The Importance of Human Cardiac Anatomy for Translational Research

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Introduction

As co-editors of this special issue, we are both excited and honored to have the opportunity to assemble this compilation of manuscripts on human cardiac anatomy. Although each of us have differing scientific backgrounds—Bob Anderson a medically qualified anatomist, Alex Hill a biomedical engineer, and Paul Iaizzo a systems physiologist—we all concur that to participate in any specific area within the field of translational cardiovascular research, it is necessary to have a deep understanding of basic cardiac anatomy. Only with this basic knowledge is it feasible to understand how the heart may become altered through the processes of disease. Thus, it was our intent in compiling

this special issue that it could serve as a timely and critical review of the important aspects on this topic. Furthermore, it was our hope that it would provide an issue of value to the broad range of readership of the journal, including those who may be performing cross-disciplinary research spanning from bench to bedside, such as those interested in emerging technologies, basic research, pre-clinical research, first-in-man and feasibility clinical trials, and/or therapies resulting from translational research.

It is our shared belief that there is a strong need currently in the fields of cardiovascular science and medicine to promote the use of attitudinally correct cardiac anatomic nomenclature. Many previously published descriptions of human cardiac anatomy have not adhered to the basic fundamental rules of orientation and/or anatomical position, leading to inconsistent nomenclature. Only recently have specialists in cardiac anatomy focused on the need to turn away from the traditional labeling of the human heart using an independent, cardiocentric orientation and to use the more traditional anatomic position describing the anatomical features within the heart relative to the orthogonal planes of the body. This is especially important for those performing cross-disciplinary research from bench to bedside, as it is imperative that all colleagues involved are speaking the same anatomical language, be they anatomists, basic cardiovascular researchers, echocardiographers, radiologists, cardiologists, cardiac surgeons, or designers of medical devices.

This special issue, therefore, not only begins with an article dedicated to the topic of attitudinally correct cardiac anatomy, but throughout the articles efforts were made to adhere to this nomenclature. The other topics in this special issue were selected to provide academic reviews of major topics as they pertain to cardiac anatomy, including cardiac development, the conduction system, the vascular systems, valves, and chamber structure and properties. Hence, we believe that this

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special issue can serve as a focus guide and reference on cardiac anatomy for the broad readership of the journal. In addition, there are many other amazing reference materials that the scholars of cardiac anatomy might like to employ. For example, we take the opportunity to share several such online resources to aid in further study:

- The Atlas of Human Cardiac Anatomy (<http://www.vhlab.umn.edu/atlas/>)
- Cardiac Morphology (<http://www.cardiacmorphology.com/>);
- The International Working Group for Archiving and Cataloguing the Images and Videos of the Nomenclatures for Paediatric and Congenital Heart Disease or Archiving Working Group (ipccc-awg.net)

As co-editors of this special issue, we close by acknowledging the important efforts of each of the contributing authors in preparing these scholarly articles. We

hope that readers find this special issue enjoyable, relevant, and valuable.

Sincerely yours,

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