Approved by the Regents
May 20, 2010

PROMOTION RECOMMENDATION
UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL
DEPARTMENT OF PATHOLOGY

David O. Ferguson, M.D., Ph.D., assistant professor of pathology, Department of Pathology, Medical School, is recommended for promotion to associate professor of pathology, with tenure, Department of Pathology, Medical School.

Academic Degrees:

M.D./Ph.D.	1997	Cornell University
B.S.	1988	University of Rochester

Professional Record:

2003-present	Assistant Professor of Pathology, University of Michigan
2000-2003	Instructor in Pathology, Brigham and Women's Hospital, Boston, MA

Summary of Evaluation:

Teaching: Dr. Ferguson's main teaching activities involve graduate students, both in the laboratory setting and in formal graduate school lectures, the latter including a research colloquium in experimental pathology and lectures in tissues, cellular and molecular basics of disease, current topics in molecular pathology, cancer biology and human genetics. He has also mentored postdoctoral fellows, graduate students and undergraduate students, all of whom work full time in his laboratory. He has also been on 19 preliminary exam committees in toxicology, molecular and cellular pathology, and cellular and molecular biology. During the past two years, he has become active in supervising residents, rotating through the Molecular Diagnostics Laboratory. Overall, his teaching activities account for approximately 15% of his professional time. He is regarded as an excellent teacher by his students.

Research: Since he began on the faculty at the University of Michigan, Dr. Ferguson has studied a complex of proteins, some of which are important in immunodeficiency syndromes, cancer predisposition, neurodegeneration and mammalian early development. He discovered that the DNA nuclease activities of one of these proteins, Mre11 function in a specific pathway of DNA repair called homologous recombination. This is considered to be highly significant in the field of DNA repair and genomic stability. His work has been published in some of the most prestigious journals including *Blood, Cell, Cancer Research, Oncogene,* and *Immunology Review*. He has had continuous grant support, and currently is a principal investigator on an R01 studying Mre11 in lymphocyte development and DNA repair and another from the Leukemia and Lymphoma Society for related studies. He has been invited to present his work at a

Keystone Symposium in 2007, at a Gordon Conference in 2009, at Washington University in St. Louis and the University of Pennsylvania.

Recent and Significant Publications:

Deng Y, Guo X, Ferguson DO, Chang S: Multiple roles for Mre11 at uncapped telomeres. *Nature* Online Publication July 26, 2009, in press, 2009.

Dinkelmann M, Spehalski E, Stoneham T, Buis J, Wu Y, Sekiguchi JM, Ferguson DO: Multiple functions of MRN in end-joining pathways during isotype class switching. *Nature Structural and Molecular Biology.* Online Publication July 26, 2009, in press 2009.

Buis J, Wu Y, Deng Y, Leddon J, Westfield G, Eckersdorff M, Sekiguchi JM, Chang S, Ferguson DO: Mre11 Nuclease Activity has Essential Roles in DNA Repair and Genomic Stability Distinct from ATM Activation. *Cell* Oct 3; 135(1): 85-96, 2008.

Else T, Theisen BK, Wu Y, Hutz JE, Keegan CE, Hammar GD, Ferguson DO: Tpp1/Acd maintains genomic stability through a complex role in telomere protection. *Chromosome Research* 15(8): 1001-13, 2007.

Zhong H, Bryson A, Eckersdorff M, Ferguson DO: Rad50 depletion impacts upon ATR dependent DNA damage responses. *Human Molecular Genetics* Sep 14(18):2685-93, 2005.

Service: Dr. Ferguson has made great contributions to this institution and to his profession. At the University of Michigan, he is a member of the MSTP Advisory Board, chair of the Cellular and Molecular Biology Curriculum Subcommittee, chair of the Preliminary Exam Committee of the Molecular and Cellular Pathology Program and he has recruited for both the PIBS and MSTP programs. Nationally, he has been a peer reviewer for several journals including *Nature*, *Cell*, *Molecular Cell*, and the *Journal of Cell Biology*. Over the past two years, Dr. Ferguson has assumed the clinical responsibility in the Molecular Diagnostics Laboratory analyzing complex test results and interacting with the appropriate clinicians. His expertise in this area has greatly enhanced the capabilities of this laboratory. About 15% of his professional efforts are involved in this sophisticated clinical laboratory activity.

External Review:

Reviewer A: "Dr. Ferguson is well recognized in the field because of his exceptional work on MRE11/RAD50/NBS1 (MRN) complex, a protein complex that plays a key role in DNA damage checkpoint control and DNA repair...David has unique scientific intuition, which allows him to generate in my opinion the most informative model that answers a critical question in the field. I believe that his diligence and his sharp scientific instinct are likely to pay off again the future...He is also a recipient of the prestigious Leukemia and Lymphoma Society Scholar Award, which again speaks highly of his research program and reputation in the field. He has trained a large number of graduate students and undergraduate students."

Reviewer B: "David has made seminal contributions to the field of DNA repair and Immunology. David was the senior author on two important publications, one in Cell and one in Nature Structural and Molecular biology, within the last twelve months...The work is original and has been widely discussed in the DNA repair field. On the basis of this work, David has achieved an international reputation."

Reviewer C: "Dr. Ferguson's scholarship is really second to none at this stage of his career. He has numerous high profile publications, he has reasonable grant funding, he is well-known by the DNA repair community and he continues to do exciting work...I think he is a star, who I expect will continue to develop and become a leader in our field."

Reviewer D: "Dr. Ferguson is recognized internationally as a leading scholar in the field of DNA repair, as evidenced by his high-profile publications and invited presentations, which include recent invited appearances at Keystone Symposia and Gordon Conferences."

Reviewer E: "...from his early work to the present, Dr. Ferguson has distinguished himself internationally by both the quality and the impact of his work. His hallmark is innovative biological research reported in papers of exceptional quality and impact as well as influential talks at scientific meetings. Dr. Ferguson is outstanding in his scientific leadership resulting in broad-based biological discoveries concerning cancer and DNA damage response pathways."

Summary of Recommendation:

Dr. David Ferguson is an established scientist whose work has made a significant national and international impact in the field of DNA repair. His work has been consistently funded from external sources, and he has published the results of his studies in high quality peer-reviewed prestigious journals. In addition, he is an accomplished educator who has taught formal courses and mentored a variety of students in the laboratory setting, and he has taken on considerable administrative responsibility in the graduate program. Finally, he is an established pathology clinician in the molecular diagnostics laboratory. I am pleased to recommend David O. Ferguson, M.D., Ph.D. for promotion to associate professor of pathology, with tenure, Department of Pathology, Medical School.

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

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