

# A landmark in biomedical information: many ways are leading to PubMed

MediaWiki tags open remote literature access to PubMed

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## Abstract

Entrez PubMed (<http://www.ncbi.nlm.nih.gov>) is a central biomedical information hub. Its comprehensiveness, reliability and availability policy make it a primary information resource for many specialized portals concerning theme-focused information. NCBI offers programming tools for including automated information access into external applications. We present our plug-in (<http://www.mediawiki.org/wiki/Extension:Pubmed>) for remote access and presentation of PubMed literature data (single hits and result sets) within a MediaWiki page.

## PubMed Extension Implementation

Up to now, PubMed literature data could not be included automatically into a MediaWiki page. The described PubMed extension [<http://www.mediawiki.org/wiki/Extension:Pubmed>] uses hooks and tag-function associations in the wiki software part. It is based on a PHP SOAP class and contains methods to connect to the PubMed API functions listed in [[http://www.ncbi.nlm.nih.gov/entrez/query/static/esoap\\_help.html](http://www.ncbi.nlm.nih.gov/entrez/query/static/esoap_help.html)]. Programming details can be found in

[Bohne 2008]. The extension is invoked by the <pubmed> tag and transmits a query to PubMed using the described method. The result set consists of the PubMed article IDs related to the query. A PubMed request causes the server to send the answer as a large data set in a XML record. In the next step, the algorithm extracts the necessary parts by mapping the related fields. This step is necessary, as some attribute names unfortunately are not unique, like the 'Forename' or the 'Firstname' attribute in the author definition. The following step is the layout process building the HTML code from the mapped data using a HTML template file. In addition to the primary literature data, some links are generated and included. At the moment there are three default links: A link back to the PubMed page by the PMID, a link to the journal on Worldcat.org by ISSN and a link to the full text at the publisher's page, if DOI information is available. Thus the MediaWiki plug-in provides a new tag within the markup language. The <Pubmed> tag establishes a powerful connection to PubMed by submitting the value between opening and closing tag as a query string to PubMed. The <Pubmed> tag can possess three attributes influencing the result set layout. The attribute 'limit' controls the number of result records returned by the layout generator. The limit set by the NCBI utilities is 500 result records per query. The limit parameter should be used with complex queries – e.g. to present the first 20 hits. The attributes 'layoutfile' and 'layoutlinks' can set the current layout to templates different from the default mode. Two other pieces of information about publication status are added in brackets – information about the publication medium and status (P for paper, I for Internet) and information about publication status (p for published, a for ahead of print, and e for epublished).

The MediaWiki plug-in is an easy-to-use tool for users not familiar with programming. Using the <PubMed> tag helps them to integrate literature reference data and links into their own wiki pages, opening access to free or subscribed related sources like full text or Worldcat data.

## Reference

Bohne-Lang, A.; Lang, E. (2008). Application Note: A MediaWiki extension to open remote access to literature data from Pubmed. *Biomedical Digital Libraries*, Vol 5, No 1.