THE EXCEPTIONALS: WOMEN JOURNAL EDITORS IN THE FIELD OF MEDICAL PHYSICS

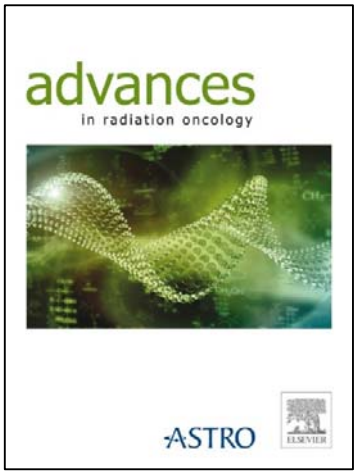
Chiaojung Jillian Tsai, MD, PhD and Kathleen Marie Hintenlang, PhD, FAAPM, FACR, FASTRO

ASTRO Advances Deputy Editor-In-Chief and Senior Editor-Physics / IOMP Women Subcommittee

1. Foreword

Three decades ago, the very first invited oral presentation Kathleen M. Hintenlang, PhD was honored to present at a State society was entitled 'Women in Science'. The presentation referenced published and unpublished masterworks of pre-eminent scholars: Marie Curie, Lise Meitner, Irene Joliot-Curie, Tikvah Alper, Edith Quimby, Chien-Shiung Wu, Rosalind Franklin, Ida Noddack, Rosalyn Yalow. There were many women whose accomplishments were not captured, and others lost in the pages of history. Come full circle and IOMP is celebrating its 60th anniversary with a published issue of the MPI Journal History Edition dedicated to this anniversary.

We are proud to introduce you to the exceptional women journal editors that are continuing to inspire, motivate and lead the way, as they provide an historical view of their journal's development along with perspectives.



Advances in Radiation Oncology, established in 2015, is the first Gold Open Access, peer reviewed journal from the American Society for Radiation Oncology (ASTRO). Included in PubMed Central, *Advances* complements the research in the International Journal of Radiation Oncology • Biology • Physics and Practical Radiation Oncology. The mission of *Advances in Radiation Oncology* is to address the rising demand for outlets to publish quality radiation oncology related research and limitations in the number of manuscripts that could be published in conventional paper journals. As the journal contents are permanently and freely available online, Advances can be accessed on a global basis to all health care professionals and scientists, as well as our patient population and their caregivers. Additionally, one of the goals of Advances is to address contemporary pressing issues pertinent to all aspects of cancer care, including technologic innovations, COVID-19 pandemic, cybersecurity, and the impact of artificial intelligence in academic publishing.

2. Susan Richardson: Journal of Applied Clinical Medical Physics

Susan Richardson

I'm Susan Richardson, Ph.D., the newest Deputy Editor of the American Association of Physicists in Medicine (AAPM) **Journal of Applied Clinical Medical Physics (JACMP**). Prior to my current role I have been an

associate editor for many years, and an active reviewer. While JACMP has always been supportive of women in medical physics, I am also proud to be the first woman associate editor.

One of the ways JACMP support women in medical physics is through their double-blind review system. Studies have shown that journals with a single-blind system (the reviewers are hidden from the authors) demonstrate a bias during the review process. Samantha Hedrick and I wrote an editorial regarding this earlier this year (1). Such a bias, whether conscious or unconscious, tends to discriminate against women. Even reviewers who are not explicitly biased against women tend to favor well-known authors. Unfortunately, such a bias also works against women as the medical physics field has historically (and continually) been overrepresented by men. The most effective solution to overcoming these biases is a double-blind review process which hides the authors from the reviewers as well as the reviewers from the authors. This addresses both the bias against women and the bias against less well-known authors (who also tend to be women). This is one of the many reasons I am excited to help lead JACMP in my role as Deputy Editor.

JACMP also supports women medical physics in another way. Historically women have taken a greater proportion of clinical roles, often as M.Sc. physicists. With its focus on clinical articles JACMP provides an excellent forum for those physicists to publish. The open access model of JACMP also supports visibility of authors. Since published papers are often judged by the quality of the journal they are published in, my mission is to help JACMP continue its excellent reputation, which includes the journal impact factor but also in other metrics. Another aspect of an excellent journal is the shortened time from submission to publication. Authors look at the time involved getting their manuscript through the review process and sometimes choose the journal based on how streamlined that process is. I want to make JACMP's review process as painless as possible. We strive to obtain appropriate and comprehensive reviews at JACMP both by ensuring prompt review of submissions as well as making improvements to the web site both for authors and reviewers.

(1) Hedrick, Samantha G., and Susan Richardson. "EDI and open access: How JACMP is the future of ethical publishing—A tale in two parts." *Journal of Applied Clinical Medical Physics* 23.11 (2022). https://doi.org/10.1002/acm2.13818

3. Iuliana Toma-Dasu: Physica Medica - European Journal of Medical Physics

Uiliana Toma-Dasu

Physica Medica - European Journal of Medical Physics (https://www.physicamedica.com/), the official journal of the European Federation of Organisations for Medical Physics (EFOMP), the Associazione Italiana di Fisica Medica e Sanitaria (AIFM), the Société Française de Physique Médicale (SFPM), the IrishAssociation of Physicists in Medicine (IAPM), the Czech Association of Medical Physicists and the Hellenic Association of Medical Physicists, has a long history of serving the medical radiation physics community by publishing articles on the main topics related to the major areas of scientific and professional activities of medical physicists, such as radiation therapy, diagnostic and therapeutic nuclear medicine, diagnostic and interventional radiology as well as magnetic resonance imaging and complementing fields.

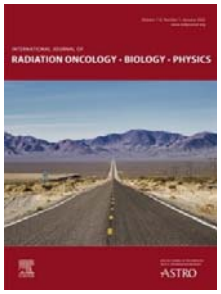
The long journey of Physica Medica to become the flagship publication of EFOMP and play the important role it has today in the European medical physics societies, started in Italy and the first recognition of its impact to the scientific literature in the field came as early as 1996 when the journal gained its first Impact Factor. Since 2007 Physica Medica is publishing with the well-known academic publishing company, Elsevier. The journal consolidated its position, developed, and had a steady growth with Prof Alberto Del Guerra (Pisa, Italy), Prof

Fridtjof Nüsslin (Munich, Germany) and Prof Paolo Russo (Napoli, Italy) at the helm, sailing through the complicated waters of the challenging field of medical physics. This would not have been possible without the voluntary support of the members of the editorial board from all over the world, the ever growing pool of highly competent reviewers and, last but definitely not least, without the contribution of our published authors, who are deeply acknowledged. The current status of the journal is making us proud: the number of submissions is continuously increasing - by a factor as great as 10 from 2010 to 2020 - the IF has broken the glass ceiling reaching 3.119 in 2022, and the most updated CiteScoreTracker for 2022 is 5.6. We reached in terms of submissions and citations far away from the European borders, making thus Physica Medica the journal of a much larger community than the European one in the true spirit of cooperation that we promote and actively support.

It was therefore a great honour to me to be invited in 2021 to get on board of Physica Medica and bring my own contribution as Editor in Chief to the development of the journal, after years of collaboration as reviewer and Associate Editor. I experienced it as a challenge and great responsibility requiring not only competence, but also commitment and dedication, and, to some degree, some sense of vision for what the future might bring into our field in order to make sure that the ship is not only sailing smoothy through its familiar waters, but it is also opening new ways. This translates into publishing not only the traditional work in medical physics on dosimetry, imaging and technology, which is the core of research and development in our field, but also papers that involve close collaboration with our colleagues the medical doctors, as well as publications crossing the bridge towards radiobiology, radiation protection, modelling, and the use of Artificial Intelligence to mention just few examples. To ensure sustainable integration of our profession in the field of health care we plan to foster further the multidisciplinary collaboration and engage more our colleagues the medical doctors, the nurses, the radiobiologists, the engineers, and the radiation protection experts, not only by publishing papers that are addressed to them, but papers that are written by them for the medical physicists. It is my strong belief that only through multidisciplinary collaboration the progress in our field from a theoretical idea to the test bench and the patient bed could be ensured.

Journals like ours are not just the perfect platform for high quality research and development dissemination and educational support, they also act as a mirror of the society they serve. Physica Medica is therefore reflecting with respect and thankfulness the large diversity of the members of the medical physics community without any type of borders worldwide. This is not unique; it is the spirit of The International Organisation for Medical Physics, and it is our ambition to keep promoting it and inspiring the generations to come to carry it on!

4. Samantha G. Hedrick, Sue S. Yom, Hania A. Al-Hallaq: International Journal of Radiation Oncology, Biology, Physics




Samantha G. Hedrick


Sue S. Yom


Hania A. Al-Hallaq

Scientific publishing is an important endeavor for our society, providing data and benchmarks for improving patient care and a path for career advancement for researchers. Ensuring that equity, diversity, and inclusion (EDI) are integrated into scientific publishing is challenging [1], particularly when considering the number of people and steps involved. At each step of the process, there is a need to consider EDI in the data collected and reported, the authors writing the manuscripts, the reviewers providing feedback, and the editors managing the ultimate publication.

EDI provides value to all aspects of science and scientific publishing, and thus should be valued not only as an ethical but strategic imperative. Al Shebli et al found that a paper written by a diverse group of authors is strongly correlated with a higher impact factor than a paper written by a homogenous group of authors [2]. Moreover, a scientist surrounded by a diverse group of collaborators has a higher impact factor than an ethnically similar group of collaborators [2]. However, the current state has room for improvement. For example, Salazar et al found that most editors of top-cited journals are heterosexual, white men [3]. Chatterjee et al showed that research conducted by women receives fewer citations [4]. Hopkins et al reported that there is a disproportionately higher rejection rate for authors from underrepresented groups [5]. Publishing is a hierarchical field, in which one works their way up from author to reviewer to associate editor to the penultimate position of editor. Thus, women and other racial/ethnic and gender minorities must be well represented at all rungs of the ladder in order to be afforded the opportunity to become an editor.

Publishers and journals across various domains of science are now noting the disparities along the author-editor continuum [6]. In evaluating authorship, Kozlowski et al in 2022 found that women are overrepresented as authors in the health sciences compared to the United States population, but are underrepresented in physics and mathematics [7]. In addition, gender disparities have been specifically documented in certain medical specialties, such as radiation oncology [8], and are especially acute in allied fields such as medical physics [9] whose pipelines are inherently skewed [10] . The additive effects of intersectionality, a relatively common state of multiple minoritized identities, enhances exclusion [11]. In medical physics, we may wonder when is the tipping point at which time such gender and racial/ethnic disparities could be expected to improve? Social scientists have discovered experimental evidence demonstrating that a minority opinion must exceed 25% or more in order to change societal norms [12]. However, media research also demonstrates that when the visual representation of women exceeds 33%, it is perceived by men as a majority of women [13]. How does this translate into the world of medical physics publishing?

Scientific journals have acknowledged that it is their responsibility to actively seek a diverse team, outlining five steps that journal editors should take to support social justice including: adding diversity to editorial meeting agendas, diversifying the editorial team and advisory boards, and encouraging editors to actively diversify their contact lists when commissioning editorials, reviews, etc [14]. Double-anonymized review is one way to improve equity and inclusion at the author level [15,16]. In terms of diversity of editorial boards, editors should collect demographic information and actively seek to diversify their cohort. One practical method by which to accomplish this is to impose term limits [17], as the *International Journal of Radiation Oncology, Biology, and Physics (IJROBP)* does. It is understandable that leadership positions may reflect a previous underlying population distribution, but formal mechanisms can be installed which act in support of rapid adaptation and allow for aspirational goal-setting.

Enhancing opportunities for professional growth is another strategy for increasing diversity. In academic medicine where there is significant career longevity, the opportunities afforded to early-career members may be limited as the demographic composition of professionals in a field can change more rapidly than the timeline of career progression (i.e., mostly men to more women). Given that the percentage of women in the American Association of Physicists in Medicine (AAPM) and on the editorial board of *Medical Physics* [10], 23% and 17% respectively, are both below the tipping point (assuming this is 25%), it behooves our male allies in publishing to actively consider diversification of the editorial pipeline. There has never been a female editor of either *Medical Physics* or *JACMP*, whereas analogous European journals, such as *Physica Medica* and *Physics in Medicine and Biology,* currently both have female Editors-in-Chief. At the *IJROBP*, the Editor-in-Chief is likewise female and over the past couple of years the percentages of women at the executive/section editor and associate editor level have exceeded 40-50% including within the physics section [6]. It should be noted that ASTRO has recently initiated processes to collect improved demographic information on its membership, which are intended to facilitate continued diversification of all of its committees, conferences, and journals.

As Dr. Elizabeth Kagan Arleo, Editor-in-Chief of the radiology journal *Clinical Imaging*, pointed out when the field of radiology was grappling with the dearth of female editors of radiology journals [18], "the time is now." Furthermore, as the late Justice Ruth Bader Ginsburg eloquently reminded us, "women belong in all places where decisions are being made." If the clinical radiologic sciences can increase the number of women editors-in-chief from none to nine in a matter of a few years [18], it is possible for other health fields to follow suit. Excluding any voice from our community, based on race, ethnicity, gender, or other minoritized identities, potentially discards information and perspectives that are valuable to our communities and patients. The value of including EDI in scientific publishing is enabling more scientists to ask more questions and finding more answers that will help more people.

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5. Katia Parodi – Physics in Medicine and Biology

Katia Parodi

I feel privileged to serve as the first female Editor-in-Chief of the journal **Physics in Medicine and Biology (PMB).** Since its inception in 1956, the journal has promoted the dissemination of cutting-edge research on the application of Physics to Medicine, Physiology and Biology, with special emphasis on therapeutic procedures and medical imaging. While remaining true to its initial mission, PMB has constantly expanded its subject areas to

adapt to the evolving scientific landscape of biomedical physics and engineering. In this process, the journal has also adapted its format and is currently a hybrid open access journal, where authors have the option to pay an article publication charge for gold open access.

PMB is published by the Institute of Physics Publishing on behalf of the Institute of Physics and Engineering in Medicine, which are both not-for-profit companies committed to use the revenue generated by the journal to promote global advancement and dissemination of science. In line with the principles of these two institutes, PMB is engaged to promote diversity, equity and inclusion in scientific publishing, and this is well reflected by the constant efforts to ensure equal opportunities for researchers to become authors, reviewers or editorial board members, along with the support offered to researchers based in lower-income countries for affordable open access publication of their work.

The dynamic and open-minded spirit of the journal has not only contributed to a wide scientific and geographical spread of the international editorial and advisory boards but has also supported an increasing engagement of women in leading positions for the journal over the last decades.

For many years, several female scientists including myself have served or are actively serving the journal in key positions and can thus actively contribute to solicit, review rigorously and disseminate quickly and broadly the best new science in our field, helping to shape the future of Medical Physics and bridge more fundamental research into novel applications of Physics to Medicine, Physiology and Biology.

6. Marianne Aznar – Radiotherapy and Oncology

Marianne Aznar

Radiotherapy and Oncology publishes papers relating to radiation oncology, including clinical radiotherapy, combined modality treatment, experimental work in radiobiology, chemobiology, hyperthermia and tumour biology, as well as physical aspects relevant to oncology, particularly in the field of imaging, dosimetry, and radiation therapy planning.

I joined "Radiotherapy and Oncology" as physics editor in 2020: though I was the first women in this role, it is worth noting that prof David Thwaites was the first and only physics editor for many years from 1994! (https://doi.org/10.1016/j.radonc.2020.11.005.).

At present, only 5/15 editors and 21/72 editorial board members of Radiotherapy and Oncology are female. Though the publisher, Elsevier, and the editorial office are aware of the need for more gender balance (https://www.elsevier.com/about/press-releases/corporate/elseviers-journals-now-displaying-editors-gender-in-support-of-diversity), this lack of representation will take time to resolve as members and editors are appointed for a fixed number of years: gradually, as people rotate out of their editorial functions, more women can be invited to contribute. It is worth noting that no such data is collected for reviewers.

Though it is understandable, it is also makes it hard for editors such as myself to ensure diversity when inviting reviewers to comment on an article.

7. Magdalena Stoeva – Health and Technology

Magdalena Stoeva

My name is Magdalena Stoeva, PhD, FIOMP, FIUPESM, and together with K. P. Lin, PhD, FIUPESM we are the Editors in Chief of the Journal Health and Technology (HEAL, https://www.springer.com/journal/12553). I also serve as the Secretary General of the International Union for Physical and Engineering Sciences in Medicine (IUPESM).

Being an editor is more than just a job, this is a way we see the world and more important communicate scientific, educational, and professional information to our colleagues and the global scientific audience. Combining the interdisciplinary knowledge of the basic sciences, the novelty trends of the profession, the understanding of the professional challenges our colleagues face, and what is more important, contributing to the establishment and supporting the mechanisms to deliver sustainable professional growth and workplace balance are probably the most important, but also the most challenging tasks an Editor can face.

Health and Technology is jointly published by Springer and the IUPESM in cooperation with the World Health Organization. It is the first truly cross-disciplinary journal on issues related to health technologies addressing all professions relating to health, care and health technology.

The journal constitutes an information platform connecting medical technology and informatics with the needs of care, health care professionals and patients. Thus, medical physicists and biomedical/clinical engineers are encouraged to write articles not only for their colleagues, but directed to all other groups of readers as well, and vice versa.

The journal Health and Technology works in close collaboration with women groups and committees established under the IUPESM, the International Organization for Medical Physics (IOMP) and the International Federation for Medical and Biological Engineering (IFMBE).

I would also like to use the occasion to convey my special gratitude to the female team-members at Springer for their active role in the publishing process throughout the years:

- Chew Juan Low, Senior Editorial Assistant
- Jana Palinkas, Associate Publisher
- Sonal Shukla, Head of Abstracting & Indexing
- Suvira Srivastav, Publishing Director, Mathematics, Physical and Applied Sciences
- Teena Bedi, Senior Publisher, Computer Science and Engineering.

This special article is dedicated to all female editors, associate and senior editors, peer-reviewers and those that contribute towards scientific progress and dissemination through academic publications.

Authors:

Chiaojung Jillian Tsai

Kathleen Marie Hintenlang