

# Difficult points in current gross anatomy education and research

Jun Yan

Several decades ago, it was clear that gross anatomy was a very important basic medical science course. With the emergence of new medical fields, such as genetics medicine, etc., this situation may change in the foreseeable future. Many gross anatomy scholars are putting their best efforts into this important discipline, which may soon be considered an “old” or outdated field, but I believe it is important to discuss the so-called “difficult points” in gross anatomy now, because it is necessary to determine the best solutions before the situation worsens. Therefore, I recently raised this issue in order to solicit the opinions of individuals who have engaged in gross anatomy education and/or research.

## Point 1: Illusion that all contents in gross anatomy have been examined clearly

On the education side, there is a common sentiment that “gross anatomy is the most stale medical field, and the contents of gross anatomy have been examined clearly.” As increasingly more areas of medicine are introduced, there is no controversy that gross anatomy is the oldest discipline. However, I do not believe that the “oldest academic discipline” equals “dead learning”. Additionally, the “new areas” in the medical field will lose its holds basis, if it cannot receive the support from gross anatomy. It is also true that, occasionally, figures showing suspicious gross anatomical features are used to

explain the results of embryological research in academic journals. Therefore, it is important to note here that there currently remain some unknown points in gross anatomy, such as distribution patterns and areas of the autonomic nervous system in peripheral parts of the body, although there are several hypotheses with respect to these.

## Point 2: Impact of the impact factor and a lack of educators

The appearance of the impact factor used by academic journals has greatly influenced research operations. By its nature, the impact factor represents new areas of research, concentrated fields, and/or popular research. I also recognized that the “point” is necessary for judging one research which belonging to “advance” or not. Unfortunately, in some countries, the impact factor has been used to judge the capability of the researcher(s). Education and research related to gross anatomy have been the most affected. As a result of such factors, undesirable phenomena have occurred, such as a reduction in the number of hours of gross anatomy education and dissection practice required for medical students. In the worst cases, Departments of Anatomy have been eliminated in some medical universities. Additionally, some newly appointed professors cannot perform dissections, although they may be excellent researchers in, for example, genetics or molecular biology. Due to these negative events, young researchers have left the field of gross anatomy, and staff shortage has become an increasingly serious issue.

## Point 3: Effects of digital imaging technology

In recent years, digital imaging technology has undergone dramatic development due to innovations in electronics and computer technology. Endoscopic diagnosis and treatment and computed tomography and magnetic resonance imaging techniques are quite popular and are recognized for having enabled significant advances in clinical treatments. At the same time, these

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Received: 06 July 2015

Published: 12 September 2015

technologies are also applicable to train students in anatomy, so-called “virtual dissection”. In some medical universities, the actual dissection training has been replaced by training with virtual dissection, due to such factors as religion, culture, and funding. However, an important component of medical student anatomy training is to dissect the human body in order to facilitate understanding of the inter-relationships of organs through observation of the real specimens. Another purpose is to enable students to understand human death, in order to cultivate the human nature required for physicians to respect the preciousness of death. These objectives cannot be achieved with virtual dissection or with other imaging training. Additionally, a fundamental cause of the mistakes made during endoscopic surgery is that the actual dissection training was insufficient, because even advanced endoscopic training is also typically conducted under image guidance only.

There may be additional issues to add to the three above-mentioned problems related to gross anatomy education/research, and I hope these problems highlight some of the issues for everyone so that we can determine solutions to facilitate the continued development of gross anatomy education and research.

**Keywords:** Difficult points, Digital imaging, Endoscopic surgery, Gross anatomy, Virtual dissection

How to cite this article

Yan J. Difficult points in current gross anatomy education and research. Edorium J Anat Embryo 2015;5:18–19.

Article ID: 100005A04JY2015

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doi:10.5348/A04-2015-5-ED-4

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**Author Contributions**

Jun Yan – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

**Guarantor**

The corresponding author is the guarantor of submission.

**Conflict of Interest**

Authors declare no conflict of interest.

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