Approved by the Regents
May 16, 2013

PROMOTION RECOMMENDATION
UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL
DEPARTMENT OF INTERNAL MEDICINE
DEPARTMENT OF PHARMACOLOGY

James M. Rae, Ph.D., assistant professor of internal medicine, Department of Internal Medicine, and assistant professor of pharmacology, Department of Pharmacology, Medical School, is recommended for promotion to associate professor of internal medicine, with tenure, Department of Internal Medicine, and associate professor of pharmacology, without tenure, Department of Pharmacology, Medical School.

Academic Degrees:

Ph.D.	2001	Georgetown University
B.S.	1989	University of Pittsburgh

Professional Record:

2007-present	Assistant Professor (Adjunct), Department of Medicine, University of Miami
2007-present	Assistant Professor of Internal Medicine, University of Michigan
2006-present	Assistant Professor of Pharmacology, University of Michigan
2004-present	Assistant Professor (Adjunct), Division of Clinical Pharmacology, Department of Medicine, Indiana University
2004-2007	Research Assistant Professor, Department of Internal Medicine, University of Michigan
2001-2004	Research Investigator, Department of Internal Medicine University of Michigan
1991-1997	Research Associate, Department of Oncology, Georgetown University

Summary of Evaluation:

Teaching: Dr. Rae has made teaching and mentoring an integral part of his mission as a University of Michigan faculty member. Over the past five years, he has devoted roughly 20% of his professional effort on various teaching activities including classroom instruction, research instruction and mentoring in the laboratory setting, and mentoring students in the context of dissertation committees, examination committees and student seminars. Currently, Dr. Rae is co-mentoring Dr. Michelle Anderson from the Division of Gastroenterology on her K23 grant. She has been receiving training in clinical biomarker development and validation from Dr. Rae and members of his laboratory. Dr. Rae also co-mentors Dr. N. Lynn Henry on her K07 grant. Dr. Rae and members of his lab train Dr. Henry on the basic science of pharmacogenomics, pharmacology, and preclinical drug evaluations. Lastly, Dr. Rae is co-mentoring Dr. Van Poznak on her K23 grant and has been training her on the basic science of pharmacogenomics.

Dr. Rae also teaches courses at the University of Michigan School of Dentistry, the College of Pharmacy, and the Department of Pharmacology.

Research: Dr. Rae has become a nationally and internationally recognized expert in the field of pharmacogenomics and using a pharmacogenetic approach to identify and characterize gene variants that have the potential to influence patients' ability to respond to and tolerate breast cancer endocrine therapy. Dr. Rae has made important contributions to a highly clinically relevant field, both as a significant participant in team-science based projects, and through focused, hypothesis driven research projects generated in his own laboratory. Since his appointment as an assistant professor in the Division of Hematology/Oncology, he has secured three grants: an R01 from the NIH and a grant from the Breast Cancer Research Foundation, which are both active, and a grant which was funded by Pfizer Global Pharmaceuticals and ended in 2011. Dr. Rae has published 28 peer-reviewed articles since 2007, with five as first or senior author and filed a U.S. patent for a novel GREB1a Monoclonal Antibody. His national and international reputation is evidenced by his list of extramural invited presentations across the U.S. and in Jamaica, Belgium, Scotland, the United Kingdom, and Mexico. Dr. Rae is a member of the editorial boards of *Breast Cancer Research and Treatment* and *Frontiers in Pharmacology.* He has also served and currently serves as a manuscript reviewer for numerous journals.

Recent and Significant Publications:

Rae JM, Sikora MJ, Henry NL, Li L, Kim S, Oesterreich S, Skaar TC, Nguyen AT, Desta Z, Storniolo AM, Flockhart DA, Hayes DF, Stearns V: Cytochrome P450 2D6 activity predicts discontinuation of tamoxifen therapy in breast cancer patients. *Pharmacogenomics* 9:258-264, 2009.

Sikora MJ, Cordero KE, Larios JM, Johnson MD, Lippman ME, Rae JM: Androgen metabolite 5α-androstane-3β,17β-diol (3βAdiol) induces breast cancer growth via estrogen receptor: Implications for aromatase inhibitor resistance. *Breast Cancer Research and Treatment:* 115:289-296, 2009.

Sikora MJ, Thibert JN, Salter J, Dowsett M, Johnson MD, Rae JM: High efficiency genotype analysis from formalin-fixed, paraffin-embedded tumor tissues. *The Pharmacogenomics Journal* 11:348-358, 2011.

Regan MM, Leyland-Jones B, Bouzyk M, Pagani O, Tang W, Kammler R, Dell'orto P, Biasi MO, Thürlimann B, Lyng MB, Ditzel HJ, Neven P, Debled M, Maibach R, Price KN, Gelber RD, Coates AS, Goldhirsch A, Rae JM, Viale G, Breast International Group (BIG) 1-98 Collaborative Group: CYP2D6 Genotype and tamoxifen response in postmenopausal women with endocrine-responsive breast cancer: The Breast International Group 1-98 Trial. *Journal of the National Cancer Institute* 104:441-451, 2012.

Rae JM, Drury S, Hayes DF, Stearns V, Thibert JN, Haynes BP, Salter J, Sestak I, Cuzick J, Dowsett M: CYP2D6 and UGT2B7 Genotype and risk of recurrence in tamoxifen-treated breast cancer patients. *Journal of the National Cancer Institute* 104:452-460, 2012.

Service: Dr. Rae is a member of the University of Michigan Institutional Review Board as a non-physician scientist and has served on two faculty search committees, one with the Department of Pharmacology and one with the College of Pharmacy in the Clinical Pharmacy Department. He is also a member of the University of Michigan Pharmacological Sciences Training Program. On the national level, Dr. Rae is an executive officer of translational research for the SWOG Cooperative Group, and served on the planning committee for the American Society of Clinical Oncology Planning Committee for the 2012 Annual Meeting Seminar "*New Drugs in Oncology*."

External Reviewers:

Reviewer A: "Dr. Rae has become a leader in the field of pharmacogenomics as applied to the metabolism of steroid hormones and the adjuvant treatment of breast cancer patients with tamoxifen and aromatase inhibitors. His studies have also resulted in large multicenter clinical trials in which he played a leadership role in developing the methodology, organization, and development of the statistical analysis plan....Thus, he has amply demonstrated major research contributions having basic as well as translational significance."

Reviewer B: "Dr. Rae has been invited to make plenary presentations at the most prominent breast cancer symposia worldwide, again pointing out that he enjoys renown in the field of cancer pharmacogenomics where there are relatively few others of comparable experience and reputation. He is also a very gifted public speaker, in front of small and large audiences whether they be filled with fellow scientists or lay public; this skill no doubt has earned him a very favorable academic teaching reputation....In short, Dr. Rae is already internationally renown [sic] for his scholarly research and collaborative clinical contributions....I am also confident that Dr. Rae's tenured academic career will continue on an upward trajectory for many more years."

Reviewer C: "With respect to his contribution to the scientific community, Dr. Rae has served in a broad range of capacities with numerous programs, including as a grant reviewer of the endocrinology and cellular biology study sections for the Breast Cancer Research Program of the Department of Defense....In further support of the scientific community, Dr. Rae has given many national and international lectures covering a variety of topics in cancer research. As my comments demonstrate, Dr. Rae is an outstanding scientist, excelling in the areas of research, education, and service."

Reviewer D: "Dr. Rae's work is well thought of by his peers. That he is considered to be a scientist showing very good promise for the future as well as solid accomplishments thus far is seen by his serving on many grant review panels of the DOD, Komen, etc. and participating in national and international meetings, and large international breast cancer studies. His contributions in design and analysis of these studies (ATAC, BIG, etc.) appear to have been quite important to their successful completion and publication."

Reviewer E: "Dr. Rae's scholarly and professional niche ranks highly among his peers. There are only a limited number of investigators who focus on pharmacogenomics and pharmacodynamics in the field of breast cancer. He would be ranked in the top tier of those investigators....He is to be commended for perseverance in working in a very controversial area

and contributing to it by his objectivity and willingness to delve into the problems with a broad and reasoned approach."

Reviewer F: "...I consider Dr. Rae to be one of the foremost translational breast cancer researchers [of his cohort] in the country....I know of no other breast cancer translational investigator of his age who can compare with him in terms of his national/international stature and accomplishments....In summary, James Rae is outstanding. I cannot think of another individual in the breast cancer field that I would compare with him in terms of accomplishments and leadership potential. He is quite head and shoulders above any other investigator of his [generation] of my acquaintance."

Summary of Recommendation:

Dr. Rae has proven to be not only a successful independent scientist but also a valued and cooperative participant in team science. He is highly productive in his research and committed to the education of the next generation of scientists. For these reasons, I am pleased to recommend James M. Rae, Ph.D. for promotion to associate professor of internal medicine, with tenure, Department of Internal Medicine, and associate professor of pharmacology, without tenure, Department of Pharmacology, Medical School.

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

May 2013