

Editorial

Cardiovascular research at the *Heart of Clinical Science*

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Clinical Science was originally established as the journal *Heart* in 1909 by Sir Thomas Lewis and Sir James Mackenzie. *Heart* was an influential journal publishing cardiovascular research and was renamed *Clinical Science* in 1933 to attract broader research interests. Nevertheless, cardiovascular research contributions remain a foundational part of the journal to this day. This editorial provides historical perspective on the journal's cardiovascular origins and includes data related to cardiovascular publications from the past decade. *Clinical Science* is committed to publishing leading cardiovascular research from the field and looks forward to receiving your submission.

Clinical Science is a high-impact scientific journal publishing original science and reviews across a breadth of biomedical research topics. The tagline 'linking basic science to disease mechanisms' underscores the translational scope of the journal broadly focused on publishing science that advances our understanding of disease pathophysiology. While *Clinical Science* has a multidisciplinary scope including metabolism and nutrition, endocrinology, infection and immunity, gastrointestinal and liver disease, nephrology, and pulmonary disease, the journal was founded with a focus on cardiovascular research, and cardiovascular research remains at the core of *Clinical Science* to this day.

Clinical Science was first established in 1909 as the journal *Heart* by Sir Thomas Lewis and Sir James Mackenzie who served as the founding editors. Lewis was an influential and successful cardiovascular researcher who published his first scientific paper at the age of 19 years. He subsequently published *The Mechanism of the Heart Beat*, widely recognized as the most comprehensive book on electrophysiology of the heart at the time [1]. Mackenzie was a renowned clinician scientist who developed an interest and expertise in cardiology and went on to establish a Clinical Research Center in St. Andrews, Scotland [2]. Both Lewis and Mackenzie were inducted as Fellows of the Royal Society, and both later succumbed to cardiovascular disease. Because of Lewis's and Mackenzie's expertise and notoriety, *Heart* served as a highly influential journal for the field of cardiovascular research. In 1933, *Heart* was renamed *Clinical Science* to expand the journal scope and acknowledge the broad clinical and translational research interests of Lewis and Mackenzie that extended well beyond their contributions to the cardiovascular field.

Despite the change in name and expanding journal scope, *Clinical Science* remained committed to serving as a home for cardiovascular research. In fact, if one considers the Editors-in-Chief over the past 50 years, the emphasis on cardiovascular research is apparent. Figure 1 lists each of the Editors-in-Chief for *Clinical Science* since 1971, including their general research interests. Regardless of their primary research focus, each editor had a strong appreciation for integrating disease mechanisms across different organ systems thus capturing the spirit and examples set by the careers of Lewis and Mackenzie. It is a privilege to be included on this list, and to continue building upon the progress and success of my predecessors.

In recent years, the percentage of papers published in *Clinical Science* in the broad category of cardiovascular research (Figure 2) remained relatively stable with an average of 44.6%. *Clinical Science* is

Received: 09 February 2023
 Revised: 19 March 2023
 Accepted: 27 March 2023

Version of Record published:
 13 April 2023

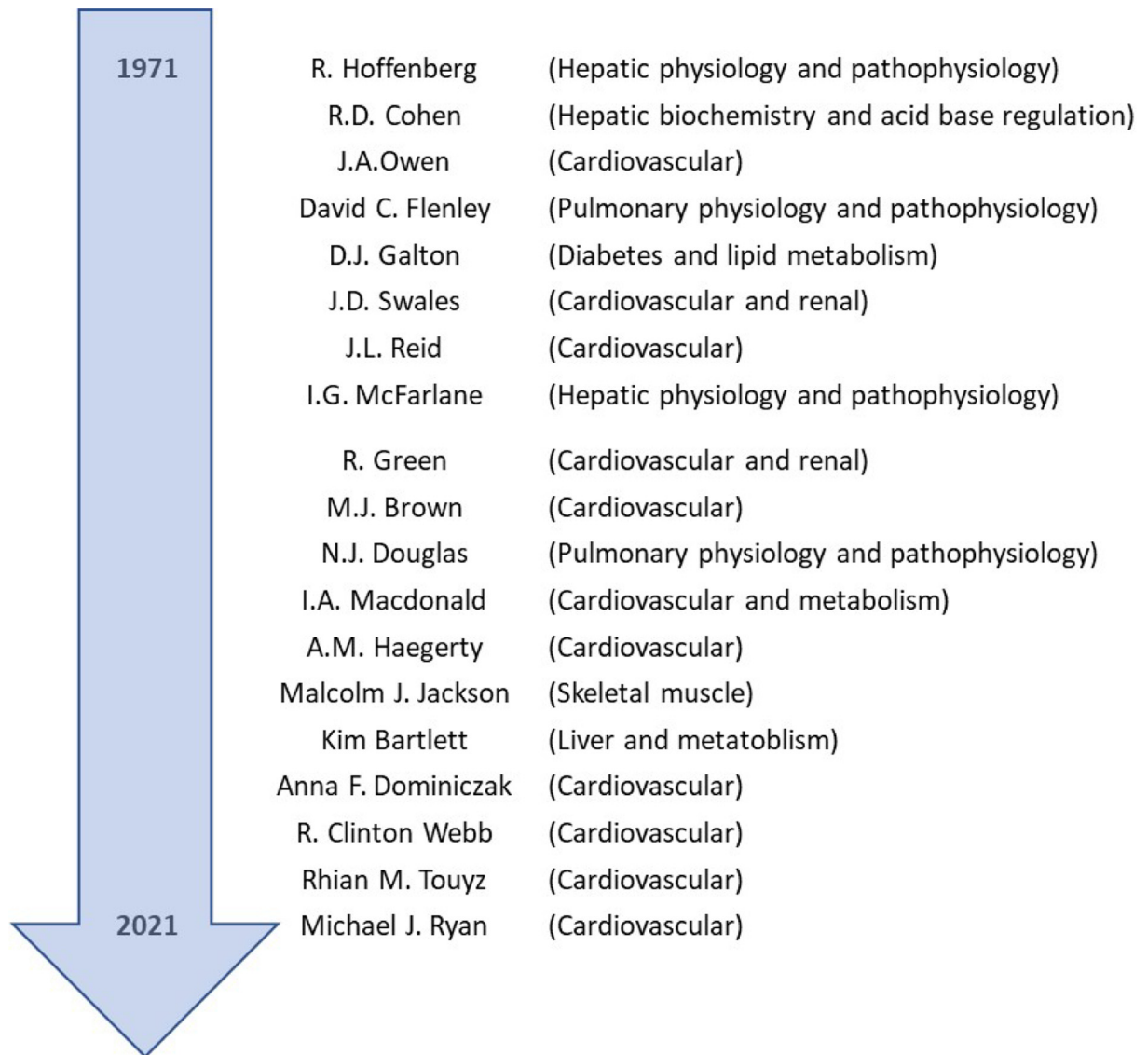


Figure 1. Fifty years of *Clinical Science* Editors-in-Chief

seeking to continue as a home for translational cardiovascular science, and several factors should give prospective authors reason to submit their best cardiovascular work to *Clinical Science*. The first is the scientific expertise of the Associate Editors, Editorial Board, and journal staff. The Associate Editors and Editorial Board include internationally recognized leaders in the cardiovascular field, and the journal editorial staff have the expertise to support the editors and authors to ensure success. Cardiovascular submissions are handled by editors and reviewers who know the experts in the field, provide constructive reviews, and create a high standard for published original research and reviews. Second, *Clinical Science* is a high-impact journal, ranking in the top quartile of journals in the Medicine, Research and Experimental category and achieving an impact factor of 6.876 (2021 *Journal Citation Reports*, Web of Science Group, 2022). Third, *Clinical Science* has multiple options for publishing open access and, in line with the Biochemical Society's Open Scholarship position statement, is steadily progressing toward a model that supports full open access. Fourth, with >599,000 article views in 2022, *Clinical Science* actively engages in the promotion of published work which leads to greater visibility and citations for the science. Finally, *Clinical Science* is owned by and returns all profits to the Biochemical Society, a not-for-profit learned society. Founded in 1911, the Biochemical Society has been at the forefront of advancing molecular bioscience for over 100 years, promoting its importance as a discipline, facilitating the sharing of knowledge and expertise, and supporting molecular bioscientists across all career

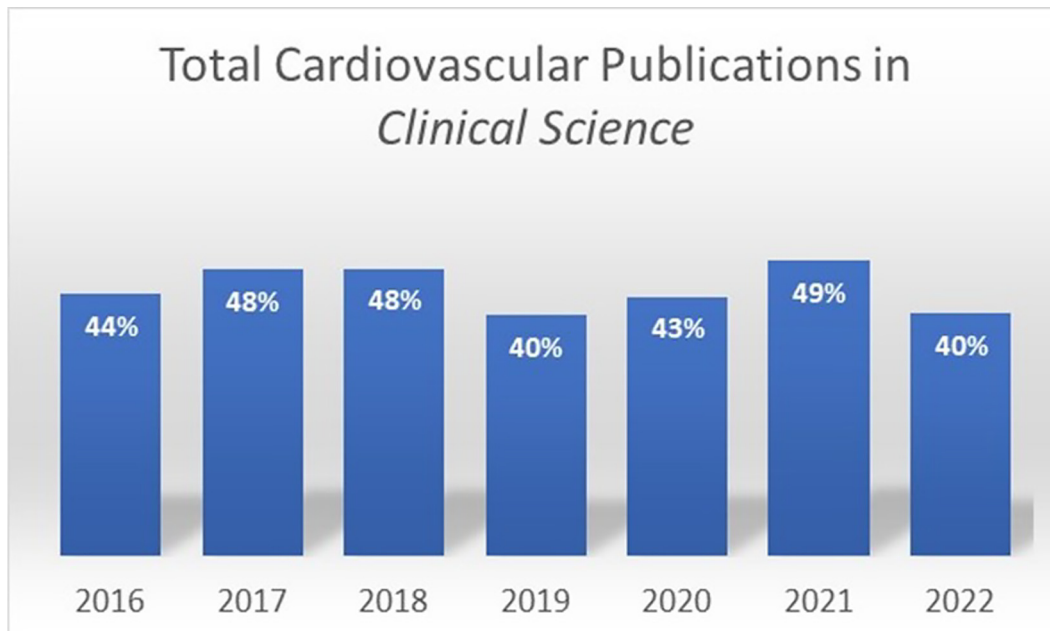


Figure 2. Total cardiovascular publications, as a percentage of total publications, remained relatively constant from 2016 to 2022 for *Clinical Science*

stages. By publishing in an independent society-owned journal, authors are supporting their own research community. Collectively, these factors ensure that the cardiovascular research published in *Clinical Science* is accessible and visible to the broader scientific community.

Table 1 provides additional support for the impactful cardiovascular work published in *Clinical Science* and the visibility it receives. The table lists the ten most highly cited cardiovascular papers from the last decade, including article views (data taken from Web of Science, 2022). It is important to note that the journal only started tracking views in 2019. Thus, the cardiovascular papers are receiving significant traffic even 10 years after their publication.

Clinical Science also tracks the Altmetric score of each article, a tool used to assess the overall attention that an article receives. This measure factors in citations, views, news outlets, social media attention, and others. The Altmetric score allows researchers to monitor and track early engagement of a paper, and the qualitative data provided can showcase its influence and impact as well as help identify potential future collaborators. Table 2 shows the top ten cardiovascular publications with the highest Altmetric score from the past decade, thus demonstrating that cardiovascular work published in *Clinical Science* garners broad attention.

For over 100 years, *Clinical Science* has been at the forefront of the cardiovascular field. As the journal evolves, high-impact cardiovascular publications remain at its core. Prospective authors are encouraged to explore cardiovascular themed published collections including cardiovascular oncology [23], ACE2, a multifunctional protein from cardiovascular regulation to COVID-19 [24], and adipose biology, cardiovascular and cardiometabolic disease [25]. The future of cardiovascular research at *Clinical Science* is led by an internationally recognized group of Associate Editors, an expert Editorial Board, and a committed publications staff. *Clinical Science* also supports the advancement of the next generation of biomedical scientists through research awards, presented at numerous international scientific meetings, including European Council on Cardiovascular Research (ECCR), the American Physiological Society (APS), and the American Heart Association's (AHA) Council on Hypertension. The journal is continually seeking ways to improve, build new partnerships, and attract new authors working in the cardiovascular field. Importantly, *Clinical Science* will continue to promote the outstanding contributions made by its authors and as a Biochemical Society journal, we are committed to a sustainable transition to open scholarship that will further increase the visibility of your cardiovascular work. When deciding which journal is best suited for your cutting edge cardiovascular work linking basic science to understanding disease mechanisms, please consider the cardiovascular origins of *Clinical Science* started over a century ago, and the continued commitment to publishing top work from the cardiovascular field.

Table 1 Cardiovascular papers with the highest citations in the past 10 years

Publication year	Top 10 highest cited cardiovascular papers	Reference	Total citations	Total article views
2012	Cellular and molecular mechanisms of metformin: an overview	[3]	1100	3,335
2018	Atherosclerosis and inflammation: overview and updates	[4]	326	5,236
2013	Microparticles: biomarkers and beyond	[5]	247	917
2014	The Bioenergetic Health Index: a new concept in mitochondrial translational research	[6]	186	4,982
2018	Imbalance of gut microbiome and intestinal epithelial barrier dysfunction in patients with high blood pressure	[7]	181	1,654
2015	Pericytes at the intersection between tissue regeneration and pathology	[8]	163	640
2012	AMP-activated protein kinase, stress responses and cardiovascular diseases	[9]	163	380
2012	Perivascular adipose tissue: more than just structural support	[10]	161	276
2013	Angiotensin-(1–7): beyond the cardio-renal actions	[11]	149	676
2017	Chronic cerebral hypoperfusion: a key mechanism leading to vascular cognitive impairment and dementia. Closing the translational gap between rodent models and human vascular cognitive impairment and dementia	[12]	148	1,771

Note: Views have only been measured since 2019 hence why those published in 2012 have a relatively small number of views. Although it's quite impressive that the first article, for example, has had 3,300 views since 2019 even though it was published in 2012.

Table 2 Cardiovascular papers with the highest Altmetric in the past 10 years

Publication year	Title	Reference	Altmetric attention score
2021	The SARS-CoV-2 Spike protein disrupts human cardiac pericytes function through CD147 receptor-mediated signaling: a potential non-infective mechanism of COVID-19 microvascular disease	[13]	567
2021	Role of ACE2 in pregnancy and potential implications for COVID-19 susceptibility	[14]	228
2012	High-intensity exercise attenuates postprandial lipaemia and markers of oxidative stress	[15]	147
2022	SARS-CoV-2 spike protein causes cardiovascular disease independent of viral infection	[16]	124
2013	Mediterranean diet- and exercise-induced improvement in age-dependent vascular activity	[17]	79
2016	Lung function and respiratory symptoms in a randomized smoking cessation trial of electronic cigarettes	[18]	71
2018	Changes in cell fate determine the regenerative and functional capacity of the developing kidney before and after release of obstruction	[19]	67
2017	Pharmacological inhibition of protein tyrosine phosphatase 1B protects against atherosclerotic plaque formation in the LDLR ^{-/-} mouse model of atherosclerosis	[20]	63
2016	Mitochondrial health, the epigenome and healthspan	[21]	46
2018	Cardiovascular benefits of GLP-1 agonists in Type 2 diabetes: a comparative review	[22]	44

Data Availability

Not applicable to this study.

Competing Interests

The author declares that there are no competing interests associated with the manuscript.

CRedit Author Contribution

Michael J. Ryan: Conceptualization, Data curation, Formal analysis, Writing—original draft, Writing—review & editing.

Acknowledgements

The author gratefully acknowledges the input of the *Clinical Science* Editorial Office Staff who supported this work. This material is the result of work supported with resources and the use of facilities at the Columbia VA Health Care System, Columbia, SC.

Abbreviations

ACE2, Angiotensin Converting Enzyme 2; AHA, American Heart Association; APS, American Physiological Society; ECCR, European Council on Cardiovascular Research.

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