

PROMOTION RECOMMENDATION  
The University of Michigan  
College of Pharmacy

George A. Garcia, associate professor of medicinal chemistry, with tenure, College of Pharmacy, is recommended for promotion to professor of medicinal chemistry, with tenure, College of Pharmacy.

Academic Degrees:

Ph.D.            1988    University of California, San Francisco  
B.S.             1982    California State University, Sacramento

Professional Record:

2012–present    Chair, Department of Medicinal Chemistry, College of Pharmacy, University of Michigan  
2011-2012       Associate Chair, Department of Medicinal Chemistry, College of Pharmacy, University of Michigan  
1996-present    Associate Professor of Medicinal Chemistry, College of Pharmacy, University of Michigan  
1990-1996       Assistant Professor of Medicinal Chemistry and Pharmacognosy, College of Pharmacy, University of Michigan

Summary of Evaluation:

Teaching: Professor Garcia is an extremely dedicated and talented educator who teaches in the College of Pharmacy's professional and graduate programs and is considered a leader in cutting-edge teaching techniques and innovations. He recently led the College of Pharmacy's successful efforts to consolidate the medicinal chemistry course series with the Medical School's pharmacology series. This process has required a tremendous effort in integrating the academic components, in reinventing the didactic approach, and in coordinating with key faculty in both departments. The resulting combined course represents a new and improved, better integrated, and more relevant approach which promises to be extremely effective. In the graduate curriculum, Professor Garcia has served for many years as course coordinator and one of the primary lecturers for our introductory graduate course in medicinal chemistry. Professor Garcia's didactic teaching has been highly valued; student evaluations have been consistently positive in both Pharm.D. and graduate-level courses with many examples of strongly favorable student comments. He was recognized with the College of Pharmacy's Student Appreciation Award in 2005. He has also been an exceptional mentor. He has developed a number of graduate students and postdoctoral fellows. He has also overseen numerous Pharm.D. investigations projects and has mentored many other trainees, including international students and fellows. His students have won numerous local and national awards and are flourishing in their careers in academia, industry, and government. In addition to his didactic teaching and mentoring activities, Professor Garcia served on the Advisory Committee of the Center for Research on Learning and Teaching (CRLT) and is currently co-chair of the College's Faculty Development Committee, which has organized workshops on teaching for our faculty.

Research: Professor Garcia is widely acknowledged as a leader in the study of the biosynthesis of unnatural tRNA bases. He is internationally known for his ground-breaking work on the eubacterial tRNA-guanine transglycosylase (TGT) which is responsible for the incorporation of queuine into RNA, a long-term investigation that has led to many invited presentations and collaborations. He has more recently extended his research interests to include discovery of anti-infective agents targeting tuberculosis and shigella, which will likely have exciting and very promising implications. His research productivity in these areas has been consistent and noteworthy, with several important articles in top tier journals. During his transition to new research ideas, Professor Garcia has been successful in securing external funding to support his work.

Recent and Significant Publications:

Gill, Sumandeep K. and **Garcia, G. A.**, “*In vitro* Investigation of Wild-type and Rifamycin-Resistant Mutants of the *Mycobacterium tuberculosis* RNA Polymerase”, *Tuberculosis* (2011), In press, DOI:10.1016/j.tube.2011.05.002.

Hurt, J. K., McQuade, T., Larsen, M. and **Garcia, G. A.**, “HTS of the Virulence Regulator VirF: a Novel Antibiotic Target for Shigellosis”, *Journal of Biomolecular Screening* (2010), **15**, 379-387. PMID: 2882805

Chen, Y.-C., Kelly, V.P., Stachura, S., and **Garcia, G. A.**, “Characterization of the Human tRNA-Guanine Transglycosylase: Confirmation of the Heterodimeric Subunit Structure”, *RNA* (2010), **16(5)**, 958-968. PMID: 2856889

Chen, Y.-C., Brooks, A.F., Goodenough-Lashua, D.M., Kittendorf, J.D., Showalter, H.D. and **Garcia, G. A.**, “Evolution of tRNA-Guanine Transglycosylase: Insight Gained from Studies of Heterocyclic Substrate Recognition by the Human and *E. coli* tRNA-Guanine Transglycosylases”, *Nucleic Acids Research* (2011), **39 (7)**, 2834-2844, PMID: 3074131

**Garcia, G. A.**, Chervin, S. M., and Kittendorf, J. D., “Identification of the Rate-Determining Step of tRNA-Guanine Transglycosylase from *E. coli*”, *Biochemistry* (2009), **48(47)**, 11243-51. PMID: 2789984

Service: Professor Garcia has compiled an impressive record of service and as a citizen of the College of Pharmacy. He has served as a regular member of an NIH Study Section, reviewed numerous grants and manuscripts, and served as chair for regional scientific conferences. He also participates as an ad hoc reviewer on at least 17 professional journals and has served as an outside reviewer for several national initiatives in Puerto Rico, Austria, and Ireland. On the college level, he has played a key role in promoting diversity, improving and assessing teaching and service, and providing faculty development opportunities, as well as contributing significant effort to administrative responsibilities within his department and the College of Pharmacy. He is serving or has served on over 50 Ph.D. thesis committees and on numerous faculty committees for promotions and searches. At the university level, he was a member of the Rackham Graduate School Divisional Board and on the Center for Research on Learning and Teaching Advisory

Board. He was one of the original members of the organizing committees for the Interdepartmental Program in Chemical Biology and helped design that curriculum. He is also an active member of several training grants on campus.

External Reviewers:

Reviewer (A)

“The manuscript is indicative of a mature thought process in designing, executing and interpreting the diverse experimental data obtained... I note that he has expanded his interests to include *the M. tuberculosis* RNA polymerase and the virulence factor (VirF) of *Shigella*. Both are very interesting research projects that are ultimately very fundable... These manuscripts indicate to me that Dr. Garcia has positioned himself to make important contributions in these new research areas... Overall, it is clear that Dr. Garcia has established a national and international reputation...”

Reviewer (B)

“Dr. Garcia’s research as a mechanistic enzymologist is widely known and highly regarded... The work for which he is best known... is extremely challenging science... It takes a special temperament on top of a keen intellect to succeed in such endeavors, and this is exactly what Dr. Garcia brings to bear on his research. That he has been able to contribute with great success over an extended period of time to this field is quite extraordinary. He is by any measure a world-leading authority on this subject and as a consequence in the broader fields of enzymology and biochemistry... The record shows that Dr. Garcia has devoted much energy to professional service...”

Reviewer (C)

“Dr. Garcia... has developed an excellent research program that is noteworthy for its emphasis on unique topics of significant interest and importance, its biochemical rigor, and its interdisciplinary and collaborative nature. Dr. Garcia is a world leader in a difficult and challenging area of study... His success in this new research effort supports my judgment that Dr. Garcia is one of the top members of his cohort of mechanistic enzymologists who have applied their skills to academic drug discovery. The teaching contributions of Dr. Garcia are also quite impressive... One of the most significant examples of his service is as a full member of the BNP study section—a very important and demanding role, and one that speaks well of his scientific reputation.”

Reviewer (D)

“He has published extensively about non-coding RNA and this is a very interesting area in providing for a unique target for the treatment of various diseases. He is now focusing on drugs to treat tuberculosis and this is a significant problem because of toxicity of current drugs and resistance to current therapy... He has been active in the integration of medicinal chemistry and pharmacology which seems to be a new trend across the country... Outside of the university he has been on NIH study section and reviewed many manuscripts for prestigious publication such as *Science*.”

Reviewer (E)

“...within this field Dr. Garcia is highly respected. Dr. Garcia is also a very skilled and meticulous enzymologist. His combined expertise...makes him an exceptionally unique scientist with perhaps only a few other peers in the world that he can be directly compared to... Dr. Garcia is obviously a very accomplished teacher. It is clear from the course evaluations and comments from students that he is generally well-liked and is successful at communicating difficult concepts to Pharmacy students... I believe that Dr. Garcia has achieved excellence in teaching, research and service....”

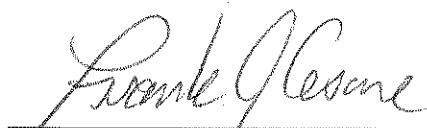
Reviewer (F)

“...there is no doubt that George has made insightful and significant contributions to our understanding of the mechanism and structure of tRNAguanine transglycosylase... He combines an impressive array of techniques...to attack scientific problems... He routinely publishes in top tier (and high impact) journals... He has a solid record of presentations at various national and international venues... It is important to point out that when George started working in the area, very little was known about the basic enzymology of RNA modification. His early papers might emerge as the most significant ones because they established the basic enzymology, and made the system tractable.”

Reviewer (G)

“...Dr. Garcia has maintained a strong, externally funded independent research program that has gained national and international recognition... The majority of the publications resulting from his research have appeared in excellent journals... Dr. Garcia’s research programs are successful and highly regarded by his peers, and he is widely recognized as a prominent figure in the tRNA field... His efforts demonstrate a strong commitment to excellence in training of both undergraduate and graduate students... Dr. George Garcia is a versatile and dynamic member of your faculty who has established an active, internationally recognized research program.”

Summary of Recommendation: Professor Garcia is a highly regarded scientist who is widely known as a leader in his field, and his commitment to teaching and service is unparalleled. It is with the support of the College of Pharmacy Executive Committee that I recommend George A. Garcia for promotion to professor of medicinal chemistry, with tenure, College of Pharmacy.



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Frank J. Ascione  
Dean, College of Pharmacy

May 2012