

PROMOTION RECOMMENDATION

The University of Michigan
School of Dentistry

Helena Hwu Ritchie, assistant professor of dentistry, School of Dentistry, is recommended for promotion to associate professor of dentistry, with tenure, School of Dentistry.

Academic Degrees:

MS	1975	National Taiwan University, College of Medicine
PhD	1984	University of Texas Medical Branch at Galveston

Professional Record:

1984-1988	Assistant Biologist & Postdoctoral Research Fellow, Kerckhoff Marine Laboratory, California Institute of Technology
1988-1991	Research Associate, Department of Cell Biology, Baylor College of Medicine
1991-1996	Assistant Professor, Department of Basic Sciences, University of Texas at Houston, Dental Branch
1996-1998	Assistant Research Scientist, Department of Pediatrics, University of Iowa, College of Dentistry
1998-present	Assistant Professor, Department of Cariology, Restorative Sciences and Endodontics, University of Michigan, School of Dentistry

Summary of Evaluation:

Teaching: Coming from a non-dental background, Dr. Ritchie joined the faculty with limited teaching experience and held mostly non-traditional teaching responsibilities in the School. She made a major commitment to enhance her presentation and lecturing skills by taking several courses at the Center for Research on Learning and Teaching. Dr. Ritchie's formal teaching has increased substantially in the last three years and it is also evident that she has made considerable effort to increase her didactic teaching and enhance her effectiveness as a teacher. In this regard, it is notable that she is receiving high scores from students in a subject area that many students find difficult and challenging such as Biochemistry and Molecular Biology. Dr. Ritchie is also directing a graduate course and a predoctoral Integrated Medical Sciences-module. In her role as mentor and advisor, Dr. Ritchie has demonstrated a serious dedication to a long list of students, including high school and dental summer students, undergraduate and graduate students, postdoctoral research fellows and visiting scholars. As someone who had limited teaching experience when she joined the faculty, Dr. Ritchie has established herself as a valuable faculty member who is making a significant contribution to the educational mission of the School.

Research: Over the past seven years Dr. Ritchie has continued to develop her research career by advancing the understanding of basic molecular-genetic mechanisms involved in dentinogenesis. Her research in this area includes studies on tooth development at a molecular level including the first report of the coding sequences for rat and human DSP and PP, the discovery of multiple DSP.PP transcripts in tooth germs and development of several widely used research tools (e.g., rat dental pulp cell lines, rat DSP and PP recombinant proteins). Most recently, Dr. Ritchie developed

a ferret animal model for testing the *in vivo* effectiveness of DSP and PP recombinant proteins in tooth mineralization. Since her faculty appointment at the School of Dentistry, Dr. Ritchie's research funding has been consistent. She acquired a five year NIH RO1 awarded in 1995 and holds a current (2003-2007) NIDCR grant in addition to some smaller grants as well as an NIDCR collaborative grant (1999-2002) with her former department chair, Dr. Brian Clarkson.

Most recently, she has submitted a new RO1 grant application to NIH/NIDCR. Dr. Ritchie's work has had a significant impact in the area of dentin research. Without question she has demonstrated through her publications and the acquisition of NIH grants, that she is able to achieve academic independence. She has a consistent record of productivity in a well-focused area related to the function and regulation of dentin matrix proteins. This work is highly regarded nationally and internationally in the research community as evidenced by her citation frequency and international collaborations.

Recent and Significant Publications:

1. **Ritchie, H.H.**, Hou, H., Veis, A., Butler, W.T. Cloning and sequence determination of rat dentin sialoprotein, a novel dentin protein, *J Biol Chem* 269:3698-3702, 1994.
2. **Ritchie, H.H.**, Wang, H-L. Sequence determination of an extremely acidic rat dentin Phosphoprotein, *J Biol Chem* 271:21695-21698, 1996.
3. **Ritchie, H.H.**, Berry, J.E., Somerman, M.J., Hanks, C.T., Bronckers, A.L.J.J., Hotton, D. Papagerakis, P., Berdal A., Butler, W.T. Dentin Sialoprotein (DSP) transcripts: developmentally sustained expression in odontoblasts and transient expression in ameloblasts, *Eur J Oral Sci* 105:405-413, 1997.
4. **Ritchie, H.H.**, Ritchie, D.G., Wang, H-L. Six decades of dentinogenesis research. Historical and prospective views on phosphophoryn and dentin sialoprotein, *Eur J Oral Sci* 106:211-220, 1998.
5. **Ritchie, H.H.**, Wang, H-L., Knudtson, K. A Novel Rat 523 Amino Acid Phosphophoryn: Nucleotide Sequence and Genomic Organization, *Biochim Biophys Acta* 1520:212-222, 2001.
6. **Ritchie, H.H.**, Li, X.R., Hanks, C.T., Knudtson, K., Wang, H-L. The conservation and regulation DSP-PP gene, *Connective Tissue Research* 43:331-337, 2002.
7. Lundquist, P., **Ritchie, H.H.**, Moore, K., Lundgren, T., Linde, A. Phosphate and calcium uptake odontoblast-like MRPC-1 cells concomitant with mineralization, *J Bone and Mineral Research* 17:1801-1813, 2002.

Service: Dr. Ritchie is a member of a number of Professional Societies related to her field of interest and has regularly participated in IADR, Mineralized Tissues, Biomineralization and Tooth Development Conferences. On a number of occasions she has chaired sessions and has also been an invited speaker. She is a regular reviewer of manuscripts in respected journals related to her field and has also served as a reviewer of NSF and NIH grants. Although her involvement at the departmental level might be considered more limited, it appears that she is willing to participate more towards departmental activities given the opportunity.

External Reviewers:

Reviewer (A)

"In regard to her future potential as a senior tenured member of staff of the institution, I feel that she would be regarded as a solid and valued contributor, both as a teacher and researcher."

Reviewer (B)

"I believe Helena is a thoughtful and vigorous research investigator, an active and effective teacher and mentor, a dedicated professional, and a conscientious service contributor to the betterment of the School of Dentistry and the University of Michigan."

Reviewer (C)

"One of Helena's most cited publications (74 citations) is the 1994 paper describing cloning of the rat dentin sialoprotein cDNA, on which much later work is based. Her recent invitation to join the *Journal of Dental Research* Editorial Board further indicates that her opinions are valued by the scientific community."

Reviewer (D)

"She produces a steady stream of interesting publications that do not only have impact in the dental field."

Reviewer (E)

"Through innovative studies of the dentin matrix proteins, Dr. Ritchie has earned an international reputation for her research which is focused and well supported by competitive grants. Moreover, she has the potential to further enhance her scientific reputation, particularly through her ongoing studies of the transcriptional regulation of DSPP, in the coming years."

Summary of Recommendation: Dr. Ritchie is an original researcher and a valuable faculty member. She has successfully obtained external support for her research program. Dr. Ritchie raised interest for her area of research with our students, and has successfully mentored predoctoral and graduate students in their research projects, resulting in joint publications. She has been independent and productive in her research and I have no doubts that she will be able to maintain or expand this level of scientific productivity in the future. It is with the support of the Appointments, Promotion and Tenure and the Executive Committees that I recommend her for promotion to associate professor of dentistry, with tenure.



Peter J. Polverini, DDS, DMSc
Dean, School of Dentistry

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