

COMMENTARY

Mammary Cancer in Humans and Mice: A Tutorial for Comparative Pathology

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Enclosed in this issue of *Veterinary Pathology* you will find a CD-ROM entitled “Mammary Cancer in Humans and Mice: A Tutorial for Comparative Pathology.” This CD-ROM is designed to provide a source of histopathology images of the common lesions found in the human and mouse mammary gland, with emphasis on genetically engineered mice (GEM); limited coverage of the cat and dog is also provided. The CD-ROM is primarily designed for graduate students, postdoctoral fellows, and residents. However, it should also be a useful resource for the veterinary pathologist.

The CD-ROM was the brainchild of the organizers of the Workshop on Mouse Models of Human Cancer held in Annapolis (MD) in March 1999. The workshop organizers, Drs. Jeffrey Green, Lothar Henninghausen, and Lalage Wakefield, collected tissue blocks and histology slides from around the world that represented 90% of the published breast cancer models in the spring of 1999. The slide collection consisted of 175 slides, covering 39 models in GEM, and involving 26 genes and five promoter systems. In addition, three transplantation models, two carcinogen-induced models, and spontaneous mouse mammary tumor virus-induced lesions were represented. Each member of the Pathology Panel (M. Anver, J. Ward, M. Merino, B. Gusterson, J. Russo, R. Jensen, F. Tavassoli, S. Rehm, and R. Cardiff) received a slide set in advance of the meeting. The Annapolis Workshop was held 5–6 March 1999. During the workshop, the Pathology Panel discussed the slides and heard presentations from various mammary biologists who had created the models. The Pathology Panel reconvened in Bethesda (MD) on 28–29 July 1999 to review their conclusions.

The Pathology Panel was asked to make recommendations about the proper interpretation of the histopathology and pathobiology slides and to develop a nomenclature for GEM models. Their recommendations appeared in an issue of *Oncogene*,¹ along with

reviews of many of the model systems discussed at the Annapolis Workshop. One of the major observations at the workshop was that the medical and veterinary pathologists do not necessarily have a common vocabulary to describe or name specific lesions. The language gap is even greater between the pathologist and the mammary and molecular biologist. The *Oncogene* review article was primarily designed to provide our mammary and molecular biology colleagues with guidelines for understanding the insights of pathology.

The organizers felt that the rest of the scientific community would benefit from the Annapolis slide set. However, the slide collection could not be shared with every laboratory doing mammary tumor research. Further, publication of a limited set of images in the standard journal format would not provide the scientific community with these wonderful resources. As an alternative, they obtained funding from The Cancer Genome Anatomy Project to develop a CD-ROM. The American College of Veterinary Pathologists (ACVP) has been asked to participate in this unique multimedia event by distributing the CD-ROM as a part of this issue of *Veterinary Pathology*. The CD-ROMs for distribution were kindly provided by the National Cancer Institute of the National Institutes of Health, which sponsors the Mouse Models of Human Cancer Consortium. To learn more about this consortium, visit their website at <http://mmhcc.nci.nih.gov>.

Ms. Ulli Wagner and Dr. Robert Cardiff were commissioned to develop the CD-ROM. Most of the images of human and mouse mammary glands were provided by Dr. Cardiff. However, we were fortunate to obtain the slide collection of Dr. Hanne D. Jensen, University of California, Davis (CA). Dr. Jensen's images illustrate the subgross (three-dimensional) histology and pathology of the human breast. Dr. Jensen also annotated her images. Additional images of human pathology were provided to supplement the Jensen collection. Ms. Wagner was responsible for the

design and production of the CD. Mr. Jai Evans, Mr. Christopher Santos, and Mr. Jeff Wolski developed the Java Zoom Applet and JavaScript search engine. A number of investigators provided blocks and specific samples. They are acknowledged in the appropriate sections of the CD-ROM.

The CD includes examples of normal growth and development, nonneoplastic lesions, and mammary cancer. Instructions, with examples, on techniques such as whole mount preparation, immunohisto-chemistry, in situ hybridization, and common histologic stains are provided. All images are annotated and every GEM model has an accompanying citation. Tables are provided for orientation and organization. The CD includes a search engine and a help mode. The images are all based on full scale 1996×1640 pixel images at 300 pixels/in. The resolution exceeds that of any current journal page and provides various zoom options for high resolution viewing. Some images and text are outlinked for those who wish to use the Internet to drill down for greater detail.

The authors and the ACVP will be very interested

in your evaluation of the CD-ROM and the response of your residents, graduate students, and postdoctoral fellows. As any experiment, it will have shortcomings. It does assure wider distribution of a key resource and a glance at the future of scientific publishing. The Mouse Models of Human Cancer Consortium and its Standing Committee on Pathology and Laboratory Medicine is planning the production and distribution of similar disks that illustrate cancer in other organ systems. Please let us know what you think. An evaluation response module can be found on the disk. Or, you may address your comments to Dr. Robert Cardiff (rdcardiff@ucdavis.edu), or Dr. Donna Kusewitt (Kusewitt.1@osu.edu) at the editorial office of *Veterinary Pathology*.

Reference

- 1 Cardiff RD, Anver MR, Gusterson BA, Henninghausen L, Jensen RA, Merino MJ, Rehm S, Russo J, Tavassoli FA, Wakefield LM, Ward JM, Green JE: The mammary pathology of genetically engineered mice: the consensus report and recommendations from the Annapolis meeting. *Oncogene* **19**:968–988, 2000