Approved by the Regents
May 19, 2011

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

Scott E. Barolo, 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.	1997	University of California, San Diego
B.S.	1992	Pennsylvania State University

Professional Record:

2003-present	Assistant Professor of Cell and Developmental Biology, University of Michigan
2001-2003	Assistant Project Scientist, University of California, San Diego

Summary of Evaluation:

Teaching: Dr. Barolo is involved extensively in classroom and laboratory teaching. He has been the course director for CDB 580 (Developmental Biology) for two years and will continue in 2011. He has also served as course director of CDB 680 (Organogenesis of Complex Tissues), and has taught in PIBS 503 (Research Responsibility and Ethics), CDB530 (Cell Biology), BCHM650 (Mechanisms of Eukaryotic Gene Expression) and MCDB427 (Molecular Biology). He is noted as a creative and highly effective teacher by students. Dr. Barolo is also heavily involved in teaching in his laboratory, giving hands on experience to postdoctoral fellows, graduate and undergraduate students as well as research technicians. He currently mentors three students, plus one who recently received her Ph.D. and is now a postdoctoral fellow at University of North Carolina, Chapel Hill. He has mentored one postdoctoral fellow who is now in a second postdoctoral position at Duke. Dr. Barolo has served or continues to serve on 20 graduate dissertation committees.

Research: Dr. Barolo's research interest is tightly focused on exploring the mechanisms of transcriptional regulation elicited by cell signaling pathways during development. Unlike most of his peers, who simply continue one or another aspect of their postdoctoral studies, Dr. Barolo chose to initiate a completely novel research program upon his arrival at the University of Michigan. This choice demanded a considerable investment of time and energy to develop major new research tools designed to exploit a unique niche in the developmental biology community. Using these tools, he developed enormous amounts of preliminary data, some of which were published as independent reports. Though this investment in tool building meant that his initial trajectory was slower than most, this careful investment in groundwork was worthwhile--Dr. Barolo was successful in securing his first independent NIH grant and has now, only three years

later, exploited the latitude allowed by that first award to acquire sufficient data to submit a second R01 on a different but closely related topic. Additionally, as recognized in his letters, his productivity is accelerating and his work is beginning to have a major impact on the field of transcriptional regulation. His *Developmental Cell* paper was chosen as Editor's Choice in *Science* and cited by the Faculty of 1000 as a *must read*: "This fascinating study analyzes a developmental enhancer, uncovering multiple unknown elements required for transcriptional activation and tissue specificity. Strikingly, it identifies the first enhancer segment that is essential for enhancer-promoter interactions at a distance but not for patterning per se." This newest citation certifies that he is maintaining his intellectual leadership as an independent investigator in an entirely new area of transcription. Several external reviewers, all leaders in this field, specifically comment on Dr. Barolo's excellent and thought-provoking presentations at national meetings and praise another highly anticipated study that is the major focus of his current research (the critical importance of low affinity binding sites in establishing enhancer activity and specificity). Based on the solicited comments from these top leaders of the field (including Howard Hughes Medical Institute investigators and members of the National Academy of Sciences), Dr. Barolo's work is both novel and seminal.

Recent and Significant Publications:

Swanson CI, Evans NC, Barolo S: Structural rules and complex regulatory circuitry constrain expression of a Notch- and EGFR-regulated eye enhancer. *Developmental Cell* 18: 59-370, 2010.

Swanson CI, Hinrichs T, Johnson LA, Zhao Y, Barolo S: A directional recombination cloning system for restriction- and ligation-free construction of GFP, DsRed, and lacZ transgenic *Drosophila* reporters. *Gene* 408:180-186, 2008.

Chang JL, Chang MV, Barolo S, Cadigan KM: Regulation of the feedback antagonist *naked cuticle* by Wingless signaling. *Developmental Biology* 321:446-454, 2008.

Johnson LA, Zhao Y, Golden K, Barolo S: Reverse-engineering a transcriptional enhancer: a case study in *Drosophila*. *Tissue Engineering* 14:1549-1559, 2008.

Barolo S: Transgenic Wnt/TCF reporters: All you need is Lef? *Oncogene* 25:7505-7511, 2006.

Service: Dr. Barolo has an exemplary service record. He is a member of several CDB Committees, including the CDB Graduate Admissions Committee and CDB Graduate Programs Committee. He is also very involved in faculty recruiting. At the University level, he is the co-organizer/co-founder of the U-M Transcription Club, U-M *Drosophila* Group, the U-M Hedgehog Signaling Group and the co-founder of the hedgehogcommons.org web site. Nationally, he recently organized the Midwest Drosophila Research Conference and has served as the session chair and moderator for the Annual *Drosophila* Research Conference twice. In the community, he has volunteered his time at the Detroit Community High School (teaching genetics in a 9th grade lab) and he was a lab instructor for the Wolverine Health Explorers. Dr. Barolo serves as *ad hoc* reviewer for multiple professional journals, including *Developmental Cell, Molecular and Cellular*

Biology, Genetics, and *PLoS Genetics.* He also is a grant reviewer for the Biomedical Research Council, National Science Foundation, and NIH/NICHD Developmental Biology Subcommittee.

External Review:

Reviewer A: "His recent work, published in Developmental Cell, is a true masterpiece....some investigators at Scott's level have more publications, but he has ones that are truly worth reading, and he has developed tools and technologies for the future that will take his research far. One can expect a lot of good work to come from the laboratory of this thorough and careful scientist and it is on this basis that I provide my unambiguous support for his promotion to Associate Professor with tenure within your esteemed department."

Reviewer B: "Scott [is] an obviously intelligent, articulate, and personally most engaging scientist [of his cohort]....His papers are always well done, clever, polished and perspicacious..."

Reviewer C: "It is extremely common for bright [junior] investigators to have a gap of 3-4 years in their publication [record] before they take off....I consider Scott Barolo as a creative and very intelligent scientist and I strongly believe that he has much potential for future productivity and significant contributions to his field....One strong point of Scott's docket is the number of invitations to give seminars in [the] department or to contribute to meetings. This reflects the fact that he is held in high esteem by his peers. He is also a member of an NSF study section after having served several times as an ad hoc member on NSF and NIH panels."

Reviewer D: "...I can say from my own experience that Scott's work has had an impact on the field in as much as it has altered the way I (and undoubtedly others) think about the organization and activity of *Drosophila* enhancers. I also find him to be a deep and serious thinker about issues in the field who has demonstrated both tenacity and creativity in attacking what remains the unsolved question of how the organization of binding sites in enhancers relates to their function."

Reviewer E: "Scott published a 2010 Developmental Cell paper on the Spa enhancer that was picked as an Editor's Choice in Science magazine and also as a 'Must Read' publication...I would say the Scott is at the top of his peers studying transcriptional control in Drosophila. His recent Developmental Cell publication solidifies him as a leader in the field of transcriptional control in general. Since 'promoter bashing' is not in fashion, it is quite significant that his paper was chosen as the Editor's Choice in Science. It speaks both to the quality of the work and to Scott's ability to present the work in an interesting and accessible manner."

Reviewer F: "His most recent work on the unexpected complexity of a developmental enhancer, published in Developmental Cell, is very well done and will likely have a lasting impact on the field....I believe that he will continue to make important and unique contribution to understanding developmental regulation of gene transcription."

Reviewer G: "After reading his promotion docket, I am convinced that he deserves to be promoted with tenure without delay, and I believe he will continue to make excellent contributions in the areas of research and education....In my opinion, the Developmental Cell paper describing Barolo's analysis of the 'sparkling' enhancer is one of the top five gene regulation papers in all of

biology in terms of new concepts learned....He is very well respected in the field, and I have no doubt that he would be promoted here..."

Summary of Recommendation:

Dr. Barolo has achieved a consistent record of exceptional scholarship since coming to Michigan, and both his funding and publication rate are accelerating. The high quality of his research is recognized and praised by colleagues here and internationally. His expertise in transcriptional regulation and his extremely strong teaching and service records are widely acknowledged. He is an outstanding teacher and mentor. Dr. Barolo has assumed many administrative responsibilities within the University and in the department. I am pleased to recommend Scott E. Barolo, Ph.D. for promotion to associate professor, with tenure, in the Department of Cell and Developmental Biology.

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

May 2011