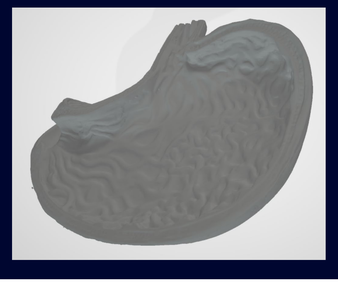
Creation of Inclusive, Student-Centric, Open Source Pathology textbook with Accompanying Instructor and Student Study Resources



Soon, ZA[1], Kong, JY[2,3], Dyck H[3], Bush, J[4], Carloni, V[5], Kim, S[5], Yasari, B[5], Sangha, S[5], Owens, M[5], Perkins, S[5], Mehandiratta, D[5], Jaca, L[5], Kim, R[5], Menon, A[5], Soomro, Z[5], Kaur, N[5], Huang, XM[5], and Garcia, V[5].

[1]Biology, IKB Faculty of Science, UBCO, [2]School of Computing Academic Health Sciences, Dept. of Basic Health Sciences, BCIT (and Affiliate Faculty, [3]Dept. of Pathology and Laboratory Medical Sciences, [4]Faculty of Medicine, UBCV), [5]Undergraduate Student Assistant, UBCO.

Objectives

The project is an ambitious one, undertaken in collaboration with UBCV and BCIT, starting in May 2022 to create the first-ever set of Open Education Resources (OER) for Pathophysiology. It is being designed for and by students and instructors of Health Care Professional Programs. Pathophysiology is a core course required by multiple programs (including Nursing and Medicine) at every institute worldwide. Together the OER Resources we are creating are being organized in a BCCampus Pressbook. This free Pressbook is an e-textbook covering basic human anatomy and physiology, as well as diseases and disorders that are most common in Canada. Additionally, we are including the following features.

Features:

a) Ethnicity, Diversity, Inclusivity (EDI):

This OER resource includes an EDI guide to facilitate and improve both instruction and patient care, using more appropriate and respectful terms regarding biological sex gender, and ethnicity instead of terms that are gender-binary or racially-based. This provides a much-needed update to current publisher-produced textbooks.

b) Instructor Resources:

We are designing sets of instructor-friendly lesson plans and ideas for demos and activities to support student active learning. Each set has associated learning outcomes (LOs) listed so that instructors can pick and choose which topics and sections for their class based on LOs, as well as report these LOs to their institute or other share-holders if required.

c) Student Resources:

We are creating and including sets of interactive student resources, such as: engaging multimodal case studies, practice Q&A with embedded rotatable 3D images, new medical illustrations, tutorial style video clips, coupled with the inclusion of real pathological specimens (stories & imagery). All of these aspects are designed to provide additional relevancy to health care topics and encourage student curiousity, reflection and mastery of each disease and disorder. Each activity is equipped with auto-feedback & marking and can be completed in a “choose your own adventure” style format to fit the needs of each student, course, and instructor.

d) Knowledge Spotlights:

In these sections, we are writing paragraphs that highlight research contributions to this field by traditionally marginalized peoples, including overlooked Canadians, to inspire students and increase exposure to hidden role models in the field. The idea is to raise student awareness with regards to IBPOC, and LGBTQS+ contributions as well as to increase exposure to, and encourage more diversity in STEM.

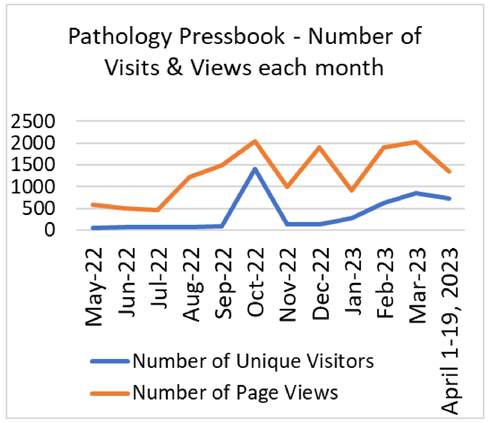


Figure 1. Number of Visits and Views each Month (May 2022 – April 19, 2023) to our new OER Pathology Pressbook.

Progress

This project started as a pilot project at UBCV and BCIT two years ago. So far we have created over 100 pages of content. This year, the UBCO students under my supervision have contributed by generating over 10 Knowledge and Diversity Spotlights, in addition to a set of student and instructor EDI Language guidelines. As well under the mentorship of STAR and UBC Studios Okanagan students have played key roles in creating both 2D and 3D rotatable images. Since January 2023, I’ve been able to generate 19 interactive student activities with the help of UBCO students. User participation in these activities is shown in Figure 2.

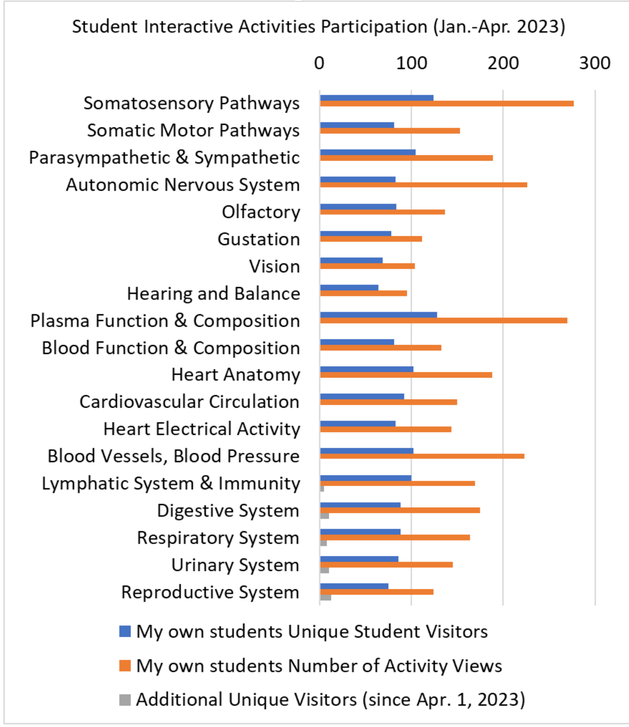


Figure 2. Participation in newly created Student Interactive Activities. Additional Unique Visitor data only available for last 4 activities.

Current Month Usage

Only the most recent Visitor Location data is available, but it has remained fairly consistent over the last 4 months (Figure 3).

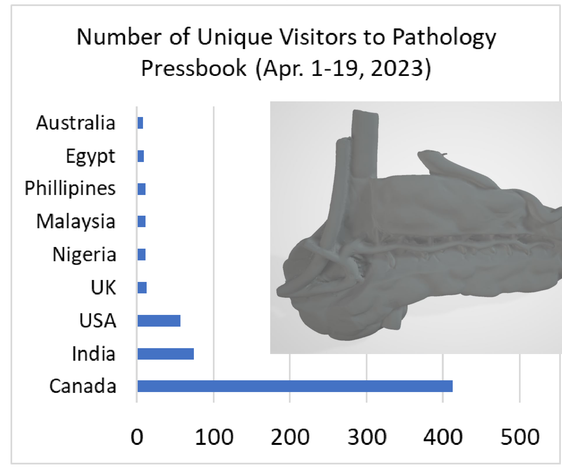


Figure 3. Number of Visits and Views (April 1-19, 2023) to our new OER Pathology Pressbook.

Reference / Bibliography

1. M. Rodríguez-Martín and P. Rodríguez-Gonzalvez, "Learning based on 3D photogrammetry models to evaluate the competences in visual testing of welds," 2018 IEEE Global Engineering Education Conference (EDUCON), 2018, pp. 1576-1581, doi: 10.1109/EDUCON.2018.8363422
2. Dixit I., Kennedy S., Piemontesi J., Kennedy B., Krebs C. (2019) Which Tool Is Best: 3D Scanning or Photogrammetry – It Depends on the Task. In: Rea P. (eds) Biomedical Visualisation. Advances in Experimental Medicine and Biology, vol 1120. Springer, Cham. https://doi.org/10.1007/978-3-030-06070-1_9
3. Petriceks AH, Peterson AS, Angeles M, Brown WP, Srivastava S. Photogrammetry of Human Specimens: An Innovation in Anatomy Education. Journal of Medical Education and Curricular Development. January 2018. doi:10.1177/2382120518799356

Acknowledgement

We gratefully acknowledge the financial support for this project provided by IKB Faculty of Science, UBC Vancouver, UBC Okanagan, and BCIT via the CTIG, BCIT OER, and UBCV and UBCO Aspire-2040 Learning Transformations Funds.

THE UNIVERSITY OF BRITISH COLUMBIA
Biology
Irving K. Barber Faculty of Science
Okanagan Campus

Partners:

THE UNIVERSITY OF BRITISH COLUMBIA
Faculty of Medicine

BCIT
BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY

The UBC David F. Hardwick Pathology Learning Centre (DHPLC)

Ryan Mandau
UBC Survive and Thrive Applied Research (STAR)

Joel Thiessen
UBC Studios Okanagan