

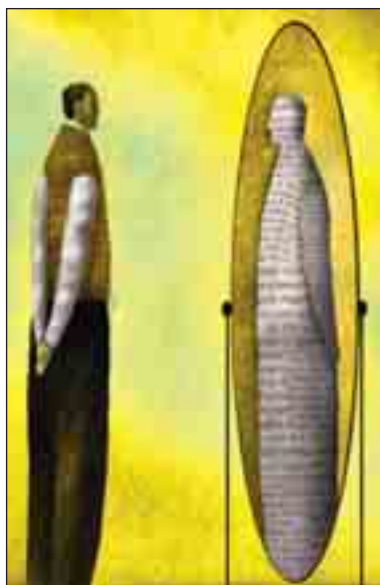
Don't be misled by citation figures! (17)

No Significant Advantage

Once again, we're not going to spin a fictional story about Professor Windigmann's and Postdoc Slime's 'particularly sophisticated' methods of citation picking. As in the previous issue, we have chosen the demystification of another common prejudice, namely, that "methodological articles are cited more frequently than 'genuine' research papers".

Certainly, among the most-cited articles of modern science there are some that solely describe the development of new experimental methods or tools. Who, for example, would not immediately think of the 1970 *Nature* paper on SDS-polyacrylamide gel electrophoresis of proteins by Ulrich Lämmli? Even today, it is being cited several hundred times per year. The same is also true for the paper in which Marion Bradford described the first determination of protein quantities by using Coomassie dye (*Analytical Biochemistry* vol. 72: 248-54, 1976).

No doubt, there are real "blockbusters" among the articles that, in particular, describe new methodology. And in terms of citations, these "blockbusters" do beat almost every paper containing "earthshaking" scientific insights.



On the other hand, however, don't they really deserve it? In fact, there are quite a few people who think that new or, at least, significantly improved methods are particularly at the heart of scientific advance. It is new methodology in the first place, they say, that opens the door to experimental testing for a multitude of problems and theories.

Anyway, at least the Nobel Committee sometimes sees it this way: Frederic Sanger, Walter Gilbert, Georges Köhler, César Milstein, Kary Mullis, Michael Smith, Osamu Shimomura, Roger Tsien...; they all received Nobel prizes for the development of methods and tools such as protein and DNA sequencing, monoclonal antibodies, PCR, site-directed mutagenesis, green fluorescent protein.

However, can it be concluded that methodological papers have a basic advantage? Are they actually being cited more frequently *on average* than articles presenting 'real' research results?

Indeed, one might suspect that methodological articles often reach a wider audience than many research papers that only raise the interest of a handful of researchers in their respective niches. From this, however, one could only deduce that very few methodological papers are likely to be very rarely or even not at all cited.

On the other hand, the facts do indeed indicate that a methodological paper only occasionally skyrockets in terms of citation numbers. For example, each year Thomson Scientific lists the most-cited biomedical paper of the previous year – seldom is there a methodological one ranking among the top 25.

And that methodology-based articles are generally *not* cited more frequently on average than research papers is quite nicely indicated by the annual impact factors (IF) of purely methodological journals. It's far from impressive what journals, such as *Methods in Microbiology*, *Electrophoresis*, *BioTechniques* or the *Journal of Immunological Methods* have to offer, in this respect. A short investigation by *Lab Times* revealed that of sixty methodological journals, there was hardly one with an IF lower than 1 but, on the other hand, only five had an IF higher than 3. The "leader" was *Nature Methods* with an IF of 15.5, which is about the level of the *Journal of Clinical Oncology* or the *Journal of Experimental Medicine*.

Conclusion: Apparently, methodological papers are rarely *never* quoted, but equally they are rarely *frequently* quoted!

RALF NEUMANN

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Kai Herfort, Ralf Neumann, Hubert Rehm

Office: Alte Straße 1, 79249 Merzhausen, Germany
Tel.: +49 (0)761-286869; Fax: +49 (0)761-35738
Management: Kai Herfort, Tel: +49 (0)761-286869

Editors:

Ralf Neumann (Editor-in-chief), Kai Herfort,
Karin Hollricher, Winfried Koepfelle, Hubert Rehm,
Harald Zähringer
Tel.: +49 (0)761-2925884, editors@lab-times.org

Reporters:

Thorsten Braun, Susanne Dorn, Rafael Florés,
Jeremy Garwood, Andrea Herb, Rosemarie Marchan
Matthias Nawrat, Ralf Schreck

Graphics, Design and Production:

Ulrich Sillmann (Art Director), Kai Herfort, Winfried
Koepfelle, Ralf Neumann, Harald Zähringer
Cover Artwork: Kai Herfort

Sales:

Advertising Manager: Bernd Beutel
Top-Ad Bernd Beutel, Hammelbacherstraße 30,
69469 Weinheim, Germany
Tel: +49 (0)6201-29092-0
Fax: +49 (0)6201-29092-20
info@top-ad-online.de

Recruitment:

Ulrich Sillmann,
Tel: +49 (0)761-2925881, jobs@lab-times.org

Printed at:

Stürtz GmbH,
Alfred-Nobel-Straße 33, 97080 Würzburg, Germany

Web:

www.lab-times.org
Webmaster: Carsten Rees
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