

JGP 100th Anniversary

## 100 years and counting: JGP celebrates its centenary



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As JGP approaches its 100th year, dissemination of science is more important than ever.

Is 100 years a lifetime, or is it just the blink of an eye? Does age make us stale or wise? Fearful or courageous? Do we become more self-sufficient or more dependent? These questions become more urgent for me with each passing year as I contemplate the meaning of my life and the experiences I hope will lie in my future. For me, the key word when thinking about the legacy of my work is *disseminate*. I wish to disseminate the way I do science, by training enthusiastic students, collaborating with peers, and being as generous with emerging talent as my mentors were with me. I aspire to disseminate the splendor and importance of science by communicating with nonscientists, policy makers, and schoolchildren. And I wish to disseminate my group's findings by publishing our work for consumption now and in the future. My challenge, then, is to make sure my actions now and tomorrow align with my values and these goals. However long my lifetime, in the greater scheme of things, it is just the blink of an eye.

JGP is nearing the 100th anniversary of its founding. 100 years is worthy of reflection and celebration. 100 years means, to me, a lifetime of bearing witness to the evolution of physiology and our physiology community. Many of the changes that have occurred are positive: the diversification of the scientific workforce (although this still has a long way to go); the expansion of research in formerly developing countries, particularly in Asia; the increased ease of travel, which makes regular attendance at international meetings possible for many; the introduction of new communication technologies that allow us to "meet" scientists across the globe without leaving our laboratories; and the immediate access to online publications that makes new science available much more rapidly than did print publications that often could be accessed only at high-quality libraries. Other changes over the last 100 years are concerning. At least in the US, funding from the federal government is now held by the oldest group of scientists since records have been kept (Lauer, 2017). The difficulty of obtaining academic positions and research funding has become a deal-breaker for many junior scientists. In addition, public trust in science and scientists has eroded

since the dawn of the space age, when scientists were universally viewed as performing work beneficial to society. Controversies over vaccinations, climate change, evolution, and genetically modified plants reveal passionate anti-science views that we cannot ignore.

A change in the way that scientific work is conducted and published can be observed in the pages of JGP by comparing articles that appeared in its first year of publication with those in its most recent year. Of the 64 articles published between September 1918 and August 1919, 51 had a single author. Of the 61 primary research articles published in the 12 months ending August 1, 2017, not a single work had only one author. This shift from single to multiple authors reflects the broader trend of papers becoming more complex, often with numerous methodologies. Indeed, in its first year of publication, JGP papers did not include a separate section describing the methods used. Methods in 1918 were straightforward and were described in-line with the experiments. In contrast, the Materials and methods sections from the Research Articles published in the August 2017 issue of JGP range from 785 to 2,850 words, with a mean of 1,363 words. Contemporary papers typically represent years of work by a group of people, and collaborations are *de rigueur*. Solomon Snyder decried this trend toward grander, more complete stories in an insightful opinion piece in 2013, noting that "the sad outcome is a mode of publication which is counter-productive to rapid dissemination of important advances" (Snyder, 2013).

The changing emphasis in physiology toward mammalian/human systems is also apparent in JGP's archive. In the first year of publication, JGP published work on the physiology of organisms that included plants, bacteria, invertebrate aquatic animals, invertebrate land animals (including those that fly), amphibians, and birds. 100 years ago, it was understood that the study of living matter would reveal general themes governing how cells and tissues develop, how they are organized, how they function, and how they adapt to their envi-

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ronment. The richness of systems used in JGP's early days highlights that the pressure to be "translational" may be hindering the research enterprise, as we focus on human physiology at the expense of exploring the physiology of all life. For example, the JGP paper "On the control of rope in bread" (Cohn et al., 1918) describes the pH dependence of formation of biofilms, although the first appearance of the term "biofilm" in PubMed didn't occur until 1975 (Mack et al., 1975). Although, on the surface, slimy bread does not appear to have direct relevance to human health, in retrospect, this study characterized a bacterial phenomenon now understood to play a critical role in infection and antibiotic resistance. In "Further proof of the existence of a specific tetany-producing substance in the thymus gland" (Uhlenhuth, 1918), the authors were insightful enough to use larval salamanders that lack parathyroid glands to study the effects of thymus compounds in the absence of conflicting effects of the gland itself. This approach is conceptually similar to the recent work from Lily Jan's laboratory, in which salamander oocytes were used for expression cloning of TMEM16 because they have no endogenous calcium-activated chloride currents (Schroeder et al., 2008). We would not have these comparative physiology tools if someone had not found salamander physiology compelling and secured the funding to study it. I enjoyed looking through the first issues of JGP, which are freely available on our website. I wouldn't want to return to those "good old days," which were not so great for women, minorities, and non-Western scientists. However, understanding that all life is connected by broad mechanistic themes and that the differences in physiology can teach us as much as the similarities rings true for me. As Richard Feynman said, "Nature uses only the longest threads to weave her patterns, so that each small piece of her fabric reveals the organization of the entire tapestry" (Feynman, 1967).

As we look forward to the next 100 years of JGP, dissemination of science seems even more important than in the past. I believe journals can play a role in building trust in scientists. We can make articles accessible to nonspecialists by making sure work is well written and presented, using meaningful and accurate titles, and providing short, nonsensationalized summaries. We can contribute to rigor and reproducibility by using appropriate reviewers who thoroughly evaluate all parts of manuscripts, by publishing full methodological details, and by including important figures in the main text rather than in supplements. We can enhance transparency by explaining editors' reasoning in detail in decision letters and via conflict of interest policies. The integrity of the scientific literature is essential to advancing knowledge and developing insight in a way that respects public investment in our work. For JGP to remain relevant for the next 100 years, we must recognize our role in curating the

threads of nature's tapestry and making sure the patterns of visible to all.

We will be celebrating the legacy of JGP by revisiting its past and developing its future. This issue marks the launch of a series of Milestone in Physiology articles, edited by Olaf S. Andersen, that provide a historical retrospective of notable discoveries published in JGP (Bretag, 2017; and see Alvarez and Latorre and Palmer in this issue). Look out, too, for additional anniversary features that will appear on our website throughout 2018. Our newest initiative, the Junior Faculty Networking Cohort, celebrates new faculty and their important role in our community. The program connects a small group of junior faculty with a mentor from our Editorial Advisory Board for quarterly networking and mentoring sessions that continue throughout the junior faculty years. This program highlights the role that a community journal like JGP can play in nurturing the next generation of scientific leaders. It complements our postdoctoral reviewer program, in which Associate Editors mentor postdoctoral scholars through the process of reviewing manuscripts. JGP is committed to providing services to scientists at all career stages. We look forward to celebrating with all of you—authors, reviewers, readers, and board members—during our 100th Anniversary events at the 2018 Biophysical Society Meeting. I hope to see you all there!

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