



2015

# 15<sup>th</sup> INTERNATIONAL CONFERENCE ON SCIENTOMETRICS & INFORMETRICS

29 June - 4 July, 2015  
BOĞAZIÇI UNIVERSITY • ISTANBUL-TURKEY  
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PROCEEDINGS OF ISSI 2015



# **PROCEEDINGS OF ISSI 2015 ISTANBUL**

**15<sup>th</sup> International Society of  
Scientometrics and Informetrics Conference**

**Istanbul, Turkey  
29<sup>th</sup> June to 4<sup>th</sup> July 2015**

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Boğaziçi University Cataloging –in-Publication Data

Proceedings of ISSI 2015 Istanbul: 15th International Society of Scientometrics and Informetrics Conference, Istanbul, Turkey, 29 June to 3 July, 2015 / editors Albert Ali Salah, Yaşar Tonta, Alkım Almıla Akdağ Salah, Cassidy Sugimoto, Umut Al.

1275 p.; 29 cm.

ISBN 978-975-518-381-7

ISSN 2175-1935

1. Bibliometrics - Congresses. 2. Information science - Congresses. 3. Communication in science - Congresses. 4. Scientific literature - Congresses.  
Z669.8jb.I58

Printed at the Boğaziçi University Printhouse

First Printing: June 2015

Boğaziçi Üniversitesi, ETA B Blok, Zemin Kat, Kuzey Kampüs, İstanbul / TÜRKİYE

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# CHAIRS' WELCOME

The 15th International Society of Scientometrics and Informetrics Conference took place at Boğaziçi University in Istanbul, from June 29 to July 4, 2015. The Conference was jointly organised by Boğaziçi University, Hacettepe University, and the TÜBİTAK ULAKBİM (Turkish Academic Network and Information Center – The Scientific and Technological Research Council of Turkey) under the auspices of ISSI – the International Society for Scientometrics and Informetrics.

The ISSI biennial conference is the premier international forum for scientists, research managers, authorities and information professionals to discuss the current status and progress in informetric and scientometric theories, concepts, tools, platforms, and indicators. In addition to theoretical and quantitative focus of the conference, the participants had the opportunity to discuss practical, cross-cultural, and multi-disciplinary aspects of information and library science, R&D-management, and science ethics, among other related topics.

The focus theme of ISSI2015 was “**the future of scientometrics**”. Scientometrics and informetrics together represent a broad field with a rich history. Scientometrics has been responsible for creating tools for research assessment and evaluation, as well as for use in charting the flow of scientific ideas and people. Today, with the advancements of computing power, technology, and database management systems, the impact of scientometrics has become ubiquitous for scientists and science policy makers. However, the high diffusion of scientometric and informetric research has also brought a new wave of criticism and concern, as people grapple with issues of goal displacement and inappropriate use of indicators. The question facing the field is how best to move forward given the computational opportunities and the sociological concerns. Therefore, the goal of ISSI2015 was to highlight the best research in this field and to bring together scholars and practitioners in the area to discuss new research directions, methods, and theories, and to reflect upon the history of scientometrics and its implications.

The keynote given by Loet Leydesdorff demonstrated the potential of thinking of science as a complex institution. By building on the Triple Helix Model of University-Industry-Government relations, Dr. Leydesdorff showed that innovation systems can provide institutional mediation between knowledge production, wealth generation, and governance.

The second keynote, by Kevin Boyack, directly answered the challenge of the focus theme of ISSI2015, and proposed several opportunities to expand the field of scientometrics. Dr. Boyack called for increasing attention to funding, workforce, data and instrumentation, research objects, and innovation.

The conference included four special sessions on a range of topics, including performance indicators, algorithms for topic detection, empirical evaluation of education, research and innovation, and how scientometrics can be used to improve and inform university rankings. These special sessions included poster presentations, panel discussions, invited speakers, and public debates.

The increasing number of open-source software for scientometrics presents great opportunities for researchers. Four tutorials, organized on the first day of the conference, aimed to introduce a number of tools in depth: open source data analysis and visualization tools, citation exploration software, measurement of scholarly impact, and on social network analysis with the popular R software.

The Doctoral Forum, organized by Andrea Scharnhorst and Judit Bar-Ilan, is a meeting of senior researchers and selected doctoral students for presenting and discussing research projects and an

excellent way for students of getting valuable feedback, along with strong networking opportunities. This is the sixth ISSI Doctoral Forum and we are extremely happy about the interest it continues to receive from the community. Additionally, the prestigious Eugene Garfield Doctoral Dissertation Scholarship is given by the Eugene Garfield Foundation.

During the Conference, the Derek de Solla Price Award of the International Journal Scientometrics was given to Mike Thelwall, Professor of Information Science at the University of Wolverhampton (UK), in a special session organized for this purpose. This award recognizes excellence through outstanding, sustained career achievements in the field of quantitative studies of science and their applications.

The satellite workshops of the conference reflected the diversity of the field. In **“Mining Scientific Papers: Computational Linguistics and Bibliometrics”**, researchers in bibliometrics and computational linguistics were brought together to study the ways bibliometrics can benefit from large-scale text analytics and sense mining of scientific papers, thus exploring the interdisciplinarity of Bibliometrics and Natural Language Processing. The workshop on **“Grand challenges in data integration for research and innovation policy”** dealt with problems of big, open and linked data. The **“Forecasting science: Models of science and technology dynamics for innovation policy”** workshop discussed methodology for predicting the circumstances leading to scientific or technological innovation. **“Workshop on Bibliometrics Education”** brought together educational institutions, employers, professional societies, and Bibliometrics researchers and professionals to tackle this problem. Finally, **“Google Scholar and related products”** was a highly interactive workshop on the benefits and limitations of some of the most important citation tools.

All contributions for the conference were evaluated by at least two reviewers of the Scientific Program Committee. The papers that required additional reviews were discussed by the Program Chairs before a decision was reached. From 228 full and research in progress paper submissions, 123 papers were accepted for publication (54 percent acceptance rate). 82 of these papers were full papers, and 41 were research in progress. There was a large number of paper submissions on social media, technology transfer, science policy and research assessment. From 123 poster and ignite talk submissions, 68 posters and 13 ignite talks were accepted (66 percent). The ignite talks were to increase discussion of underrepresented topics and novel ideas. Because of the large number of papers, and to allow proper discussion for each paper, four parallel sessions were implemented. Several poster sessions were organized, each containing a relatively manageable number of posters. The conference brought together researchers from 42 countries and the works of 458 researchers were presented.

We thank all our contributors for their submissions, the members of the Organizing Committee for their work, the Scientific Program Committee for their reviewing effort, the ISSI board for their trust and guidance, the Rectorate and the Faculty of Engineering of Boğaziçi University for their constant assistance and support, as well as the sponsors for their generous financial contributions. We particularly thank Metin Tunç (Thomson Reuters), Elif Gürses (formerly of TÜBİTAK ULAKBİM), Juan Gorraiz (Universitat Wien), Figen Atalan (Boğaziçi University), Orçun Madran (Hacettepe University) and Büşra Şahin (DEKON Congress & Tourism) for their help in organizing ISSI2015.

**Albert Ali Salah, Yaşar Tonta, Mirat Satoğlu, Alkım Almıla Akdağ Salah, Cassidy Sugimoto, Umut Al**

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**THEORY**

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**METHODS AND TECHNIQUES**

# Expertise Overlap between an Expert Panel and Research Groups in Global Journal Maps

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## Abstract

There are no available methods to measure overlap in expertise between a panel of experts and evaluated research groups in discipline-specific research evaluation. This paper explores a bibliometric approach to determining the overlap of expertise, using the 2009 and 2011 research evaluations of ten Pharmaceutical Sciences and nine Biology research groups of the University of Antwerp. We study this overlap at the journal level. Specifically, journal overlay maps are applied to visualize to what extent the research groups and panel members publish in the same journals. Pharmaceutical Sciences panel members published more diversely than the corresponding research groups, whereas the Biology research groups published more diversely than the panel. Numbers of publications in the same journals vary over a large scale. A different range of coverage was found for different research groups; there is also a significant difference between maximum and minimum coverage based on discipline. Future research will focus on similarity testing, and a comparison with other disciplines.

## Conference Topic

Methods and techniques

## Introduction

Expert panel review is considered the standard for determining research quality of individuals and groups (Nedeva et al., 1996; Rons, et al., 2008; Butler & McAllister, 2011; Lawrenz et al., 2012), but also, for instance, for research proposals submitted to research funding organizations. The principal objective of such evaluations is to improve the quality of scientific research. Currently, there are no available methods that can measure overlap in expertise between a panel and the units of assessment in discipline-specific research evaluation (Engels et al., 2013). Rahman et al. (2014) explored expertise overlap between panel and research groups through publishing in the same Web of Science subject categories. Since one category may comprise a wide array of different subfields and topics (Bornmann, et al., 2011), it is up for discussion how relevant it is to have panel members and research group members publishing in the same subject categories. This paper presents a journal level analysis to explore this issue. Journals cover more closely related subfields and topics (Tseng & Tsay, 2013). This paper uses overlay maps at the journal level (Leydesdorff & Rafols,

2012), with special attention to the quantification of similarity between groups and panel for two disciplines.

In 2007, the University of Antwerp (Belgium) introduced site visits by expert panels that promise communication and participation between expert and research groups. It is expected that each research group's expertise is well covered by the expertise of the panel members.

We have used the data collected in the frame of research evaluation by the University of Antwerp. This research in progress paper explores the expertise overlap between expert panel and research groups of the department of Biology and Pharmaceutical Sciences. Hence, the research questions are:

- 1) To what extent is there overlap between the panel's expertise and the expertise of the groups as a whole?
- 2) To what extent is each individual research group's expertise covered by the panel's expertise?

### Data and Method

In this paper, we present an analysis of the 2009 assessment of ten research groups (2001-2008) of the Department of Pharmaceutical Sciences, and the 2011 assessment of the nine research groups (2004-2010) belonging to the Department of Biology, University of Antwerp. The citable items from the Science Citation Index Expanded of the Web of Science (WoS) published by the research groups in the reference period were considered.

Both panels were composed of five members (including the chair). All the publications of the individual panel members up to the year of assessment were taken into account. The combined publication output of the Pharmaceutical Sciences panel members is 1,029 publications. In total, these publications appeared in 300 different journals. The number of publications per panel member ranges from 124 to 353, in 39 to 93 different journals. The Biology panel members' publication output amounts to 786 publications in 217 different journals. The number of publications per panel member ranges from 76 to 262, in 36 to 76 journals. There are no co-authored publications between panel members in both cases.

**Table 1: Publication profile of the Pharmaceutical Sciences and Biology research groups**

Pharmaceutical Sciences research groups (2001-2008)			Biology research groups (2004-2010)		
<u>Group code</u>	<u>Number of Publications</u>	<u>Number of Journals</u>	<u>Group code</u>	<u>Number of Publications</u>	<u>Number of Journals</u>
PSRG - A	40	22	BRG - A	168	53
PSRG - B	62	32	BRG - B	58	33
PSRG - C	61	35	BRG - C	212	212
PSRG - D	32	17	BRG - D	175	68
PSRG - E	64	42	BRG - E	168	69
PSRG - F	34	21	BRG - F	58	35
PSRG - G	67	31	BRG - G	280	139
PSRG - H	39	27	BRG - H	67	42
PSRG - I	29	10	BRG - I	86	52
PSRG - J	11	09	----	----	----
All groups together	<b>372</b>	<b>180</b>	All groups together	<b>1,153</b>	<b>372</b>

PSRG = Pharmaceutical Sciences Research Group; BRG = Biology Research Group.

Table 1 lists the number of publications of the research groups. The Pharmaceutical Sciences research groups published 372 publications in 180 journals, including 67 joint publications

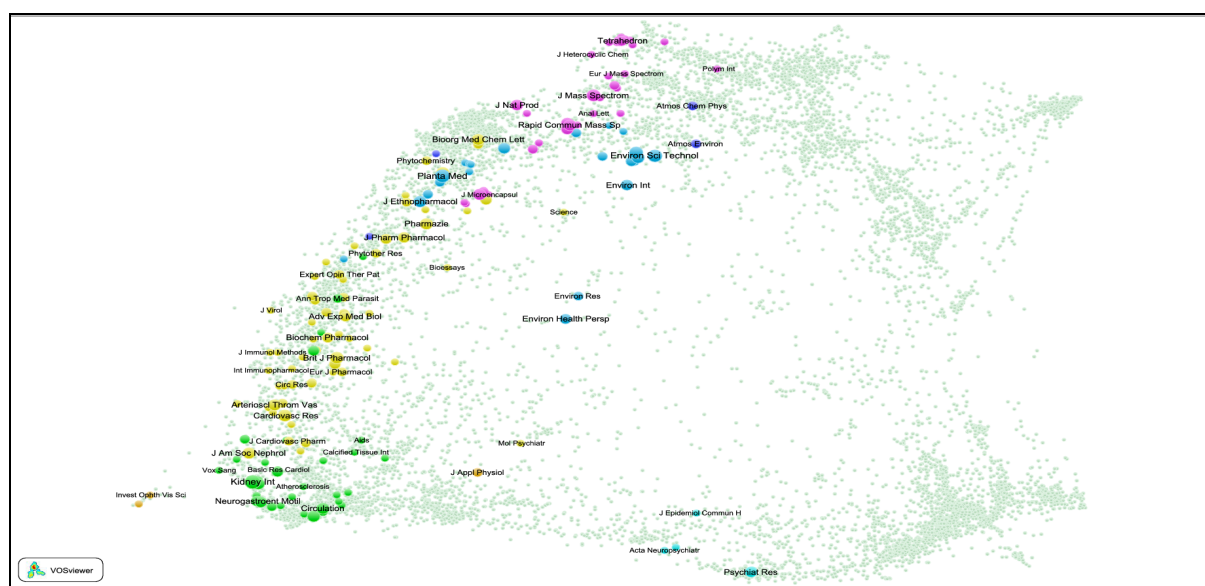
between the groups, while the Biology research groups generated 1,153 publications in 372 journals, and there are 119 joint publications between the groups.

For this paper, we adopted the overlay mapping methods based on a global journal map from Web of Science data (Leydesdorff & Rafols, 2012). Journals overlay maps were created for the panels, all individual research groups, and the combined research groups of each department. To this end, all Source titles (Journal titles hereafter) pertaining to the entire citable journal output of the panel members and the groups were retrieved and entered into network software, and overlay information was added to the global journal map. The overlap of research group and panel publications was visualized on a global journal map based on the retrieved journal titles, using the visualization program VOSviewer (van Eck & Waltman, 2010).

## Analysis and Results

### *Panel profiles versus Group profiles*

Pharmaceutical sciences panel publications are found in 300 different journals, whereas those of the combined Pharmaceutical Sciences groups cover 180 journals. The journal overlay maps for the Pharmaceutical Sciences combined groups (Fig. 1) and the panel (Fig. 2) clearly show that the publication scope of the panel is wider than that of the combined groups. The panel publications are strong (11.86%) in ‘Pharmaceutical Research’, ‘British Journal of Clinical Pharmacology’, and ‘Archiv der Pharmazie’ journals, whereas the research group publications are clustered (8.6%) in ‘Kidney International’, ‘Planta Medica’, ‘Environmental Science & Technology’ journals.



**Figure 1. Pharmaceutical Sciences groups’ publications overlay to the global journal maps.**





Together, the Pharmaceutical Sciences panel and groups have 60 journals in common. In addition, 240 journals have panel publications but no group publications, while 120 journals contain group publications but no panel publications. Further, Biology panel and group publications were common in 93 journals. Moreover, 125 journals contained panel publications but no group publications and 279 journals have group publications but no panel publications.

These findings demonstrate that Pharmaceutical Sciences panel published more diversely than the groups, whereas the opposite is true for the Biology department. However, the Pharmaceutical Sciences panel overlaps in one third of the journals of groups' publications, whereas the Biology panel overlaps almost half the journals where biology groups have publications too.

#### *Panel profile versus Individual group profile*

Overlay maps of the publications of the individual groups were created, and subsequently compared with the two panel overlay maps. Most Pharmaceutical Sciences research groups have at least one journal in common with the panel; this is the case for PSRG-A (50%), PSRG-B (40.63%), PSRG-C (31.42%), PSRG-D (58.82%), PSRG-E (40.78%), PSRG-F (61.9%), PSRG-G (16.13%), PSRG- H (37.03%), and PSRG-J (20%). Only PSRG-I has none. All Biology research groups have one or more journals in common with the panel: BRG-A (41.51%), BRG-B (18.75%), BRG-C (33.33%), BRG-D (35.29%), BRG-E (42.65%), BRG-F (48.57%), BRG-G (35.97%), BRG-H (19.05%), BRG-I (25%).

These data show that the research outputs of three of the ten Pharmaceutical Sciences research groups (A, D, F) are 50–62 percent, four groups (B, C, E, H) are 30–40 percent, two groups (G, J) are 20 to 15 percent covered by the panels' expertise thematically, whereas one group (group I) is not covered at all. At the same time, three out of nine Biology research groups (A, E, F) are 40-50 percent, three research groups (C, D, G) are 30-40 percent, and another three research groups (B, H, I) are below 25 percent covered by the panel's expertise.

#### **Conclusion**

The results indicate that the Biology research groups published more diversely than the panel, which is similar to the findings in Rahman et al. (2014). However, the Pharmaceutical Sciences panel published more diversely than research groups, which is opposite to what was found in Rahman et al. (2014) where the research groups published more diversely in Web of Science subject categories than the panel did. The most likely reason is that all panel members' publications are taken into account (published over the course of over 20 years, often working in different countries and on different topics), whereas the research groups have a specific focus and choose the journals accordingly.

Pharmaceutical Sciences panel overlaps in one third of the journals of the corresponding group's publications, whereas the Biology panel overlaps in close to half the journals where Biology groups have publications. In addition, the number of publications in the same journals by the expert panel and research group varied, and a different range of coverage was found for different research groups. There is also a significant difference between maximum and minimum coverage based on discipline. To quantify which overlap leads to the best standard for evaluation, a considerable range of percentage of common journals between the panel and research group needs to be identified. The considerable range of percentage will express a well-covered, partially covered, and hardly covered expertise based on journal level matching. In subsequent analysis, we will compare results with corresponding results for other disciplines and explore other criteria for adequate relations between evaluation panels and groups.

## Acknowledgments

This investigation has been made possible by the financial support of the Flemish Government to ECOOM, among others. The opinions in the paper are the authors' and not necessarily those of the government. The authors thank Nele Dexters for assistance.

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