PRN: a preprint service for catalyzing R-fMRI and neuroscience related studies postprint

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Date: 2017-11-06T00:00:00+00:00

Abstract

Sharing drafts of scientific manuscripts on preprint hosting services for early exposure and pre-publication feedback is a well-accepted practice in fields such as physics, astronomy, or mathematics. The field of neuroscience, however, has yet to adopt the preprint model. A reason for this reluctance might partly be the lack of central preprint services for the field of neuroscience. To address this issue, we announce the launch of Preprints of the R-fMRI Network (PRN), a community funded preprint hosting service. PRN provides free-submission and free hosting of manuscripts for resting state functional magnetic resonance imaging (R-fMRI) and neuroscience related studies. Submissions will be peer viewed and receive feedback from readers and a panel of invited consultants of the R-fMRI Network. All manuscripts and feedback will be freely available online with citable permanent URL for open-access. The goal of PRN is to supplement the "peer reviewed" journal publication system –by more rapidly communicating the latest research achievements throughout the world. We hope PRN will help the field to embrace the preprint model and thus further accelerate R-fMRI and neuroscience related studies, eventually enhancing human mental health.

Full Text

Preamble

PRN: A Preprint Service for Catalyzing R-fMRI and Neuroscience Related Studies

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Abstract

Sharing drafts of scientific manuscripts on preprint hosting services for early exposure and pre-publication feedback is a well-accepted practice in fields such as physics, astronomy, and mathematics. However, the field of neuroscience has yet to adopt the preprint model, partly due to the lack of central preprint services dedicated to the field. To address this gap, we announce the launch of Preprints of the R-fMRI Network (PRN), a community-funded preprint hosting service.

PRN provides free submission and hosting of manuscripts for resting-state functional magnetic resonance imaging (R-fMRI) and neuroscience-related studies. Submissions will be peer-viewed and receive feedback from readers and a panel of invited consultants from the R-fMRI Network. All manuscripts and feedback will be freely available online with citable permanent URLs for open access. The goal of PRN is to supplement the traditional "peer-reviewed" journal publication system by more rapidly communicating the latest research achievements worldwide. We hope PRN will help the field embrace the preprint model, thereby accelerating R-fMRI and neuroscience-related studies and ultimately enhancing human mental health.

Keywords: Free-submission, Neuroscience, Open-access, "Peer viewed," Preprint-hosting, R-fMRI

1. Introduction

Before submitting manuscripts to traditional journals for peer review and publication, researchers in some fields routinely distribute their work as preprints to receive early feedback, which helps prepare articles for definitive submission while rapidly propagating novel ideas throughout their disciplines. The well-known central repository for preprints, arXiv (http://arXiv.org), was founded in 1991 by Dr. Paul Ginsparg for the field of physics and gradually expanded to include astronomy, mathematics, computer science, nonlinear science, quantitative biology, and statistics as scientists in these fields embraced preprints (Ginsparg, 2011). arXiv now hosts nearly one million full-text preprints (983,739 as of November 1, 2014). Registered users can submit manuscripts (multiple versions are allowed), and all users can freely browse, view, and cite any articles. Although arXiv lacks rating systems or a feedback mechanism for users to recommend papers to peers or provide feedback to authors, it remains an invaluable resource for the fields it serves.

However, researchers' attitudes toward preprints vary by field. Neuroscience

has yet to adopt the practice of releasing preprints. Instead, neuroscientists typically circulate manuscripts privately among collaborators and colleagues in small groups for feedback. This limited sharing may partly stem from the lack of central preprint services for the field. Only in 2013 did two preprint services dedicated to biology emerge for the life sciences (Callaway, 2013; Van Noorden, 2012). PeerJ Preprints (https://peerj.com/preprints/), launched by PeerJ, and bioRxiv (http://biorxiv.org), launched by Cold Spring Harbor Laboratory, provide preprint hosting services with online feedback and comment systems. Early feedback is expected to help authors revise and improve their articles for later peer review at traditional journals, and commenters can be acknowledged for their contributions in subsequent publications. However, it is still early days for neuroscience preprints—bioRxiv and PeerJ Preprints have received only 56 and 38 neuroscience papers, respectively (as of 11/1/2014; see Table 1). Additional efforts to facilitate adoption of the preprint model appear necessary.

A subfield of neuroscience, neuroimaging—particularly resting-state functional magnetic resonance imaging (R-fMRI)—has emerged as a field embracing innovations such as open data sharing (e.g., ADHD-200-Consortium, 2012; Biswal et al., 2010; Di Martino et al., 2014; Hall et al., 2012; Mennes et al., 2013; Milham, 2012; Mueller et al., 2005; Satterthwaite et al., 2014; Van Essen et al., 2013; Zuo et al., 2014), open software sharing (e.g., Bellec et al., 2012; Rubinov and Sporns, 2010; Sikka et al., 2014; Song et al., 2011; Taylor and Saad, 2013; Whitfield-Gabrieli and Nieto-Castanon, 2012; Xia et al., 2013; Yan and Zang, 2010; Zang et al., 2012; Zuo and Xing, 2014), and sharing of learning resources (e.g., Training Course in fMRI (http://sitemaker.umich.edu/fmri.training.course), R-fMRI Course (http://rfmri.org/Course)). As a method for investigating ongoing brain activity in basic, translational, and clinical neuroscience studies, R-fMRI has become an increasingly prevalent research area, particularly given its sensitivity to developmental, aging, and pathological features (Andrews-Hanna et al., 2007; Fair et al., 2008; Greicius, 2008; Zuo et al., 2010), subject-friendly data collection procedures in clinical samples, and high comparability and consistency across studies and sites (ADHD-200-Consortium, 2012; Biswal et al., 2010; Mennes et al., 2013; Tomasi and Volkow, 2012). This field has expanded exponentially, now exceeding 1,000 studies published per year (Figure 1 [Figure 1: see original paper]). Given these emerging traditions of openness and the growing number of researchers involved, we believe the field can benefit from a preprint service that provides peer viewing and commenting.

Accordingly, we announce a preprint publication model to catalyze R-fMRI and related neuroscience studies. We have designed PRN as a community-funded, open-access, free-submission, "peer-viewed" preprint service to supplement the traditional "peer-reviewed" journal publication system by supporting more rapid communication of the latest research observations worldwide.

2. Implementation

We have implemented the PRN service building upon the success of The R-fMRI Network (RFMRI.ORG), which was designed as a framework to support R-fMRI studies. The R-fMRI Network comprises R-fMRI researchers (the nodes) connected by sharing (the edges), enabling imagers to efficiently exchange ideas, comments, resources, tools, experiences, data, and increasing knowledge of the brain. Researchers (nodes) with backgrounds in basic neuroscience, methodology, or clinical applications can connect within the network. The R-fMRI Network currently has more than 5,000 registered members and aims to enhance collaborations among researchers, particularly to translate knowledge from basic neuroscience and methodology to clinical applications (bench to bedside).

The R-fMRI Network (RFMRI.ORG) features a forum system integrated with Drupal-based mailing list functionality (http://drupal.org; http://www.gnu.org/software/mailman/). This online forum system allows researchers to propose research ideas, discuss controversial issues, request software assistance, share experiences, report preliminary results, initiate collaborations, and even seek employment opportunities. The network hosts several instances of R-fMRI software (e.g., DPABI, DPARSF, and GraphVar), online learning resources, open data links, and aggregates the latest R-fMRI-related studies from PubMed. All new posts are distributed to all registered R-fMRI Network users via an integrated mailing list, and users can comment on any post by directly replying to the mailing list.

PRN has been built upon this existing RFMRI.ORG infrastructure. Submitting a manuscript is as simple as posting a forum message: the paper title becomes the post title, the manuscript title page and abstract form the post content, and a PDF version of the full-text manuscript serves as an attachment. Each preprint manuscript receives a permanent online URL with a convenient commenting system like the forum, plus immediate mailing list notification to all registered users. Additionally, PRN includes the following features.

3. Features

Preprint
All submissions to PRN are preprint submissions, allowing authors to freely revise and submit either unrevised or revised manuscripts to formal "peer-reviewed" traditional journals that permit preprints. PRN only checks manuscript format and contacts the corresponding author to confirm approval of submission. As a preprint service, PRN has no peer review process and provides no editing service.

Open-access
All PRN articles are freely available online after submission. Readers can freely read, download, and comment on articles. Like other posts on the R-fMRI Network, all submissions are dated, citable with a permanent URL, and indexed by Google. Each PRN submission has a unique URL with a timestamp (e.g.,

http://rfmri.org/PRN_{140828001}). PRN does not require copyright transfer; however, it requires sufficient rights to distribute submitted articles in perpetuity, as documented at http://rfmri.org/PRN_{140831001}. In general, authors should grant PRN a non-exclusive and irrevocable license to distribute the article or certify that the work is under either a Creative Commons Attribution license or a Creative Commons Attribution-Noncommercial-ShareAlike license.

Free-submission
Unlike other open-access journals, submission to PRN is free of charge.

"Peer viewed"
Articles on PRN will be peer-viewed by interested readers and consultants. PRN has enrolled a panel of consultants, each obligated to comment on three PRN papers per six-month period. On a monthly basis, PRN will recognize "consultants' choice" and "readers' choice" articles. Furthermore, PRN will highlight the most active articles—those eliciting the most comments and revisions—to spur feedback and revision.

Community funded
PRN is a community-funded effort. We encourage all researchers to make a small contribution at http://rfmri.org/HelpUs to support PRN, though this is completely voluntary.

4. Compatibility with Traditional Formal Journals

A major concern is that traditional formal journals may refuse to publish manuscripts previously made available on a preprint server. To address this, we initiated cross-field discussions on preprints with editors-in-chief of journals in neuroscience, physics, and mathematics. An editor-in-chief in physics responded that arXiv is invaluable for physics research and is scanned daily by most physicists. Several editors-in-chief of neuroscience journals have confirmed that their journals do accept preprint manuscripts. Based on Sherpa-Romeo information (http://www.sherpa.ac.uk/romeo), we have compiled a table of PRN-compatible journals (http://rfmri.org/PRN_{20140921001}). Authors should consult this table carefully before submitting preprint manuscripts to PRN to avoid jeopardizing subsequent submission to PRN-incompatible journals.

5. Conclusions

We have launched PRN as a preprint service to catalyze R-fMRI and related neuroscience studies. By empowering this preprint system with an online commenting system and mailing list notifications to promote new studies to the R-fMRI community, and by inviting R-fMRI experts as consultants to comment on preprint manuscripts, we hope PRN will help the field embrace the preprint model, accelerate R-fMRI and related neuroscience studies, and ultimately enhance human mental health.

Acknowledgements

We thank Drs. Charles E. Schroeder, F. Xavier Castellanos, and Yu-Feng Zang for their assistance and support of the PRN effort. This work is supported by community contributors (http://rfmri.org/Contributors).

Author Contributions

Conceived and designed the experiments: CY. Performed the experiments: CY QL LG. Analyzed the data: CY QL LG. Contributed reagents/materials/analysis tools: CY QL. Wrote the paper: CY QL LG.

Conflict of Interest Statement

The authors declare that PRN receives technical support and hosting services from My Research Network (RNET.PW).

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Table 1. Overview of neuroscience-related preprint manuscripts on online preprint services (as of 11/1/2014). The table includes service name, scope, launch date, URL, total articles hosted, neuroscience-related articles, and fMRI-related articles.

Figure 1. Number of R-fMRI-related studies in PubMed over time (search keywords: "resting+state+fmri"), showing exponential growth from fewer than 50 studies in 1994 to over 1,000 studies annually by 2014.

Note: Figure translations are in progress. See original paper for figures.