

# Taking a *SecondLook*<sup>TM</sup> at a Time-Efficient Self-Review Resource

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**Abstract** Interactive review tools are highly valued by today's students. The *SecondLook*<sup>TM</sup> Histology resource was developed for students at the University of Michigan to test their knowledge and skills in analyzing micrographic histology images. Originally conceived as a series of PowerPoint files, it has also been converted to mobile applications.

**Keywords** Histology · Microscopic anatomy · Educational technology · e-Learning · Medical education · Mobile application

Efficient time management is a major concern for today's students. They want to know whether they have learned the required material and developed the skills to do well in an upcoming examination. As a consequence, “high-yield resources” that make the most of limited study time are in high demand [1].

In order to help students review the material, gauge their knowledge of histology, and assess their competency of recognizing/identifying cells and tissues, I developed the *SecondLook*<sup>TM</sup> self-review strategy, which can easily be copied and adapted to other subjects. This resource is available to University of Michigan (U-M) students as a series of PowerPoint files and, through collaboration with

the U-M Medical School Information Services, also as mobile applications. A single PowerPoint file/app set covers the material of a specific tissue/organ system on 10–35 slides. Each slide contains histological images with one to eight questions (Fig. 1). The questions on each page are asked in a logical succession, one question often building on the answer to the previous. Using the PowerPoint animation feature, a click/tap reveals the answer with any follow-up question. The questions use a variety of open-ended formats, avoiding a “select-the-best-answer” MCQ design. Each set takes 10–15 minutes to complete, enabling students to quickly uncover deficiencies in their knowledge and skills and allowing them to target their study efforts to fill these gaps. This didactic approach relies heavily on active learning. It uses technology (computers, tablets, and smartphones) and lets students receive immediate feedback, often with a brief explanation why an answer is correct (Fig. 1). As more emphasis is placed on the understanding of concepts, no score/percentage of correct answers is provided.

Over 95 % of recent U-M medical students name the *SecondLook*<sup>TM</sup> PowerPoint files as one of their most important histology learning resources and report that they always or frequently use the *SecondLook*<sup>TM</sup> files [1, 2]. Students praise this resource for making their learning more efficient by providing a quick self-review tool and for giving them a better idea about intended learning objectives.

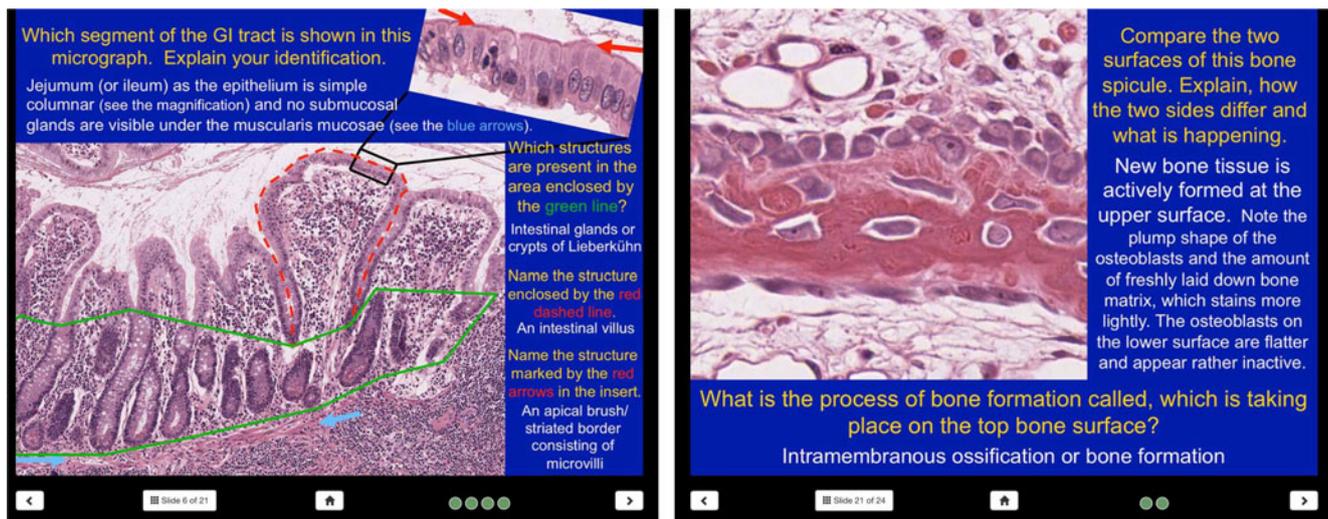
In order to expand the accessibility of the *SecondLook*<sup>TM</sup> tool, the U-M Medical School's Learning Design and Publishing team has generated a strategy that allows the easy translation of *SecondLook*<sup>TM</sup> PowerPoint files into HTML-based applications for a range of mobile devices (both iOS and Android). The application version has several features not available with a PowerPoint file, such as a slide randomizer function, easy navigation

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**Fig. 1** Sample pages from the Small and Large Intestine and the Bone Structure and Formation set of the *SecondLook™* Histology series

between slides, question and page indicators, and a limited zoom ability.

Although the *SecondLook™* concept was originally designed for a subject represented largely by visual material, it can easily be adapted to other fields. *SecondLook™* series for Neuroanatomy, Gross Anatomy, and Oral as well as Basic Medical Radiology are currently in development. The development of *SecondLook™*-like tools for other basic science and clinical topics will encourage students to apply a scientific approach to learning and integrate the Socratic process into clinical problem-solving. *SecondLook™* provides an active learning strategy in an electronic format, a combination that is universally embraced by today's students [1].

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