

The New *Circulation Research* A Manifesto

Roberto Bolli, MD

“Wisdom is to know that we don’t know.”
—Socrates, 469–399 BC

“The first thing we must do when seeking knowledge is to reject the presumptuousness of knowing, for it is not possible to learn that which we claim to know.”
—Epictetus, 55–135

“Doubt is the beginning of knowledge.”
—René Descartes, 1596–1650

“All that we know is infinitely less than all that still remains unknown.”
—William Harvey, 1578–1657

In retrospect, it was inevitable. Originally conceived along the lines of the standard inaugural message of a new editorial team (ie, a brief, general statement that is traditionally published at the time of the editorial transition), this article has gradually grown in scope and depth, morphing into what has become a veritable manifesto—a comprehensive account of my vision for *Circulation Research*. This metamorphosis was the result of my reflections on some basic questions: What is the purpose of an inaugural editorial? Do readers prefer to be given just a glimpse of what is coming or do they want to know the whole story—the entire array of new initiatives and policies that are transforming the journal? Is there an inherent advantage in incompleteness and/or superficiality? The answer to these questions was obvious to me. The changes that are taking place at *Circulation Research* are too numerous, too profound, and too important to be compressed into a few paragraphs, nor did I see any point in describing them in a manner that would be haphazard, ambiguous, and/or incomplete (for example, omitting most of them just to be brief). And so, what was originally supposed to be a two-page Editorial has ballooned into a manuscript longer than a Regular Article. I ask the readers not to ascribe this unusual length to an inadequate effort on my part to be succinct. While it is true that conciseness, when used wisely, does require work (Blaise Pascal once wrote to a friend: “I apologize for the length of this epistle; I did not have the time to make it shorter”), the readers will undoubtedly realize that the length of this Editorial is not due to lack of time (or effort), but rather to the sheer size and scope of its content.

Which also explains the delay in the publication of this Editorial relative to the official beginning of my editorship on

July 1, 2009. Writing the manifesto of a new vision of a major scientific journal is not a trivial undertaking that can be completed in a couple of days, nor would I want to publish something written superficially, hastily, carelessly, or, worse still, vicariously. My first priority as Editor-in-Chief has been to attend to the urgent task of changing almost every aspect of the journal (*vide infra*). Having done most of that, I focused on preparing this document, which I hope will articulate clearly the changes that are taking place and the philosophy behind them. For details regarding our new policies, please refer to the revised Instructions to Authors that are posted on the journal website.

Vision

Where do the new editors want to take the journal? Simply put, our vision is that *Circulation Research* must be the undisputed premier international journal in basic and translational cardiovascular biology. This means that it must be the preferred forum for publishing high-quality papers of broad appeal in all areas of cardiovascular biology. In addition to being the most authoritative vehicle for the dissemination of scientific advances, *Circulation Research* should also serve a leadership role in shaping the direction of cardiovascular research.

Strategy

How will we achieve these goals? First, the readers can rest assured that the Associate Editors and I have made an unambiguous commitment to fulfill our vision and that we will not be satisfied with anything less. We will pursue these goals doggedly and relentlessly. Although we aim high, we are greatly aided by the lofty baseline from which we commence our climb. The journal we inherit boasts a prestigious tradition and enjoys a high level of respect in the community of cardiovascular scholars. After its birth in 1953 (Figure 1), *Circulation Research* rapidly established itself as a leader in cardiovascular publishing and has maintained this status for over half a century. Most recently, under the capable direction of Eduardo Marbán, and thanks to his innovativeness and perspicacity, the journal has continued to assert its stature and has boasted enviably expeditious review and production processes. Nevertheless, we must not be complacent, for everything around us is changing at an ever-accelerating rate. The landscape of scientific publishing is becoming increasingly competitive in a rapidly expanding and fragmenting market. In this environment, a journal’s status can deteriorate rapidly, and if a journal is not moving forward, it will quickly fall behind in both status and impact factor. We believe that increasing competition and rapid changes in the scientific landscape necessitate a strategy of

Correspondence to Roberto Bolli, MD. E-mail rbolli@louisville.edu; circulation.research@circresearch.com
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CIRCULATION RESEARCH

A Journal of the American Heart Association

Areas of Expertise

No. 1

Editor's Foreword..... 1

Tension and Distensibility of Carotid Sinus Wall, Pressoreceptors and Blood Pressure Regulation..... *C. Heymans, A. L. Delaunois, and G. van den Heuvel-Heymans* 3

Nucleotide Metabolism in Cardiac Activity. I. Methods and Initial Observations
Philip A. Khairallah and W. F. H. M. Mommaerts 8

Nucleotide Metabolism in Cardiac Activity. II. Reactions in Systole
Philip A. Khairallah and W. F. H. M. Mommaerts 12

Functional Analysis of the Vasomotor Innervation of the Dog's Hind Footpad
W. C. Raudall, W. F. Alexander, J. W. Cox, and A. B. Hertzman 16

Local Postural Vasomotor Reflexes Arising from the Limb Veins
Peter Gaskell and Alan C. Burton 27

Fundamental Difference in the Reactivity of the Blood Vessels in Skin Compared with those in Muscle. Blood Flow Response in these Two Beds to Ischemia, and to Intra-arterial Injections of Methacholine, Epinephrine and Noradrenalin before and after Administration of Antiadrenergic Drugs
John T. Lanier, Harold D. Green, John Hardaway, Hooper D. Johnson, and William B. Donald 40

Hemodynamic Studies in Tricuspid Stenosis of Rheumatic Origin
M. Irené Ferrer, Réjane M. Harvey, Marvin Kuschner, Dickinson W. Richards, Jr., and André Cournaud 49

Figure 1. The first part of the Table of Contents of the first issue of *Circulation Research* (1953). Driven by increased government support after World War II, cardiovascular research expanded rapidly in the late 1940s and early 1950s. *Circulation Research* was launched by the American Heart Association in January 1953 to provide an interdisciplinary journal that would focus specifically on research in the cardiovascular system. This was a novel idea, because the journals that existed at the time were devoted to a discipline, eg, physiology, but not specifically to a system or organ.

continuous reassessment and improvement in order to adapt to the evolving environment, capitalize on new opportunities, and anticipate scientific trends. This will be the underpinning of our strategy.

To take *Circulation Research* to the next level, we will build on its traditional strengths of rigor, efficiency, and prestige, correct its weaknesses, and implement a broad array of philosophical, structural, and operational changes to further enhance the status and impact of the journal and to anticipate emerging trends in both science and publication. In keeping with this strategy, we are changing almost every aspect of the journal. If I had to describe our program in one word, that word would be “change.” As of December 31, 2009, more than 50 changes have already been implemented or are soon going to be implemented; because it would be impossible to provide a detailed account of all of them, I summarize the salient ones below.

New Editorial Team

In the current era of e-mail and online communication, geographic concentration of Associate Editors in one location is neither necessary nor desirable, for it is unlikely that the best talent will be clustered in one institution or city. Accordingly, the new team of Associate Editors (Figure 2) has been recruited from all over the world, with no regard to geographic considerations.

Editor-in-Chief

Roberto Bolli Ischemia/reperfusion, stem cells, gene transfer, coronary circulation, integrative physiology, translational studies

Senior Editor

Eugene Braunwald Basic, translational, and clinical cardiovascular research

Senior Associate Editors

Eric Olson Development, hypertrophy, heart failure, molecular biology, signal transduction

Jeffrey Robbins Cardiomyopathies, protein conformation-based disease, muscle biology, molecular biology

Christine Seidman Human molecular genetics, congenital heart disorders, cardiomyopathies

Associate Editors

Aruni Bhatnagar
(Deputy Editor) Cardiac metabolism, free radicals/oxidative stress, oxidant signaling, proteomics

William Chilian Coronary circulation, angiogenesis, vascular biology, integrative physiology

Alan Daugherty Atherosclerosis, aneurysms, angiotensin II, lipoprotein metabolism, vascular biology

Linda Demer Atherosclerosis, calcification, vascular biology, bioengineering

Stephanie Dimmeler Stem cells, vasculogenesis, endothelial biology

Masatsugu Hori Ischemia/reperfusion, heart failure, integrative physiology, translational studies

Walter Koch Receptor pharmacology, signal transduction, G proteins, heart failure, gene therapy

Issei Komuro Development, hypertrophy, heart failure, stem cells, molecular biology, signal transduction



Figure 2. The new *Circulation Research* editorial team. From left to right: Eric Olson, Masatsugu Hori, Issei Komuro, Douglas Losordo, William Chilian, Alan Daugherty, Roberto Bolli, Jeffrey Robbins, Hugh Watkins, Linda Demer, Walter Koch, Brian O'Rourke, Stephanie Dimmeler, Aruni Bhatnagar, and Silvia Priori. Christine Seidman is not present.

<i>Douglas Losordo</i>	Stem cells, angiogenesis, endothelial biology, gene transfer, translational studies
<i>Brian O'Rourke</i>	Calcium homeostasis, excitation–contraction coupling, ion channels, electrophysiology, mitochondria, metabolism, computational biology
<i>Silvia Priori</i>	Electrophysiology, arrhythmias, ion channels, genetics
<i>Hugh Watkins</i>	Genetics, cardiomyopathies, functional analyses of inherited cardiac diseases

The 50% increase in the number of Associate Editors (from 10 to 15) relative to the previous team is motivated by three fundamental needs: (1) to ensure that all subspecialties in basic cardiovascular science are adequately covered, resulting in a well-balanced mix of expertise; (2) to enable efficient handling of an expanded and demanding portfolio of articles (*vide infra*); and (3) to broaden and strengthen the impact of *Circulation Research*. In view of the international reach of the journal (in 2008, 56% of submissions were from outside the US), the number of international Associate Editors has been greatly expanded (from two to five), ensuring robust representation of Asia and Europe.

Two other aspects of this team deserve comment. The designation of Senior Editor is a new feature for *Circulation*

Research; in this capacity, Eugene Braunwald (Figure 3) provides strategic and conceptual guidance regarding the overall operations and philosophy of the journal. As Senior Associate Editors, Eric Olson, Jeffrey Robbins, and Christine Seidman play a significant role in shaping the direction of the journal and its policies and initiatives.

New Editorial Board

Nothing is more important to a journal's success than the quality and motivation of its reviewers. Peer review is the veritable backbone of a journal. Indeed, the quality of a journal can only be as high as the quality of its reviewers. The performance of the referees is also important to the authors, who have the right to a rapid and fair review. It is truly impossible to overemphasize the impact of our consultants on the success of our work. They are absolutely critical. Therefore, we have worked diligently to assemble our Editorial Board; its members have been selected on the basis of their scientific expertise, scholarly stature, intellectual integrity, and commitment to the journal.

As you may have noticed in the masthead, a new structure has been implemented that includes two Boards: the traditional Editorial Board (whose 148 members are primarily charged with reviewing manuscripts) and the newly created Board of Consulting Editors, which in turn encompasses four subsets: the Editors Emeriti, six Senior Consulting Editors (current or former Editors of other cardiovascular journals), 20 Consulting Editors (a select group of individuals who are widely recognized as leaders in their field of research and have distinguished themselves for exceptional commitment to

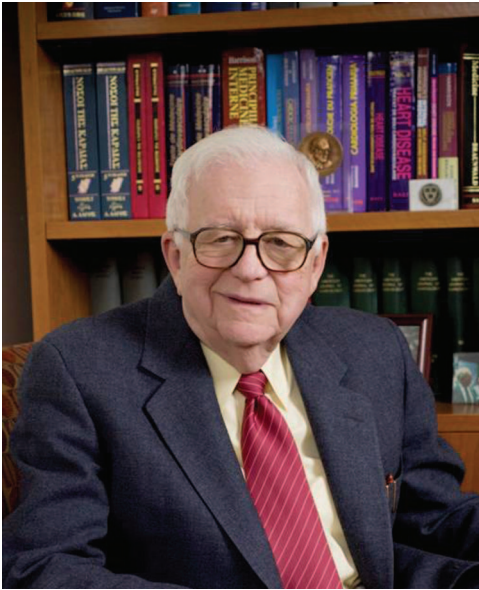


Figure 3. Eugene Braunwald, MD, Senior Editor of *Circulation Research*. Dr Braunwald has contributed more to cardiovascular medicine than any other contemporary physician or scientist. His very first paper (submitted at the beginning of his postdoctoral research fellowship) appeared in *Circulation Research* in September 1954 (in the second volume²); since then, he has authored 68 articles in our journal. As he narrates in a recent Editorial,³ he interacted personally with Carl J. Wiggers, the founding Editor of *Circulation Research*.

the mission of the journal), and four Statistical Consultants. Besides reviewing manuscripts (the traditional role of the Editorial Board), the members of the Board of Consulting Editors are called on to serve as Guest Editors for thematic Review series and for manuscripts where a conflict may exist for the Associate Editors, to provide advice regarding the direction and operations of the journal, to suggest new initiatives, topics for Reviews, and themes that need emphasis, to identify areas for improvement, and to prepare Reviews and Editorials. Thus, the functions of the Board of Consulting Editors are intermediate between those of the Editorial Board and those of the Associate Editors.

Together, the two Boards (Editorial Board and Board of Consulting Editors) constitute an extraordinary cadre of dedicated, experienced, and highly respected individuals who share our passion for excellence, our vision for the journal, and our commitment to its success. These outstanding cardiovascular scientists will not only uphold but further enhance the high standards of quality, credibility, and prestige that have made *Circulation Research* a leader in scientific publishing.

What they do is truly remarkable. They give without asking. They selflessly donate their time (often on weekends and evenings), their energy, and their expertise to assist the editors in the tricky task of sifting through hundreds of papers to find the few gold nuggets that meet our standards. And they do this in the shade of anonymity; although they, in large measure, shape the journal, their efforts and contribution are not known to the readership. Few activities are nobler and more altruistic than that of an

anonymous reviewer. Despite the fact that I have worked with scientific journals for decades, I continue to be amazed by the unselfish dedication of editorial consultants. The Associate Editors and I are proud of the members of our Editorial Board and our Board of Consulting Editors—a bevy of outstanding scientific citizens who deserve our utmost gratitude, respect, and admiration.

I believe that the work and commitment of these individuals must be rewarded. Accordingly, those editorial consultants who distinguish themselves for the number, timeliness, and quality of their reviews (as assessed by the ratings assigned by the Associate Editors) will be recognized at the annual Editorial Board dinner, on the journal itself, and through individualized letters from the editor. This policy has already been implemented. At the dinner of *Circulation Research* held in Orlando during the 2009 American Heart Association (AHA) Scientific Sessions, a distinguished cadre of outstanding consultants was identified and presented with a number of awards; this “honor roll” is highlighted on the journal website.

I also wish to improve communication between the editors and their consultants (Editorial Board and Board of Consulting Editors). Since (as mentioned above) the members of these Boards are selected on the basis of their scientific stature and commitment to the journal, they constitute a massive reservoir of expertise and wisdom, and thus are an invaluable source of advice that will greatly benefit the journal. Accordingly, the Associate Editors and I wish to maintain an ongoing dialogue with them. We welcome and greatly value their suggestions, constructive criticism, and feedback on new initiatives, areas for improvement, philosophical and logistical matters, topics for Review articles, creative uses of online resources, and any other issues that may enhance the quality of *Circulation Research*. Besides frequent informal contacts, once a year we will conduct a survey of all Board members to solicit their candid feedback regarding the direction, philosophy, and operation of the journal. I am committed to personally responding to all email/phone/letter messages from them.

Changes in Article Selection

Driven by a pursuit of excellence, the editors have implemented a number of changes in the criteria used to select articles for publication.

Raising the Bar

In science, as in most human endeavors, quality is more important than quantity. As stewards of *Circulation Research*, the editors have a fiduciary responsibility to the readership to ensure that only the very best science appears in the journal. In a very real sense, the editors work for the readers; their charge is to select papers rigorously, publishing only truly new or novel information that constitutes an important conceptual advance vis-à-vis existing knowledge, so that the readers’ time is spent wisely. In an increasingly busy and competitive environment, the readers’ decision to look at our journal must be worth the effort.

Accordingly, we have “raised the bar” for acceptance. For a paper to be published in *Circulation Research*, it must not

only be methodologically immaculate but also have substantial conceptual novelty and a potentially large impact on the field. Unfortunately, this means that the acceptance rate will likely fall below the 15% to 17% range where it has hovered for years.

Novelty As the Overarching Requirement

Along these lines, conceptual novelty will be the *sine qua non* for a paper to be published in *Circulation Research*. In other words, we will give priority to new information that significantly augments existing knowledge. The information may or may not be mechanistic, but it must provide substantial new insights into cardiovascular biology in health and disease. It is important for authors to know that studies that are well-designed and methodologically sound but have little novelty (ie, studies that represent variations or extensions of previous ideas or incremental advances over previous work) will generally not be published. In the new review forms (see Online Data Supplement, available at <http://circres.ahajournals.org>), referees are asked to specifically indicate what is new in a manuscript and whether the degree of novelty justifies publication. We also ask authors to describe briefly in their cover letter what is new in their manuscript and why this will be of interest to the readership of *Circulation Research*.

Thematic Content/Areas of Interest

Besides the fields that have been traditionally covered by *Circulation Research*, the editors wish to emphasize the relatively underrepresented areas of cardiovascular genetics and developmental cardiovascular biology, as well as new enabling technologies and translational mechanistic research (*vide infra*). We encourage submission of articles in these fields. Our interest in promoting these topics/themes as important features of *Circulation Research* is clearly reflected in the makeup of the new editorial team.

Translational research merits additional comment. In keeping with the increasing emphasis of the NIH, AHA, and other bodies on bridging the gap between basic research and clinical medicine, we will endeavor to publish more cutting-edge translational studies that offer mechanistic insights, ie, work in humans or with human tissue that uses state-of-the-art approaches to illuminate basic mechanisms of disease and therapy. However, merely observational human studies will not be published.

New Article Portfolio

The portfolio of articles published by *Circulation Research* has been significantly expanded to meet the multifarious needs of authors and readers. As an addition to the standard, time-honored Regular Articles, Reviews, and Editorials, we have launched a cornucopia of new manuscript formats and categories in an effort to enrich the thematic content of the journal and broaden its appeal (Table).

Extended Print Version of Regular Articles

Recognizing that the current limits for Regular Articles (6,000 words and 8 display items) have worked well in most cases, we will maintain them. However, we will also allow selected papers to exceed this length if we deem it appropriate

Table. Major Changes in the Portfolio and Format of Articles Published in *Circulation Research*

New Article Categories

- Extended print version of Regular Articles
- Brief UltraRapid Communications
- Short Communications
- New Methods in Cardiovascular Biology
- Featured Articles
- News and Views
- Scientific Guidelines
- Methodological Reviews
- Emerging Science
- Controversies in Cardiovascular Research
- Basic Implications of Clinical Science
- Translational Perspectives
- Personal Reflections
- Profiles in Cardiovascular Science
- Expanded online content

Changes in Format

- New cover page
- New style for Table of Contents
- Structured Abstract
- Boldface type for Abstract
- List of non-standard abbreviations
- Requirement for a detailed Methods section in the Online Data Supplement (with sufficient details to enable readers to replicate the experiments)
- Full reference citations (including all authors)
- Novelty and Significance section
- In This Issue section

and the authors are willing to pay for the additional pages. This flexibility is necessary because some outstanding papers of great impact contain an unavoidably large amount of data that cannot be compressed into the standard limits without a significant loss of quality. Thus, authors of a long article will now have two options: (1) publishing part of their manuscript as an Online Data Supplement, so as to keep the print version within the standard limit of 6,000 words and 8 display items (old option); or (2) publishing the entire paper in the print version (except for the detailed Methods section, which will appear online) and paying for the extra pages (new option). The latter choice is offered to those investigators who do not wish to “split” their papers between a print and an online version.

Brief UltraRapid Communications

We have discontinued the UltraRapid Communication format because the review time for these articles (average, 17.7 days in 2008) was not appreciably less than that of Regular Articles (average, 18.9 days in 2008). Instead, we have implemented a new category, Brief UltraRapid Communications (BURCs), which will enable authors to receive a very fast decision (within seven days of submission) on papers of unusual impact. BURCs are limited to 2,500 words (exclud-

ing Methods) and 4 display items. Their purpose is to enable very rapid dissemination of observations that are of outstanding interest to the readership but have a relatively narrow scope. Less comprehensive than Regular Articles but still scientifically rigorous, BURCs will present seminal findings that have the potential to open up new avenues of research. Authors will receive a dichotomous (“yes/no”) decision within seven days of submission. Detailed comments by the referees may not be available. For the papers deemed acceptable, only minor changes in the text and/or figure will be permitted; major revisions or changes requiring more than five days will not be allowed. A brief letter to the editor explaining the importance of the findings and the reason for requesting accelerated publication should accompany the manuscript. Papers not accepted as BURCs may be resubmitted as Regular Communications provided they have been extensively revised and expanded with the addition of substantial new data.

Like all other original articles, BURCs will be published online ahead of print 7 to 14 days after acceptance and then in print version an average of 24 days after acceptance. This means that authors can expect BURCs to be published within 14 to 21 days of submission if no revision is needed and within 19 to 26 days if a revision is indicated—the fastest publication process available in any journal we are aware of.

Short Communications

Recognizing that some important studies may be less comprehensive than other, we have created this new category (2,500 words [excluding Methods] and 4 display items) to provide an avenue for publishing papers that are more narrowly focused than Regular Articles but are still definitive and scientifically rigorous. The time to first decision for these papers is expected to be even less than that for Regular Articles, which is already aggressively brief (eg, 9.7 days in December 2009).

New Methods in Cardiovascular Biology

Circulation Research has traditionally shunned methodological papers, yet despite the lack of mechanistic insights, these articles can have a significant impact on cardiovascular science. Research is driven by techniques at least as much as it is driven by ideas; in fact, many (if not most) studies are performed because new methodologies have become available to answer old questions. Why, then, avoid publication of new methods? Cognizant of these facts, and recognizing the impact that enabling technologies can have on science, we have introduced a category of methodologically focused articles whose purpose is to describe new tools and techniques that have the potential to transform research and be useful to a broad spectrum of investigators. In general, the description and validation of the new technology should be combined with at least one example of its application to a specific question relevant to cardiovascular physiology or pathology.

Featured Articles

We have introduced this new designation to highlight original articles of outstanding scientific importance. Fea-

tured Articles are identified on the journal’s cover and highlighted in color in the Table of Contents of the print version. They are archived on the journal website with each current issue and can be retrieved separately in all past journal issues. (To view our Featured Articles archive, click on the link below the cover image icon in the online issue Table of Contents.)

News and Views

This section of the journal appraises the readership of important events and scientific advances using a fresh, informal, conversational style. The content is miscellaneous: news of broad general interest to the cardiovascular community (including international news); major recent discoveries in the cardiovascular field as well as ground-breaking discoveries in other fields that might have reverberations in cardiovascular research; changes in science management and policy and political/social issues that might impact the implementation, conduct, perception, and dissemination of cardiovascular research; highlights of the most exciting basic and translational science presented at scientific meetings; and commentaries by selected scientific leaders. In keeping with the mission of the AHA, we also plan to include issues relevant to early career investigators and their particular needs. *News and Views* debuted at the end of 2009 (in the November 20 issue).

I wish to stress that *News and Views* (like all sections of the journal) will *not* be used to push a political or ideological agenda. I do not subscribe to the praxis of some journals, which choose to advocate a particular ideological position by publishing opinion articles/commentaries that promote only one point of view, only one side of a debate. I do not believe this is a proper use of scientific publications. I believe that journals ought to respect intellectual diversity, not only because of the obvious reason that it is fair but also because exposure to different ideas is enriching. At *Circulation Research*, we will not push political views or ideologies of any kind; instead, we will strive to be inclusive, to respect diversity of opinions, and to the extent possible, present all sides of an issue fairly.

Scientific Guidelines

As the official journal of the Council on Basic Cardiovascular Sciences (BCVS) of the AHA (the largest basic cardiovascular research organization in the world, with >5,000 members), *Circulation Research* is uniquely positioned as an authoritative source of information regarding optimal scientific methodology. Indeed, the membership of the BCVS Council includes leading experts in virtually all major techniques used in contemporary cardiovascular investigation—an extraordinary reservoir of knowledge that could, and should, be leveraged to the benefit of our readership. Accordingly, I believe it would be appropriate for the journal to promulgate scientific guidelines pertaining to methodologies that are widely used in cardiovascular research. We envision these guidelines to reflect the consensus of a committee of recognized experts, selected among the members of the BCVS Council.

Publication of scientific guidelines will serve multiple useful purposes. It will fulfill the educational mission of the AHA and of the BCVS Council, adding a new dimension to the journal. It will facilitate peer review of manuscripts and grant applications because it will provide widely agreed on standards for evaluating common methodologies. Most importantly, it will benefit the conduct of research by defining standards for performing scientific investigations.

Methodological Reviews

Along the same lines, we plan to introduce Review articles to discuss methods that are of broad interest and that enable a better understanding of cardiovascular biology, particularly recent technologies in which the methods are still in flux. These articles, written by recognized experts, should be useful to all investigators, but especially to early-career investigators.

Emerging Science

These will be brief commentaries or full Reviews published on an occasional basis to highlight areas of research that are very recent and at the cutting edge of cardiovascular biology. In keeping with our vision of the journal as a trend-setter, the goal is to bring attention to new topics that are very promising but not yet well developed.

Controversies in Cardiovascular Research

These will be back-to-back articles arguing opposing points of view on a topic of broad current interest. We envision that each discussant will write a brief paper arguing a point of view and a brief response to the opposing paper. The two papers and the two responses will be published together in the same issue. In selected cases where multiple points of view exist, more than two discussants may be appropriate.

Basic Implications of Clinical Science

The purpose of these articles will be to inform basic investigators of important mechanistic and pathophysiological questions that are engendered by clinical or epidemiological studies. The focus will be on clinical observations or results of clinical trials that are clearly important for patients but whose basic biological mechanism remains elusive; the articles will highlight the significance of these observations/studies and point out potential avenues for investigation at the basic level that could illuminate the underlying mechanism(s). We hope that Basic Implications of Clinical Science will be a valuable source of new research ideas and will serve to provide more clinically oriented directions to basic research projects.

Translational Perspectives

In keeping with our goal of promoting clinical translation (*vide supra*) and with the growing interest of funding agencies, scientific organizations, and the public at large in the rapid application of fundamental insights to patient care, the purpose of these articles will be to highlight basic discoveries that have been, or are being, translated into clinical therapies. By publishing these papers, we also wish to signal the

rekindled interest of *Circulation Research* in translational work focused on basic mechanisms of human disease.

Personal Reflections

In these autobiographic notes, leading scientists will narrate the circumstances, insights, and emotions surrounding their seminal discoveries. Unlike typical Reviews, these articles will be personal and reflective, featuring a blend of scientific, autobiographic, and emotional content.

Profiles in Cardiovascular Science

One of our goals is to add a human/personal dimension to the contents of the journal. To this end, we are launching *Profiles in Cardiovascular Science*—interviews with leading cardiovascular scientists that will focus on their lives and personal experiences, the decisions and events that contributed to their success, their reflections on a career in research, and the advice they have for young investigators. The first *Profile* will appear soon (in the February 19 issue), featuring Dr Ignarro, and will be accompanied by a brief Editorial announcing this initiative.

The purpose of both *Profiles* and *Personal Reflections* is to offer a new perspective on the process of science, one that is rarely found in scientific journals. It is hoped that by providing an up-close and personal look at the lives of prominent investigators, these new features will help the readers to appreciate how scientific breakthroughs actually happen and what personal qualities and behaviors are most important for a successful career in research.

Expanded Online Content

In accordance with contemporary trends in scientific publishing, we plan to enact a dramatic expansion of the online features of the journal. We expect many of these initiatives to take place later in 2010, after the most pressing changes have been implemented. A number of ideas are in the pipeline. For example, in an effort to cater to the new generation, which is more at ease with electronic than print media, we are launching the journal on Facebook and Twitter. We are also planning to create a web-based chat room containing letters from readers and responses from authors. Another initiative in the pipeline is to post podcasts of Featured Articles, winners of the Best Manuscript Awards, and of *News and Views*, *Profiles*, and *Personal Reflections*, possibly including interviews with the authors. More on this topic to follow.

Changes in Format

The major modifications to the format of *Circulation Research* are summarized in the Table. As you have probably noted, we have dramatically changed the “look” of the journal by printing a full-page photograph and highlighting the Featured Articles on the cover. We have also revitalized the dull-looking Table of Contents by the use of color (blue for the headings, yellow for the Featured Articles) and thumbnail pictures.

The format of the original articles has been changed to improve clarity, readability, and impact. Busy readers who are pressed for time (who among us is not?) appreciate the ability to grasp the essential message of a manuscript quickly

and easily, without having to delve into a labyrinth of details and intricacies. Thus, a standard structure is now required for the Abstract, which includes the rationale for the study (why the work was performed), the specific objective(s), a brief synopsis of the methods and results, and the salient conclusions. The standardization of this format should facilitate rapid dissemination of the message. The use of boldface type in the Abstract is aimed at enhancing readability. An additional feature that enables busy readers to grasp the “take home” message very easily and quickly are the bullet points listed in the Novelty and Significance section, after the references (*vide infra*).

Over the years, I have noticed an increasing proclivity of authors to punctuate their papers with a bewildering array of sibylline abbreviations, which forces the unfortunate readers to rummage through the text looking for that lucky spot where they will find the answer to the riddle (ie, the definition). To spare our readers this ordeal, we now require that all nonstandard abbreviations and acronyms used in the text be listed after the Abstract. No longer will you have to stop, look at the window, and ask yourself: “What in the world is CALOS?” And no more annoying searches for the meaning of TIP60, OFT, RVLM, HMVEC-L, HF/HS, DIGE, CDD, SMP-P, EBD, SRL, MNIC, POVPC, L:D, MTS, BD, DORV, SLC, DLA, NMNAT, DPI, OIR, VASP, bmDC, Del-1, TcPO₂, SRPK3, LSS, RRV, Ptch1, and HLI, just to name a few.

One of the complaints I hear most frequently is that nobody knows how exactly the experiments were performed. Thus, a full Methods section, with enough details to enable readers to replicate the experiments without consulting previous articles, must be now included in the Online Supplement. At the same time, the print version of the Methods, while abbreviated, should provide sufficient information for the reader to understand the basic methodology of the study without having to refer to the Online Supplement. Another common source of frustration for readers is the use of the “et al” designation (usually after the first three authors) in reference citations; in many cases, this format makes it arduous to know where the cited work was performed, because the senior author is frequently not one of the first three names. Thus, all authors are now included in cited articles.

As basic cardiovascular research becomes ever more specialized and narrow, a growing number of scientists (including translational and clinical scientists) struggle with understanding important papers published in fields that are remote from their specific areas of expertise. Therefore, at the end of each original article, we have added a section that summarizes the novelty and significance of the work in a general language that can be easily understood by scientists who do not work in that field. The purpose is not to repeat the content of the Abstract, but to state succinctly and clearly what is new or novel about the work and what it means—its broad implications for future basic research and also, if applicable, for clinical medicine. We envision the Novelty and Significance section as a “translation” of sort of a specialized paper for a general audience, designed to facilitate the dissemination of new concepts to the broad cardiovascular scientific community and to foster interdisciplinary communication. In



Figure 4. Carl J. Wiggers, the founding Editor of *Circulation Research*. After retiring as Chair of Physiology at (then) Western Reserve University in 1953, Wiggers became Editor of the newly launched *Circulation Research*, a position he held until 1957. Under his leadership, the journal rapidly became known as the leader in basic cardiovascular investigation. Wiggers was an icon in cardiovascular physiology. He was a demanding editor and had an absolute rule of not allowing more than three authors in a paper.³ He was also an ardent supporter of the importance of not publishing. In the Editor’s Foreword to the first issue of *Circulation Research*,⁴ he wrote: “If an investigation has failed to yield new facts which are interesting or interesting facts which are new, the investigator should suppress the urge to convert an unsuccessful or unconvincing research into a published communication. Research is a gamble in which the laws of chance favor the loser, and the loser must remain a good sport.” Five years later, he reiterated in his memoir: “Research is a game in which one can lose as well as win; an investigator who has failed to discover new facts should be a good sport and not try to disguise his failure by writing a paper.”

this section, we include two sets of bullet points (2 to 3 points each), written in a telegraphic style; the first set (titled “What is known?”) summarizes what was known regarding the issue at hand before the study was performed, whereas the second set (titled “What new information does this article contribute?”) summarizes the key new information that the article provides. We hope that these bullet points will enable readers to appreciate immediately, clearly, and almost effortlessly the critical new contributions of a paper.

To offer readers an opportunity to peruse Featured Articles very rapidly, we will introduce a page entitled “In This Issue,” in which we will summarize these papers in an accessible language meant for a general rather than a specialized audience.

In general, I exhort authors to use a language that is simple and clear. As Carl Wiggers, the founding Editor of *Circulation Research* (Figure 4), so eloquently wrote in his memoir,¹ “[Readers] hold that genius in presentation consists in stating complex matters simply, not in stating simple matters complexly.”

Changes in the Review Process

We are very proud of the review process at *Circulation Research*; it is remarkably efficient and expeditious. For

example, in the first four months of our editorship (July to October 2009), the average time from submission to first decision for all manuscripts was only 13.5 days. This time has shortened progressively to 12.0 days in November 2009 and 9.7 days in December 2009. Of note, such rapidity has been achieved despite the fact that we have implemented a policy of having all original articles routinely reviewed by three referees (*vide infra*). We have worked hard to attain this speed and are committed to maintaining the operations of the journal at this level of efficiency. Having achieved an average decision time of ≈ 10 days at the beginning of our editorship and during the month of December (when many people take vacation), we are confident that we can maintain this level of performance throughout our tenure.

The review forms used by referees (shown in the Online Supplement) have been completely revised. As can be seen, the categories used for rating manuscripts include Novelty, Impact, Strength of Mechanistic Insights, Methodology/Experimental Design, and Overall Priority. A percentile scale has been added to all of these categories. Currently, the “border zone” between acceptance and rejection is in the 10% to 20% window; a rating worse than 20% will usually result in rejection.

One of the most important changes we have made is the implementation of a policy whereby all articles that undergo full review are routinely examined by three consultants (not two). This praxis not only enhances the quality and fairness of the process (by minimizing the impact of one biased or inadequate review) but also ensures its timeliness, because it obviates the need to scramble for a third referee when the first two reviews are highly discordant or one of them is never returned.

Finally, we have strived to make decision letters more specific and informative, particularly when a decision of Revision or Rejection with the Possibility of De Novo Resubmission is rendered. In these cases, the authors need to know which specific changes/new data would be required for the paper to achieve a priority that may be sufficient for publication. Accordingly, a customized paragraph is now included in all decision letters that clearly states the reasons for rejection and, in the case of “borderline” papers (overall priority between 10% to 20%), specifies which additional data the editors believe would be most important to improve the priority of the manuscript.

International Outreach

For a variety of socio-economic reasons, cutting-edge investigations are increasingly being conducted outside of the US. The globalization of research is one of the overarching trends of our time, and cardiovascular research is no exception. Already, the majority of papers submitted to us (56% in 2008, as mentioned above) are from countries other than the US. I believe that if *Circulation Research* is to be a leader, it must be viewed as a global forum for scientific discourse and the preferred destination for the best basic and translational cardiovascular research from all over the world. To facilitate the achievement of this goal, I have appointed five international Associate Editors (two in Japan [Masatsugu Hori and Issei Komuro] and three in Europe [Stephanie Dimmeler,

Hugh Watkins, and Silvia Priori])—a significant increase versus the two international editors of the previous team. I also plan to devote parts of *News and Views* to international issues. These measures should send an unmistakable signal that *Circulation Research* intends to be a truly international journal.

Strengthened Relationship Between *Circulation Research* and the BCVS Council

I am convinced that one of the greatest opportunities for *Circulation Research* to grow stems from its status as the official journal of the BCVS Council. This relationship is crucial and must be greatly expanded. Based on my view that the Council should be an advisory organ for the journal and should actively contribute to its activities, I have initiated regular annual meetings with the Council Leadership Committee, during which we discuss issues of common interest and I ask for feedback and advice on the strategic direction and operations of the journal, areas of emphasis, and themes/authors for Reviews, Editorials, and other nonoriginal articles. In addition, I maintain a continuous dialogue with the Council Leadership Committee throughout the year, and the same survey that is sent to Editorial Board members (*vide supra*) is also sent to the Leadership Committee. Furthermore, the Chair of the Council serves as coeditor of *News and Views*. As mentioned above, the Council will play a leading role in replacing Scientific Guidelines. A number of other initiatives are in the pipeline and will be announced as they are implemented. It is my hope that these changes will further strengthen the ties between the journal and the Council and benefit both parties.

Best Manuscript Awards

Five annual awards have been instituted to recognize the most outstanding articles published in *Circulation Research*: four Best Original Manuscript Awards (one each in molecular medicine, cellular biology, integrative physiology, and translational/clinical research) and a Best Review Award. The winners are chosen by the editors on the basis of novelty, impact, and number of website hits and article citations. These nonmonetary awards were inaugurated at the annual dinner of *Circulation Research* in November 2009; the winners are highlighted in the journal website as well as in the print version (January 8, 2010 issue).

Concluding Remarks: The Road Ahead

The Associate Editors and I are excited about the future of *Circulation Research*. We look forward with passionate enthusiasm to working with the Editorial Board, reviewers, and authors toward our goal of further elevating the status of *Circulation Research* as a premier vehicle for the dissemination of advances in basic and translational cardiovascular biology.

The journey will no doubt be arduous. I read with great interest (and some trepidation) Carl Wiggers' description of the fate that awaits an editor': “When I assumed the editorship of *Circulation Research*, I was warned that editors can neither make new friends nor retain old ones. I was shown a cartoon depicting a captive editor surrounded by a ring of

cannibals, variously labeled contributor, reader, publisher, and printer. Javelins were being hurled at the editor, presumably to tenderize his flesh preparatory to putting him in the stew pot. Nevertheless, since my pachydermal covering had thickened with the years, I resolved to take the risks.” Although I don’t think the reality is actually as dire as some people have suggested, I know that the road ahead is strewn with challenges and pitfalls. Because of the very nature of the job, it is not possible or even advisable for an editor to please everybody. My simple pledge is that I will do my very best and work as hard as I can to make the journal as fair as possible to the authors and as useful as possible to the readers.

The Big Picture: We All Share the Same Dream

As the Associate Editors and I embark on this journey, we will always keep in mind the reason we do what we do, for it is from this thought that come the assiduity and equanimity necessary to move forward in a manner that is consistent with our vision of excellence for *Circulation Research*. All of us who are involved in biomedical research (editors, reviewers, authors, and readers) must always remember that, at the end of the day, the ultimate purpose of what we do is to advance the frontier of science. This thought must be a constant source of inspiration—and a motivation to all work together.

We must be able to step back from the daily grind, transcend the frustrations that punctuate our routine, and stop to think just how lucky we are. We are in the business of advancing human knowledge! Isn’t that a priceless privilege? Which job could be more exciting than seeing what has never been seen before? Can there be anything more exhilarating than being the first human ever to unravel a secret of nature? How many other jobs give us the opportunity to expand our understanding of the natural world? Isn’t it beautiful to make our own contribution—however small—to the knowledge of mankind, to that precious collective heritage that is passed on from generation to generation? Every now and then, let’s stop and think this: Our job description, as scientists, is to do what humans have dreamed of doing throughout history—to get an up-close glimpse of the infinite complexity and astonishing organization of life. For all the challenges that we face in our work, we are incredibly fortunate that our job—the pursuit of knowledge—enables us to fulfill a quintessential characteristic of our human nature. Yes, quintessential, because the thirst for knowledge is one of our most fundamental drives, one of our most insuppressible instincts. Knowledge is as vital to our mind as food is to our body.

To live is to learn. To be human is to understand. So universal, so fundamental is our longing for knowledge that it has driven mankind since ancient times, long before the appearance of modern science, even when the tools available to explore the world were rudimentary or nonexistent. Even though they did not have the tools, our ancestors dreamed of knowing. Shouldn’t we feel lucky to live in a time when we have powerful tools to realize that dream?

Throughout history, humans have been willing to make unbelievable sacrifices, enduring all sorts of hardship and even risking their lives, in order to know more; and they did this without having the sophisticated technology that we are so fortunate to have today, and that we take for granted.

Almost 2,400 years ago, Aristotle (384–322 BC) wrote in his *Metaphysics* that “all men naturally yearn to know” and poignantly added that “the act of achieving knowledge is life,” echoing Socrates (469–399 BC), who had gone as far as asserting that “there is only one good—knowledge—and only one evil—ignorance.” Four centuries later, the dream of knowledge exudes from the beautiful words of Virgil, the great Latin poet (70–19 BC): “Happy is he who has been able to know the causes of things” (*Felix qui potuit rerum cognoscere causas*), he wrote in the *Georgics*.

The dream of knowledge, this magnificent obsession, must be written in our genes—we are inquisitive from the moment we are born. The innate need to explore, the restless quest for answers, the insatiable yearning to achieve an ever greater understanding of nature are unique attributes that define us as human beings, setting us apart from all other animal species. The poetic genius of Dante Alighieri (1265–1321) crystallized this concept masterfully in the sublime words of Odysseus to his companions, which ought to be etched in every house and in every building: “You were not made to live like brutes, but to pursue virtue and knowledge” (*Divine Comedy, Inferno*, canto XXVI). Fourteen words. Nobody has said it more succinctly, more incisively, more eloquently.

A Plea for Humility

I would like to close this long article with a plea for humility. “But what does science have to do with humility?” may ask some readers, bewildered by this odd link between two ostensibly unrelated things. In fact, they have everything to do with each other, because science necessitates humility—the humility to admit our ignorance. Many thinkers of the past (alas, often forgotten nowadays) have recognized this. “Knowledge consists of being aware both of when we know and of when we don’t know,” said Confucius (551–479 BC), a concept that was echoed six centuries later in the Western world by the stoic philosopher Epictetus (55–135): “What is the first thing that we must do when seeking knowledge?,” he asked in his *Discourses*; “To reject the presumptuousness of knowing, for it is not possible to learn that which we claim to know.” At the dawn of modern science, Rene Descartes (1596–1650) emphasized the importance of doubting everything in order to build solid knowledge: “Doubt is the beginning of knowledge” (*Dubium sapientiae initium*), he repeated. Unfortunately, admitting that we don’t know (or that we are not sure) clashes with our pride, and so these wise precepts are often ignored. Having observed biomedical research for more than three decades, I have come to the conclusion that the greatest enemy of science—and the cardinal sin of many a scientist—is pride. Pride not only produces a distorted view of reality, but also biases judgment, undermines objectivity, fuels controversies, fosters rivalries, and ultimately obfuscates the truth, thereby delaying progress. As every scientist knows, the quest for truth is unavoidably punctuated by errors. The problem with human nature is that investigators tend to identify themselves with their ideas and to become emotionally attached to them, to the point that they regard a disagreement as an act of hostility rather than as an opportunity to improve their own thesis. They view an admission of error as a humiliating blow to

their ego rather than as a necessary step that brings us closer to the truth.

Human nature has not changed much since antiquity. It is because of this constant human reality that the stoic philosophy of Epictetus, who admonished that the achievement of knowledge requires humility (*vide supra*), is as valid today as it was 20 centuries ago. Even today, despite our technologically and scientifically advanced culture (or perhaps because of it), the humility of acknowledging how little we know is essential to enable us to explore nature with an open mind and to resist the temptation to claim ownership of the truth. No matter how much we know, we must always keep in mind that the quest for knowledge is never-ending; as the Italian philosopher Tommaso Campanella (1568–1639) put it, “The more I understand, the more I don’t know.” And let’s remember that truth has no proprietor. Nobody owns it. Truth is the collective property of the human intellect—a common treasure that is accessible to everyone and belongs to no one.

Over the years, I have seen so many scientists who embody the presumptuousness decried by Epictetus. These individuals are certain that they know the truth, and that they know it more than anyone else. It is as if they claimed truth as their property. They have an explanation for every question. They never doubt their own theories and data. They never admit mistakes. And, of course, they regard any idea that differs from theirs as a threat to their ability to control the field—an attack on their personal property that must be repelled. Should someone have the irreverence of challenging their ideas, they blast the challenger’s data as flawed rather than questioning their own data or ideas. I consider these self-appointed proprietors of the truth as the main impediment to scientific progress. They ought to be reminded that (1) statistically, the vast majority of our (and their) hypotheses will turn out to be wrong (every serious scientist knows this very well); and (2) historically, a few decades from now (or even earlier), most of our “explanations” will be considered rudimentary, naïve, or obsolete, just as most explanations of nineteenth century scientists are now considered rudimentary, naïve, or obsolete.

Without going back 2,400 years to Socrates’ mantra “True wisdom is to know that we don’t know,” we should be guided by the magnificent words that William Harvey (Figure 5) wrote in the preface to his immortal masterpiece, *De Motu Cordis*, published in 1628: “True scientists, who are only eager for truth and knowledge, never regard themselves as already thoroughly informed, but they welcome further infor-



Figure 5. William Harvey (1578–1657), one of the founding fathers of physiology and, together with Pasteur, the most honored physician investigator. Harvey’s main contribution was to establish the scientific method in biomedical research. In *De Motu Cordis* (1628), he described the circulation of the blood—arguably the most important cardiovascular discovery of all times and one of the milestones in the history of medicine. Shown here is Harvey’s portrait at the age of 43. He was short, dark-haired, and nervous. He had a very active mind and was always full of energy—almost as if in a continuous, perpetual motion. Because of his energy, he often woke up at night and had to walk until he got tired enough to go back to sleep. © National Portrait Gallery, London.

mation from whomsoever and from whencesoever it may come;...very many [of them] maintain that all that we know is still infinitely less than all that still remains unknown.” Let’s keep these words in our minds, every day, as we pursue our search for the truth. Let’s always remember that acknowledging our ignorance is the first and most important step toward achieving knowledge.

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