

Evolving Access: Genetics Society of America Journals GENETICS and G3: Genes | Genomes | Genetics

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The journal *GENETICS* published its first issue in January 1916, featuring Calvin Bridges's proof that chromosomes are the carriers of heredity.¹ This first American journal of genetics predated the professional society that has since become its publisher, the Genetics Society of America (GSA).

The desire to provide access to peer-reviewed scientific research is nothing new. Henry Oldenburg, founding editor of the *Philosophical Transactions of the Royal Society*, the oldest scientific journal, wrote in the inaugural issue in March 1665, "And No Small Number are at present engaged for those weighty Productions, which require Time and Assistance, for their due Maturity. . . . But every many may receive some benefit from these Parcels."² Could we imagine what kind of Creative Commons license Oldenburg would have assigned to his journal in the 17th century?

Nearly 400 years later, in this rapidly changing scholarly publishing environment, most scientific publishers, including GSA, recognize the need to remain agile and resilient as we juggle the interests of multiple (often competing) audiences and stakeholders while remaining true to our intellectual and scientific missions. This article presents the history of the GSA's journals *GENETICS* and *G3: Genes | Genomes | Genetics* primarily in terms of their access models and some of the shoals they have navigated.

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Offering Open Access in GENETICS

Like many longstanding journals in scientific publishing, *GENETICS* has a hybrid business model that derives income from institutional subscriptions as well as author publication charges. In addition to being available to its subscriber base, the full contents of *GENETICS* are available to members of GSA and freely accessible to everyone 12 months after each issue's publication date. In 2010, after more than 90 years of print publication, *GENETICS* moved to an online-only publishing model.

GENETICS was in the vanguard promoting rapid access to its content. The journal began offering "publish-ahead-of-print" (now called "early online") in late 2004, with authors' manuscripts ("preprints") freely available on the *GENETICS* Web site and in PubMed. Those manuscripts are rough cuts—devoid of copyediting (which can be substantial and provide marked improvements in readability), formatting, and other enhancements that add value to the final article, the version of record. During 2012, in response to discussions with our population and evolutionary geneticist authors and readers, the GSA journals developed a policy that allows authors to deposit manuscripts into preprint repositories such as arXiv, before review or submission. If the article is eventually published, the journal requires that authors insert a link from the preprint in arXiv to the final article on the *GENETICS* journal Web site.

In 2008, responding to feedback from members of its community, in particular those whose funding agencies were encouraging publication in open-access (OA) journals, GSA began exploring a hybrid OA model for *GENETICS*. In November 2008, *GENETICS* offered its first immedi-

ately available OA articles: for a nominal fee [too nominal!!], authors were able to make their articles free-to-read OA. Today, about 20% of authors elect to pay an additional fee for that option. All editorials and some articles selected by the editors (such as *GENETICS*' first educational primer, published in August 2012) are made free to read. Authors who choose that option—whether required by their funders (such as the Wellcome Trust or the Howard Hughes Medical Institute) or because they "just want it to be OA"—report satisfaction. Many demur because they cannot be sure whether OA will result in their articles being seen, read, or cited more often; others seem certain that free-to-read OA will increase their articles' reach.

Creating G3

Around 2009, *GENETICS*' Editorial Board began to explore the need for a publication that would function as a sister of *GENETICS* and complement its mission. Why consider a second journal? Because, as Bob Dylan sang, "The Times, They Are a-Changin'."³ Recent strategic changes, and a paradigm shift at *GENETICS* had brought a revised scope statement that meant publication in the journal would be reserved for articles that describe a significant advance in the field, have broad appeal, and are unusually novel. That led to more rejections and more submissions returned to authors without review. And that resulted in a slimmer *GENETICS*, with the number of articles published purposely declining from 576 in 2007 to 288 in 2011. The scope change left a number of authors without a venue for publication of some of their valuable work.

The new journal, *G3: Genes | Genomes | Genetics*, was born of the *GENETICS* Editorial Board's desire to serve that group

G3 Scope Statement

G3: *Genes | Genomes | Genetics* provides a forum for the publication of high-quality foundational research, particularly research that generates useful genetic and genomic information such as genome maps, single gene studies, genome-wide association and QTL studies, as well as mutant screens and advances in methods and technology. The Editorial Board of G3 believes that rapid dissemination of this research is the necessary foundation for analysis that leads to mechanistic insights.

G3: *Genes | Genomes | Genetics* meets the critical and growing need of the genetics community for rapid review and publication of useful results in all areas of genetics. G3 offers the opportunity to publish the puzzling finding or to present unpublished results that may not have been submitted for review and publication due to a perceived lack of a potential high-impact finding.

of authors—many of whom are GSA members—and the broader genetics community, by providing a venue for publishing high-quality, useful research and rapidly disseminating information. The GSA recognized the need for a respected venue for publication of genetic screens, genome sequences of novel species, population data, quantitative trait locus (QTL) studies, collections of novel mutants, genome maps, human genetics studies outside the new scope of *GENETICS*, and more. Only later did we recognize the financial opportunities that G3 potentially offers to the GSA.

G3 was launched not to compete with *GENETICS* but to strengthen it; the plan is for the two journals to provide a synergy. The OA model seemed a natural fit for G3 as a native-online new journal for which quick publication is top priority. We were uncertain of the degree to which OA would drive submissions, but G3 is, in part, an experiment to determine whether

researchers' actual behavior (such as submitting a manuscript to G3 or reading the journal) would match their expressed attitudes ("The field needs an OA journal like G3"). Other considerations included a trend toward OA for genetics and genomics articles and the need for a scholarly publisher to provide fast and open access to data and research useful to other scientists.

Lively discussion (and much debate!) took place among editors, GSA Board members, current and prospective authors, OA advocates, OA skeptics, scholars in scientific publishing, consultants, and members of the various scientific communities. Discussions took place concerning scientific content, scope, strategy, and finances, among other elements. A few critical questions were: Is launching an online-only OA journal in the best interest of GSA and its mission ("to foster a unified science of genetics and to maximize its intellectual and practical impact")? How would GSA define the scope of G3 so that its community clearly understood the different missions of the two GSA journals? Would launching another journal be in the best interest of GSA's members, authors, the scientific community, institutions, and readers? How could GSA assess and accurately predict its level of intellectual and fiscal risk and return? What type of Creative Commons license would work for G3? (G3 uses a Creative Commons Attribution license, CC-BY 3.0.)

One of the most important tasks was to identify the right scientist to lead such a venture. After a thorough international search, Brenda J. Andrews, professor and director of the Terrence Donnelly Centre for Cellular and Biomolecular Research at the University of Toronto, was appointed editor-in-chief in July 2010. Infusing G3 with energy and vision, Andrews assembled a team of four (since expanded to five) senior editors and nearly 80 associate editors, all of whom are well-regarded practicing scientists. In fall 2010, working with some of the senior editors and the editor-in-chief of *GENETICS*, G3 began to accept submissions. In June 2011, G3 published its inaugural issue.

Update on G3

As of December 2012, 230 papers had been published in G3, on topics as varied as the genetics and genomics of *Drosophila*, mice, plants, fungi, the nematode worm *Caenorhabditis elegans*, humans, insects, bacteria, viruses, and livestock; bioinformatics; population and evolutionary genetics; and tools. The number of submissions and articles published continues to increase, and the journal continues to expand its breadth.

As sister journals published by GSA, G3 and *GENETICS* complement each other in numerous ways. GSA has published or is publishing sets of related papers ("blocks" of articles) in both journals, including collections on the mouse collaborative cross, genomic selection, and (in 2013–2014), and the genetics of immunity. Authors submitting manuscripts to *GENETICS* that are outside the journal's scope but are thought worthy of publication are encouraged to allow their manuscripts to be considered for publication in G3; most agree. In some cases, G3 has been able to offer authors "accept with revision" decisions based on the existing reviews for *GENETICS*. That process serves authors by allowing them quick publication without having to revise and resubmit to another journal, while making the GSA journals a welcome venue for submissions.

Has G3 reached its goal to provide authors with fast, clear decisions? The average time to first decision in 2012 is 30 days. While there is room for improvement, our first responsibility is to ensure that authors receive fair, helpful reviews and clear decisions. G3 is also considering more frequent, possibly continuous, publication.

How is the business model working? As an OA journal not supported by institutional subscriptions, memberships, grants, or other funding sources, G3 must make its operations fully sustainable through publication charges and other efficiencies (advertising and reprint revenue are expected to remain negligible). Manuscript volume has been trending upward, but the initial investment to launch G3 was

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PeerJ Heralds in a New Era of Innovation and Affordability in Academic Publishing

Peter Binfield

PeerJ (<https://peerj.com>), a new journal publisher founded on the principles of affordability, innovation, and open access, published its first 30 peer-reviewed articles on 12 February 2013, premiering several innovative features. Launched by Jason Hoyt (formerly at Mendeley and Stanford University) and Peter Binfield (formerly at PLOS ONE), *PeerJ* was shaped from the premise that

PETER BINFIELD is co-founder and publisher of *PeerJ*.

“if society can set a goal to sequence a human genome for just \$99, then why shouldn’t academics be given the opportunity to openly publish their research for a similar amount?”

PeerJ aims to establish a new model for the publication of all well-reported, scientifically sound research in the biological and medical sciences. The journal has an economical and efficient peer-review and publication system and has assembled an editorial board of 800 academics, including an advisory board of 20. Articles undergo rigorous peer review; publication decisions are made on scientific validity rather than on perceived impact. *PeerJ* encourages

“open” peer review (reviewers are encouraged to provide their names; authors can then reproduce the peer-review history alongside their published articles). The journal uses a Creative Commons License; all articles are free for readers to read, distribute, or reuse provided authors are properly attributed.

PeerJ is unique in that it operates a “membership model”: Authors become lifetime members for a single payment, which can be as low as \$99, giving them the ability to freely publish their articles thereafter. As a result, publication costs for authors are significantly lower than for similar OA publications. 

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the taxpaying public, APS became (to my knowledge) the first publisher to offer free public access to the entire *Physical Review* corpus. This access has so far been limited to the United States, but plans are being made to expand the service to other

nations. APS provides access to all its journals, back to 1893, to any US public library or high school that agrees to provide in-house, walk-in access to its patrons.

APS remains committed to producing journals of the highest quality while

ensuring that researchers and students at all levels have access. APS has been an active participant in OA for a long time and will continue to work with our community in a responsive and responsible manner. 

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substantial, and it is too early to predict its long-term success. In addition, the astounding success of *PLOS ONE* makes it difficult for new journals to compete in the OA marketplace.

Looking Forward

Times are interesting (perhaps a bit too interesting...) for scholarly publishers. The arena is competitive and dynamic, with rapid proliferation of journals (several well funded with staff tens of times the size of those of many society journals); pressure from authors, funders, and institutions to provide OA for content; increasing pressure from academic libraries and institutions to keep subscription prices flat

(which may inadvertently quash publisher innovation and growth); and many other factors, depending on publisher niche.

Clearly, there is no one predefined path to (or definition of) success, though intellectual and fiscal sustainability are critical elements. For the GSA journals, less than 2 years after the launch of G3, it is too early to draw firm conclusions. We are, in many ways, still at the beginning of our experiments with OA, even as we remain optimistic and buoyed by community response.

Publishers—in particular, scholarly society publishers such as GSA—have myriad constituents and responsibilities, each distinct and important. It is our responsibility

to rise to the challenge, commit to our mission to foster scholarship in our field of science and support our colleagues who pursue it, adjust our vision and practice when necessary, and set a high bar. It is our intent that G3, like *GENETICS* since its inception nearly a century ago, will tell stories of discoveries for years to come. 

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