

The Research Techniques Made Simple Series: Lasting and Future Impact on Investigative Dermatology



The Research Techniques Made Simple (RTMS) series of the *Journal of Investigative Dermatology* (*JID*) now comprises 110 published articles that are intended to facilitate linkage of dermatology clinical practice and the fundamental science and research methodologies on which many diagnostic and therapeutic advances are built. The current print edition of the RTMS series includes articles that have been published from 1 October 2020 through 1 December 2021. RTMS articles cover topics that range from basic research to animal models to clinical and translational research to engage the memberships of the Society for Investigative Dermatology and the European Society for Dermatology Research and the broad readership of the *JID*. With >9 years of experience in publishing these articles, we analyzed the impacts they have had on investigative dermatology using metrics, including citations, downloads, and social media shares. [Figure 1](#) shows that some RTMS articles are cited rapidly after publication, whereas others have an enduring impact, being cited over many years ([Figure 2](#)).

Many early articles focused on explaining widely used techniques, including the PCR, immunofluorescence staining, confocal microscopy, ELISA, and flow cytometry ([Gan and Patel, 2013](#); [Garibyan and Avashia, 2013](#); [Jahan-Tigh et al., 2012](#); [Nwaneshiudu et al., 2012](#); [Odell and Cook, 2013](#)). Over the years, articles that explain emerging research tools such as next-generation sequencing and CRISPR have been presented ([Grada and Weinbrecht, 2013](#); [Guitart et al., 2016](#); [Otten and Sun, 2020](#); [Shi et al., 2021](#)). Articles on PCR, next-generation sequencing, and ELISA are the most highly cited, with 123, 156, and 229 citations to date, respectively. We hope that 2021 articles focused on basic research topics that include “Delivery of the CRISPR/Cas9 Components into Epidermal Cells” ([Shi et al., 2021](#)), “Analysis of Autophagy in the Skin” ([Hill et al., 2021](#)), and “Analysis of Skin Cell and Tissue Mechanics Using Atomic

Force Microscopy” ([Connelly et al., 2021](#)) will be similarly influential.

Animal models are important for exploring organismal responses to skin perturbation, healthy skin homeostasis, and local and systemic changes that occur during the development and progression of skin diseases. RTMS articles have covered multiple animal models, with one of the most downloaded and cited being Animal Models of Wound Healing ([Grada et al., 2018](#)) (downloaded 12,993 times, cited 41 times). For comparison, the most cited *JID* articles published in 2018 have received 71–135 citations to date. Mouse Models of Atopic Dermatitis ([Kim et al., 2019](#)) and Murine Models of Human Psoriasis ([Hawkes et al., 2018](#)) have been downloaded 1,852 and 2,022 times, respectively. We encourage prospective authors to submit applications that relate to additional animal models of skin health and disease as topics of future RTMS articles.

The RTMS editors are particularly interested in cutting-edge techniques that have been described but not yet widely applied to investigative dermatology. For this reason, we published a series of two articles this year on the technology and clinical application of Imaging Mass Cytometry ([Naderi-Azad et al., 2021](#); [Veenstra et al., 2021](#)). We, together with the authors of these articles, anticipate the incorporation of this powerful technique into multiomic platforms at single-cell resolution to identify and study unique cell populations within the skin. We also look for ways to promote the standardization of research techniques across the field. The 2020 publication of “Experimental UVR Exposure” ([O’Mahoney et al., 2020](#)) serves this purpose because UVR exposure has not traditionally been standardized across experimental models. We aim to promote discussion and to highlight important techniques that could drive the field forward.

Clinical research techniques are frequently as unfamiliar to basic researchers as basic research techniques are to clinicians. Being a trainee—or an established researcher—in investigative dermatology requires at least some understanding of a broad research spectrum. Furthermore, successful collaborations in translational

Rapidly Cited RTMS Articles

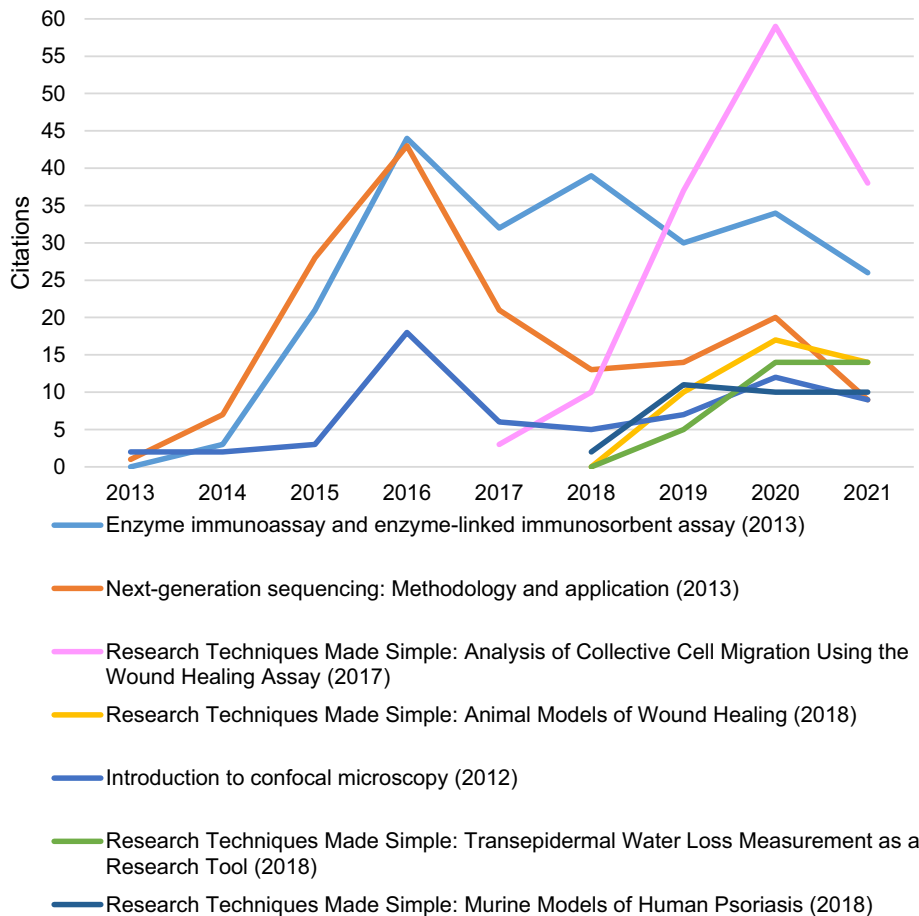


Figure 1. Certain RTMS articles have been well-cited within the first 3 years of publication. RTMS readers have rapidly cited articles covering basic techniques, animal models, techniques on wound healing, and techniques to study physiological functions of both animal and human skin. Early citation of published articles positively impacts the *JID* Impact Factor. *JID*, *Journal of Investigative Dermatology*; RTMS, *Research Techniques Made Simple*.

research require the ability to speak different scientific languages. Thus, we are not surprised that “Drug Survival Studies in Dermatology: Principles, Purposes, and Pitfalls” (van den Reek et al., 2015) and “Assessing Risk of Bias in Systematic Reviews” (Drucker et al., 2016) were cited 55 and 36 times, respectively. The latter is the most downloaded of all *JID* articles with 45,853 lifetime downloads. “Sample Size Estimation and Power Calculation” (Schmidt et al., 2018) has been downloaded 7,362 times, and the February 2021 article “An Introduction to Qualitative Research” (Bazen et al., 2021) is so far the most downloaded RTMS article of 2021 (820 downloads). We hope that many dermatology researchers will read these articles and learn to appreciate the techniques and languages used by colleagues in these complementary fields.

The RTMS series has broached topics related to drug discovery, development, and delivery. “Molecular Docking in Dermatology – A Foray into In Silico Drug Discovery” (Issa et al., 2019) was downloaded 2,473 times, and we hope that the 2021 publication of “Preclinical Development of Combination Antitumor Targeted Therapies in Dermatology” (Yumeen et al., 2020) and “Skin-Targeted Drug and Vaccine Delivery Using Dissolvable Microneedle Arrays” (November 2021) will lead to new therapeutics for skin diseases. The

RTMS series has also featured assessment of outcomes measures with an early article “‘Validation’ of Outcome Measures in Dermatology” (Viola et al., 2013), being followed this year by “Developing and Validating QOL Outcome Measures for Skin Diseases” (Braun et al., 2020).

With the COVID-19 pandemic, online methods of conducting population-based research have become more important. “Web-Based Survey Research in Dermatology: Conduct and Applications” (Maymone et al., 2018) and “Tele dermatology in Clinical Trials” (Laggis et al., 2019) have been downloaded 5,640 and 2,087 times, respectively, with the latter having been highlighted multiple times on Twitter by researchers, companies, and nonprofit organizations in both Spanish and English. As an acknowledgment that online communication about research findings is important, we featured “Scientific Communication using Twitter” (Daneshjou et al., 2021) as part of this year’s RTMS series.

The editors and authors of the RTMS series have endeavored over the years to cover topics across the entire investigative dermatology research spectrum. On the basis of metrics such as downloads, citations, and tweets, we conclude that these articles are having a broad impact on the field. In this brief editorial, we could not summarize the

RTMS Article Citations Are Durable

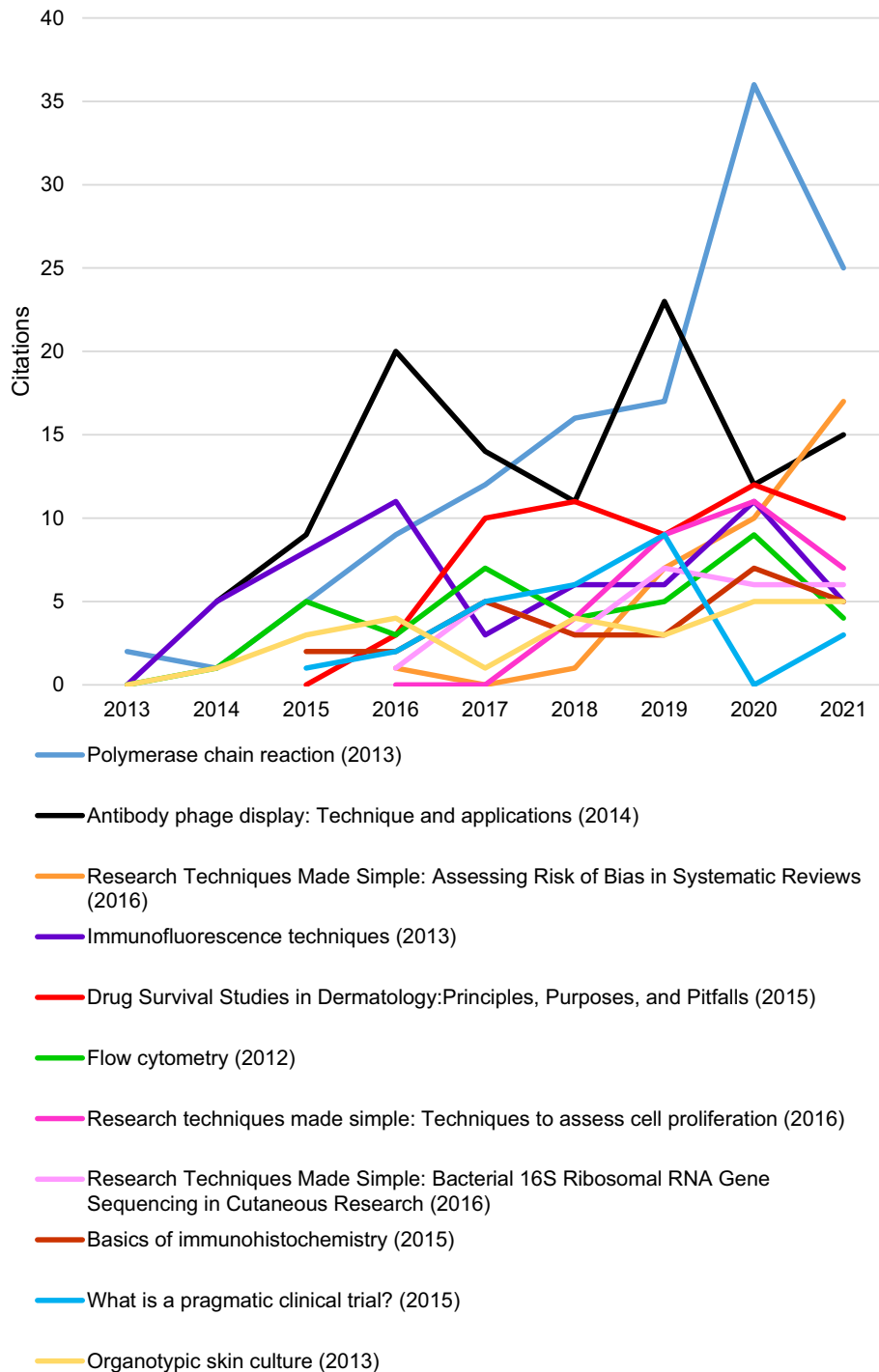


Figure 2. Certain RTMS articles have had a lasting impact on the field, with some being cited for nearly a decade. RTMS readers have long appreciated articles covering basic techniques and approaches to assessing clinical data. RTMS, Research Techniques Made Simple.

metrics relating to all RTMS articles but have highlighted some of the most successful ones using these measures. We thank the authors of all the 110 RTMS articles for contributing to this global project to educate our field. To ensure the continued success of the series, we hope that you will read the RTMS articles, incorporate their usage into your training, and cite them as appropriate when you publish your research findings. We also welcome feedback and invite proposals for

future RTMS articles. Contact us at JIDEditor@sidnet.org to make your impact on the field using the RTMS format.

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EDITORIAL

CONFLICTS OF INTEREST

All authors are editors of the *Journal of Investigative Dermatology* and the Research Techniques Made Simple articles.

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AUTHOR CONTRIBUTIONS

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