Modular Integration of 1st Year Gross Anatomy and Histology Courses with 2nd Year Medical Pathology

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RATIONALE/NEED

Pathology is an integrative medical field that exemplifies the unity of basic science and clinical medicine in patient care. Pathology services are used by virtually all physicians, and it is therefore important that all medical students be exposed to pathology in a meaningful way outside of the classroom to foster understanding of the field and the pathologist's role in medicine.

The autopsy experience has traditionally taken this role, as it offers "on the job" experience with pathologists while reinforcing material learned in the classroom. However, with many institutions converting to "systems-based" curricula, the autopsy experience is not incorporated as broadly as it once was. For this reason, many institutions are seeking other ways to incorporate pathology experiences. The gross anatomy laboratory has emerged as a suitable environment for these interventions because the students are relatively new to the concept of pathology and witness a variety of lesions.

However, few methods currently exist for how to effectively incorporate elements of pathology into the gross anatomy laboratory. Those that exist require the direct presence of pathologists in the laboratory, which is not always practical due to scheduling conflicts and a lack of standardization. In this project, we plan to introduce a novel digital pathology module component into the gross anatomy laboratory.

The purpose of the modules is to introduce students to pathology by teaching them how to describe lesions and the laboratory correlates needed for diagnosis. This project will assess knowledge gain and student feedback. The results will guide further developments.

METHODS

Once dissection teams are assigned, students entering the class of 2022 and 2023 will be recruited via e-mail to participate in the research study on a voluntary basis. Modules will be designed in Microsoft PowerPoint under the guidance of members of the Department of Pathology and Laboratory Medicine. Each module will be tailored to the specific organ system being studied in the gross anatomy dissection lab.

Each module will contain the following elements:
1) Learning objectives
2) Signing of table number
3) Pre-module quiz (to assess baseline knowledge)
4) Review of the basic anatomy and histology associated with the organ system under study (e.g. the cardiovascular system)
5) Introduction to a standard pathology diagnosis algorithm (simplified)
6) One specific pathology and histopathology correlate (eg, myocardial infarction)
   a) Gross findings of the lesion (e.g. infarction of the inferior wall of the left ventricle)
   b) Histopathological findings of the lesion (e.g. coagulative necrosis)
   c) Relevant laboratory data with explanations (e.g. troponin)
7) Post-module quiz of knowledge gain
8) Survey to assess student feedback of the modules and alignment with the three consensus guidelines

CONTENT PREVIEW
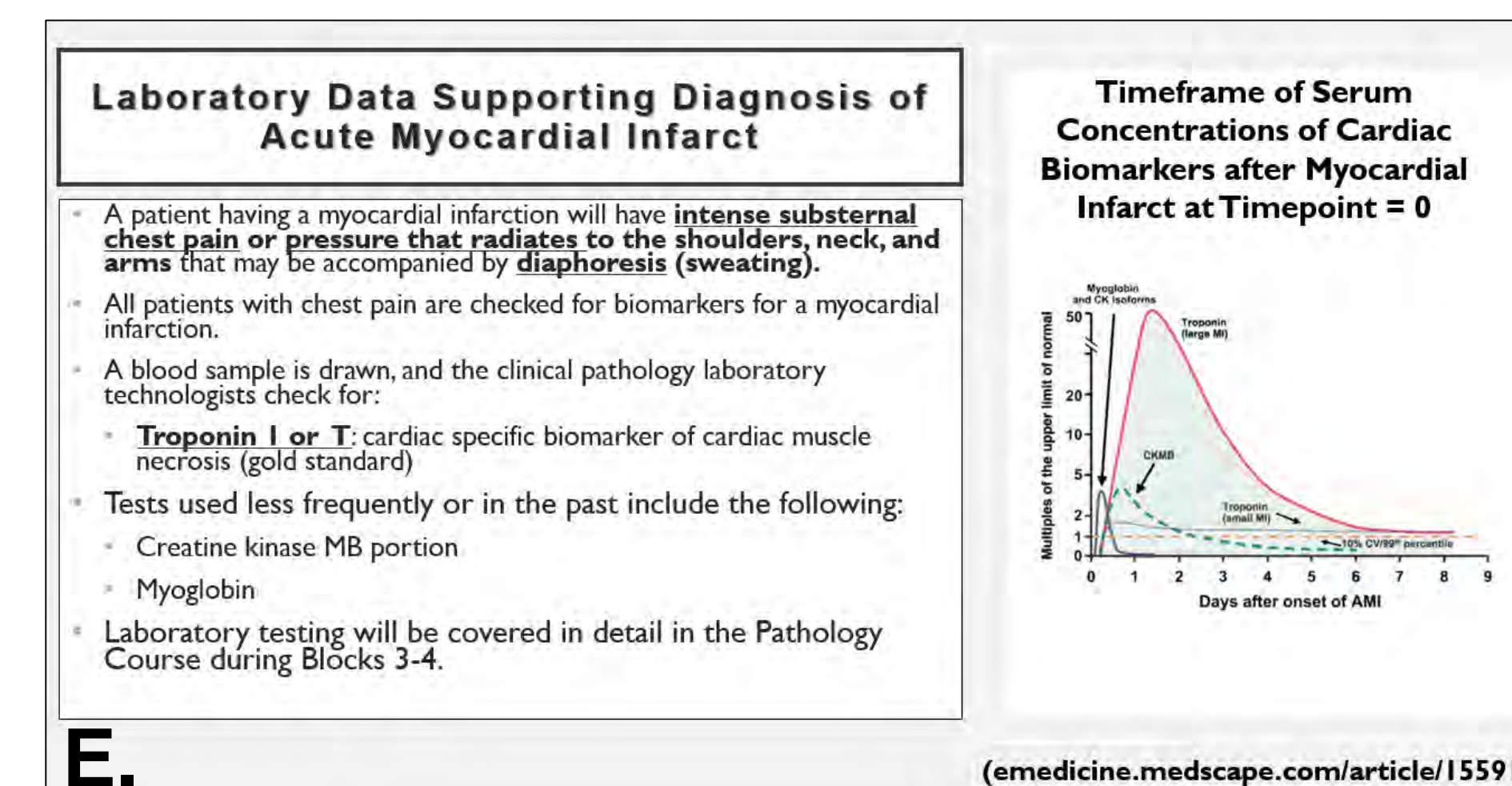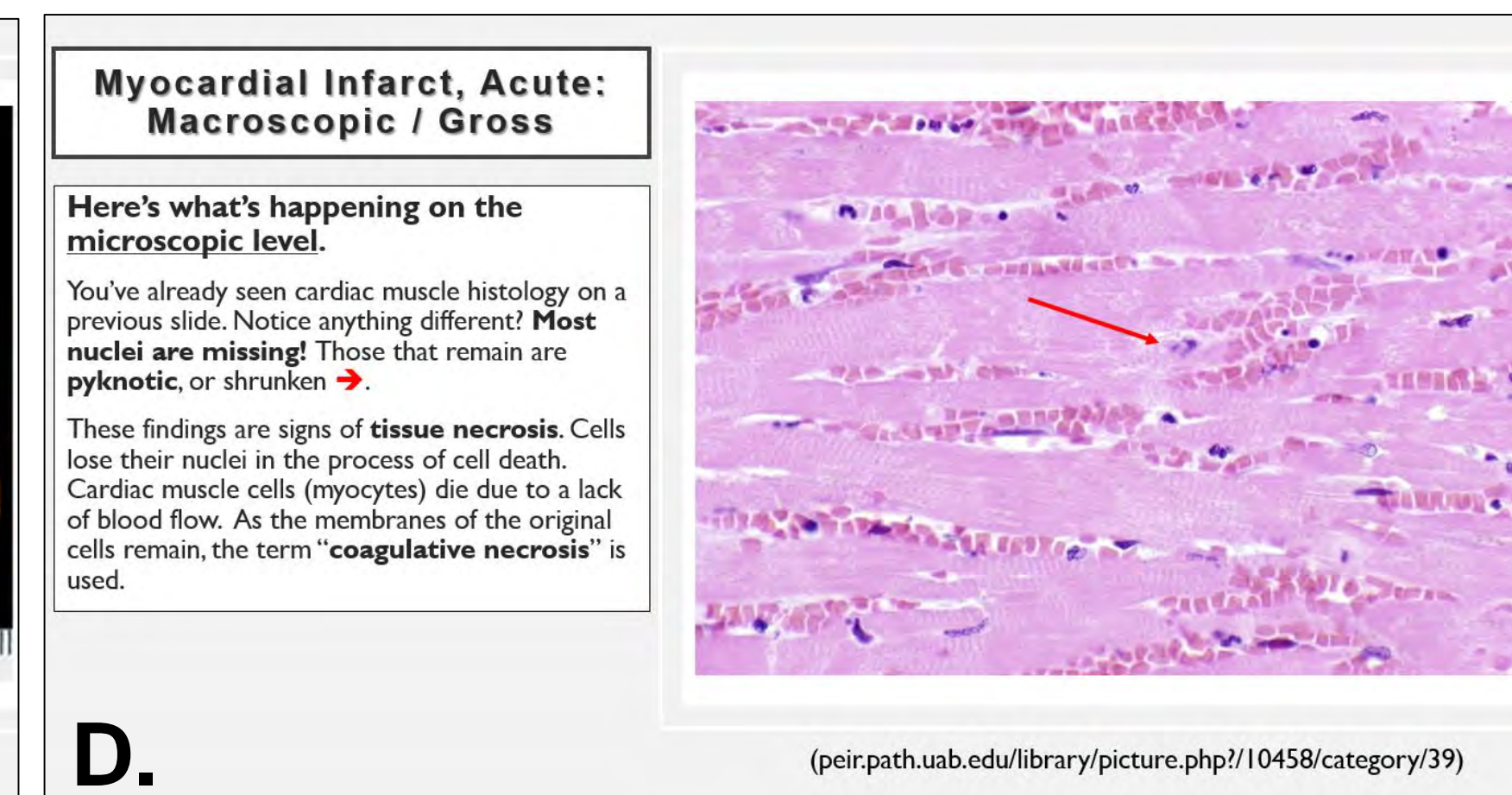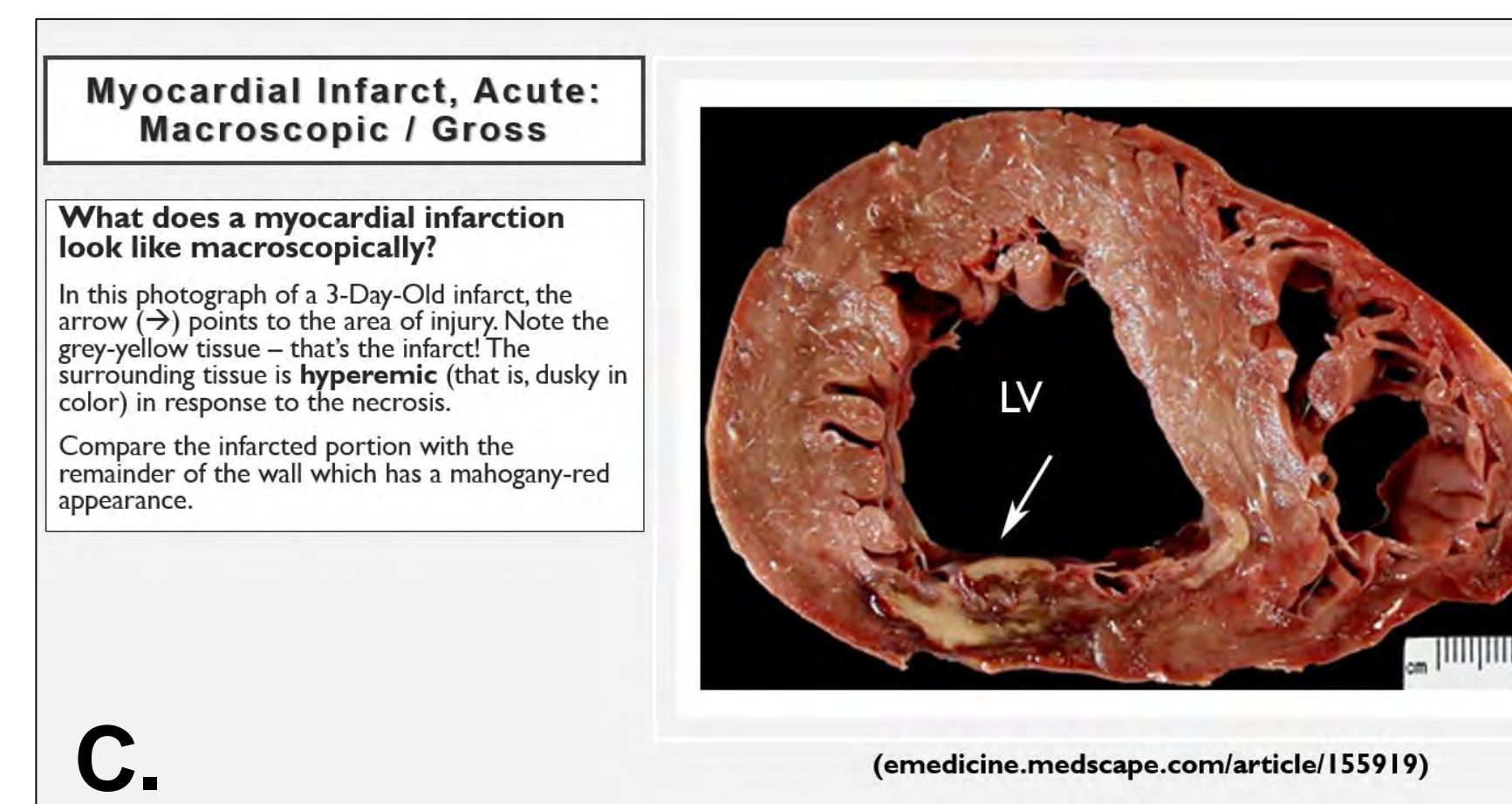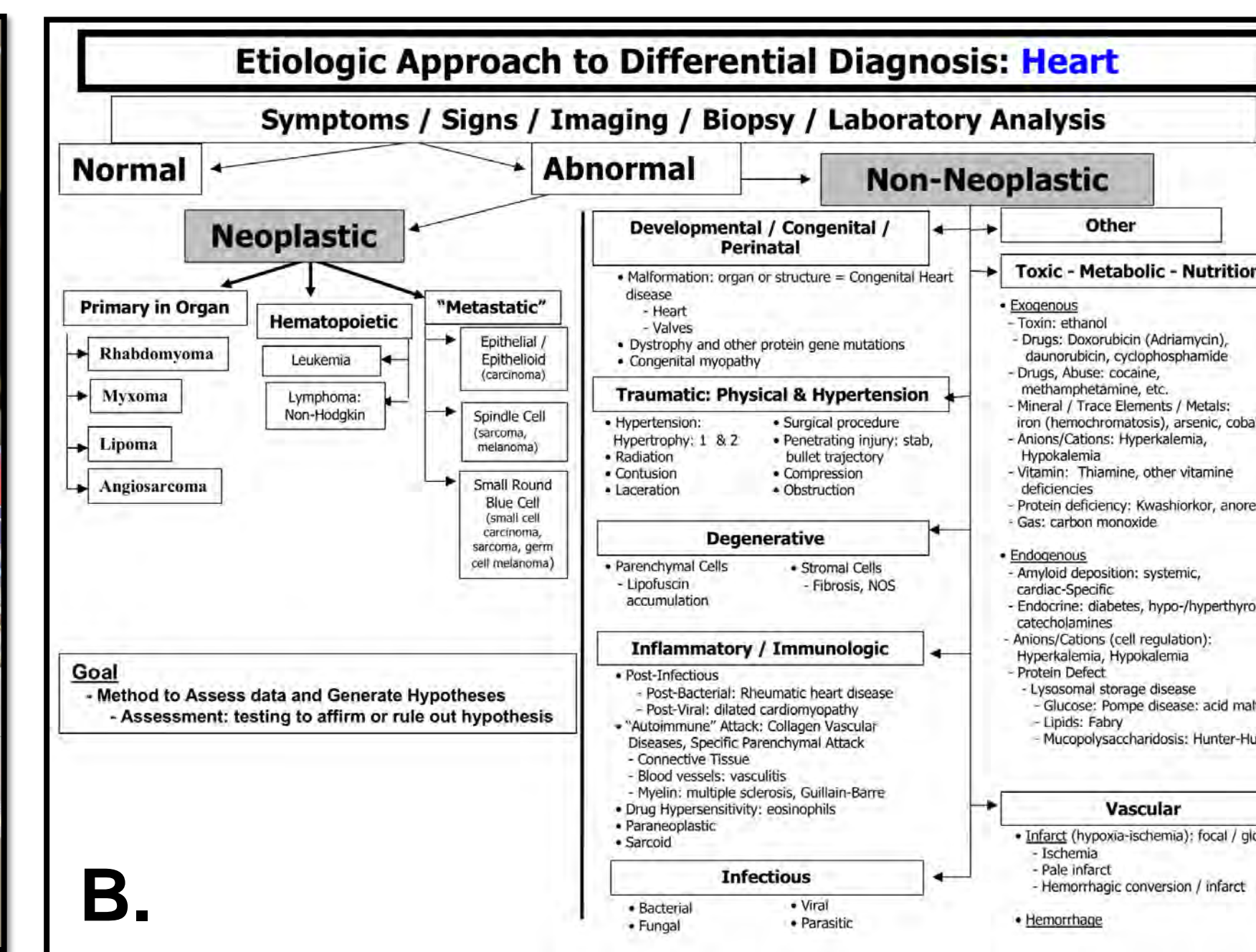
A. The gross anatomy laboratory space in which the modules will be conducted (courtesy of Kelly Harrell, Ph.D., M.P.T.)
B. Standard pathology algorithm for characterization of diseases of the heart (Courtesy of Philip Boyer, M.D., Ph.D.)
C-E. Examples of pathology integration slides in the cardiovascular module (prototype shown).
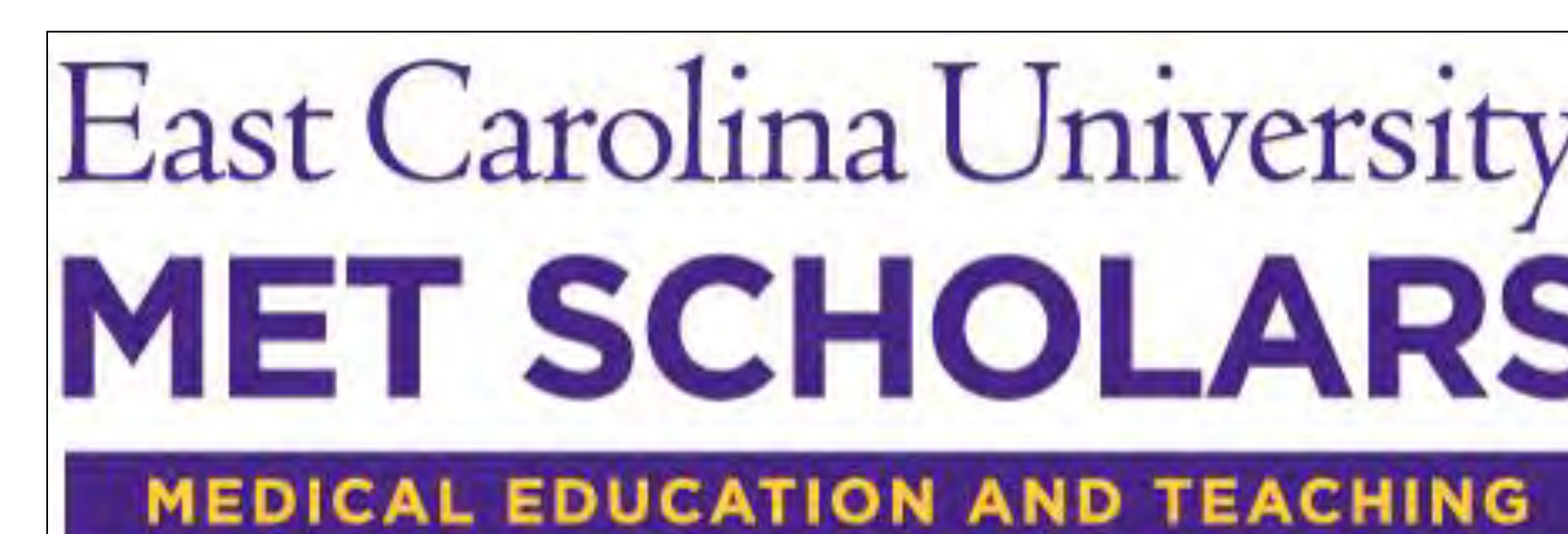
ACTION PLAN

- Consent will be obtained for students participating in the study. Prior to launch, the modules will be uploaded onto the lab iPads and a short training session will be held where participating students will receive instructions for module completion.

- The post-module quiz and surveys will be given again at 1 week, 1 month, and 3 month intervals and again at the beginning of Block 3 Medical Pathology to assess continued retention of pathology knowledge and to gain continued feedback.

- Focus groups will convene the week following each module. Focus groups will consist of no more than 8 students who will be recruited on a voluntary basis from participants. The groups will meet to discuss the impact of the modules and will guide further developments.

ANTICIPATED IMPACT

We anticipate that the digital modules trialed in this experiment will enhance students' understanding and appreciation for pathology as a medical field and that, with further trials and evaluation, can provide an open-access framework for similar applications at other institutions.

REFERENCES

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ACKNOWLEDGEMENTS