acosta-Jaquez HA, Keller JA, Foster KG, Soliman GA, Ballif BA, Fingar DC: Site-specific mTOR phosphorylation promotes mTORC1-mediated biochemical signaling and cell growth. *Mol Cell Biol* 29:4308-4324, 2009.

Foster KG, Acosta-Jaquez HA, Romeo Y, Ekim B, Soliman GA, Carriere A, Roux PP, Ballif BA, Fingar DC: Regulation of mTOR complex 1 (mTORC1) by raptor S863 and multi-site phosphorylation. *J Biol Chem* 285:80-94, 2010.

Soliman GA, Acosta-Jaquez HA, Dunlop EA, Ekim B, Maj N, Tee AR and Fingar DC: mTOR S2481 autophosphorylation monitors mTORC-specific catalytic activity and clarifies rapamycin mechanism of action. *J Biol Chem* 285:7866-7879, 2010.

Soliman GA, Acosta-Jaquez HA, and Fingar DC: mTORC1 inhibition via rapamycin promotes triacylglycerol lipolysis to release free fatty acids in 3T3-L1 adipocytes. *Lipids* 45:1089-1100, 2010.

*Ekim E, Magnuson B, Acosta-Jaquez HA, Keller JA, Feener EP, Fingar DC: mTOR kinase domain phosphorylation promotes mTORC1 signaling, cell growth, and cell cycle progression. *Mol Cell Biol* 31:2787-2801, 2011. *Selected by the editor as a highlighted publication of significant interest in "MCB Spotlights."

Service: Dr. Fingar is exceptional in her contributions to service to the university. She served three years on the CDB graduate program committee; two of those years she was the chair. This took an extraordinary effort, because those two years had record high numbers of graduate students. As chair, Dr. Fingar mentored each student and served on every qualifying exam committee. In addition, Dr. Fingar spearheaded an extensive update of graduate training policies, and contributed to writing a greatly revised graduate student handbook. Dr. Fingar has made a point of contributing to all departmental retreats, as well as other department programs. She has served on faculty search committees, and served two years on the CDB executive committee. Dr. Fingar has also been involved in graduate training and recruitment on behalf of the CMB program. For the past two years she co-organized the annual CMB poster session. In summary, Dr. Fingar's service contributions have been exemplary.

External Reviewers:

Reviewer A: "...Diane is making important contributions to a very high-profile field and I know from discussions with the top-tier leaders in the field that Diane is a 'scientist to watch' in this important area of research."

Reviewer B: "Most recently, she identified two additional sites in mTOR (S2159/T2164) that are required for mTORC1 activity and appear to be regulated by two unidentified upstream kinases, this is, to my knowledge, the first demonstration of direct mTORC1 regulation by upstream kinases. These papers on phospho-regulation of mTORC1 have provided a visible niche for Dr. Fingar in the mTOR field, and her papers on these topics are among the best out there. This is extremely solid and valuable biochemical work."

Reviewer C: "My students and I have studied each of Dr. Fingar's papers figure-by-figure, and we have always been impressed by the rigor and innovation of her work. Knowing how difficult these biochemical experiments can be, we are in awe of the beautiful data presented in each of the papers from her lab....Dr. Fingar's research program has been characterized by innovation, technical rigor, and high productivity. She has established herself as a major contributor in the mTOR signaling field and a leader in the efforts of uncovering regulatory mechanisms involving phosphorylation. It is also clear to me that her program is on a continued upward trajectory."

Reviewer D: "...her research is clearly on an upward trajectory...she chose an extremely difficult problem. We have also studied mTOR phosphorylation but gave up due to there being too many phosphorylation sites, making it extremely difficult to decipher the contribution of any single site (or group of sites) to mTOR activity. Dr. Fingar's gritty perseverance in this area has been remarkable. To my knowledge, she is one of the few if not the only one not to give up....I am very positive about her accomplishments and particularly enthusiastic about her future prospects."

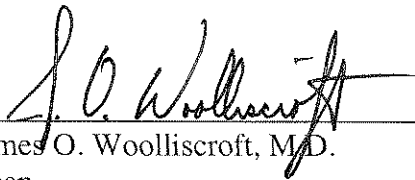
Reviewer E: "In the past four years, Diane has published several important studies identifying novel phosphorylation sites not only on mTOR, but also on proteins that interact with and modulate mTOR activity and function. Importantly, these studies also characterized the role of phosphorylation of these novel sites in controlling the activity of the protein, and have allowed her to extend the initial studies into an assessment of the role of mTOR in lipolysis and cell cycle progression....Overall, in regard to her scholarly and professional niche, I would rank Diane in the top 10% of investigators at her level. In summary, I feel that Diane is an outstanding scientist who, at a relatively early stage in her career, has already made significant contributions in her area of research. She also has developed a number of collaborations strongly suggesting that she is an exceptional team player. Notably, based on the number of students that she has mentored or served on dissertation committees for, Diane is also a dedicated teacher."

Reviewer F: "As an independent researcher she developed a unique niche in the field by studying novel phosphorylation sites on mTOR and raptor and establishing their importance for mTOR activity (JBC and MCB). I believe that this work will form a strong foundation for her future work and for others in this important field of research."

Reviewer G: “In a major departure from her previous work (and from the rest of the mTOR field), Dr. Fingar used proteomics approaches to identify a number of phosphorylation sites on mTOR and its signaling partners (including raptor). She has gone on to elucidate the regulation of these various phosphorylation sites, and their role in the control of mTOR. The importance of these sites, while not previously understood, is now widely recognized in large part due to the work of Dr. Fingar. She is one of the leaders in this field and is likely the most published investigator on this important topic....Diane stands out among the mTOR-focused investigators at her stage, and clearly merits promotion at Michigan—and would at any institution in the world.”

Summary of Recommendation:

Dr. Fingar has achieved a consistent record of exceptional scholarship. Moreover, both her funding and publication rate are accelerating. The high quality of her research is recognized by colleagues here and internationally. Her expertise on mTOR and her extremely strong teaching and service records are widely acknowledged. Dr. Fingar is an outstanding teacher and mentor. She has assumed many administrative responsibilities within the University; chairing as well as serving on numerous committees in the Department of Cell and Developmental Biology and in the CMB program. I am pleased to recommend Diane C. Fingar, Ph.D. for promotion to associate professor of cell and developmental biology, with tenure, Department of Cell and Developmental Biology, Medical School.



James O. Woolliscroft, M.D.
Dean
Lyle C. Roll Professor of Medicine

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