

## Seventy Years of GASTROENTEROLOGY (1943–2013)



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During a cab ride from a meeting of the American Gastroenterological Association (AGA) to Reagan National Airport in Washington, DC, GASTROENTEROLOGY Editor-in-Chief Omary asked me to consider writing a historical overview of the Journal. Although I exuberantly supported the idea, I felt a bit overwhelmed at the beginning. However, now that it is complete, I am glad I did it.

There are many valuable sources of historical data about GASTROENTEROLOGY. A brief history of the Journal and its editors (1943–1968) was included in the silver anniversary issue (Almy TP et al, *Gastroenterology*, 1968). A chapter on AGA publications, including GASTROENTEROLOGY, is included in a history of the first 75 years of the AGA (Boyle JD, *The American Gastroenterological Association: History of its First Seventy-Five Years*, 1973). From time to time, some editors have provided a status report of the Journal. Examples include “Gastroenterology 1943–1960: A Change in Editorship” (Wilbur DL, *Gastroenterology*, 1960), “A Statement of Aims” (Grossman MI, *Gastroenterology*, 1960), “A Departing Look at the Journal in the Seventies” (Donaldson RM, *Gastroenterology*, 1977), “Our New Publisher” (Goyal RK, *Gastroenterology*, 1990), “100 Volumes and Going Strong” (Goyal RK, *Gastroenterology*, 1991), and “Passing the Torch: A Look Back at Our Editorship” (LaRusso NF et al, *Gastroenterology*, 1996). In 2008, then-Editor-in-Chief Anil K. Rustgi compiled comments by the living past editors of GASTROENTEROLOGY on the most significant articles published during their tenures (Rustgi AK, *Gastroenterology*, 2008).

Important facts about the Journal are also found in the monograph “The American Gastroenterological Association 1897–1997,” commissioned by the AGA (Smith DC, *The American Gastroenterological Association 1897–1997: A Century of Service to the Profession and the Public*, 1999). Another important source was the series of tape-recorded interviews with many leaders of the AGA assembled as “An Oral History of the AGA” by J. D. Boyle. Some of these tapes provided important information about GASTROENTEROLOGY. One of these documents,

“Morton I. Grossman, MD, PhD: An Oral History,” has been published (Boyle JD, *Gastroenterology*, 1982); however, others about J. Arnold Barger, MD (1868), Andrew Conway Ivy, MD, PhD (1969), Franz Joseph Ingelfinger, MD (1978), and Walter Lincoln Palmer, MD, PhD (1978), are available in the archives of the AGA central office. There are also other papers written on the history of the AGA that provide some information about the Journal (Fridenwald J, *Gastroenterology*, 1962; Greenberger N, *Gastroenterology*, 1985; McGill DB, *Gastroenterology*, 1987). In addition, excellent electronic records of the annual meetings of the editorial board are available from 2002 onward. Paper records before were discarded in recurrent house cleanings and the need for space conservation. For this report, I have liberally borrowed from all of these resources as well as from volumes of GASTROENTEROLOGY resting in the basement of Harvard’s Countway Library. In some instances, material in the AGA archives did not provide context or understanding of certain important events. In such instances, Google was an important source of information.

This review describes the circumstances leading to the birth of GASTROENTEROLOGY, the foundation of the mission of GASTROENTEROLOGY, how the editorial teams of the Journal have navigated GASTROENTEROLOGY through the ever-changing field of gastrointestinal (GI) sciences and the methods of communication during its 70 years of existence, and my perspective of the history of the Journal and speculation about its future. An accompanying paper, “GASTROENTEROLOGY’s Editors-in-Chief: Historical and Personal Perspectives of Their Editorships,” describes previous editors’ personalities, approaches, challenges, and successes in advancing GASTROENTEROLOGY.

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*Abbreviations used in this paper:* AGA, American Gastroenterological Association; GI, gastrointestinal.

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## Birth

Although the AGA is the oldest GI society in the world, the risk-averse leaders of the AGA did not publish the first GI journal. The first GI journal was the German *Archiv für Verdauungs-Krankheiten mit Einschluss der Diätetik* (1895–1939), which continued as *Gastroenterologia* (1939–1968) and thereafter as *Digestion* (1968–present). The first American GI journal, *American Journal of Gastro-Enterology*, was only published for a brief period (1914–1916) by Anthony Bassler, who later proposed the name GASTROENTEROLOGY for our journal. The AGA's annual scientific meetings (now referred to as Digestive Disease Week) started in 1898. The proceedings of these meetings were published in *Transactions of the American Gastroenterological Association*. All papers presented at the meetings were supplied to the secretary of the AGA and, after 1922, to the recorder for printing. *Transactions of the American Gastroenterological Association* was distributed to members without cost, and publication ceased in 1939.

Many members of the AGA at the time believed that the association should have a legitimate journal. However, this suggestion was not realized until much later. In 1934, two important GI journals were launched: the American College of Gastroenterology (which was founded in 1932) started publishing *American Journal of Gastroenterology*, and Beaumont Cornell, an internist and owner of Sandfield Publishing Company, founded *American Journal of Digestive Diseases and Nutrition*. Cornell was the journal's supervising editor, and Frank Smithies was the editor-in-chief. Frank Smithies was well connected with the AGA and had been its president in 1929. Smithies convinced the AGA to make *American Journal of Digestive Diseases and Nutrition* the official journal of the association, with joint editorial control by the AGA and Cornell; Smithies would remain as the journal's editor-in-chief. In 1937, Smithies passed away, and on the recommendation of the AGA and Cornell, Walter Alvarez was appointed editor-in-chief. For 8 years (1934–1942), *American Journal of Digestive Diseases and Nutrition* was an official organ of the AGA. However, in 1937, Cornell did something that infuriated the AGA; he published a supplement to the journal about his own cancer research without consulting anyone. Very unhappy with this event, the AGA tried to buy the journal and become its sole owner or start its own journal. On June 15, 1942, because mutually acceptable terms could not be reached, the AGA terminated the contract with Cornell. Cornell continued to publish the journal until 1955, when he sold it to Paul B. Hoeber Inc for an undisclosed amount.

The excitement of the AGA members about having their own journal was tempered by financial concerns. Members wanted a journal of high editorial standards with a policy of rigid advertising screening, but such screening might negatively affect the financial viability of

the journal. One prominent member of the AGA, Andrew Ivy, had publishing experience with *American Journal of Physiology*. Based on this experience, he proposed that an AGA journal could break even with 1000 subscribers, which was a reasonable goal. Moreover, any income from “ethical” advertisements could be used by the AGA to fund research. Ultimately, Ivy secured a financially risk-free contract with the publishing house Williams and Wilkins. The contract was signed on July 15, 1942, and GASTROENTEROLOGY was born and became the official journal of the AGA. The title of GASTROENTEROLOGY was chosen because the other suggested titles would confuse it with existing journals such as *American Journal of Gastroenterology*; in addition, it was selected over the competing suggestion of *Gastroenterology & Nutrition* because the field of nutrition was moving away from GI physiology and disease.

## Mission and Scope

To understand the mission and scope of GASTROENTEROLOGY, it is necessary to understand the origin of the AGA and its founding members. The AGA was founded on June 3, 1897, during an annual meeting of the American Medical Association in Philadelphia. A draft constitution with bylaws was presented, and David Stewart was elected temporary secretary; he was later replaced by Charles D. Aaron, who was barely 31 years old. Although Charles Aaron is generally accepted as the founder of the AGA, he never served as president of the organization.

The founders of the AGA were young (the average age was 35 years), academically oriented, and searching for new knowledge in the broad field of gastroenterology. The AGA was originally formed as an elite society of members of the American Medical Association who were interested in all aspects of diseases of the alimentary tract. Many of its founders were members of the American Association of Physicians (founded in 1886) and the American Society of Clinical Investigation (founded in 1909). It is worth noting that the American Society of Clinical Investigation was founded by a young academic gastroenterologist, Samuel Meltzer of New York, who played an important role in shaping the AGA. The American Society of Clinical Investigation and the AGA were both founded by like-minded clinical investigators.

The AGA started as a small closed group with very restricted membership that included 22 members. The young founders of the AGA were a heterogeneous group who had different motivations; most were in it for the love of GI sciences, and their practice of the profession was mainly to obtain material for research observation and comparisons. The majority of the members were internists with an interest in gastroenterology, with ap-

pointments at hospitals and medical schools. The AGA was a research-oriented association of academicians.

In 1945, membership was expanded so that active membership was unlimited, but only to those with research interest. For “associate membership status,” the individual had to demonstrate interest in research, and he or she must have published at least a few credible papers. Quality was considered more important than quantity. Unprecedented expansion in tools and knowledge for the clinical practice of gastroenterology made the research requirement impossible for most practicing gastroenterologists. In 1968, Morton Grossman led the AGA to a membership policy to include all board-certified gastroenterologists regardless of research experience. This completely changed the composition of the stakeholders of the AGA.

The founders of the AGA were committed to a broad definition of gastroenterology covering all aspects of basic science, including anatomy, pathology, physiology, pathophysiology, and GI practice such as GI pathology, GI surgery, and pediatric gastroenterology. However, as advancements and specialization in different aspects of clinical and basic science and practice grew, it became impossible to hold all aspects of gastroenterology under one tent. GI radiology and endoscopy presented particular “conflicts” as they rapidly grew to be independent in their own right. Walter B. Cannon, who is considered the father of GI radiology, served as president of the AGA (1910–1911). However, GI radiology soon became a discipline outside of gastroenterology. That was not the case for GI endoscopy, although some conflicts were obvious. An endoscopy society was founded in 1949, known as the American Gastroscopic Society, and renamed the American Society for Gastrointestinal Endoscopy (ASGE) in 1961. Rapid developments in fiber-optic endoscopy in the late 1950s and 1960s were primarily reported at the annual meetings of the ASGE. Technical improvements resulted in the availability of commercial endoscopes by the 1970s. Further improvements in endoscopes resulted in their use by all practicing gastroenterologists.

In the beginning, *GASTROENTEROLOGY* struggled with balancing its mission of being a house organ for communication to its members and disseminating the best research and advances in the field while maintaining its image as a top international journal (Grossman MI, *Gastroenterology*, 1960). Over the 70 years of its existence, *GASTROENTEROLOGY* has had an unwavering commitment to translating complicated research findings and concepts for its readers. Another commitment has been for the Journal to represent all aspects of gastroenterology, clinical and basic science alike. Editors have also attempted to maintain a balance between original research papers and other editorial material.

## Three Periods

*GASTROENTEROLOGY* is only a window into what is happening in GI sciences and clinical practice. Because the field of research is dynamic and ever changing, the expertise of the editors has changed with evolving research environments. Changes in technology, particularly the invention of the Internet and other media technologies, required the editors to make timely adjustments in the operations of the Journal.

To appreciate the underlying reasons for these changes, I have arbitrarily divided the 70 years of *GASTROENTEROLOGY* into 3 periods. Period 1 (1943–1965) was a period of growing pains and conversion of the Journal from papers containing clinical observations presented at the AGA annual meeting to the foundation of a modern journal. The modern journal sought to have an impact on the science of gastroenterology that extended outside the specific interest of AGA members. Period 2 (1966–1991) was one of maturation, and the editors built on the concepts established in period 1. With time, the scientific and clinical fields and research opportunities in gastroenterology changed. Changes in the field of digestive diseases brought different flavors to the content of the Journal. Period 3 (1992–present) was a time of coping with changes in the science and revolution in information technology.

### *Period 1 (1943–1965)*

*GASTROENTEROLOGY* had a great start and rapid growth. The success of *GASTROENTEROLOGY* in the early 1960s reflected a growing number of training programs, many of which had a research component, and was due to its visionary editors and chair of the editorial board and to the understanding of the AGA Governing Boards. Alvarez has been called the father of *GASTROENTEROLOGY*, but Morton Grossman may deserve to be designated the father of modern *GASTROENTEROLOGY*.

During the 1940s, most research was focused on clinical observations. Pavlov’s work was still a dominant influence in the field. Clinical topics were dominated by dyspepsia and irritable bowel syndrome. Much research was repetitive, inconclusive, and not well designed by the increasingly vigorous standards of the 1950s. The observational clinical work with extrapolation to science that might apply was challenged by a younger generation committed to biostatistics and biochemistry. Experimental physiology took center stage, and studies of GI hormones became a dominant topic. Many young trainees and investigators were attracted to the excitement of the science of gastroenterology, and *GASTROENTEROLOGY* was the highest-quality medium for publication of their research. The Grossman period was dominated by physiology of GI hormones and pathophysiology of peptic ulcer disease.



# GASTROENTEROLOGY Turns 70, *continued*

According to Walter Palmer, “The two persons most responsible for the organization of GASTROENTEROLOGY were Walter Alvarez and Andrew Ivy” (Boyle JD, Walter Lincoln Palmer MD, PhD: An Oral History, 1978). In 1943, Alvarez became the first editor-in-chief. Ivy was the managing editor, and it was his “persistent pushing, making of arrangements, and carrying out the details that was primarily responsible” for the Journal. Palmer states that “Alvarez had a great capacity to write. He could sit down and dictate an editorial that wouldn’t have to be revised.”

In 1950, the AGA structured the appointments and tenures of the editors, editorial boards, and editorial board chairs of GASTROENTEROLOGY. These individuals were appointed for 5-year terms, and the terms overlapped the period of transition between editors. The editors and editorial board chairs could be reappointed once, but editorial board members could serve only one term. The AGA appointed an editorial board of 7 members who were entrusted to make final decisions on all editorial matters. This number was later expanded to more than 20. In addition, the AGA also appointed a 62-member editorial council and 19 associate editors. These individuals were those with a special field of interest. The editorial council and associate editors provided reviews of all submitted papers. The chair of the editorial board played a very important role as liaison between the governing board and the editor. The first editorial board chair was Walter L. Palmer (1950–1956), followed by Sara Jordan (1956–1958), Dwight Wilbur (1958–1963), and Franz Ingelfinger (1963–1968).

When Ivy resigned as managing editor in 1953 for personal reasons, Abe Aaron took over the position. This arrangement lasted several years, and “when Abe announced that he would take over the editorship, no one objected.” “He became editor as well as managing editor—everything.” In 1960, Dwight Wilbur was chair of the editorial board when Morton Grossman (1960–1965) was appointed editor. In 1963, the editorial council and the associate editors were no longer appointed and reviewers with expertise were drawn informally from a large pool of experts, including those who were not members of the AGA. Grossman appointed Hans Popper as associate editor of liver disease, and he handled all manuscripts about the liver (Table 1). Grossman is primarily responsible for the current shape of GASTROENTEROLOGY.

During this period, editors received no honoraria. The editor’s institution provided space and postage. There was no designated editorial staff, so the editor’s institutional secretaries provided administrative support. Williams and Wilkins provided excellent technical support for the Journal.

When GASTROENTEROLOGY was launched, all papers were invited, although a number of author-initiated pa-

pers were submitted as time passed. In 1945, more than 100 credible papers were submitted for publication (Mateer JG, Gastroenterology, 1951). Almost all papers published in GASTROENTEROLOGY were from domestic authors. With time, the number of author-initiated submissions grew and Grossman discontinued the invited submissions.

Initially the editors depended on the associate editors and the members of the editorial council for review of all submissions. Grossman was the first editor to invite the participation of non-AGA members as reviewers. Grossman also used the review process for author education. All of the submitted papers received careful reviews. Papers were not rejected based entirely on the assigned priority. Grossman took particular interest in papers that had strong science but were not well written. He “never rejected a paper only because of its English and writing style.” Instead, he spent countless hours improving the presentation of the paper.

At first, all invited papers and some author-initiated papers were accepted for publication. In 1945, of 100 papers, 42 were accepted for publication. Grossman reported that during Palmer/Ivy’s time, the acceptance rate was 81%; it dropped to 57% in 1961 and to 45% in 1964 (Figure 1).

The front cover of the January 1943 issue of GASTROENTEROLOGY had a picture of the Friedenwald Medal, under which there was a statement dedicating the issue to William Beaumont. For the next 4 years, the July issue was similarly dedicated to that year’s winner of the Friedenwald Medal: Anton Julius Carlson in 1944, Lewis Gregory Cole in 1945, Frank Howard Lahey in 1946 and George B Eusterman in 1947. Starting in 1948, the front cover of each issue contained a list of the articles published in that issue.

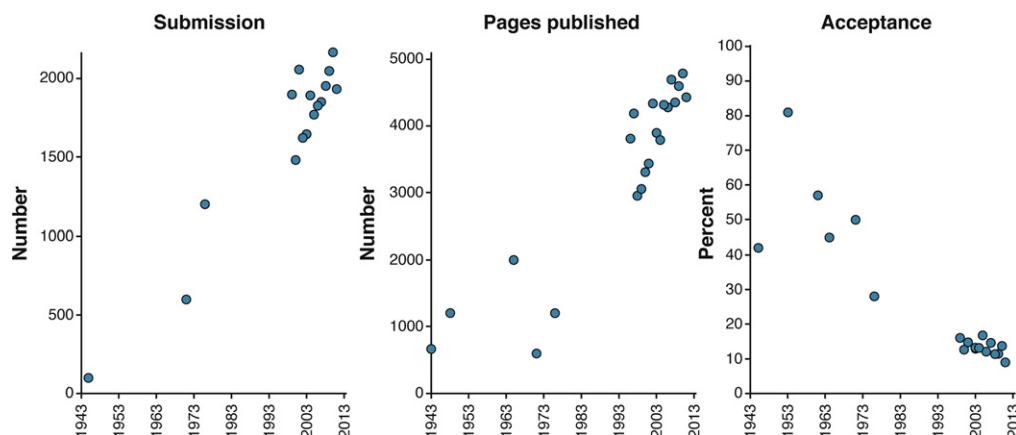
GASTROENTEROLOGY has been published monthly, with 12 issues a year, and is mostly divided into 2 volumes containing 6 issues each. However, there were 2 exceptions that disrupted the relationship between the number of years of publication and the volume number of the Journal: in 1943, all 12 issues were included in volume 1; and from 1950 to 1953, the volumes included only 4 issues each. Thus, by the end of 1953, volume 23 of GASTROENTEROLOGY had been published rather than the expected volume 20 if the journal volumes had consistently contained 6 monthly issues. After 1953, GASTROENTEROLOGY always was 3 volumes ahead of the predicted number based on its age.

In 1943, 1161 small-format pages were published. During the first few years, the number of published pages remained more or less constant but then began to increase rapidly. By 1948, the number of printed pages had doubled to approximately 2000. The AGA Governing Board tightly controlled the page limit of the Journal,

# GASTROENTEROLOGY Turns 70, *continued*

**Table 1.** Editorial Teams During the 3 Periods

| Editor-in-Chief                                |   | Associate and Special Section Editors   |  |   |
|--|---|---|--|---|
| <b>Period 1 (1943–1965)</b>                    |   |   |  |   |
| William C. Alvarez (1943–1950)                 | Andrew C. Ivy   | Franklin Hollander  | Morton I. Grossman   | Russel S. Boles   |
| Andrew C. Ivy and Walter L. Palmer (1950–1952) | Morton I. Grossman  | Franklin Hollander  | Armand Littman   | Russel S. Boles   |
| Abraham H. Aaron (1953–1959)                   | Armand Littman  | Franklin Hollander  | Russel S. Boles  |   |
| Morton I. Grossman (1959–1965)                 | Armand Littman  | Franklin Hollander  | Hans Popper  | Russel S. Boles   |
| <b>Period 2 (1966–1991)</b>                    |   |   |  |   |
| Marvin H. Sleisenger (1965–1970)               | Graham H. Jeffries<br>Robert M. Donaldson   | Charles S. Lieber   | Thomas R. Hendrix  | Russel S. Boles   |
| Robert M. Donaldson (1970–1977)                | Jerry Trier<br>Theodore M. Bayless  | Roger Lester  | Harold Conn  | Russel S. Boles   |
| John S. Fordtran (1977–1981)                   | Burton Combs<br>John Walsh  | Athol Ware<br>Raj K. Goyal  | Marvin Shuster<br>Guenter Krejs  | Jon Isenberg<br>Armand Littman  |
| Robert K. Ockner (1981–1986)                   | Rudi Schmid<br>Young Kim<br>Robert Glickman   | Marvin Sleisenger<br>Bruce Scharschmidt   | James Christensen<br>John Walsh  | Armand Littman<br>Jon Isenberg  |
| Raj K. Goyal (1986–1991)                       | John Gollan<br>James Madara<br>Mark Peppercorn  | Jules Dienstag<br>Alan Walker<br>Jose Behar   | Howard Spiro<br>William Silen<br>Satish Rattan   | Stuart Spechler<br>Helen Shields<br>Mark Feldman  |
| <b>Period 3 (1992–present)</b>                 |   |   |  |   |
| Nicholas F. LaRusso (1991–1996)                | Sidney F. Philips<br>Joseph R. Bloomer<br>C. Richard Boland<br>Eugene B. Chang  | Eugene P. Dimagno<br>Ralph A. Gianella<br>Gregory S. Gores<br>Richard H. Hunt   | Juan R. Malagelada<br>Laurence J. Miller<br>Jorge Rakela   | Joseph H. Szurszewski<br>J. Thomas LaMont<br>Henry J. Binder  |
| Daniel K. Podolsky (1996–2001)                 | Jake Liang<br>Tim Wang<br>James Madara  | Fred Gorelick<br>Jules Dienstag<br>Anil K. Rustgi   | Jeffrey Matthew<br>Ann Ouyang<br>Rick Blumberg   | Neil Kaplowitz<br>Michael Camilleri<br>Guido Tytgat   |
| David A. Brenner (2001–2006)                   | R. Balfour Sartor<br>John J. Lemasters<br>David F. Ransohoff<br>Anil K. Rustgi<br>Jonathan A. Cohn                            | Michael W. Fried<br>P. Kay Lund<br>Henry J. Binder<br>Douglas A. Drossman<br>Samuel Klein                                       | Robert S. Sandler<br>Loren Laine<br>William E. Whitehead<br>Lloyd Mayer<br>Eugene B. Chang   | Ian S. Grimm<br>Raymond N. DuBois<br>Rodger A. Liddle<br>David M. Warshauer   |
| Anil K. Rustgi (2006–2011)                     | Gary D. Wu<br>Gail Hecht<br>John M. Carethers<br>David A. Katzka<br>Vincent W. Yang<br>Kyong-Mi Chang                         | James D. Lewis<br>Jan F. Tack<br>Rexford S. Ahima<br>Hashem B. El-Serag<br>Emeran A. Mayer<br>Gary R. Lichtenstein              | M. Bishr Omary<br>Roland M. Schmid<br>Timothy C. Wang<br>Michael B. Wallace<br>Bruce R. Bacon  | Rebecca G. Wells<br>Henry J. Binder<br>Wafik S. El-Deiry<br>David C. Metz<br>David L. Jaffe                             |
| M. Bishr Omary (2011–present)                  | John M. Carethers<br>Naga P. Chalasani<br>David Lieberman<br>Diane M. Simeone<br>Grace L. Su<br>Anna S. Lok<br>Malcolm J. Low | Jerrold R. Tuner<br>John Del Valle<br>Chung Owyang<br>Jean-Michel Pawlotsky<br>John A. Williams<br>Grace Elta<br>Jonathan Braun | Linda C. Samuelson<br>John F. Kummerle<br>Robert J. Fontana<br>Douglas A. Corley<br>Bruce E. Sands<br>Anson W. Lowe<br>Ralph Kiesslich | William L. Hasler<br>Detlef Schuppan<br>Richard H. Moseley<br>Thomas D. Wang<br>Philip S. Schoenfeld<br>Joel Rubenstein |



**Figure 1.** Overall number of submissions, pages available for publication, and acceptance rate. Note that the number of submissions rapidly increased starting in 1943, with the first issue of the Journal, to approximately 2000 by 1976. The number of pages available for publication in the Journal also increased and has now reached a peak of approximately 4500 pages. However, this increase in publication pages was not sufficient to accommodate the increased submissions; the acceptance rate fell and is now approximately 12% to 15%. Note that page numbers represent the double-column, full-size page format. Numbers of the older single-column or double-column formats of small-sized pages have been converted to equivalent full-size pages.

because it was directly related to the revenue earned from the publisher. In 1959, a double-column format was adopted that could hold 50% more words per page to increase the number of articles without increasing the number of pages. By the end of Grossman's term, the number of published pages was approximately 2000 double-column, small-size pages. This represented an almost 3-fold increase of printed papers in the Journal since its inception (Figure 1).

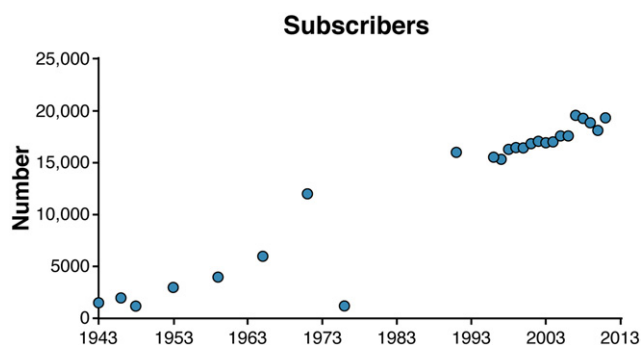
The articles in *GASTROENTEROLOGY* reflected what was going on in the field. The first issue contained 11 original articles, all by the stars of gastroenterology at that time: Sara M. Jordan, Frank H. Lahey, A. J. Carlson, B. B. Crohn, R. Schindler, E. B. Benedict, W. C. Alvarez, and Joseph Kirsner. There was substantial discussion of issues related to World War II. Burrill Crohn wrote an editorial titled "Inequities of the Selective Service," and Sara Jordan wrote an editorial suggesting that all soldiers should be checked for achlorhydria because they were at increased risk for tropical GI infections.

The first volume of *GASTROENTEROLOGY* contained 82 main articles, of which 7 dealt with the liver or biliary tract. Sixty-four papers were clinical reports, including one on "the coated tongue," and 12 were concerned with clinical investigation. In the early and middle part of this period, most of the articles were clinical observations. The clinical topics were dominated by discussion of acid secretion, peptic ulcers, obesity, and psychosomatic medicine, including dyspepsia and functional bowel disease. In the later part of this period, experimental physiology took center stage as studies of GI hormones became the dominant topic. During this period, the Journal reported advances in the mechanism of acid secretion, morphology of gastric mucosa, and pathogenesis of and clinical aspects of peptic

ulcer disease. The Journal also reported on the significance of intestinal mucosal and liver biopsies, intestinal malabsorption, hepatic coma, and pancreatic physiology and disease. Contributions and advances in gastroenterology during this period were summarized in a silver jubilee special edition of *GASTROENTEROLOGY* (Almy TP et al, *Gastroenterology*, 1968).

Alvarez also started several new sections, including editorials, Abstracts of Current Literature, and book reviews. The Abstracts of Current Literature section was edited by Franklin Hollander and contained summaries of papers from other journals. The first edition of the textbook *Bockus Gastroenterology* was reviewed in one of the issues. Editorials, Abstracts of Current Literature, and book reviews remained prominent features during his editorship. A lively letter to the editor section was also part of the Journal.

A hot topic at that time was whether *GASTROENTEROLOGY* should be a house organ of the AGA or if it should be a journal that published the best research in gastroenterology. Some of the leaders of the Journal wished it to publish all materials that may be of interest to the membership of the AGA. In 1956, Clifford Barborcka organized the first AGA Postgraduate Course as the AGA-University of Colorado Medical Center Course. The course was a huge success and was attended by nearly 700 physicians. At that time, the question of publishing the contents of the course in *GASTROENTEROLOGY* was raised but not pursued. The issue of publishing course materials arose again in 1960 after the successful second postgraduate course, held in New Orleans under the direction of Gordon McHardy. Many members of the AGA Governing Board supported the idea. However, the newly appointed editor, Morton Grossman, did not want to publish that material or any other solicited material in



**Figure 2.** Number of subscribers to GASTROENTEROLOGY. Note that the number of subscribers increased exponentially and reached ~17,000 in 1991. Since then, it has ranged between 17,000 and 20,000 subscribers.

GASTROENTEROLOGY. He argued that the Journal was facing a backlog, and the rejection rate was almost 43% in 1961. Moreover, solicited papers often failed to meet the high standards that he wished to promote. Grossman wanted the Journal to be more than a house organ of the AGA. He believed that the best way to achieve that goal was to publish the best scientific material and dedicate fewer pages to AGA administrative matters. At this point, questions were raised about the relationship of the Journal, its editor, and the AGA. Dwight Wilbur, chair of the editorial board, understood what Grossman was trying to do. He convinced the AGA Governing Board to not push for publication of the course in GASTROENTEROLOGY and to publish only the essential AGA material, including abstracts of the annual meeting, listings of training programs, Our New President, and the Friedenwald Award. The postgraduate course was published separately as a book, *Current Gastroenterology*, which earned more than \$1000.

During the first period of GASTROENTEROLOGY, advertising helped support the financial operations of the Journal. In 1950, there was growing concern that many of the claims in advertisements were not substantiated. Abe Aaron (nephew of Charles Aaron) was appointed associate editor in charge of advertising. Abe writes, “Those early years were not easy. The association was small and sources of income scant . . . we could have stuffed the profits by loose advertising policy.” However, he insisted on high ethical standards of advertisements in GASTROENTEROLOGY. He initiated a process of peer review of all advertisements and insisted that all claims made in an advertisement be substantiated by credible references. He accepted advertisements only after all concerns about their claims were resolved (Aaron, Presidential Address, 1958).

The Journal was also financially supported by subscriptions. In 1943, there were approximately 1500 paid subscribers; this number increased to 2000 in 1946, 3000 in 1953, 4000 in 1959, and 5000 in 1964 (Figure 2). Profit

from the Journal was set aside to support research and scholarships.

During period 1, there were only a few competing journals. *American Journal of Digestive Diseases and Nutrition*, which was now no longer the official journal of the AGA, was the main competitor of GASTROENTEROLOGY. Other competing journals were *American Journal of Gastroenterology* and *Gut* (published by the British Society of Gastroenterology, which was founded in 1937). At that time, published journals were catalogued in thick paper volumes of Index Medicus. GASTROENTEROLOGY ranked number 1 among all GI journals.

### **Period 2 (1966–1991)**

The second period saw major advances in quantitative pharmacology, drug receptors, and the enteric nervous system, from morphology to molecules and contributions to their functioning. Some of the fruits of the effort to understand the regulation of acid secretion and peptic ulcer disease were recognized with the coveted Nobel Prize in medicine or physiology. For example, James Black characterized the H<sub>2</sub> group of histamine receptors and developed cimetidine, the first clinically useful drug for the treatment of peptic ulcer disease. Also recognized with the Nobel Prize was the discovery by Rosalind Yalow of radioimmunoassay, which revolutionized the study of disorders of GI hormones including gastrin. Major advances were also made in defining the role of infections in GI disorders such as *Clostridium difficile* colitis. Moreover, Barry Marshall and J. Robin Warren were awarded the Nobel Prize in 2005 for their discovery of the bacterium *Helicobacter pylori* and its role in gastritis and peptic ulcer disease, and Baruch Blumberg was awarded the Nobel Prize for the identification of Australia antigen (HBsAg) as it relates to the causative agent of viral hepatitis B and the development of a vaccine against it.

In 1966, Marvin H. Sleisenger became the fifth editor of GASTROENTEROLOGY and served for 5 years. Subsequently, Robert M. Donaldson, John S. Fordtran, Robert K. Ockner, and Raj K. Goyal served 5-year terms each. Their editorial teams are listed in Table 1.

Chairs of the editorial board during this period were Franz J. Ingelfinger (1963–1968), Thomas P. Almy (1968–1973), Morton Grossman (1973–1978), Fred Kern (1978–1983), Robert M. Donaldson (1983–1988), and Jerry Trier (1988–1993). The AGA Governing Board had assigned all policy and other matters related to the Journal to the editorial board and its chair. The publications committee was created by the AGA Governing Board in 1972 to handle the Journal and other AGA publications. The committee recommended new editors and members of the editorial board, who were then subject to the approval of the governing board. Later, in 1989, the com-



mittee was reconstituted as the publication and informatics committee, chaired by Robert M. Donaldson (1989–1994).

As in period 1, GASTROENTEROLOGY continued to maintain its financial viability through advertising and subscriptions during period 2. The Journal was self-supporting, and the AGA incurred no loss from its publication. The publisher was switched to Elsevier in the late 1970s so GASTROENTEROLOGY could help financially support other AGA programs. Through this arrangement, GASTROENTEROLOGY began to turn a higher profit, which enabled the sustainability and creation of several AGA programs. Although the partnership with Elsevier lasted well over a decade, the AGA decided to explore other publishing companies and models, including self-publishing. Editors Donaldson, Brotman, and Goyal helped secure a favorable agreement with W. B. Saunders Company in the early 1990s. The AGA would earn a greater profit and would also receive a higher annual page allowance, allowing the publication of more articles in each issue.

The publishing agreement with Saunders provided what the editors and the AGA wanted. In particular, the editors were happy with the promise to reduce the time between acceptance and publication from 5 to 3 months. Also, Saunders agreed to upgrade the paper quality from 50- to 60-pound stock to enable high-quality printing of microscopic images. Another change during this period was the conversion to the use of SI units of measurement, which was used by major international biomedical journals but not by GASTROENTEROLOGY. Also introduced by Fordtran was an author checklist to streamline and standardize the submission process. The checklist also addressed ethical and legal considerations and included questions regarding prior publication, copyright consideration, conflict of interest, criteria for authorship, and the treatment of human subjects and animals. The transition to Saunders was very smooth due to the efforts of the publishing team led by Joan Blumberg (Goyal RK, *Gastroenterology*, 1990).

With the emergence of competing journals in the field, including *Hepatology* (American Association for the Study of Liver Diseases) and *American Journal of Physiology: Gastrointestinal and Liver Physiology* (American Physiological Society), the editors of GASTROENTEROLOGY were concerned about the Journal losing ground. Fordtran's recipe for attracting and publishing the best papers in the field was simply to provide fair, high-quality, and consistent reviews. He initiated the weekly meetings of the board of editors and insisted that handling associate editors defend their decisions to accept or reject papers. Subsequent editors-in-chief continued this practice. The decision-making process moved fast for approximately 95% of the papers; however, a minority of papers consumed

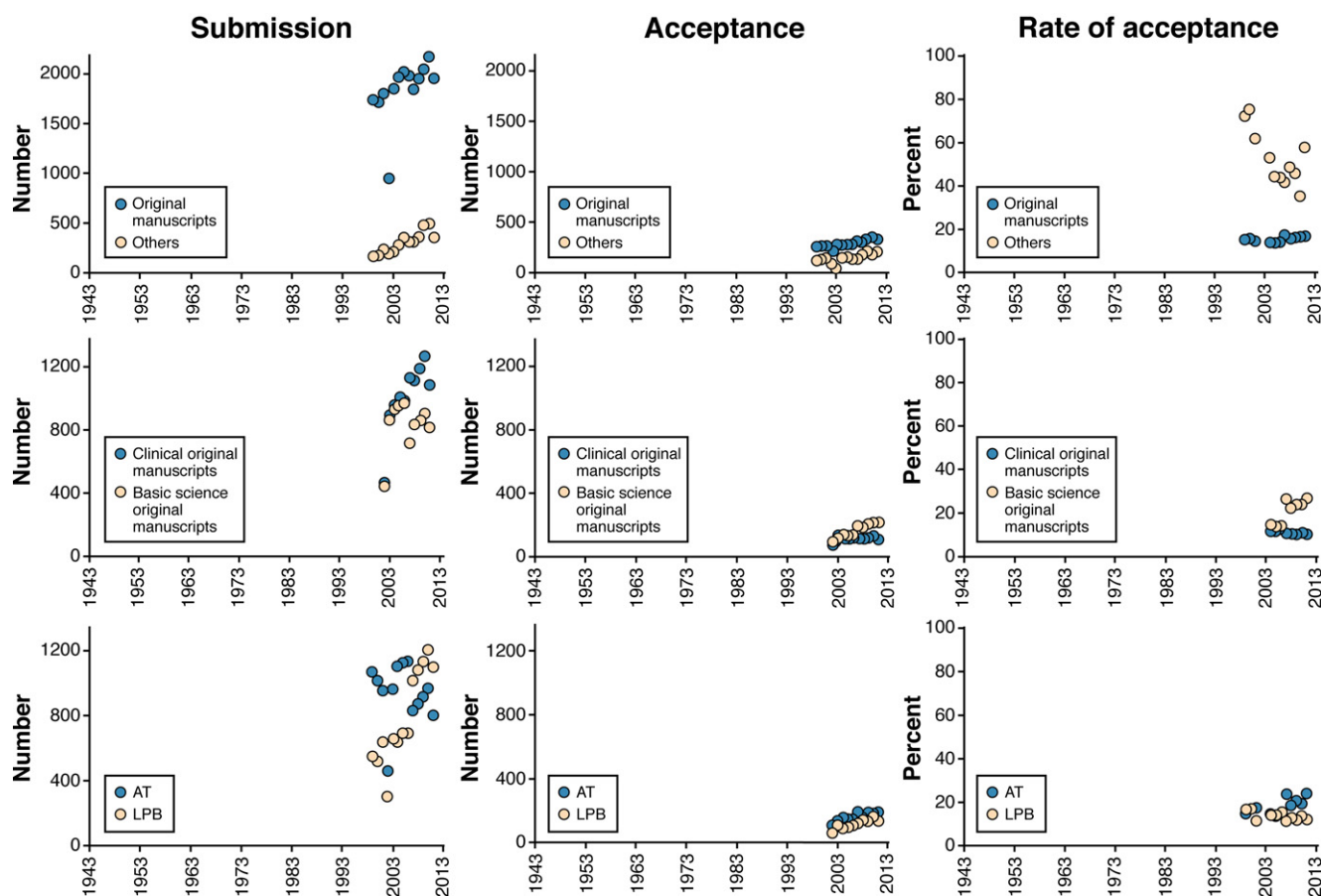
most of the editors' and reviewers' time. Reviewers' and editors' recommendations were sometimes overturned during the weekly meetings, but not without full discussion. Select reconcilable issues related to interpretation of the data between the author and reviewer were accommodated by publishing both the paper and an editorial (typically but not always by the reviewer[s]). No credible papers were returned without review, because the reviews were considered a service to the authors to provide a significant educational experience. Authors were more often upset with a bad review than a well-reasoned rejection of the paper. The publication committee continued to be chaired by Robert M Donaldson till 1994 and subsequently by Sidney Cohen (1994–1999), J. Thomas LaMont (1999–2002), and Nicholas LaRusso (2002–2004). The publications committee was disbanded from 2004 to 2007 and then was reinstated and chaired by Michael Camilleri (2007–2010), Sheila Crowe (2010–2013), and Robert Sandler (2013–2016).

During this period, there was a meteoric increase in the number of submitted papers. In 1971, approximately 600 papers were submitted; this number doubled to almost 1200 in 1976. Although there was also an increase in the number of published papers, it was not enough to keep pace with submissions; thus, the acceptance rate kept falling. The acceptance rate was 40% to 50% in the early 1970s but was only 28% by 1976 (Figure 1). Once a paper was accepted, it took nearly 3 months to publish the article in print. This delay appears to be inherent in the process of print publication and has not been significantly improved. However, for articles that required quicker publication, the Rapid Communications section was introduced in 1975; articles in this section were published within 1 to 2 months.

The front cover of each issue continued to contain a list of the articles that were published in that issue. The authors liked to see their paper and name listed on the cover, and the readers liked the ability to rapidly scan for papers of interest. As many titles were accommodated on the front cover as aesthetically acceptable. Display and placement of advertisements was regulated so that they were not allowed to distract from the scientific content. This cover format continued through the entire second period.

The mission of GASTROENTEROLOGY was to represent all facets of digestive diseases; however, due to the increasing specialization and formation of subspecialty groups and subspecialty journals, this mission was threatened. It was determined at the very onset that nutrition would not be a dominant part of the Journal. With further specialization, concerns were raised whether GASTROENTEROLOGY would be able to retain its broad appeal. The field of liver physiology and disease was growing fast, and the editors of GASTROENTEROL-



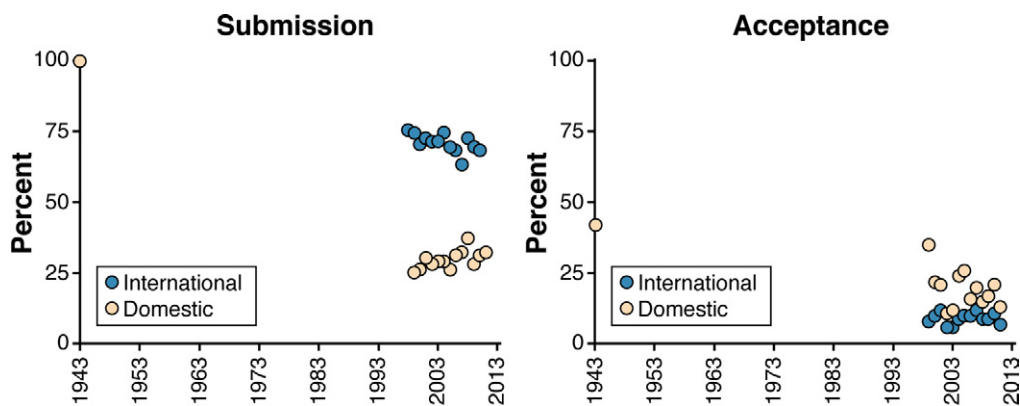


**Figure 3.** Submission and acceptance of manuscripts based by type. The *top panel* shows that approximately 80% of submitted manuscripts are original research and only a small minority represents other types. However, the proportion of published original articles was relatively small because of the lower acceptance rate of original articles as compared with other articles, which expectedly have much higher acceptance rates. The other papers include invited reviews. The *middle panel* shows that, since 2005, the number of clinical papers submitted has been increasing and that of basic sciences has been decreasing. However, net published basic science papers relative to clinical papers has been increasing due to an increased acceptance rate of basic science papers and a decreased acceptance rate of clinical papers. The *lower panel* shows submission and acceptance of AT and LPB papers. The number of AT papers submitted was more than that of LPB papers by almost 2:1, but the number of LPB papers has overtaken the number of submitted AT manuscripts since 2008. However, AT papers have a better acceptance rate and continue to outnumber LPB papers.

OGY recognized the need for special expertise to review papers in this area. To that end, as mentioned earlier, Editor-in-Chief Grossman appointed Hans Popper to handle papers regarding the liver. It then became a tradition to appoint associate editors to handle liver-related papers. In the 1970s, to emphasize the broad appeal of GASTROENTEROLOGY, the content was grouped into 2 categories: Alimentary Tract (AT) and Liver Physiology and Disease. In the 1980s, papers on the pancreas and biliary tract were added to the liver category, which was then called Liver, Pancreas, and Biliary Tract (LPB). The distribution of submission, publication, and acceptance rates of AT and LPB papers are summarized in Figure 3. AT papers dominated the number of submissions and accepted papers, but both AT and LPB papers had similar acceptance rates.

Another area of ongoing concern among the editors of the Journal was maintaining a balance between

clinical and laboratory papers. Although most AGA members were originally research oriented, by the 1970s the vast majority of members were practicing gastroenterologists who wished to see more clinical studies in GASTROENTEROLOGY. Another mission of GASTROENTEROLOGY during this time was to be an international journal that published the best research in gastroenterology from throughout the world. The number of international papers rapidly increased and began to dominate the number of submissions (Figure 4). During this period, 7 important supplements, supported by outside funds, were published. Topics included gastric acid secretion, gastric mucosa, peptic ulcer, the national problem of digestive diseases, and Crohn's disease (Table 2). Articles from these supplements typically had high citation rates. Also during this period, 10 of the most-cited papers in the history of GASTROENTEROLOGY were published (Table 3).



**Figure 4.** Submission and acceptance rates of domestic and international papers. In 1943, when *GASTROENTEROLOGY* was launched, all papers were domestic. By the 1980s, most of the submitted papers were internationally based, with a ratio of 3:1 for international versus domestic submissions. The acceptance rate of international papers continues to be lower than that of domestic papers, yet more international papers are published in the Journal than domestic papers. These data document the international nature of *GASTROENTEROLOGY*.

During period 2, the circulation of *GASTROENTEROLOGY* was expanded to include nonmember subscribers. Approximately 65% of subscribers were not AGA members; of these nonmembers, half were based outside the United States. By 1991, the paid circulation of the Journal was approximately 16,000. Overall, there was a greater than 3-fold increase in subscribers during period 2 (Figure 2).

In 1985, Eugene Garfield developed an “objective and quantitative” measure of the relative importance of biomedical journals called the “impact factor.” The impact factor is defined as the number of citations of a journal in a given year divided by the number of source articles published in that journal during the previous 2 years. During period 2, the impact factor of GI journals varied from 1 to 6, with *GASTROENTEROLOGY* scoring the highest (Figure 5).

### Period 3 (1992–present)

Period 3 is an era of computers, Internet, and social media. Unprecedented developments in information technology have allowed instantaneous communication. Snail mail was replaced by amazingly fast and free e-mail. From a funding perspective, period 3 saw a

doubling of the National Institutes of Health budget from 1999 to 2002. Completion of the Human Genome Project in 2003 resulted in studies of molecular biology, genome, gene knockout, and physiological phenotype characterization. In the gut, molecular studies on viral hepatitis, inflammatory bowel disease, and GI cancers yielded valuable new information. These and other advances in areas such as pharmacogenetics and the genetics of liver fibrosis launched the concept of personalized medicine for patients with digestive diseases. Clinical and epidemiological studies in *GASTROENTEROLOGY* became the basis of evidence-based medicine.

Nicholas F. LaRusso was appointed the 10th editor of *GASTROENTEROLOGY*, followed by David A. Brenner, Daniel K. Podolsky, and Anil K. Rustgi; each served a 5-year term. The current editor, M. Bishr Omary, began his editorship in July 2011 and will continue through July 2016. The editorial teams during period 3 are listed in Table 1. Over time, the teams grew progressively larger; under the current team, there are 29 associate and special section editors. Additionally, there is a large staff that supports the editorial team.

**Table 2.** Special Issues of *GASTROENTEROLOGY* During Period 2

| Year | Topic  | Handling editor                                   |
|------|--|---|
| 1975 | Second Conference on Digestive Diseases as a National Problem, National Institutes of Health, Bethesda, Maryland | Fred Kern Jr                                      |
| 1977 | The Biology of the Oxyntic Cell  | Morton I. Grossman                                |
| 1978 | Third Symposium on Histamine H <sub>2</sub> -Receptor Antagonists: Clinical Results With Cimetidine              | John S. Fordtran and Morton I. Grossman           |
| 1979 | The National Cooperative Crohn's Disease Study   | John W. Singleton                                 |
| 1982 | Morton Grossman Memorial Supplement  | John S. Fordtran                                  |
| 1985 | Supplement on Gastrointestinal Mucosal Defense, Injury, and Repair   | Charles T. Richardson and Mark Feldman            |
| 1989 | Supplement on the Epidemiology and Treatment of Peptic Ulcers  | Andrew H. Soll, John H. Kurata, and John H. Walsh |

**Table 3.** Papers From Periods 1 and 2 That Are Among the Top 10 Cited Papers in the 70-Year History of GASTROENTEROLOGY (as of August 2012)

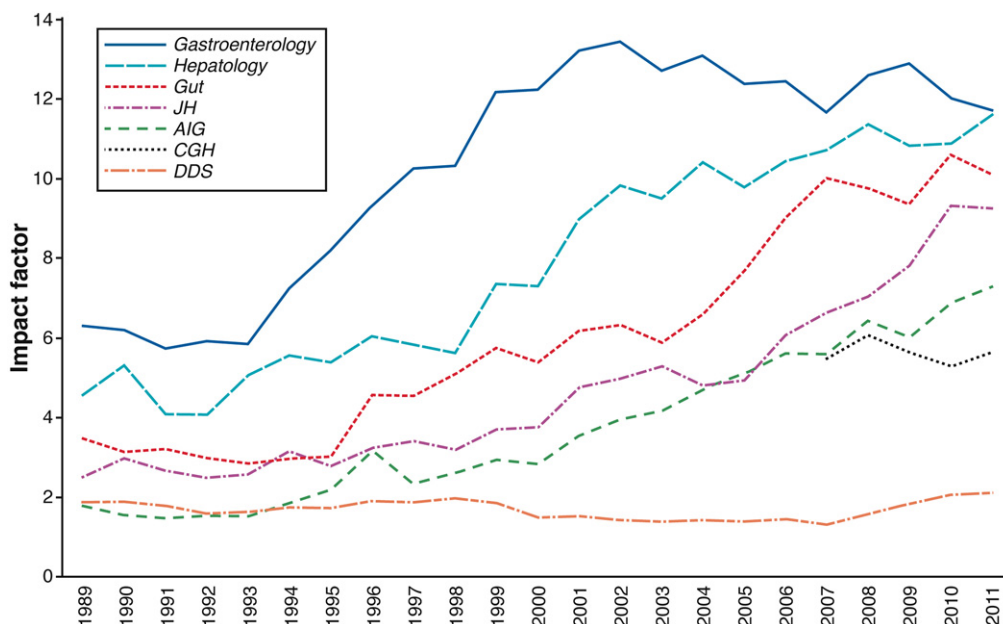
| Year | Title  | Authors                                  | No. of times cited (from Web of Science) |
|------|--|--|--|
| 1945 | A Simple Method for the Uniform Production of Gastric Ulceration in the Rat  | Shay H, Komarov SA, Fels SS, et al       | 1348                                     |
| 1976 | Development of a Crohn's Disease Activity Index. National Cooperative Crohn's Disease Study  | Best WR, Beckett JM, Singleton JW, et al | 1939                                     |
| 1979 | Cytoprotection by Prostaglandins in Rats. Prevention of Gastric Necrosis Produced by Alcohol, HCl, NaOH, Hypertonic NaCl, and Thermal Injury | Robert A, Nezamis JE, Lancaster C, et al | 1629                                     |
| 1981 | Superoxide Radicals in Feline Intestinal Ischemia  | Granger DN, Rutigli G, McCord JM         | 1146                                     |
| 1989 | Characterization of the Human Colon Carcinoma Cell Line (Caco-2) as a Model System for Intestinal Epithelial Permeability                    | Hidalgo IJ, Raub TJ, Borchardt RT        | 1105                                     |

During this period, advances in the Internet and information technology were developing at lightning speed. The Internet revolutionized GASTROENTEROLOGY as well as other journals in the field; the Journal was no longer confined by the challenges of distance and time. Additionally, the entire peer review process was made much more efficient and streamlined with the introduction of web-based manuscript tracking systems.

The total number of submissions increased from approximately 2000 at the beginning of the year 2000 to approximately 2500 during the latter part of the decade. There was also an increase in the pages available for publication; the Journal can now publish more than 4500

pages per year. Submissions far outpaced the number of accepted articles, which resulted in the acceptance rate dropping to an all-time low of 12% to 17% (Figure 1).

In period 3, the cover of GASTROENTEROLOGY took on a more contemporary look. Beginning in 1992, the cover highlighted significant articles in the issue and featured an eye-catching image from one of the articles inside. This display of a “celebrity article” was consistent with the current practice of many other journals and was a stark change from the spartan, business-like look of previous years. Visual illustrations are helpful in making complex processes easily understandable. GASTROENTEROLOGY took a major step in 2007 when a medical illus-



**Figure 5.** Impact factor of GASTROENTEROLOGY in relation to other gastroenterology-related journals. This graph compares the impact factor of GASTROENTEROLOGY with other GI journals: *Gut*, *Hepatology*, *Journal of Hepatology*, and *American Journal of Gastroenterology*. The impact factor of *Digestive Diseases Sciences & Nutrition (DDS&N)*, the official journal of the AGA before GASTROENTEROLOGY was launched, and *Clinical Gastroenterology and Hepatology*, the sister journal of GASTROENTEROLOGY launched in 2008, are also included. Note that between 1985 and 1991, the average impact factor of the main gastroenterology journals varied from 2 to 6, with GASTROENTEROLOGY leading the pack. Beginning in the 1990s, the impact factor of all gastroenterology-related journals began to rise for several complex reasons.

trator was added to the editorial staff. The illustrator redrew all author-submitted line art for increased consistency of style. Ultimately, other editorial staff members were trained on how to do this and a “redraw” team emerged. The illustrator also designed each cover and created custom art for many sections in the Journal. This brought GASTROENTEROLOGY in line with other highly regarded journals. Also, a science editor was added to the staff to enhance the consistency and readability of the article titles and abstracts and of the reviews.

The table of contents was reorganized according to the AGA descriptors during period 3. In July 2002, the categories of AT and LPB were further divided into clinical and basic science, and more recently the LPB category was further separated into its 3 components. Other features that have been introduced by the current editorial team include the Mentoring, Education, and Training Corner (which provides very useful tips and information to trainees and mentors) and the Gastroenterology in Motion section (which provides videos and a brief synopsis of unique imaging-based procedures related to diagnostic and therapeutic endoscopy or real-time physiological processes).

GASTROENTEROLOGY continues to have broad appeal, but small trends and changes are evident. Of the original papers submitted, the 50/50 proportion of clinical and basic science papers has now shifted in favor of clinical papers. Clinical papers are defined as all studies involving human subjects and human tissue. Human studies are divided into intact human (~25%), human material (~30%), and epidemiological studies (~12%). Although clinical papers outnumber basic science papers in regard to submissions, GASTROENTEROLOGY tends to publish more basic science articles; this has been the trend for the past 5 years. Organ-wise, the submission of AT papers has decreased, countered by an increase in LPB papers.

GASTROENTEROLOGY continues to primarily publish original research, but over the years other types of content have become increasingly common. For example, there are book and literature reviews, commentaries and perspectives, reviews, and image challenges. Additionally, GASTROENTEROLOGY publishes a special 13th issue each year, which is a compilation of reviews on a single topic written by world-renowned experts. These issues tend to be highly cited and widely read. A list of the topics in the 13th issues is provided in Table 4.

Eight papers from period 3 that were among the top 10 in citations during the past 70 years are listed in Table 5. Three addressed colorectal neoplasms and guidelines of colorectal screening, one was on inflammatory bowel disease, and the other on nonalcoholic fatty liver disease.

During this period, the AGA started publishing clinical practice guidelines in GASTROENTEROLOGY. They are among the most-read content in the Journal. Addition-

ally, the Journal offers continuing medical education for its readers. Also during this period, GASTROENTEROLOGY was again published by Elsevier. The AGA’s partnership with Elsevier continues to the present day and has proved to be a strong component of the Journal’s overall advancement during the monumental shift in scholarly publishing over the past decade.

One of the major developments affecting GASTROENTEROLOGY during this period was the launch of its sister journal, *Clinical Gastroenterology and Hepatology (CGH)*, in 2003. The first editor-in-chief of CGH was Michael Camilleri. CGH focuses on themes in clinical gastroenterology and hepatology and includes peer-reviewed original research, reviews, advances in translational science, and commentaries on health care policy and practice management. CGH has been highly successful and well received by the AGA membership. It has an impact factor of approximately 6 and a circulation of more than 20,000. CGH has not had any adverse effect on GASTROENTEROLOGY.

The Journal has maintained its status as an international journal (LaRusso NF et al, *Gastroenterology*, 1995). The submission of original international papers continues to dominate domestic papers by a ratio of more than 2 to 1. The acceptance rate of domestic papers is approximately 18%, in contrast to 11% for international papers. The net result is that slightly more than 50% of original papers published in the Journal are international papers. Participation of international expert reviewers is now routine in the review process. Moreover, there has been increasing involvement of international editors. This effort is greatly facilitated by high-speed costless communication made possible by the Internet.

GASTROENTEROLOGY continues to enjoy good financial health during period 3, despite fluctuations in advertising revenue due to the overall economy and gastroenterology pharmaceutical market. Ultimately, the Journal’s advertising policy was modified to permit different forms of promotion, including cover tips, outserts, and ads between editorial sections. Additionally, companies could advertise their products on GASTROENTEROLOGY’s website. The Journal’s other primary source of revenue—subscribers—also steadily increased during period 3. There were 15,535 paid subscribers in 1996, which gradually increased to 19,288 in 2011 (Figure 2).

GASTROENTEROLOGY has maintained its premiere status among the ever-growing number of journals in the subspecialty. It was ranked in the top 20 of more than 8000 biomedical journals and the highest journal of any subspecialty. However, more relevant is its status among GI journals. Although the number of GI journals has increased from 33 in 1991 to 74 in 2012, GASTROENTEROLOGY continues to be ranked number 1 among all of these journals. Over the years, GASTROENTEROLOGY’s impact fac-



**Table 4.** Supplemental Issues and Yearly Thematic Issues (13th Issue) Published During Period 3

| Year                 | Topic   | Handling editor  |
|----------------------|---|--|
| Supplemental issues  |   |  |
| 1997                 | Proceedings of the American Digestive Health Foundation International Update Conference on <i>Helicobacter pylori</i>   | Daniel K. Podolsky   |
| 2000                 | Therapeutics and Diagnostics 2000   | Daniel K. Podolsky   |
| 2004                 | Hepatocellular Carcinoma: Screening, Diagnosis, and Management  | Leonard B. Seeff, Jay H. Hoofnagle, and Alan McLaughlin              |
| 2004                 | Advancing the Treatment of Fecal and Urinary Incontinence Through Research Trial Design, Outcome Measures, and Research Priorities                                | William E. Whitehead, Nancy J. Norton, and Arnold Wald               |
| 2005                 | Celiac Disease: Proceedings of the NIH Consensus Conference   | Stephen James  |
| 2006                 | Intestinal Failure: Current and Emerging Therapies Including Transplantation. Proceedings of the NIH-Sponsored Workshop on Intestinal Failure                     | Kelly A. Tappenden and Alan N. Langnas                               |
| 2009                 | Micronutrients in Parenteral Nutrition: Too Little or Too Much? Proceedings From the American Society for Parenteral and Enteral Nutrition 2009 Research Workshop | Kelly A. Tappenden   |
| Annual (13th) issues |   |  |
| 2001                 | Therapeutics and Diagnostics 2001   | Daniel K. Podolsky   |
| 2002                 | GI Therapeutics and Diagnostics 2002  | David A. Brenner   |
| 2003                 | GI Therapeutics and Diagnostics 2003  | David A. Brenner   |
| 2004                 | Inflammatory Bowel Diseases: The Paradigm for 21st Century Medicine   | R. Balfour Sartor and Lloyd Mayer                                    |
| 2005                 | Gastrointestinal Cancer: Mechanisms, Diagnosis, and Treatment   | Robert Sandler and Raymond Dubois                                    |
| 2006                 | The Functional Gastrointestinal Disorders and the Rome III Process  | Douglas A. Drossman  |
| 2007                 | Nutrition, Obesity, and Metabolism  | Rexford S. Ahima   |
| 2008                 | End-Stage Liver Disease: Pathophysiology, Diagnosis, and Management   | Bruce R. Bacon, Kyong-Mi Chang, and Rebecca G. Wells                 |
| 2009                 | Intestinal Microbes in Health and Disease   | Gail A. Hecht  |
| 2010                 | Colon Cancer: An Update and Future Directions   | Vincent W. Yang, James D. Lewis, Timothy C. Wang, and Anil K. Rustgi |
| 2011                 | Inflammatory Bowel Disease: An Update on Fundamental Biology and Clinical Management  | Richard Blumberg, Judy Cho, James Lewis, and Gary Wu                 |
| 2012                 | Viral Hepatitis: A Changing Field   | Ann Lok and J. M. Pawlotsky  |
| 2013                 | The Pancreas: Biology, Diseases, and Therapy  | Diane Simeone and Stephan Pandol                                     |

tor has progressively increased, reaching a value of 13 in 2001, and subsequently has been stable, ranging from 13.4 to 11.64. The impact factors of the Journal's main competing GI journals, *American Journal of Gastroenterology*, *Gut*, and *Hepatology*, also increased during this period. This inflation in the impact factor may be due to a variety of factors. It is noteworthy that GASTROENTEROLOGY continues to be at the top, although the margin has fluctuated and the gap with other GI journals has narrowed significantly (Figure 5).

The impact factor has been touted as a quantitative measure of the status of a journal among its peers. It is sometimes used for marketing, attracting submissions, and signaling the quality of the papers published in a journal. Obsessed with the impact factor, some journals require reviewers to grade the citation potential of the papers under review. However, limitations of indiscriminate use of the impact factor as a marker of quality have been increasingly recognized over the past decade (Law-

rence PA, Nature, 2003; Monastersky R, The Chronicle of Higher Education, 2005; Wilhite AW et al, Science, 2012).

Another major development in period 3 was the launch of the electronic version of GASTROENTEROLOGY in 2000. Accepted papers were put on the Web ahead of print publication within 1 week of acceptance. The electronic HTML version serves as an extender of the original paper and allows for the publication of supplemental materials, videos, and additional references not included in the print version. The electronic version allows immediate and convenient accessibility for worldwide dissemination of knowledge about GI science and practice. To augment this effort, the position of online editor was created in 2009, with John F. Kuemmerle filling the role. The online editor provides leadership for the overall strategy, development, and distribution of the digital versions of GASTROENTEROLOGY and *CGH*. The online editor also ensures that GASTROENTEROLOGY makes full use of emerging digital platforms, such as social media, mobile, e-readers, and tablets, and

**Table 5.** Papers From Period 3 That Are Among the Top 10 Cited Papers in the 70-Year History of GASTROENTEROLOGY (as of April 2012)

| Year | Title   | Authors   | No. of times cited<br>(from Web of Science) |
|------|---|---|---|
| 1994 | Up-regulation of Cyclooxygenase-2 Gene Expression in Human Colorectal Adenomas and Adenocarcinomas  | Eberhart CE, Coffey RJ, Radhika A, et al  | 1816  |
| 1997 | Colorectal Cancer Screening: Clinical Guidelines and Rationale  | Winawer SJ, Fletcher RH, Miller L, et al  | 1443  |
| 1998 | Inflammatory Bowel Disease: Etiology and Pathogenesis   | Fiocchi C   | 1361  |
| 1999 | Nonalcoholic Fatty Liver Disease: A Spectrum of Clinical and Pathological Severity  | Matteoni CA, Younossi ZM, Gramlich T  | 1445  |
| 2003 | Colorectal Cancer Screening and Surveillance: Clinical Guidelines and Rationale – Update Based on New Evidence                            | Winawer S, Fletcher R, Rex D, et al.<br>Group Author: US Multisociety Task Force on Colorectal Cancer | 1379  |
| 2005 | Prospective Comparison of Transient Elastography, Fibrotest, APRI, and Liver Biopsy for the Assessment of Fibrosis in Chronic Hepatitis C | Castára L, Vergniol J, Foucher J, et al   | 912   |
| 2006 | Functional Bowel Disorders  | Longstreth GF, Thompson WG, Chey WD, et al  | 1183  |
| 2007 | Hepatocellular Carcinoma: Epidemiology and Molecular Carcinogenesis   | El-Serag HB, Rudolph KL   | 1230  |

helps develop online content such as videos, images, interactive illustrations, image banks, blogs, and podcasts.

### Personal Perspective and Speculation About the Future

Historically, major issues for GASTROENTEROLOGY, like other scientific journals, have been time delays, global accessibility and appeal, and space constraints. The total time delay is the time lapse between submission of a paper and its publication. Delays caused by snail mail and paper management in the editorial office have been conquered by e-mail and electronic management of the peer review process. From a global perspective, technology has allowed for greater international contribution to the submission and review of content for the Journal. Given that the Journal has finite space in print, there has been a decreasing acceptance rate and papers are selected by the assignment of an arbitrary priority score. Moreover, there is constant competition for space for original research and editorial material that explains the new research to its readers. Some space constraints can be overcome by online publication. In fact, GASTROENTEROLOGY has been successfully using the Internet as a space expander for more than a decade.

In recent times, there has been a growing sentiment that publishers of science have become too profit oriented and questions have been raised regarding how to freely access publically funded research. In accordance with the 2008 National Institutes of Health (NIH) policy on open access, all NIH-funded papers must be deposited into PubMed within 12 months of publication. This policy is called the “Green” model and allows GASTROENTEROLOGY to preserve the main components of its business model. This model will have to compete with the

so-called “Gold” model for open-access electronic journals that is now spreading fast. This approach has been championed by the charitable organization the Public Library of Science (PLoS). Authors are charged a fee of \$1000 to \$3000 to publish their manuscript in one of the PLoS journals. A coalition of the Howard Hughes Medical Institute, the Max Planck Institute, and Wellcome Trust now publish *eLife* (another online open-access journal) to compete with *Nature* (Economist, 2012). The Gold model of open access has also been successfully utilized by *Journal of Clinical Investigation* (Varki, *J Clin Invest*, 2003).

How will GASTROENTEROLOGY continue to be competitive in attracting the best original papers? The strength of our Journal lies in the academic depth of its authors and reviewers who can provide the best editorial content and reviews. The key to attracting the best original research is to provide timely, unbiased, and supportive reviews that also have elements of education for the authors. An unbiased and supportive review should also include a fair screening review system. Reviewers are the true unsung heroes in the review process. Personal interaction of the handling editor with the reviewer may be helpful in some cases. A second component will be the enhancement of the accepted manuscript by help with writing and graphics to express complex research findings into simple, understandable concepts.

What will be the role of the print version of GASTROENTEROLOGY? For original research papers, print journals are not competitive. Until very recently, GASTROENTEROLOGY has not charged manuscript processing fees or page charges. Print journals are not time inefficient; they are expensive and getting more expensive and are difficult to read, store, and access. They are likely to suffer the fate of

the dinosaurs. However, editorial educational material would be appropriate for controlled access and print versions. Traditionally, pharmaceutical- and device-related advertisements have been a major source of revenue for the Journal and continue to be so for the print version that mainly contains educational material. Web journals are not attractive places for advertisements, at least for now. Other models of publishing our Journal may be more appropriate and need to be carefully explored.

Times are constantly changing and GASTROENTEROLOGY, like all medical journals, will face an environment not imagined before. Whatever the future, GASTROENTEROLOGY seems to be well poised to deal with it. There is little doubt that it will continue to serve the specialty of gastroenterology in the manner envisioned by its founders: the publication of papers in all areas of GI sciences and practice that are characterized by excellence and international appeal.

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