

## Project Year

2005

## Project Team

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## Project Title

Web-based Tutorials on Aortic Arch Development, Anatomy, and Pathology

## Audience

Undergraduate students enrolled in ME:130.300, *Introduction to the Human Body: Anatomy for Undergraduates*. The site will also be made available to other Hopkins students, for use in medical training courses that incorporate embryology.

## Pedagogical Issue

Embryology is a demanding topic that introduces a vast amount of complex information during a short period of time at an early phase of the undergraduate curriculum. The relevance of this information for subsequent medical studies and its implications for later clinical practice are not immediately apparent to the undergraduate student.

## Solution

We believe that undergraduate interest in embryology could be enhanced by creating a website that presented a few examples of the seamless continuity existing between the embryonic development of a structure, its normal adult configuration, its possible variations, and the potential clinical manifestations related to some of these variations. This type of longitudinal approach linking embryological principles to actual patient histories should help undergraduate students realize the importance of acquiring such knowledge.

## Technologies Used

Menalto Online Gallery, Graphic Design, HTML/Web Design, Macromedia Flash, Adobe PDF, Animation

## Project Abstract

A basic knowledge of human embryology is essential to the understanding of human anatomy (adult anatomy and its variants) and helps physicians to recognize and diagnose many congenital disorders and malformations. However, undergraduate class instruction only has limited time and resources available for the teaching of human embryology. It is usually only much later, during the graduate years or, even more likely, during internship and residency, that the crucial role of a sound knowledge of basic human embryology becomes evident. It is our experience that medical students, postgraduate students, interns and residents often express regrets at having underestimated the interest of embryology earlier in their academic formation. Consequently, the purpose of our project is to improve, by enhancing undergraduate understanding of a specific anatomical structure, the continuity of undergraduate and

clinical learning. For our project, we propose to develop an interactive web-based tutorial exploring the relationships existing between the embryology, the anatomy, and some typical pathologies involving a vascular structure central to several medical specialties, the aortic arch. The tutorial will be available for use by students in the course *Introduction to the Human Body: Anatomy for Undergraduates*, ME: 130.300. The website will allow the student to explore the development of the aortic arch through various drawings and animations. The student will then correlate that newly acquired knowledge to the normal anatomy of the aortic arch, as demonstrated by anatomic dissections and normal imaging studies. Finally, the student will reinforce his or her understanding of the aortic arch development and anatomy by studying a few selected pathologic conditions directly related to variations in developmental pattern. We do not know of a currently existing similar web-based project trying to enhance the undergraduate teaching of embryology by linking it to clinical facts. The Technology Fellow will be designing the website, under the guidance of the faculty member. After an initial period of website design planning and illustrative material selection, the project will be developed by the Fellow on her own, with regular meetings with the faculty member. The website will include feedback options that will allow students to leave comments, questions and suggestions. A formal evaluation form will also be available on the website itself. The number of visitors to the website will also provide one measure of the success of the project. The project will focus, initially, on the embryology of the aortic arch and its implication for clinical medicine. However, it would be interesting, if this approach proves successful, to expand the website's scope to the embryology of other organs or organ systems, and to link them with their specific clinical counterparts. Once completed, the website will be maintained by the faculty member. Potentially, additional components of the website could be developed in new collaborations with undergraduate students.

A video of Ingrid and Philippe's presentation (time=2:33) is available here:

[http://mfile.akamai.com/7111/mov/streams1.nts.jhu.edu/~jhimedia/cer/tfvideos/19\\_aortic\\_arch\\_lec.mov](http://mfile.akamai.com/7111/mov/streams1.nts.jhu.edu/~jhimedia/cer/tfvideos/19_aortic_arch_lec.mov)

A link to the course website is available here:

[www.hopkinsmedicine.org/fae/anatomyinstitute/](http://www.hopkinsmedicine.org/fae/anatomyinstitute/)