Educational treasures in Radiology:

A highly customizable Radiology specific literature search engine

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ABSTRACT

This article focuses on PubRad (www.pubrad.org) - a custom defined and Radiology targeted medical literature search software which can be used in multiple ways to adjust to the individual user's needs. PubRad can be used from its website, from the user's desktop, it can be implemented into the user's own website or can be even integrated into third party programs.

TECHNICAL/IT & INNOVATIVE

EDUCATIONAL TREASURES IN RADIOLOGY

In this new series "Educational treasures in Radiology" we introduce the Radiology community to interesting and useful educational resources which can be found on the Internet. The World Wide Web (WWW) offers a plenitude of educational tools, programs and other resources. It becomes more difficult for the individual user to find the "best" resources and to separate the good from the less helpful ones. In each article of this series we present a selected online resource, which we think should be made aware to the Radiology community.

This article focuses on *PubRad*, an online program for customizing medical literature search.

PubMed (1), available via the NCBI Entrez retrieval system (2), is the most used literature database for researching newest knowledge in medicine. However, *PubMed* also displays a large amount of non-radiological search results which the radiologist needs to filter out. A tool is desired which collects only radiology related publications from *PubMed* and bundles them in a categorial way and targeted to the user's needs.

PubRad (3) has been developed for this specific purpose and provides an interface between the user's web-browser and *PubMed*. All *PubMed* indexed radiological journals are offered for search. The information is obtained via XML feed from the *PubMed* database and provided to the user as HTML code in form of a custom-defined website.

Users may search either all journals for articles or select specific journals for the user's personal preference. Users may save multiple search criteria in a personal profile. The program may be used in different modes for a broad overlook about all defined search criteria with access to the *PubMed* information as well as for on-the-fly access to the information directly from the user's computer. By using the latter mode, users receive an instant access to custom defined search criteria with literally a click of the mouse. Multiple other features, including export functions may be customized in an individualized user account.

Just recently has been *PubRad* integrated into the international Radiology community *Radiolopolis* (4,5) which demonstrates a new feature for third party program integration of *PubRad*. Members on *Radiolopolis* can search the medical literature and organize them in their preferred way. Cross-linking of literature between the co-authors provides an innovative social component into research.

In conclusion, *PubRad* is a freely available user-tailored online tool, that filters out relevant Radiology related articles from *PubMed* and saves the radiologist the time to manually filter out irrelevant articles. By individualization of search criteria, access and layout of the information presentation, the user is provided with a flexible and practical tool to facilitate the radiologist's daily workflow.

Do you have a potential topic for "Educational treasures in Radiology"? Then please contact journals@edurad.org.

FIGURES

Figure 1: This is a screenshot of *PubRad's* homepage (www.pubrad.org). PubRad allows for creating, organizing and multi-way integration of user-tailored medical literature search. A freetext search can be performed as it is done in PubMed (top left side). The user may choose the journals which should be searched for articles (all PubMed indexed Radiology journals). If the user does not select a specific journal, ALL PubMed indexed journals are searched for articles.

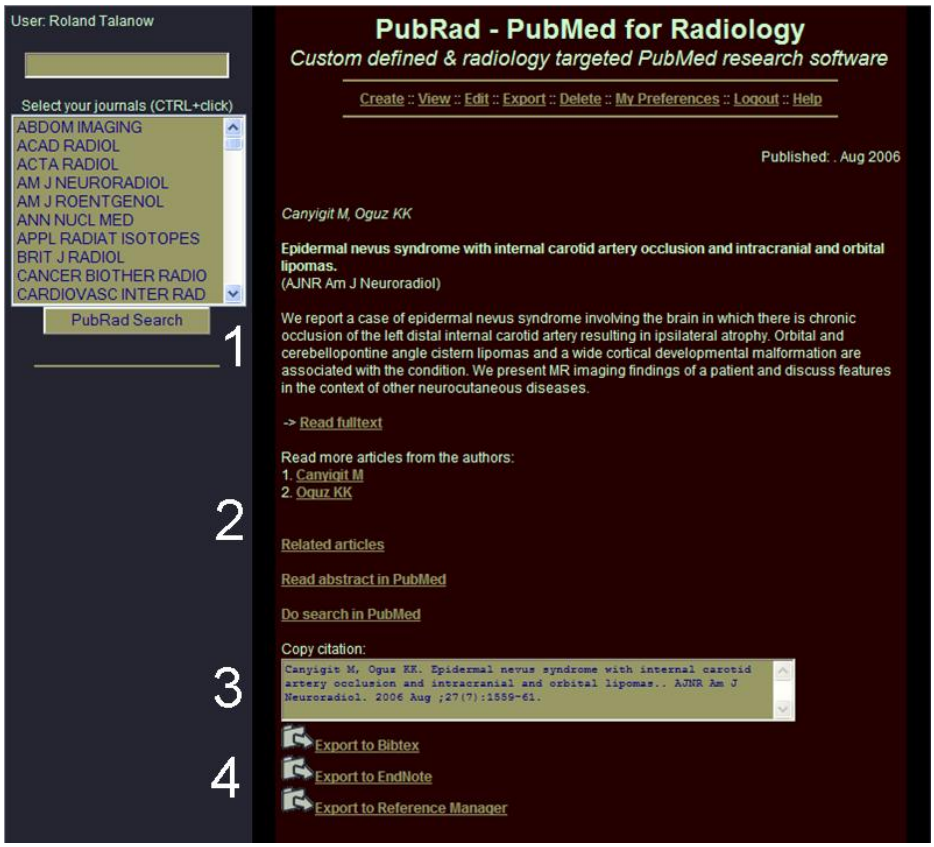


Figure 2: After selecting a title, the abstract (1) can be read with pertinent metadata. A link to the fulltext article is also provided.The user is provided with a multitude of links e.g. to read similar articles, more from the authors or to go directly to PubMed (2). Several options are provided that allow to copy the citation directly into the user's own manuscript (3) or import it into multiple popular referencing software (4).

Figure 3: PubRad allows to "create" searches (e.g. for research of a specific topic to check if any updates available etc.). The search can be later further edited or deleted.

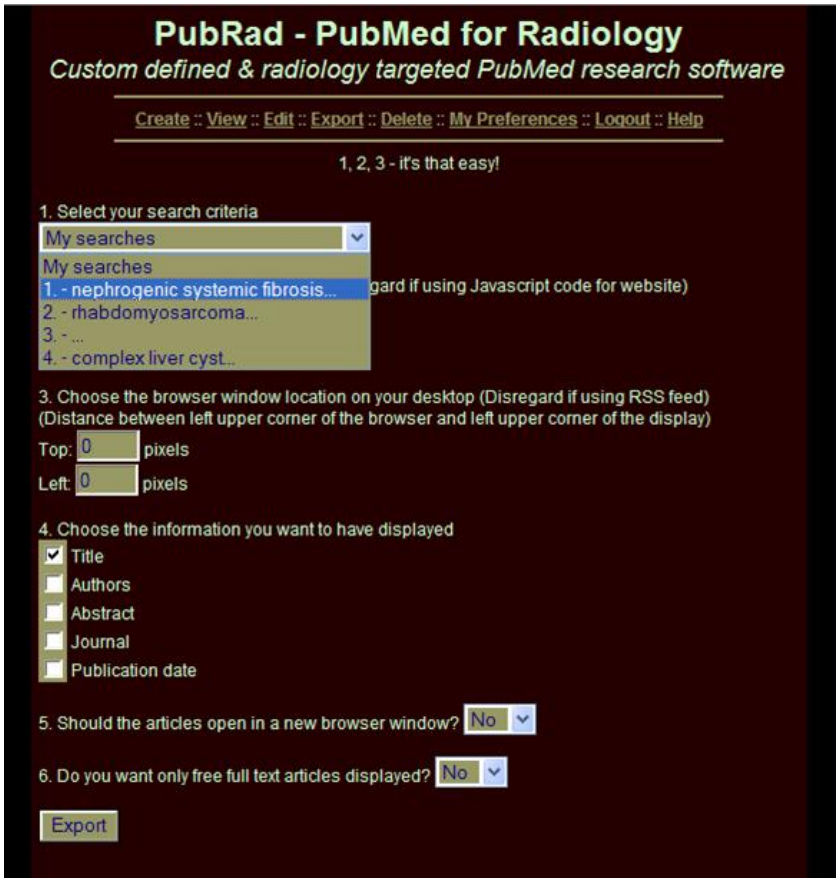


Figure 4: The probably most powerful features are the export functions. Several options to choose regarding type of display and contents of the search results are offered. The search results may be displayed in a separate window with custom-defined size, location and layout. The provided link can be copied and also saved as a shortcut directly on the user's desktop - for direct access from the user's computer. The link to the query can be also saved in the user's web-browser favorites. Another powerful feature is the export as XML file function and integration into external websites.

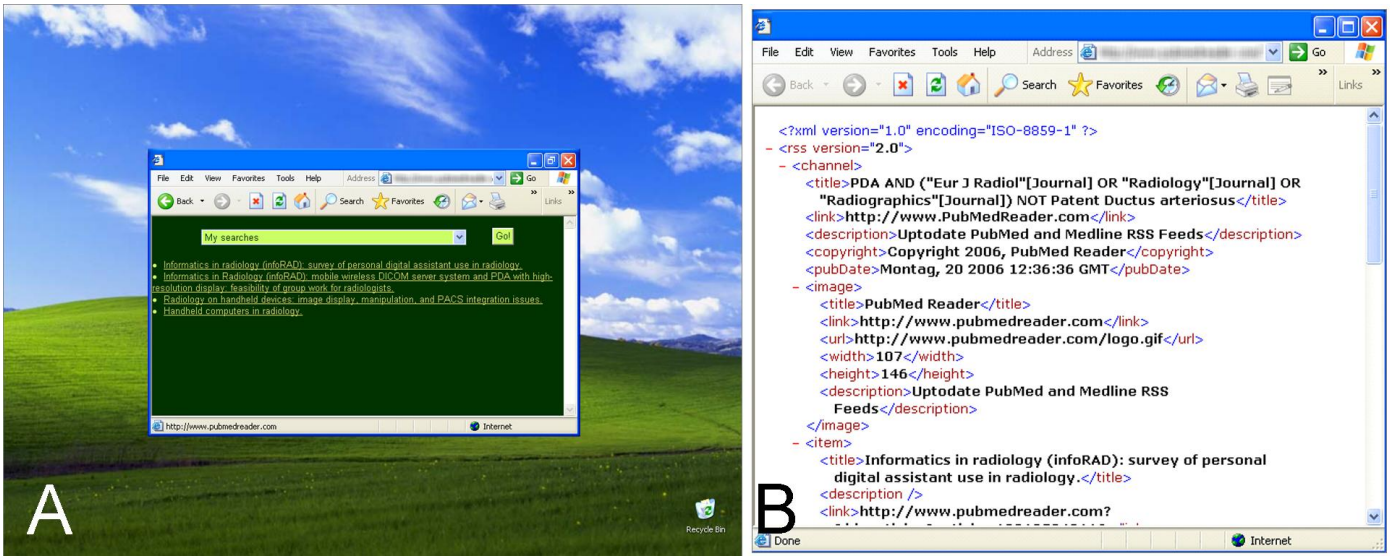


Figure 5: Example of an exported link that has been saved as a shortcut directly on the user's desktop - for direct access from the user's computer (A). B demonstrates the XML export function that allows the integration into external, third party programs.

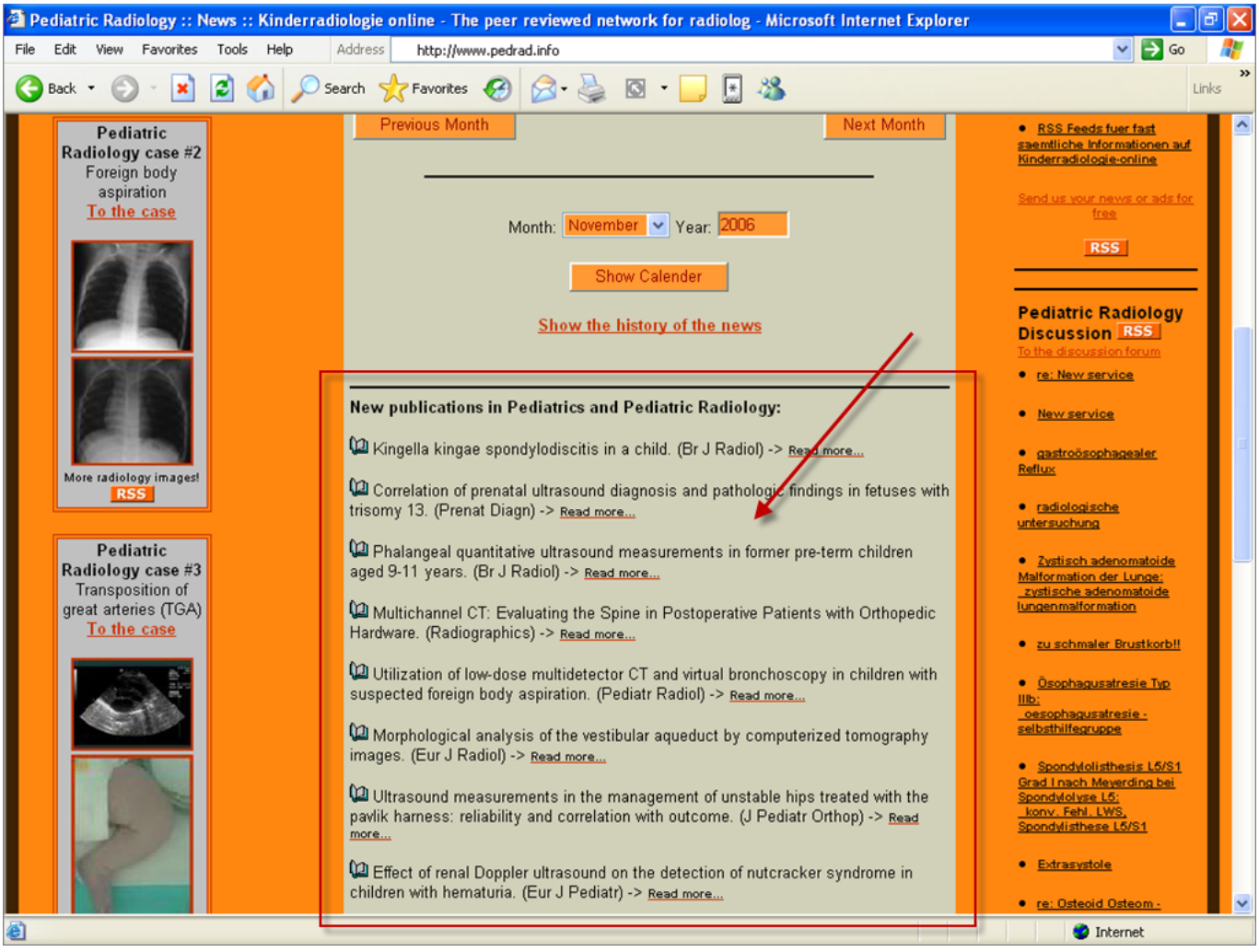


Figure 6: Example of the export function for usage in external websites. (Courtesy www.pedrad.info). The search results are displayed on-the-fly on the external website (within red rectangle) – just by simply implementing the exported PubRad RSS feed.

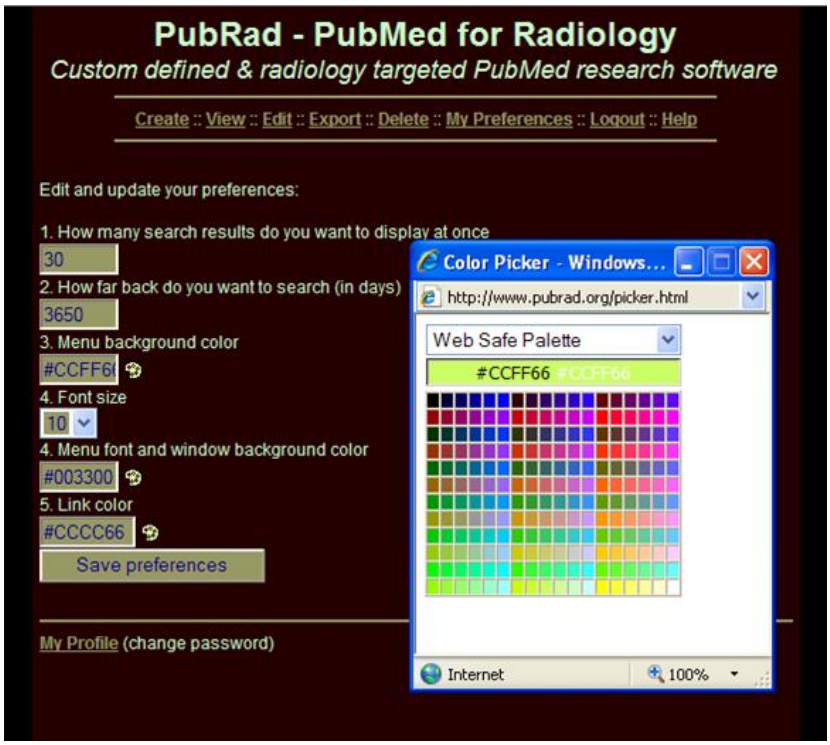


Figure 7: The user preferences allow flexibility of displaying and customizing the search results. The user may define default values for how many results should be displayed, how far back the search should go, and how the search results should be displayed and more.

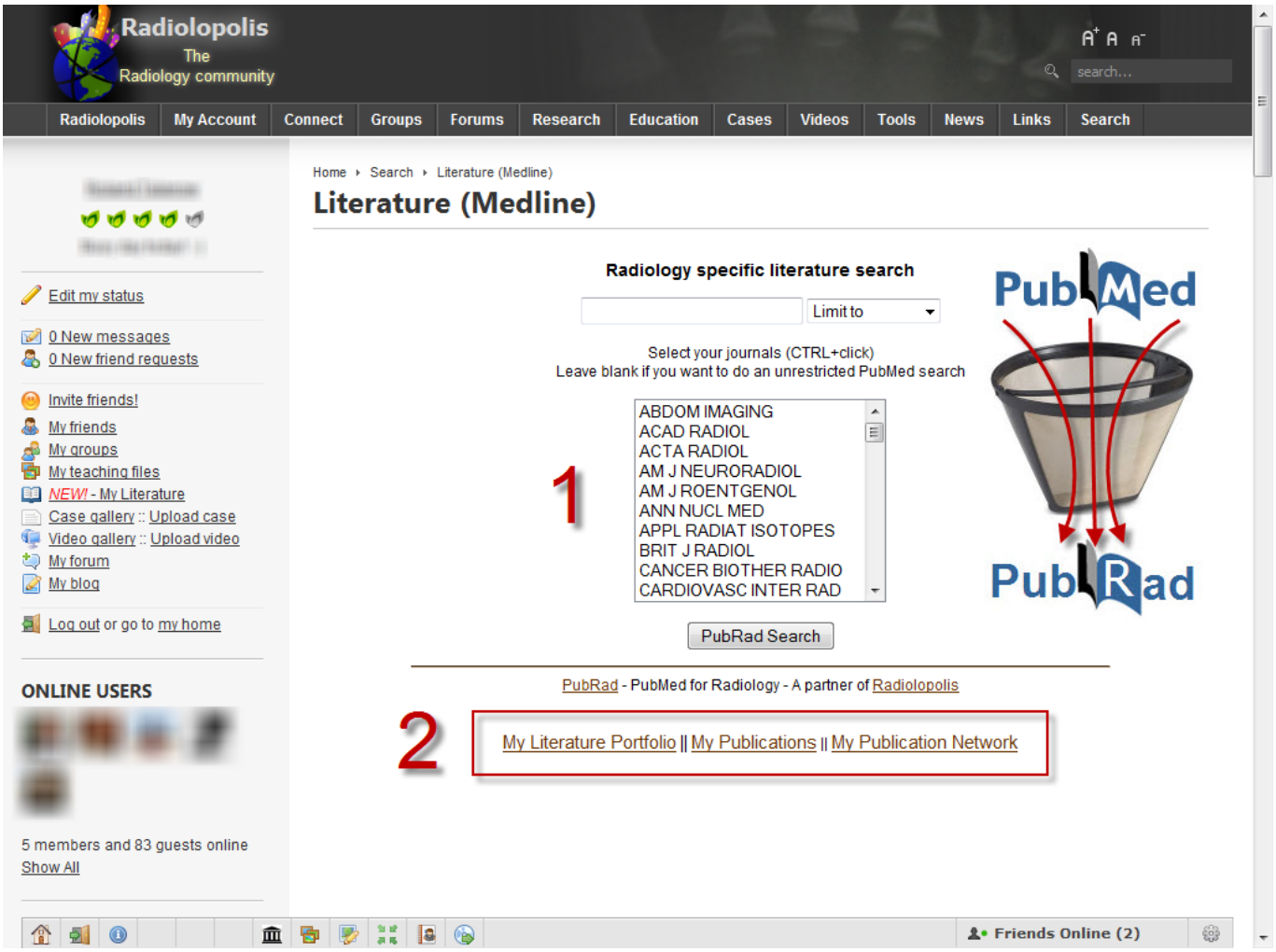


Figure 8: The latest feature has been the integration into Radiolopolis - an international Radiology community for education, research and clinical practice. PubRad has been fully integrated into this community and allows usage of its features directly from the Radiolopolis website - without the need for a separate login (1). In addition several other features have been implemented (2) such a "social" research features, customized literature portfolio and cross-linking of literature between the co-authors to stay up-to-date what the other colleagues are doing.

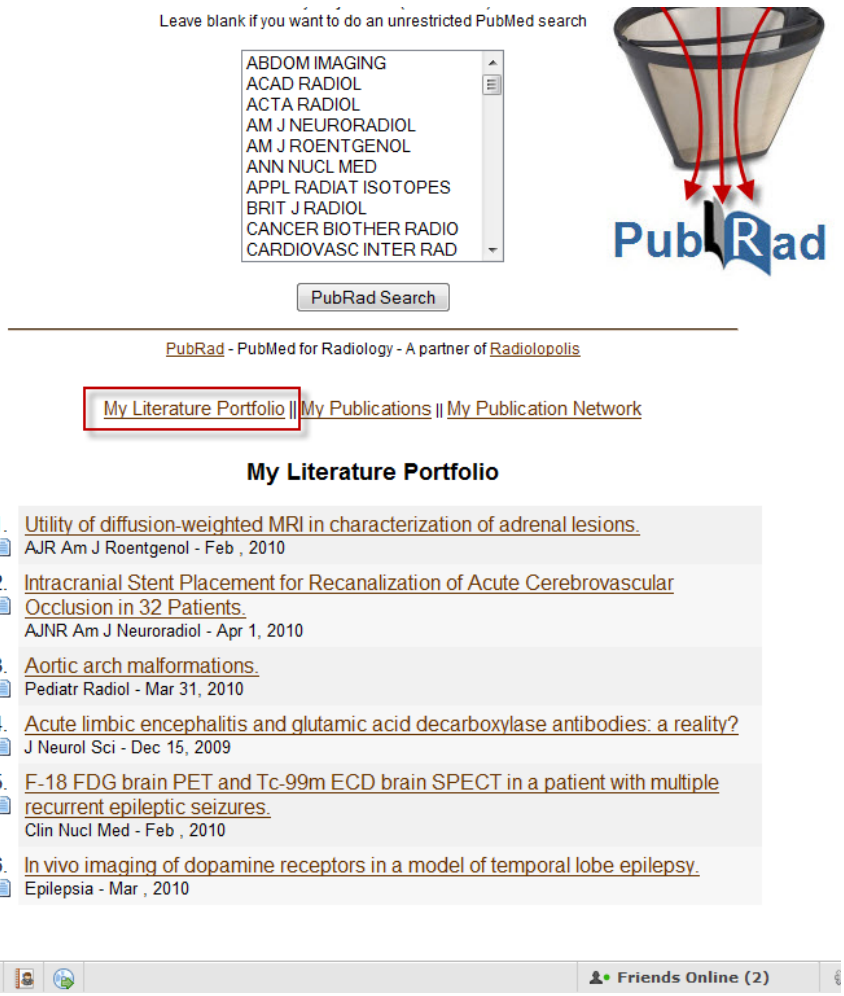


Figure 9: Integration of PubRad into the Radiology community Radiolopolis as an example of third party integration. This feature saves and organizes preferred literature in a personal portfolio (link within red rectangle).

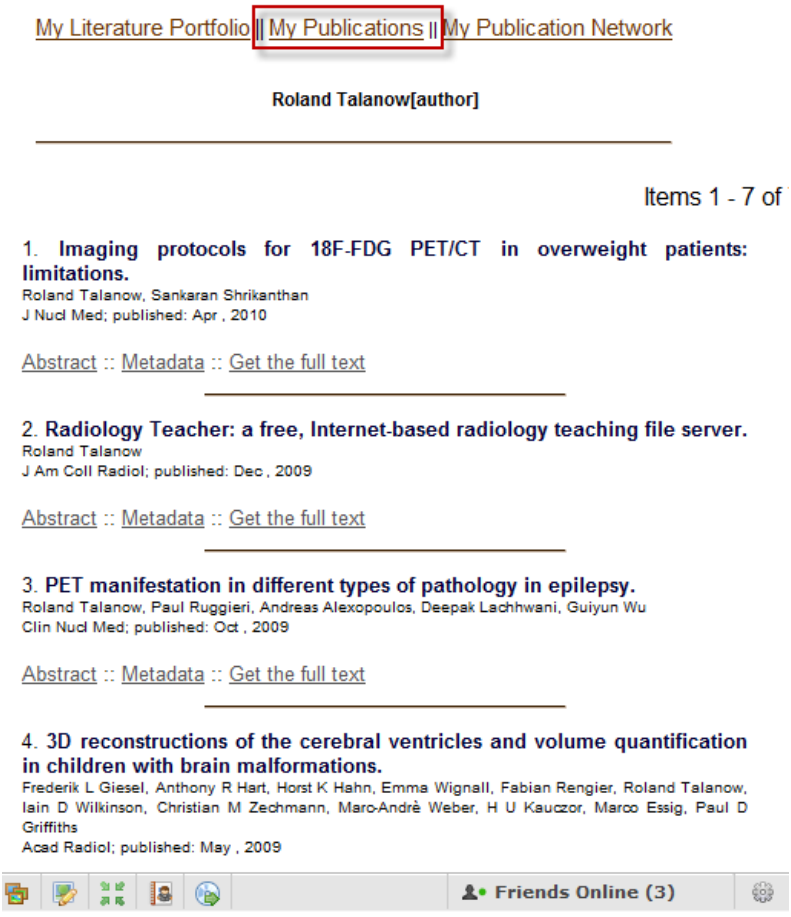
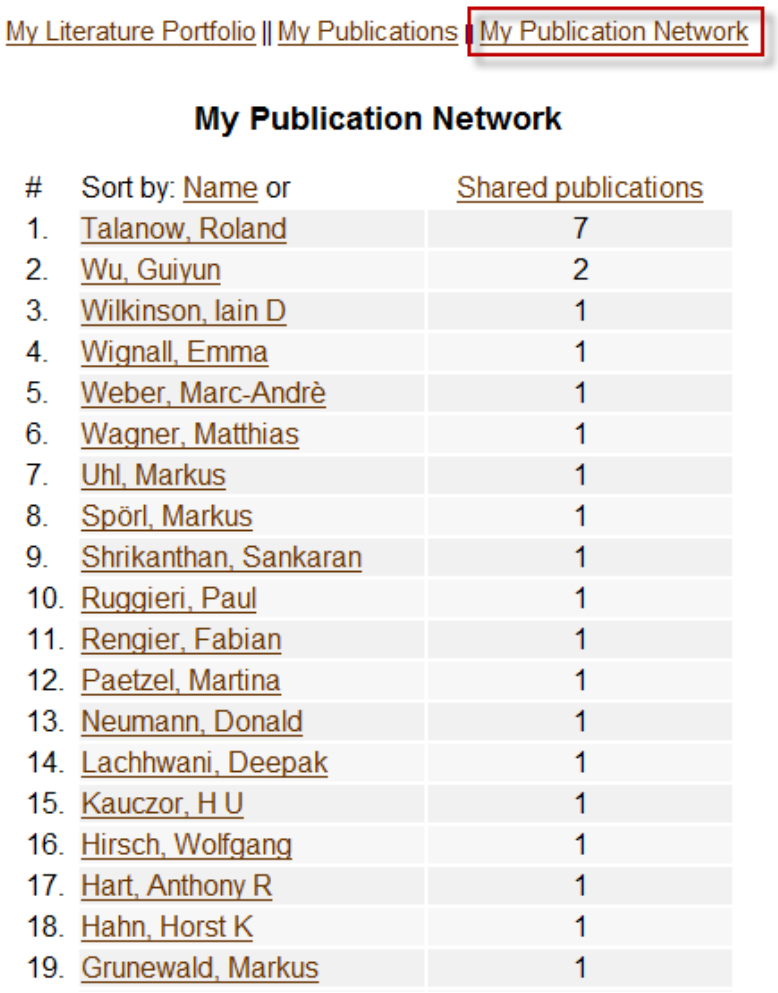


Figure 10: Integration of PubRad into the Radiology community Radiolopolis as an example of third party integration. This feature displays automatically all PubMed indexed publications of the user (link within red rectangle).



My Literature Portfolio || My Publications | My Publication Network

My Publication Network

#	Sort by: Name or	Shared publications
1.	Talanow, Roland	7
2.	Wu, Guiyun	2
3.	Wilkinson, Iain D	1
4.	Wignall, Emma	1
5.	Weber, Marc-Andrè	1
6.	Wagner, Matthias	1
7.	Uhl, Markus	1
8.	Spörl, Markus	1
9.	Shrikanthan, Sankaran	1
10.	Ruggieri, Paul	1
11.	Rengier, Fabian	1
12.	Paetzel, Martina	1
13.	Neumann, Donald	1
14.	Lachhwani, Deepak	1
15.	Kauczor, H U	1
16.	Hirsch, Wolfgang	1
17.	Hart, Anthony R	1
18.	Hahn, Horst K	1
19.	Grunewald, Markus	1

Figure 11: Integration of PubRad into the Radiology community Radiolopolis as an example of third party integration. This feature shows different ways of connectivity between co-authors – as in this case: shared publications (link within red rectangle).

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KEYWORDS

PubMed, Medline, medical literature, research, literature search, customized, user-tailored

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