

PROMOTION RECOMMENDATION
UNIVERSITY OF MICHIGAN MEDICAL SCHOOL
DEPARTMENT OF DERMATOLOGY

Gary J. Fisher, Ph.D., Associate Professor of Dermatology, with tenure, Department of Dermatology, Medical School, is recommended for promotion to Professor of Dermatology, with tenure, Department of Dermatology, Medical School.

Academic Degrees:

Ph.D.	1980	Cornell University
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Professional Record:

1999-Present	Associate Professor of Dermatology, University of Michigan
1997-1999	Senior Associate Research Scientist, Department of Dermatology, University of Michigan
1994-1997	Associate Research Scientist, Department of Dermatology, University of Michigan
1989-1994	Assistant Research Scientist, Department of Dermatology, University of Michigan
1985-1989	Research Investigator, Department of Dermatology, University of Michigan

Summary of Evaluation:

Teaching: Dr. Fisher has a major commitment to direct teaching of Dermatology residents, postdoctoral fellows, medical students, and graduate students. On a scale of 1 to 5, his overall mean teaching evaluation score is 4.84 from 2003-05. Dr. Fisher directs the Basic Science Core Curriculum Course taught to all Dermatology residents throughout their three years of training. Ratings for this course have been either outstanding or excellent in all nine categories. Dr. Fisher also lectures twice each year on basic science topics of special interest to dermatology. Ratings for these lectures have been either outstanding or excellent for all nine categories. Dr. Fisher devotes a substantial portion of his teaching effort to laboratory personnel at various stages of their careers. Since 1999, Dr. Fisher has trained 14 postdoctoral fellows, three dermatology fellows, four foreign visiting academic dermatologists, and two medical students who suspended their formal studies for one year to devote full-time effort to dermatology research. Additionally, Dr. Fisher currently serves as thesis committee member to a graduate student in the Department of Neurology. He is a member of the Student Biomedical Research Program, and has trained six medical students as part of this program. Students' evaluations of Dr. Fisher's teaching have been uniformly outstanding. Several students have been inspired to seek residency training in dermatology, one of whom is currently a resident in the Department. Dr. Fisher is also a faculty member in the Summer Clinical Research Apprentice Program (SCRAP), which seeks to provide enriching educational laboratory-based experiences for deserving minority undergraduate students, who aspire to careers in medicine or biomedical research. Dr. Fisher has trained three SCRAP students, who have evaluated Dr. Fisher's teaching as outstanding. Dr. Fisher leads a weekly one hour course for his laboratory trainees that covers new advances in dermatological research, and teaches critical evaluation of relevant scientific literature, experimental design, and data analysis. Trainees consistently rate this

course as being highly valuable. Dr. Fisher is a highly sought after guest lecturer, and has given 22 invited talks (since attaining his current rank) throughout the United States, Europe, and Asia.

Research: Dr. Fisher's research focuses on three areas: 1) molecular mechanisms by which ultraviolet (UV) irradiation from the sun damages human skin, 2) molecular mechanisms by which aging adversely affects skin connective tissue, and 3) translational research projects in collaboration with clinical faculty in Dermatology. Dr. Fisher's seminal discoveries have led to an understanding of how UV irradiation from the sun alters the metabolism, structure, and function of collagen in human skin to cause premature skin aging. His investigations to understand the molecular mechanisms by which UV irradiation activates EGFR resulted in the novel discovery that EGFR is maintained in an inactive state by protein tyrosine phosphatase kappa (RPTP- κ). UV irradiation inhibits RPTP- κ , thereby allowing EGFR to become activated. This new understanding of EGFR regulation by RPTP- κ has profound impact for: 1) fundamental knowledge regarding growth factor receptor regulation, 2) design of new therapeutic approaches to impede sun-induced skin aging, and 3) cancer biology, since misregulation of EGFR is a common driving force for many epithelial cancers. Dr. Fisher has been awarded an RO1 grant, with total funding of \$1,626,817, to continue his investigations of RPTP- κ regulation of EGFR function.

Dr. Fisher's second research focus is molecular mechanisms that cause deterioration of human skin connective tissue during aging. This research stems from Dr. Fisher's seminal discovery that the transforming growth factor (TGF- β) pathway is impaired in human skin by UV irradiation. Dr. Fisher has been awarded an RO1 grant, with total funding of \$1,887,500, to investigate mechanisms of age-related alterations of human skin connective tissue through impairment of the TGF- β pathway. Dr. Fisher is also investigating the molecular basis of estrogen action in human skin, and the therapeutic use of topical estrogen to improve the function of aged human skin. This research is funded by grants totaling \$1,025,082 to Dr. Fisher from Pfizer Corporation. Based on progress made during the initial two year grant period, Pfizer funded an additional two-year grant.

Dr. Fisher's third major research interest centers on translational research on skin diseases, conducted in collaboration with clinical faculty within the Department of Dermatology. Chief among this translational research is an NIH-funded project, with total funding of \$1,887,500, to investigate treatment of fibrotic skin diseases (i.e. diseases of over-production of collagen) with UV irradiation. Additionally, Dr. Fisher directs laboratory research into mechanisms of actions of lasers used to treat a variety of skin conditions. Although the use of lasers in dermatology is growing exponentially, knowledge regarding how laser treatment impacts the biology of the skin is essentially non-existent. Dr. Fisher has made important contributions to understanding the molecular basis of laser actions in dermatology, as evidenced by five peer-reviewed articles on this topic. Dr. Fisher's research productivity has been outstanding, as evidenced by 154 peer reviewed original research publications.

Recent and Significant Publications:

Quan T, He T, Voorhees JJ, Fisher GJ: Ultraviolet irradiation induces Smad7 via induction of transcription factor AP-1 in skin fibroblasts. *J Biol Chem* 280:8079-8085, 2005.

Quan T, He TY, Kang S, Voorhees JJ, Fisher GJ: Solar UV irradiation reduces collagen in photoaged human skin by blocking TGF- β type II receptor/SMAD signaling. *Amer J Pathol* 165:741-751, 2004.

Wang HQ, Quan, TH, He TY, Franke TF, Voorhees JJ, Fisher GJ: EGF receptor-dependent, NF- κ B independent activation of PI-3-kinase/Akt pathway inhibits ultraviolet irradiation-induced caspases 3, 8, and 9 in human keratinocytes. *J Biol Chem* 278:45737-45745, 2003.

Quan T, He TY, Voorhees JJ, Fisher GJ: Ultraviolet irradiation blocks cellular responses to transforming growth factor- β by down-regulation of its type-II receptor and inducing Smad7. *J Biol Chem* 276(28):26349-26356, 2001.

Fisher GJ, Datta S, Wang ZQ, Li XY, Quan T, Chung, JH, Kang S, Voorhees JJ: c-Jun dependent inhibition of cutaneous procollagen transcription following ultraviolet irradiation is reversed by all-*trans* retinoid acid. *J Clin Invest* 106(5):663-670, 2000.

Service: Dr. Fisher has been an *ad hoc* member of the Arthritis, Connective Tissue, and Skin Study Section at the NIH for the past fifteen years. Dr. Fisher serves on the editorial board of the two leading journals in skin research, *Journal of Investigative Dermatology* and *Journal of Dermatological Science*. In addition to his duties as Associate Editor, Dr. Fisher serves as a reviewer for several prominent journals, including *American Journal of Pathology*, *Journal of Biological Chemistry*, and *Journal of Clinical Investigation*. Dr. Fisher is a member of the abstract acceptance committee, for the annual meeting of the Society for Investigative Dermatology, the largest professional organization of skin researchers. Dr. Fisher also chairs the Photobiology Session at the annual meeting. Dr. Fisher serves as mentor on the Department of Dermatology NIH-funded Training Grant in Molecular Dermatology. This training grant serves a critical need to train physician scientists in dermatological research. He also serves as a member of the Department's resident selection committee, as well as the Department's promotions committee. In addition, Dr. Fisher serves as Associate Chair of Research for the Department of Dermatology.

External Review:

Reviewer A: "He is an excellent scientist working on important problems....If I had him in my department...we would nail the door to keep him in our department....Dr. Fisher has a very productive research career; he has been recognized by publication in the most prestigious scientific journals, he is NIH funded, he is seriously involved in the intellectual and educational activities of the department and school..."

Reviewer B: "The quality and the quantity of Dr. Fisher's grant support is outstanding and underlines his internationally and nationally well recognized qualifications....Dr. Fisher is undoubtedly at the leading edge of the field of photoaging, and has already strongly contributed to general mechanisms of aging....He will be the leading scientist in this new field..."

Reviewer C: "Dr. Fisher is a renowned international expert in skin biology, who has consistently made important contributions to the field of retinoic acid and photoaging..."

Reviewer D: "...Dr. Fisher's work has gained strong scientific, public and industrial interest. He is among the scientific leaders both at a national and international level..."

Reviewer E: "[Dr. Fisher's] extensive, impressive list of peer-reviewed publications, highlights his performance as a leader in his field, further exemplified by the number of citations reached by his publications."

Reviewer F: "...the work by Dr. Fisher and his colleagues has defined and dominated the field of photoaging, setting a standard and suggesting directions of further research. The field of dermatology is most fortunate to have him..."

Reviewer G: "He has provided evidence of excellence as an educator, and contributes significantly to the teaching and service missions of his Department. His scientific publications demonstrate originality, imagination, and timeliness. Importantly, Dr. Fisher is an outstanding Collaborator and has developed a translational research team that is unmatched anywhere."

Reviewer H: "In my judgment Dr. Fisher has established himself as a world leader in the field of mechanistic understanding of photoaging. The quality of the research of Dr. Fisher is far superior than that of others in the field. Dr. Fisher's research has provided new directions and thinking about how one considers photoaging."

Reviewer I: "He is without doubt a world-leader in his field and the methodologies that he in particular has developed and employed, makes him essentially unique."

Reviewer J: "...Dr. Fisher has made seminal contributions to photobiology, skin physiology, and clinical dermatology....Dr. Fisher is an internationally recognized expert...with outstanding track records in publication, funding, teaching, and service."

Reviewer K: "Dr. Fisher's standing in the field of photobiology is outstanding in relation to others conducting similar work. It is fair to say that Dr. Fisher is the leading authority worldwide who has advanced our understanding of photoaging the most."

Summary of Evaluation:

Dr. Fisher is a dedicated, creative teacher, who is distinctly able to communicate the essence of highly complex topics to students, to make learning stimulating and enjoyable. Dr. Fisher's leadership, commitment and example motivate junior faculty in the Department of Dermatology to reach the highest possible standard of performance. Dr. Fisher is an internationally recognized leader in the molecular basis of skin aging. His seminal discoveries unraveling ultraviolet (UV) irradiation-induced signal transduction in human skin form the foundation for the entire field of study. Dr. Fisher's prodigious achievements have been absolutely instrumental in growing the research enterprise of the Department of Dermatology to among the very best in the world. His promotion to Professor will further strengthen the reputation of the University of Michigan Medical School.



Allen S. Lichter, M.D., Dean
*Newman Family Professor
of Radiation Oncology*

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