Update on Innovative Initiatives for the *American Journal of Physiology - Heart and Circulatory Physiology*

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We would like to update the readership of the *American Journal of Physiology - Heart and Circulatory Physiology* on the progress we have made in instituting the plan we laid out two years when we assumed the editorship of this venerable journal. We have expanded the content and features of the journal, and have further enhanced the review process. Our time for manuscript review is an impressive 18 days from submission to first decision, and we have put great emphasis on providing authors with unambiguous decisions letter which provide clear and helpful guidance for a successful revision. Our look has changed, with elimination of the print version of the journal, publication of two issues each month, division of the table of contents into subspecialties of cardiovascular physiology, and the launch of article collections on hot topics.

**PODCASTS**

Our principal new feature is the editorial podcast—an audio interview with key contributors aimed at providing unique insights into a featured article. These brief discussions (<10 minutes) with an author and a leading expert accompany “hot topic” papers published in the journal, and are moderated by our editorial team. In our first two years we recorded 52 podcasts, which are posted online on our journal homepage (http://ajpheart.physiology.org) and as supplements to the e-articles. Our goal is to make our podcasts easily discoverable via numerous access points, which include posting on our dedicated podcast webserver (http://ajpheart.podbean.com), as well as offering podcasts via RSS feed and iTunes. Based on listener feedback and over 9,000 downloads, our podcasts are clearly a success.

We have generated podcasts in all subdisciplines of cardiovascular physiology. We produced several podcasts in the field of vascular biology and microcirculation (7, 8, 10, 23, 33, 34, 39, 41, 53, 57, 58, 67, 76, 105, 106, 115, 116), and we wish to highlight several key podcasts here. We discussed a human study which looked at the central blood pressure response to the COX inhibitor indomethacin in both old and young healthy adults (5) which addressed the question: What happens when you combine NSAID type pain medication and
aging-induced arterial stiffening? In conjunction with the 2012 London Summer Olympics Games, we talked with Dick Thijssen (Liverpool John Moores University) about his work on the effects of preconditioning ischemic stimulus applied to the legs of elite athletes as a protection against endothelial dysfunction in the arms after a 5 kilometer run (4). We also tackled the controversial subject of arterial function following menopause, in an attempt to understand more clearly whether early intervention with estrogen therapy may combat accelerated vascular aging after menopause (62). In our podcast on the work by Neder et al (85), we discuss how sildenafil, a PDE5 inhibitor, progressed first from ineffective treatment for ischemic heart disease, then later to a widely used treatment for erectile dysfunction, and now to current clinical trials with sildenafil as a treatment of heart failure.

We produced several podcasts on the topic of energetics and metabolism (11, 25, 32, 69). Particular highlights include a podcast on the work by Cabrera et al (12), in which we delved deeper into the protective effects of ischemic preconditioning and the phenomenon dubbed the Second Window of Protection (SWOP). Regarding the work by Mellor et al (60) on diabetic cardiomyopathy, we explored how a high fructose diet has profound effects on myocyte Ca\(^{2+}\) handling. In a spirited podcast interview about the comprehensive Review by Poole et al (72), we unpacked the complexities of exercise intolerance in heart failure patients at the oxygen transport and microcirculatory levels.

Muscle mechanics and ventricular function played a key role in our highlighted articles and editorial podcasts (28, 54, 60). The work by Wang et al (102) offered the opportunity to explore the role of phospholemman at the molecular level as well as how the regulation of sodium-calcium exchange by phospholemman may affect cardiac stress responses, such as fight-or-flight. Using a unique and innovative large animal model, Walker et al (101) focused on the oft-ignored issue of right ventricular cardiac disease. The groundbreaking research by Ma et al (56) provided a platform to discuss new methods for generating large quantities of cultured cardiac myocytes using embryoid body formation and blasticidin selection techniques.
Among the podcasts we produced on the overarching topic of signaling and stress response (34, 63, 99), several featured articles emerged as seminal discussions. We brought the complexities and importance of O-GlcNAc signaling into context by exploring the work of Facundo et al (25). In an engaging and entertaining podcast on the work by Nausch et al (67), we reached into the realm of calcium pulsars and communication between vascular smooth muscle and the endothelium. Integrating bench and bedside, we opened the door on work by Paulin et al (71) to discuss whether DHEA, a commercially available natural steroid hormone and antioxidant, may be useful as a treatment for pulmonary hypertension.

Work on cardiac excitation and contraction formed the backbone of several podcasts on key papers. We highlighted the work by Lou et al (55) which utilized donated human hearts to study the mechanisms behind sudden cardiac death in heart failure patients. In our podcast on the work by Mureli et al (63), we break down the mechanisms by which transplanted mesenchymal stem cells exert their paracrine effects, which could lead to significant translational implications for cell therapy after ischemic injury. We also waded into the decades-old debate of ephaptic conduction vs. gap junctions by exploring the work of Veeraraghavan et al (97). As well, we explored the topic of cardiovascular neurohormonal regulation with podcasts on significant articles (3, 67). David Keller spoke to us about his work by Holwerda et al (42) studying the possibility of the baroreflex contributing to the development of hypertension in African American males. Bernhard Kuhn discussed his collaborative paper with Brian Wadugu (99) that explored of the role of neuregulin signaling in cardiac physiology, with special emphasis on its role in cardiomyocyte proliferation during myocardial growth and regeneration.

We highlighted a broad spectrum of articles with podcasts on integrative cardiovascular physiology and pathophysiology (4, 38, 43, 55, 65, 72, 78, 83-85, 100, 105). The Review article by Eschenhagen et al (24) elucidated the evolution of tissue engineering with an eye toward answering the question “How do you grow cardiac muscle in a dish?” We took notice of the work by Barrett-O'Keefe et al (6), as we investigated how to tame the “sleeping giant” of elevated
skeletal muscle blood flow during exercise. The Review article by Karantalis et al (45) provided
for a lively podcast on the prospects for moving cell therapies out of the lab and into routine
clinical practice. An editorial by Virginia Miller (61) opened the door to a conversation on why
exactly sex and gender matter greatly in cardiovascular physiology. We examined the work by
Zhou et al (115), which used innovative experimental conditions to explore the vasodilator and
vasoconstrictor metabolites produced by cytochrome P-450 (CYP) 2C9 in pigs both at rest and
during exercise. We also proudly produced a bi-lingual podcast in English and Japanese, the
first ever in APS history, on gene therapy (65). We continue to produce more podcasts every
month, so stay tuned to what’s coming up next.

ARTICLE COLLECTIONS

In an effort to provide readers with high-quality, focused overviews of timely topics on
the heart and vasculature, we have increased the number of Review papers published in the
journal. Previously, Review papers comprised only 2% of the total number of papers published
in the journal. Within the last two years, we have increased this to 7% of all published papers.
Our emphasis has been on constructing collections of solicited articles on critically important
topics. In the last two years we have published article collections on a wide array of
cardiovascular physiology subtopics.

Among the eight articles in our Review article collection on “Assessing Cardiovascular
Function in Mice: New Developments and Methods,” (18, 21, 37, 75), we covered advances in
molecular imaging of atherosclerosis (73) and MRI and spectroscopy (1), as well as the
continuing evolution of the Langendorff and ejecting murine heart (52) and innovative
developments in small animal echocardiography (109). In our collection on “Cardiovascular
Regulation in Pregnancy” we discussed the vascular effects of maternal alcohol consumption
(76), the RUPP model of pre-eclampsia in a rats (51), and an analysis of the adaptive changes
of mesenteric arteries in pregnancy (95).
The “Cardiovascular Response to Exercise” collection tackles the areas of muscle oxygen transport(72) and central neural control of sympathetic nerve activity(70) in heart failure, as well as a reviews of coronary circulation in exercise training(48) and regulation of skeletal muscle reflexes in both health and disease states(64). In the “Cardiovascular Response to Obesity and Diabetes” we published articles on inflammation and metabolic dysfunction (90), the impact of the renin angiotensin system on metabolic syndrome (74), and caloric restriction and the cardiovascular system (104), among other topics (2, 107).

In our collection on “Electrophysiology and Excitation-Contraction Coupling” we covered articles on the role of conduction barriers for atrial pacemakers and arrhythmias(29), electromechanical models of the heart(94), and the analysis of cardiac optical mapping data(49), along with other timely Reviews by experts in the field (16, 91). The “G Protein Kinase A Signaling in Cardiovascular Physiology and Disease” article collection contains Reviews on such topics as scaffolding proteins in the heart(22), adrenergic signaling at the nucleus (96), G protein mediated stretch reception (87), and others (15, 44, 86).

We published a collection of Reviews on “Hypertension and Novel Modulators of Vascular Function” containing articles on how NaCl raises blood pressure (10), carbon monoxide as an endogenous vascular modulator (50), and the role of Ca2+ in pulmonary hypertension (46), among other topics (30, 81). The Review collection on “MicroRNAs in the Cardiovascular System” covers two key topics thus far, with more articles forthcoming in the next year: microRNAs in ES cell differentiation (9) and microRNAs as diagnostic biomarkers for cardiovascular disease (93).

We continue to build our ongoing collection of Reviews on the topic of “Physiological Basis of Cardiovascular Cell and Gene Therapies.” Among the many topics covered in this collection (24, 45, 88, 99, 112), we have published seminal articles on myocardial sheet therapy (31), gene and cytokine therapy for heart failure (65), cardiac regeneration therapy and its connections to cardiac physiology (89), as well as nestin-positive cells and remodelling in
cardiac disease states (13). The collection on “Post-translational Protein Modification in Metabolic Stress” contains articles on such topics as cardiac mitochondrial matrix and respiratory complex protein phosphorylation (20), post-translational regulation of PPAR proteins by SUMO and ubiquitin (98), the role of SIRT3 mediated mitochondrial protein deacetylation in the heart (78), and O-linked beta-N-acetylglucosamines in cardiac physiology (110).

Our “Protein Handling” collection showcases Review articles from some of the cardiovascular world’s most distinguished researchers (103, 108). Peipei Ping and co-authors tackled the topic of post-translational modification of proteasomes in cardiac muscle (83). Associate Editor Ivor Benjamin and his co-author tackled the subject of proteostasis and redox state in the heart (17). Associate Editor Ronglih Liao and co-authors reviewed current perspectives on cardiac amyloidosis (35), and Jeffrey Robbins and his co-author wrote a comprehensive Review on desmin-related cardiomyopathy (59). The ongoing “Systems and Computational Approaches to Cardiovascular Physiology” Review article collection covers interpreting genetic effects through models of cardiac electromechanics (68), computational approaches to understand cardiac electrophysiology and arrhythmias (77), insights into the cardiac mitochondrial network from an integrative computational analysis (114), and a deeper understanding of Guyton’s venous return curves (7).

In addition, we published independent Review papers from leading experts on topics ranging from the history of matrix metalloproteinases (43) and the pathophysiology of myocardial reperfusion injury (79) to Rho-kinase as an important new therapeutic target in cardiovascular diseases (80) and a comprehensive look at norepinephrine transporter function and human cardiovascular disease (82), among many others (11, 14, 19, 27, 36, 40, 47, 66, 111, 113). Lastly, our Standards & Guidelines articles have proven to be highly-cited benchmark articles on pressure volume analysis in mouse ventricular function (18) and assessment of flow-mediated dilation in humans (92).
We have made a significant effort to increase in the presence of the journal outside of the United States. We have Associate Editors in Canada, United Kingdom, the Netherlands, Italy and Japan, and a Consulting Editor in China. Most recently, our virtual “Editorial Office” has changed to span two continents, with our Editor in Chief, William Stanley, relocating to the University of Sydney in Australia at the start of 2013, and our Editorial Managers (Kara Hansell Keehan and Michelle Gaffney) continuing on in Baltimore. Our Editorial Board now includes more members from Europe, Asia, Pacific Islands, South America, and Africa.

From our fast turnaround times to our final product, we are delivering more value-added service and content than ever before. *AJP-Heart and Circ* continues its rise upward with a streamlined workflow, international editorial team, and high-quality articles organized for easy discoverability via podcasts and article collections. None of this is possible without the dedication of our authors, editors, editorial board members, and the constant support of the American Physiological Society. Together we are delivering a better journal to our readership every day!


