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"Burgeoning Open Access MegaJournals"

The PLoS ONE Articles Written by Japanese Authors

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Abstract

We analyze and report the PLoS ONE articles written by Japanese authors belong to Japanese research and educational institutions by using Web of Science and comparing the results with other journal articles in the same fields. According to the increase of the number of article publications in PLoS ONE, the number of articles written by Japanese researchers has been increasing every year. Compared to other journals, articles which are published in PLoS ONE tend to be more grant-aided.



Sho Sato

Sho Sato obtained Master of Library and Information Science (MLIS) in 2010 from University of Tsukuba and now is a graduate student. He specializes in Open Access, academic libraries, scholarly communication, and bibliometrics.

My role today is to analyze the status of articles published by Japanese authors in open access (OA) mega journals and their characteristics, acting as an introduction for Mr. Binfield. However, many OA mega journals, other than PLoS ONE, have been launched only recently, and they are not yet at the stage that allows for a detailed analysis of authors and other matters. Thus, my analysis covers and reports on only the status of PLoS ONE, which already has a track record of several years and has published a considerable number of articles. I focus mainly on Japan.

Coverage and Method of Survey

I undertook an analysis of articles by Japanese authors published in PLoS ONE. Japanese authors here mean authors who belong to Japanese research and educational institutions or corpora-

tions, excluding authors of Japanese nationality who work overseas but including authors of foreign nationality who work in Japan. Most of the articles published in PLoS ONE are coauthored articles, and when coauthors of articles include at least one Japanese author, I categorize them as articles by Japanese authors. In doing so, I paid no consideration to the order of authors listed, such as the first author or the second order, or the degree of contribution to these articles.

In the survey, I relied on the Web of Science of Thomson Reuters for research data on the number of articles and the professional affiliation of authors, as PLoS ONE's data on articles does not allow for comparisons in other fields or with other journals not permitting open access. There are time lags between the publication of articles and the inclusion in Web of Science. As of February 2, 2012,

when I acquired the data for the survey, Web of Science included data up until December 16, 2011. Normally, a time lag of this much does not pose a significant problem. However, as PLoS ONE publishes vast number of articles a day, figures covered in the survey have changed significantly by now. Given these circumstances, I would like you to view the figures I report today as tentative.

The items subject to my analysis are (i) the number of articles by Japanese authors, the ratio to the total number of articles published and their changes; (ii) institutions Japanese authors belong to; (iii) the status of international joint authorships; and (iv) the status of grant funding obtained. Based on the findings about these items, I examined Japanese authors who publish articles in PLoS ONE are what sorts of researchers and whether they have characteristics different from those of authors who publish articles in other journals.

Survey Results - Status of Publication of Articles by Japanese Authors

First, I looked at the top 10 countries of authors who published articles in PLoS ONE in 2011 (Figure 1). At the time of data acquisition, a total of 12,911 PLoS ONE articles were already included in Web of Science, and given the pace of article publications, 13,000 to 14,000 articles are estimated to have been included for the whole of 2011. The country from which the largest number of articles came was the United States, accounting for some 40% of the total number, followed by the People's Republic of China, England and Germany, in that order. Japan came in seventh, with 663 articles, accounting for 5% of the total number of articles published in PLoS ONE in 2011.

For major scholarly articles included in Web of Science, the number of Japanese authors ranked fifth after the United States, China, England and Germany, in that order, meaning that Japan ranks lower in the number of articles published in PLoS ONE. However, there is no big difference in the ratio of the number of articles by Japanese authors, standing at 5.1% on PLoS ONE and at 5.2% on Web of Science as a whole. As authors from Canada and France published more articles in PLoS One, the number of articles by Japanese authors made the lower ranking in PLoS ONE. Therefore, we can probably say that the number of articles by Japanese authors itself does reflect the positioning of Japan's scholarly research in the world.

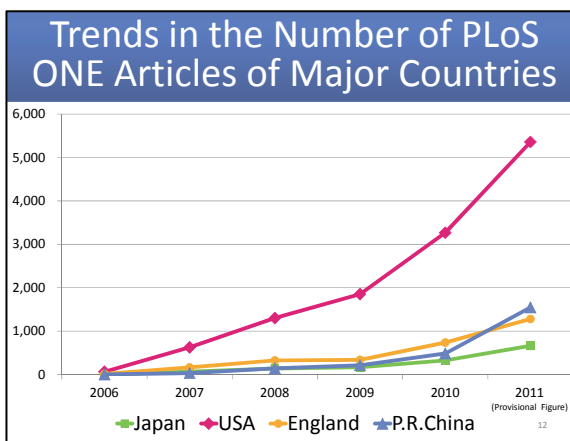
If we look at trends of the number of articles by major countries since the launch of PLoS ONE, the number of articles has been increasing for most countries, with particularly sharp rises in 2010 and

Top 10 Countries of Published Articles in 2011

Country	No. of articles	%
USA	5,357	41.5%
P. R. China	1,548	12.0%
England	1,281	9.9%
Germany	1,261	9.8%
France	971	7.5%
Canada	775	6.0%
Japan	663	5.1%
Australia	651	5.0%
Spain	588	4.6%
Netherland	586	4.5%
PLoS ONE Total	12,911	-

(Figure 1)

2011 (Figure 2). The number of articles by Japanese authors has been increasing in almost as stable a way, with the ratio to the total number staying around 5%. The growth of the number of articles decelerated in 2008-2009 for all countries other than the United States, but recovered at a stretch in 2009-2010 and 2010-2011. China in particular increased the number of articles published at a burst in 2011. There could be many reasons for this, but I personally assume that this has been significantly influenced by the fact that articles started being published in PLoS ONE with the impact factor attached in the middle of 2010.



(Figure 2)

Survey Results - Professional Affiliation of Japanese Authors

Next, I look at the top 10 institutions that published articles in PLoS ONE in 2011 (Figure 3). For comparison, I also examined the top 10 institutions in other journals classified in Web of Science as the same field of Biology as PLoS ONE and the top 10 institutions of authors in the field of Bio-

chemistry Molecular Biology with the most citations from PLoS ONE. The University of Tokyo ranked first and Kyoto University second in all three. There were no major differences from other journals about authors of articles published in PLoS ONE. Tokyo Medical and Dental University stands out with many articles published in PLoS ONE, but my research could not immediately identify the reason for this.

Top 10 Institutions with Large Number of Published Articles					
PLoS ONE (N = 663)		Biology (N = 465)		Biochem Mol Bio (N = 4,703)	
Affiliation	Articles	Affiliation	Articles	Affiliation	Articles
Univ. Tokyo	105	Univ. Tokyo	50	Univ. Tokyo	574
Kyoto Univ.	85	Kyoto Univ.	36	Kyoto Univ.	449
Osaka Univ.	64	NIRS	35	Osaka Univ.	387
Hokkaido Univ.	40	Osaka Univ.	31	Hokkaido Univ.	233
JST	35	Kyushu Univ.	29	Kyushu Univ.	198
Tokyo Med. Dent. Univ.	30	Hokkaido Univ.	24	Tohoku Univ.	195
Riken	28	Tohoku Univ.	16	Nagoya Univ.	172
Tohoku Univ.	27	Nagasaki Univ.	15	RIKEN	161
Nagoya Univ.	24	Gunma Univ.	14	JST	135
Keio Univ.	23	JST	13	AIST	127

(Figure 3)

Survey Results - Status of International Joint Authorship

International joint authorship here means coauthored articles with the participation of authors from multiple countries. I looked into the actual number of articles with international joint authorship and their ratio to the total number of articles (Figure 4). For comparison, in addition to the two fields of Biology and Biochemistry/Molecular Biology, I also examined Figures for Japan as a whole as well as the survey results for Nature and Science. About 70% of articles by Japanese authors published in Nature or Science were articles with international joint authorship. The ratio of articles with international joint authorship was lower, at 38.3%, among articles by Japanese authors published in PLoS ONE in 2011. This ratio is still higher than the average for Japan, but is little different from other journals in the field of Biology. Thus, we can say that articles by Japanese authors published in PLoS ONE do not have a particularly high ratio of international joint authorship.

Looking at partner countries of authors for international joint authorship, a majority of articles by Japanese authors are coauthored with authors from the United States, and many coauthors are from such countries as England and China (Figure 5). Broadly speaking, countries that publish many

articles in PLoS ONE as a whole also have many coauthors with Japanese authors.

Status of International Joint Authorship for Articles by Japanese Authors (2011)			
	Total	International	%
PLoS ONE	663	254	38.3%
Japan (Total)	70,671	19,671	27.8%
Biology	414	158	38.2%
BioChem Mol Bio	4,095	1,178	28.8%
Nature	77	58	75.3%
Science	79	55	69.6%

(Figure 4)

Partner Countries of International Joint Authorship with Japanese Authors	
Country	No. of articles
USA	134
England	26
P. R. China	26
France	17
Germany	16
Canada	15
Australia	13
Netherland	11
South Korea	10
Scotland	9

(Figure 5)

Survey Results - Status of Grant Funding Obtained

For the survey items above, I found no significant difference between PLoS ONE articles written by Japanese authors and other articles in general in Japan. However, there was a significantly distinctive characteristic in the status of grant funding obtained for PLoS ONE articles.

I made a survey on how many funding agencies gave a subsidy to articles by Japanese authors published in PLoS ONE in 2011 (Figure 6). In this survey, I looked at the number of grant funding instances per article, the number of articles that obtained one or more instance of grant funding and the funded rate. For comparison, I also show the survey results for Japan as a whole, the conterminous fields of research, Nature, Science and articles having authors including those from the University of Tokyo that produced similar figures.

Status of Grant Funding Obtained for Articles by Japanese Authors (2011)					
	Articles	Funding Agencies	Funds/Articles	Funded articles	Funded %
PLoS ONE	663	1,615	2.4	627	94.6%
Japan(Total)	70,671	97,077	1.4	41,547	58.8%
Biology	414	621	1.5	274	66.2%
BioChem Mol Bio	4,095	7,959	1.9	3,285	80.2%
Nature	77	395	5.1	72	93.5%
Science	79	280	3.5	74	93.7%
Univ. Tokyo	6,899	17,462	2.5	5,130	74.4%

(Figure 6)

PLoS ONE articles by Japanese authors obtained an average 2.4 instances of grant funding per article. The high funded rate of 94.6% suggests that most of these articles were authored with grant funding in some form or other. The number of grant funding per article stood lower at 1.4 for Japan as a whole, and 1.5 or 1.9 in the conterminous fields of research. Thus, we can say that many of PLoS ONE articles were authored with larger amounts of grant funding. In terms of the number of granting agencies per article, PLoS ONE articles were still overwhelmed by those published in Nature or Science, but PLoS ONE articles eclipse even these two prestigious journals in the funded rate.

This is the quite evident trend. There could be many reasons for this, but one of the most likely reasons may be that PLoS ONE articles require publication charge. As for PLoS series other than PLoS ONE, the number of grant funding per article was even higher at 4.4, with the funded rate of 100%. Thus, we can say that Japanese authors who publish articles in OA journals, or at least in PLoS series, are those who have access to relatively ample funds. However, I could not verify in the latest survey whether it is the case based on positive relationships that authors publish articles in OA journals because they have enough funds to do so or funds are provided for the purpose of publishing articles in OA journals, or it is the case that authors publish articles in PLoS ONE known for quick peer-review because they have to show some results after obtaining funding. Furthermore, since the latest survey just looked at the number of grant funding instances but not amounts of grant funding, I believe a further survey and analysis is required in this respect going forward.

(Q1) Please briefly tell us how you counted the instances of grant funding.

(Sato) Since I was not able to count the precise number of grants obtained, I counted the number of funding agencies that provided grant funding. Therefore, even when two grants of scientific research funds are provided by the Japan Science and Technology Agency (JST), it is counted as one case of grant funding. Thus, precisely speaking, the number of instances of grant funding should be interpreted as the number of funding agencies. If you use the analysis function of the Web of Science, you can acquire data on how many funding agencies gave funding to the articles being browsed. So, I obtained the number of instances of grant funding by simply dividing those figures.