The American Journal of Physiology-Heart and Circulatory Physiology: a long history, a bright future

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In 1887 after the Civil War, the American Physiological Society (APS) was founded by five clinician scientists (12). Silas Weir Mitchell was, by training, a neurologist, and Henry Pickering Bowditch was a cardiovascular physiologist who had trained in Germany with Carl Ludwig. They joined Henry Newell Martin, an Irish-born cardiovascular physiologist from Johns Hopkins; Russell Henry Chittenden, a biochemist from Yale; and John Green Curtis, a surgeon from Columbia University. The first issue of The American Journal of Physiology (AJP) was published in 1898. Over the past 116 years, seminal and critically important experimental physiological studies have been published in AJP and its many subsections (16). These studies formed the basis, in many cases, for modern medicine and therapeutics. In 1977, AJP was divided into separate discipline-related journals, and thus the American Journal of Physiology: Heart and Circulatory Physiology was born. Since that time, AJP-Heart and Circ has had eight editors-in-chief. Over the years, AJP and AJP-Heart and Circ have published numerous seminal studies in cardiovascular physiology. For instance, in 1914, Walter B. Cannon published a classic description of the role of the adrenal medulla on pain and emotion (3), paving the way for Hans Selye’s work on the fight or flight reaction (14). In 1922, Wiggers and Katz (17) described some of the earliest recordings of left ventricular pressure, which formed the basis of the eponymous Wiggers Diagram currently taught to every physiology and medical student in the world. In 1931, Fähræus and Lindqvist (4) described the effects of viscosity on blood flow in narrow tubes. In 1932, Hamilton and colleagues (5) described the use of dye dilution for the measurement of cardiac output. In 1945, a breakthrough paper by Kety and Schmidt (8) allowed for the first measurements of cerebral blood flow in the human person. If we jump to 1958, one of the most classic papers on the determinants of myocardial oxygen consumption was published by Sarnoff and colleagues (13) in AJP. In the 1960s, Berne (2) published his theory of adenosine nucleotides in the regulation of coronary blood flow. In the early 1970s, Morgan and colleagues’ study on the effects of ischemia on myocardial metabolism provided important insight into this clinically relevant process (11).

In 1977, AJP-Heart and Circ published its first issue (volume 276, number 1) as a stand-alone journal, with Matthew Levy serving as the first editor-in-chief. In the late 1970s under the guidance of Levy, AJP-Heart and Circ published groundbreaking research carried out in chronically instrumented animal models. These physiological and pathophysiological studies uncovered real-time adjustments to changes in hemodynamics and stress. A key example was the work by Hendrickx et al. (7) published in 1978, showing the relationship between regional wall thickening and myocardial blood flow distribution. Many important methodological innovations were published in AJP-Heart and Circ. The use of pulsed-Doppler flow measurements were applied to rodents and published by Hayward et al. (6) in 1981. The 1990s ushered in the era of nitric oxide and endothelial smooth muscle signaling. Kubes and Granger (9) published one of the earliest studies showing the role of nitric oxide on microvascular permeability. Since 2000, many high-profile breakthrough papers have been published in emerging new areas of cardiovascular physiology, including myocardial bioenergetics, cardiac repair, and stem cell biology, giving us new insights into the cardiac and vascular remodeling process in disease states.

Irving H. Zucker assumed the editorship of AJP-Heart and Circ in December 2013 after the tragic and untimely death of William Stanley, who led the journal as editor-in-chief for three years. Bill introduced many new and novel changes in the journal, in particular, our highly successful podcast series, special calls for papers, and rapid reports. The editors of AJP-Heart and Circ have always worked toward the goal of increasing the visibility and impact of the journal by publishing high-quality mechanistic studies that contribute to our understanding of cardiovascular physiology and pathophysiology. In 2013, we received 926 submissions, including 856 original research papers, 35 review articles, and 35 commentary articles (perspectives, editorials, and letters to the editor). Our time from submission to first decision was a brief 18 days in 2013, and our decision letters are routinely lauded by submitting authors for being clear, concise, and instructive. Our 2012 two-year impact factor was 3.629, whereas our five-year impact factor was 3.855. This editorial is not the place to debate the value and use of impact factors, as there has been much written (1) about this in the scientific community as of late (http://am.ascb.org/dora/files/SFDeclarationFINAL.pdf). However, we believe that the changes described below will also enhance this metric.

While our submission trends had been decreasing since 2008, 2013 was the first year we saw a rise in submissions, thanks in large part to the efforts of Bill Stanley and his editorial team to encourage submissions and market the journal to a broad audience. Most of our submissions are from the United States and Canada (54% of total submissions), but submissions from other countries have been steadily increasing. Submissions from China have increased every year since 2008. Going forward, we will make every effort to recruit submissions on a global scale using the strength of the APS and by personal contacts from our associate and consulting editors, as well as our editorial board. We plan to continue publishing timely and engaging review articles and editorials, discussing...
the impact of current papers. In addition, we hope to introduce several new initiatives that I would like to briefly outline here.

In spring 2014, we will produce our first “Cardiovascular Physiology Roundtable.” Marrying the written and spoken word, this project will incorporate a longer length podcast with key leaders discussing a topic in depth. Each discussion will be associated with one of our Calls for Papers. The podcast will then accompany a companion paper—a verbatim transcription of the entire discussion with the inclusion of pertinent references and a key figure. We envision that each roundtable will become a living review article, which will be fully citable, aimed at engaging our readers and listeners in both print and audio mediums to dig deeper into the rich content published in AJP-Heart and Circ. We also plan to leverage our social media presence on Facebook to engage readers with comments about the roundtable podcast and article. Our hope is to solicit differences in opinion and suggestions for new directions from our readership. As we solidify our plans for the roundtable, stay tuned for further developments.

While we believe new content and new initiatives make the journal ever more relevant to our cardiovascular community, we will always place primary importance on the quality of the science published in AJP-Heart and Circ. Our editorial staff and reviewers must hold authors to the highest level of data quality standards. Our editorial decisions will be based on not only novelty, innovation, and impact but also the quality of the data presented. Issues such as low numbers of animals, gels, etc., will be scrutinized. It is critically important for authors to pay close attention to the proper powering of their studies. This issue is of growing concern in preclinical and animal-based experiments. As was recently summarized by Macleod (10) in a Nature editorial, “To guard against such ‘underpowered studies,’ researchers should calculate the number of animals required to have a reasonable chance of detecting the anticipated effect given the expected variance of the data.” In a study carried out by Macleod and colleagues (15), “fewer than one in one hundred such publications report sample-size calculations.” Representative images without mean data will also be carefully evaluated. Experimental design and proper controls will be closely inspected. Studies that lack mechanistic insight and are purely descriptive will obtain a lower priority for consideration. As was recently summarized by Macleod (10) in a Nature editorial, “To guard against such ‘underpowered studies,’ researchers should calculate the number of animals required to have a reasonable chance of detecting the anticipated effect given the expected variance of the data.” In a study carried out by Macleod and colleagues (15), “fewer than one in one hundred such publications report sample-size calculations.” Representative images without mean data will also be carefully evaluated. Experimental design and proper controls will be closely inspected. Studies that lack mechanistic insight and are purely descriptive will obtain a lower priority for publication. We realize that often one person’s mechanism is another’s description; however, the editorial staff will be carefully looking at this issue. This editorial is not meant to be a statistical primer but rather intended to convey a message that our reviewers and editors will take into consideration for these issues when deciding on acceptability for publication in AJP-Heart and Circ.

One of the luxuries of publishing in AJP-Heart and Circ is that authors are not truncated by page or word limits. When one picks up an AJP-Heart and Circ article, everything you need to read is all right there in the manuscript. We believe that many readers have grown weary of having to consult supplemental files for important details of a study. In AJP-Heart and Circ, there is no need to abbreviate methods so as to conform to a page or word limit, only to expand further in a data supplement. There are no limits to the number of figures authors may present in their papers. Authors should also keep in mind that our page charges are highly competitive, and color figures can be published free of charge to members of the APS.

We urge you to join us on Facebook and Twitter to keep up with the latest podcasts and late-breaking studies published in AJP-Heart and Circ.

In closing, we look forward to the opportunity to serve the APS and this prestigious journal. We respect the tremendous progress made in the journal due to the dedication and innovative leadership of our friend and colleague Bill Stanley, who we feel would approve of the many new initiatives we are planning for AJP-Heart and Circ. We are also extremely happy to have the great support and expertise of Michelle Gaffney at our side, to help negotiate the labyrinth of what is a growing and competitive scientific publishing climate. The APS publications department led by Rita Scheman and the Publications Committee chaired by Dr. Hershel Raff has been extremely supportive of this transition, and we thank them for that. We look forward to receiving your best work in the coming year.

DISCLOSURES
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AUTHOR CONTRIBUTIONS
I.H.Z. conception and design of research; I.H.Z. and K.H.K. drafted manuscript; I.H.Z. and K.H.K. edited and revised manuscript; I.H.Z. and K.H.K. approved final version of manuscript.

REFERENCES