AUTHORSHIP

Writer's cramp

Washington

WHILE most researchers struggle to publish a few papers a year, Yury Struchkov gets his name in print almost twice a week. Over the past ten years, the Russian chemist has been listed as an author on almost a thousand scientific articles.

Impossible? Not, apparently, if one runs a big crystallography laboratory in Moscow. A few days' work by researchers in Struchkov's group at the Institute for Organoelemental Chemistry is usually enough to generate a paper, and Struchkov is an author on every one. A new survey of extraordinarily prolific researchers, which ranks Struchkow number one worldwide, raises once again the question of who should be an author and who should not.

Twenty researchers worldwide have published an article at least once every 11.3 days over the past decade, according to a report released last week by the Philadelphia-based Institute for Scientific Information (ISI). The top five researchers have published more that once a week. Some of these authors, like Struchkov, are crystallographers who, by nature of their sophisticated equipment and experiences, collaborate with dozens of researchers who need their services. Co-authorship is usually given in return.

Most of the others are scientists who run medium-sized to large laboratories or research groups that have tapped into a particularly fruitful line of research in their field. In the top twenty, the single discipline most heavily represented is basic molecular chemistry, followed by transplant surgery. Biomedical research, in general, accounts for more than half of the total.

An informal survey of many of the researchers on the list reveals that there are as many authorship policies as there are authors. David Greenblatt, a Tufts University pharmacologist, insists on full participation in his research. "I do the work", he says, "with my own two hands." Others, like John Najarian, a transplant surgeon at the University of Minnesota, take a more hands-off approach. He contributes ideas, advice and reviews the paper written by researchers in his department.

Both scientists put their names on almost all the papers that come out of their research groups. But as science finds itself under scrutiny as never before, many researchers are reconsidering the old problem of authorship. Is the loan of a key reagent worth a co-authorship? How about a good idea? Regular guidance?

As a result of cases in which prominent researchers were damaged by the revelation that papers on which they were listed as authors contained fabricated data (even though they had not done the research themselves), the debate over authorship is no longer academic. A laboratory director who initiates or supervises a project is now considered responsible for the accuracy of the data itself if he or she shares authorship.

Last November, after receiving a paper with more than 200 co-authors (including departmental secretaries), the *New England Journal of Medicine* announced new authorship policies. It would henceforth require that anyone designated an author make "substantial contributions" to three elements of the research: conception, design, or analysis and interpretation of the experiment; drafting or critically revising the article; and reviewing and approving the final draft.

Harvard is another institution that is worried about publication practices. In an effort to reduce the emphasis on publication volume in science, the University now asks would-be professors to select only their top ten papers for tenure consideration.

Debate over authorship is nothing new. The senior scientist who puts his name on every paper in his laboratory has become a virtual stereotype. At the Russian Institute of Volcanic Geology and Geochemistry earlier this year, ten geologists actually went on a hunger strike to protest a "autocratic" director who forced institute researchers to list him as a co-author on their papers (see *Nature* **354**, 3; 1991). On the other side is the ambitious young researcher who appends the names of distinguished advisers to his papers to improve their chance of publication. Since becoming well-known, "I've been taking my name off more papers than ever," says Anthony Fauci, of the US National Institutes of Health.

Differences in authorship policies tend to vary by discipline. Because chemistry experiments are relatively straight-forward and self-checking, the heads of prolific chemistry laboratories say they feel confident in simply providing ideas and oversight, along with regular review, to work they will eventually co-sign. "I generate the ideas and I direct the research," says Alan Katritzky, a University of Florida chemist who co-authors all the papers that come from his laboratory of 35 to 40 researchers. Although he examines primary data in weekly meetings with his team, it is not generally to check for fraud. "It's very difficult to fudge data in organic chemistry," he says. Frank Cotton, a Texas A&M University chemist, says he selects — and co-authors — most of the research projects in his laboratory because the grants are in his name, and are based on his proposals. Although he does little of the bench research, he says he guides his 15 to 25 researchers, examines their data, and has a hand in writing almost all the papers.

"I only put my name on if I had the idea, started the study, or played an active part in it," says Julia Polak, a University of London pathologist. "My own criteria is that if I don't understand it and haven't been part of the writing of the paper, I don't want my name on it." After watching the trials of Nobel Laureate David Baltimore, who unwisely defended a 1986 *Cell* paper on which he was a co-author although he had done none of the original research, Polak has instituted new data policies in her laboratory. Researchers now bring their primary data to weekly meetings, and archive even secondary data in case it is ever challenged. Although there may never be firm, interdisciplinary rules about authorship, prolific researchers do seem to be aware now of the perils of appending their names to work they have not closely supervised.

Christopher Anderson

World's twenty most prolific researchers

	Name/Field/Nation	No. papers* 1981-90	Ave. days per paper	Ave. citations per paper
1	Yury Struchkov/Chemistry/USSR	948	3.9	3.0
2	Stephen Bloom/Gastroenterology/UK	773	4.7	21.4
3	Mikhail Voronkov/Chemistry/USSR	711	5.1	2.0
4	Aleksandr Prokhorov/Physics/USSR	589	6.2	3.1
5	Ferdinand Bohlmann/Chemistry/Germany	572	6.4	6.2
6	Thomas Starzl/Surgery/USA	503	7.3	16.8
7	Frank Cotton/Chemistry/USA	451	8.1	11.4
8	Julia Polak/Histochemistry/UK	436	8.4	26.6
9	Robert Gallo/Cell Biology/USA	428	8.5	86.0
10	Genrikh Tolstikov/Chemistry/USSR	427	8.5	1.2
11	John Huffman/Crystallography/USA	403	9.1	13.2
12	Alan Katritzky/Chemistry/USA	403	9.1	4.5
13	David Greenblatt/Pharmacology/USA	383	9.5	17.1
14	John Najarian/Surgery/USA	345	10.6	14.6
15	Willy Jean Malaisse/Endocrinology/Belgium	344	10.6	10.9
16	Charles Marsden/Neurology/UK	339	10.8	15.0
17	Anthony Fauci/Immunology/USA	338	10.8	52.5
18	E. Donnall Thomas/Oncology/USA	328	11.1	37.5
19	Noboru Yanaihara/Biochemistry/Japan	322	11.3	14.0
20	Timothy Peters/Biochemistry/UK	322	11.3	9.5

Source: ISI's Science Indicators Database 1981-90.
* papers defined as articles, reviews, notes and proceeding papers; abstracts, letters, corrections, etc. were not counted.