Literature Review Research in STEM

Drs. Ana Doblas and Claudio Meier

The University of Memphis

PD UofM Spain Program

Tuesday, July 11th, 2023

Driven by doing.

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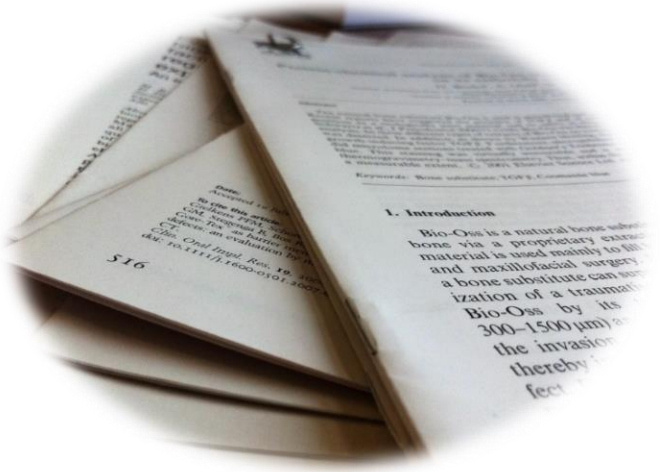
Objective of the session

At the end of the session, students will be able to

1. Understand the importance of the literature review
2. Set automatic Google alerts to track newly published work
3. Use UofM library resources to search bibliography
4. Identify Mendeley as a key for bibliography review, sharing, and citations

Why is Literature Review important to STEM research?

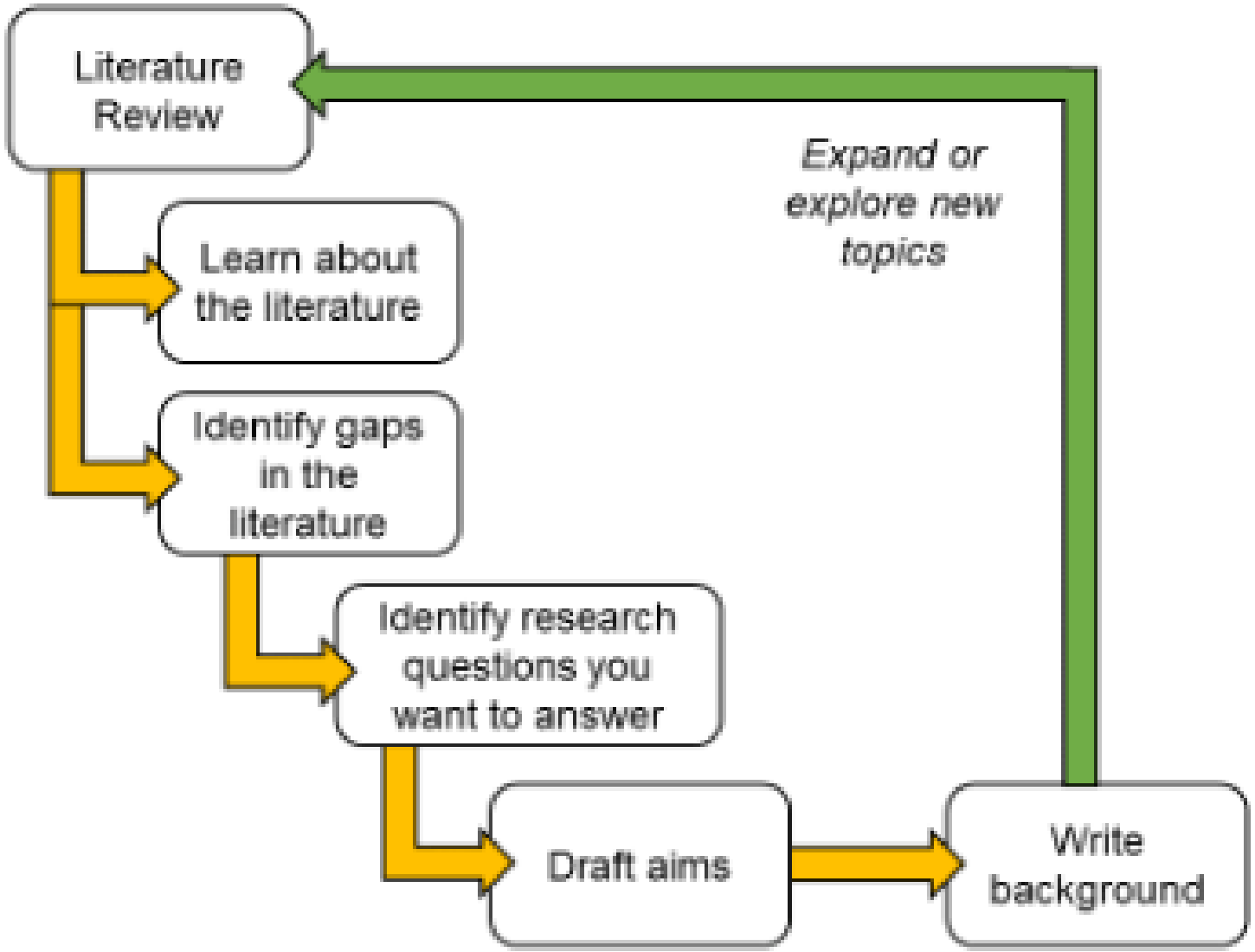
1. Research is carried out primarily to improve current knowledge
2. All research builds on prior/existing knowledge in the field
3. A literature review helps in familiarizing with the extent of knowledge in the field
4. The review should trace the progress of knowledge & the relation between various thoughts/methods/strategies
5. A literature review helps to identify gaps in knowledge, which lead to new research
6. The literature review helps to increase author's depth of knowledge in a field



QUIZ: True/False

1. Literature review helps establish a context for research
2. Literature review helps identify the theoretical framework
3. Literature review helps clarify research questions
4. Literature review helps assess the quality of previous research
5. Literature review helps comparing different studies
6. Literature review gives context to the research study
7. Literature review helps to identify problems
8. Literature review provides a map for future research

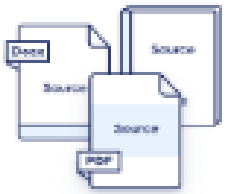
Purpose of Literature Review in Graduate School



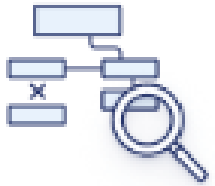
http://www.baileydebarmore.com/blog/how-to-write-your-dissertation-literature-review

How to write a literature review?

STEP 1: Search for relevant literature



STEP 2: Evaluate sources



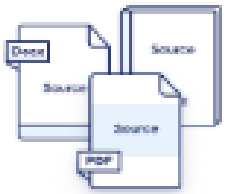
STEP 3: Identify themes, debates and gaps

STEP 4: Outline the structure

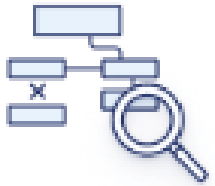
STEP 5: Write your literature review

The Literature Review Process

TASK 1: Collect Articles



TASK 2: Read Literature



TASK 3: Summarize (Synthesize) State of Research

TASK 4: Identify Gaps

TASK 5: Suggest Next Steps = Innovation

Literature search via Google Scholar – Create your basic profile

Go to https://scholar.google.com/

https://libraries.ou.edu/content/create-google-scholar-profile

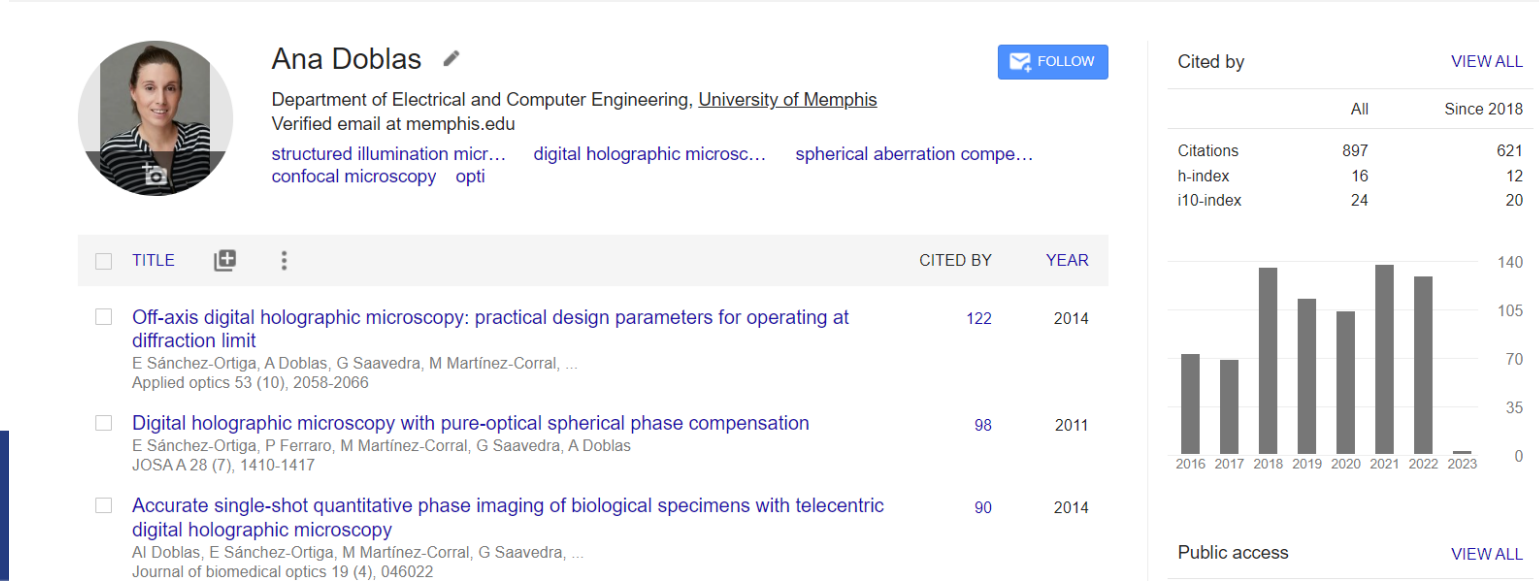
Step 1: Create your basic profile

Log on to **scholar.google.com** and click the "My Profile" link at the top of the page to get your account setup started.

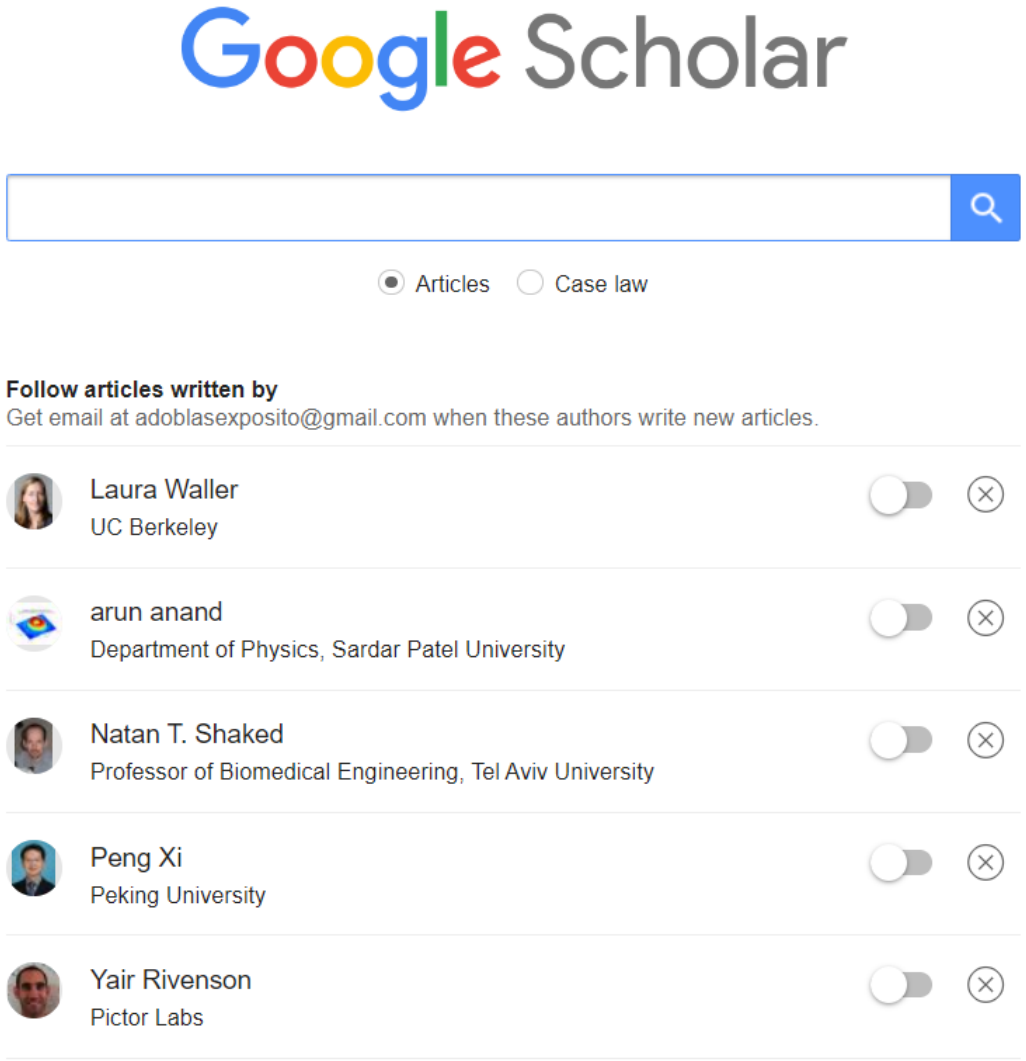
On the first screen, add your affiliation information and OU email address, so Google Scholar can confirm your account. Add keywords that are relevant to your research interests, so others can find you when browsing a subject area. Provide a link to your OU faculty or lab homepage, if you have one.

If there are others who share your name, their articles may show up as yours at this point. Don't despair! Go ahead and add those articles, even though they're not yours. You will then have a chance to delete them in the next step (and as part of this week's homework).

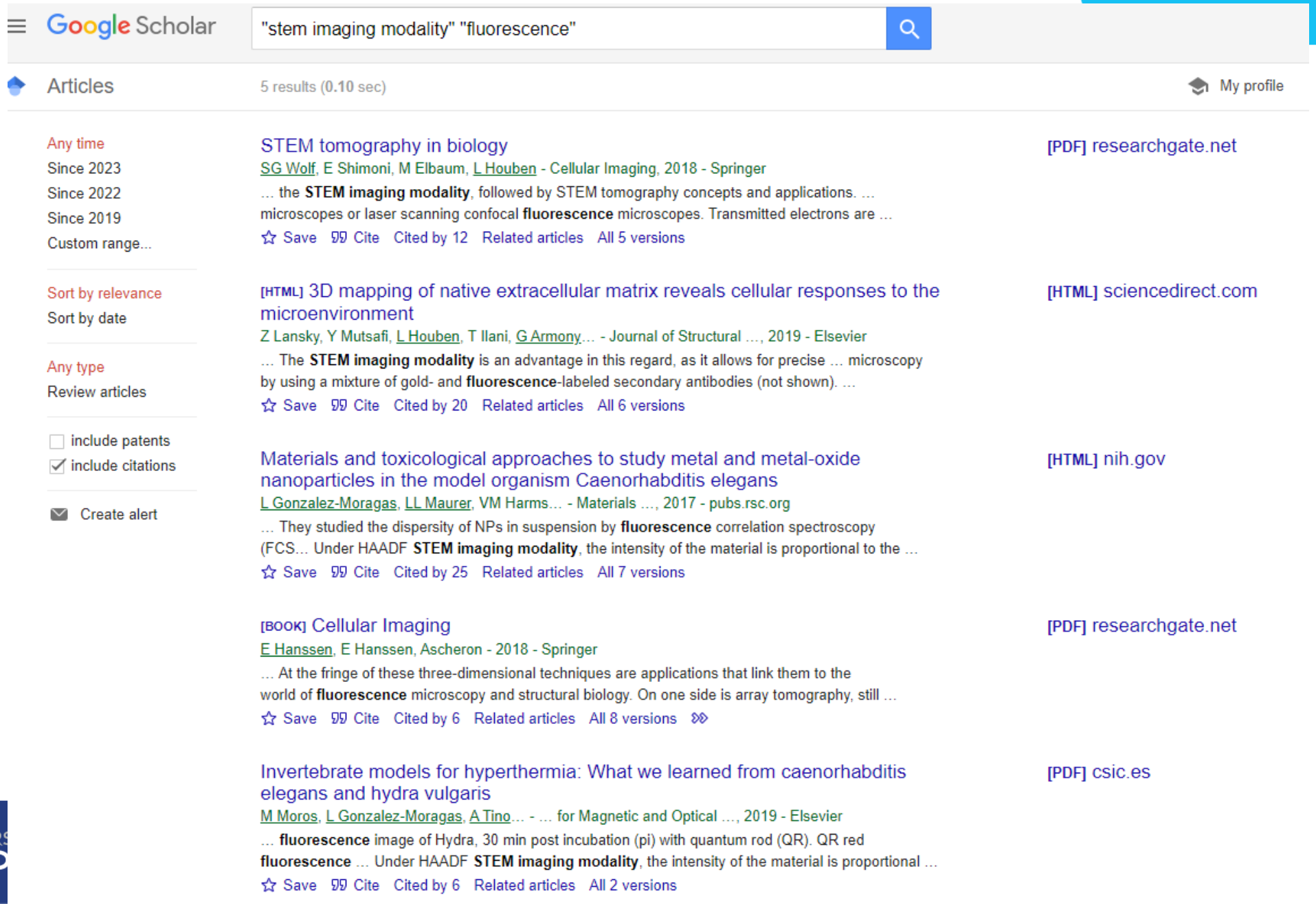
Click "Next," and – that's it! Your basic profile is done. Now, let's add some publications to it.



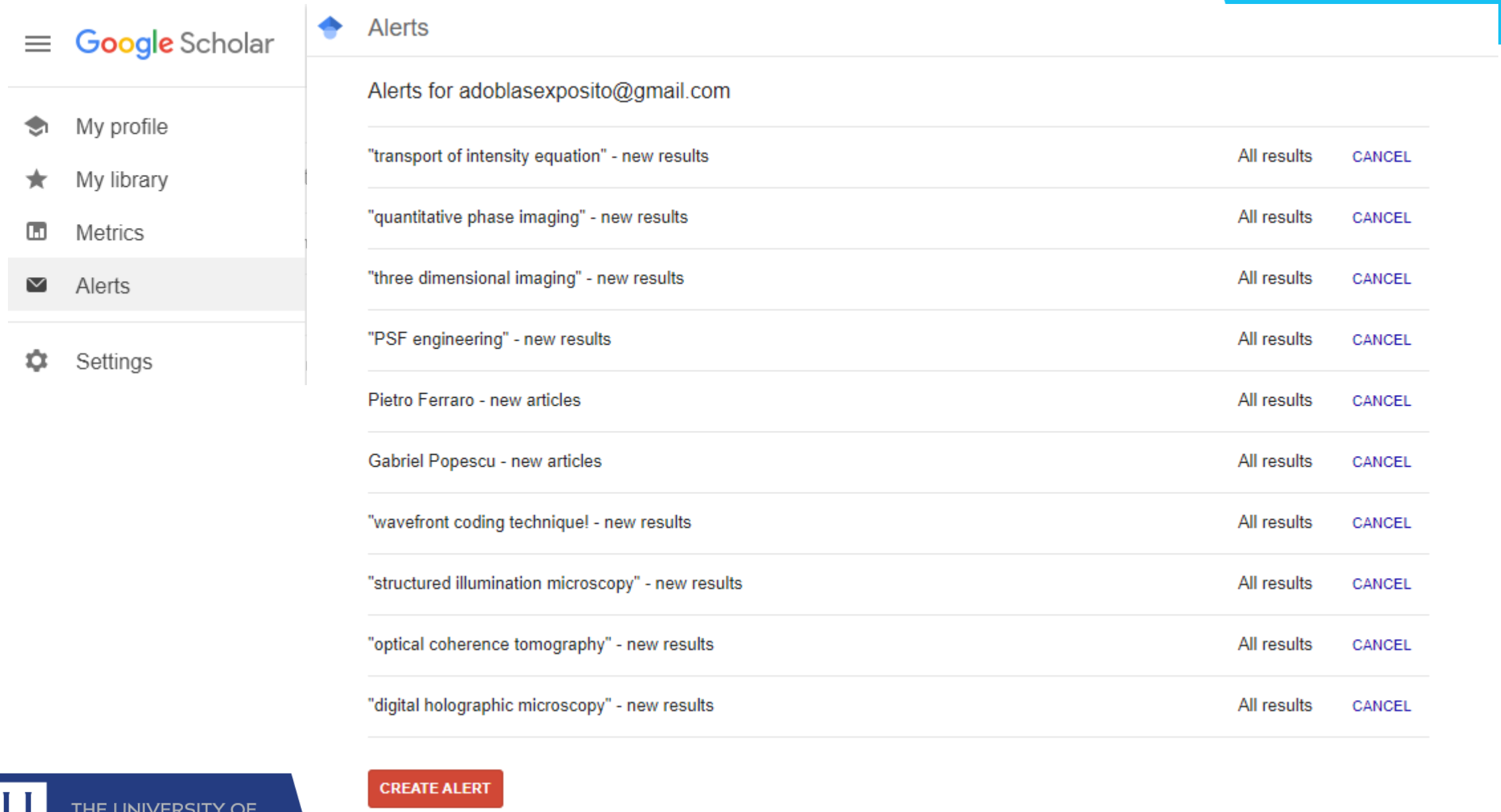
Literature search via Google Scholar – Follow particular authors



Literature search via Google Scholar – Use keywords



Set Google Alerts to track new published work



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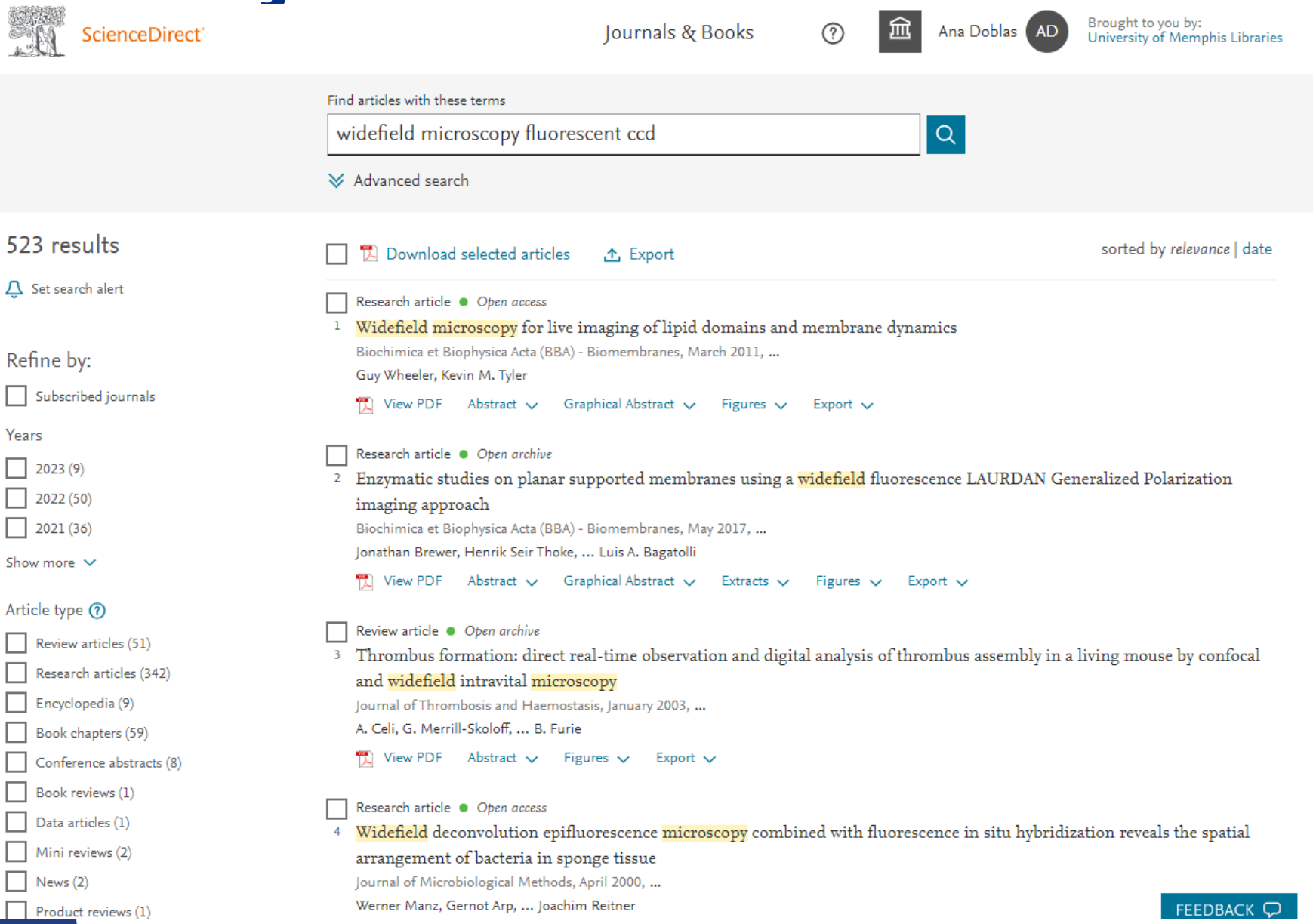
Literature search via university resources – ScienceDirect by Elsevier

Refine by:
Year
Article Type
Journal title
Subject Area



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Literature search via university resources – ScienceDirect by Elsevier

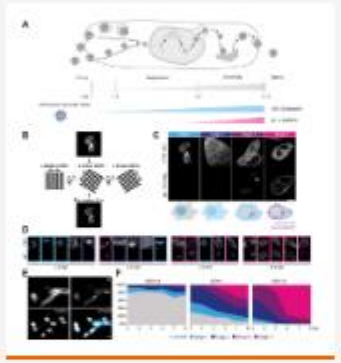
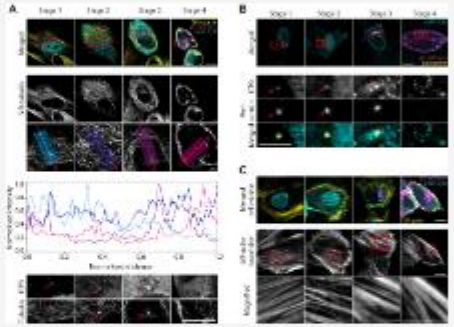
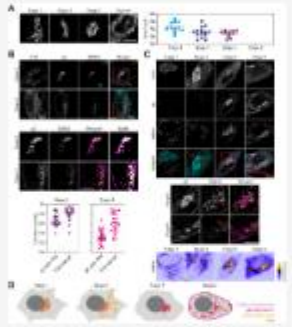
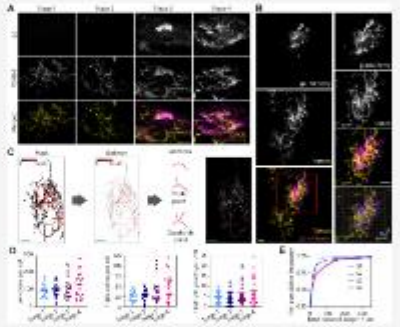
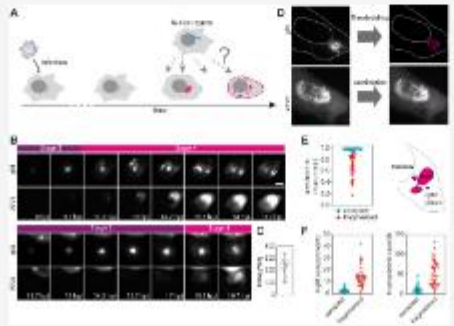
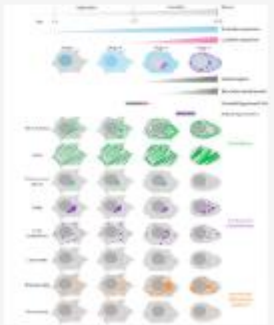
Research article ● *Open access*

10 A fluorescent reporter system enables spatiotemporal analysis of host cell modification during herpes simplex virus-1 replication

Journal of Biological Chemistry, 7 January 2021, ...

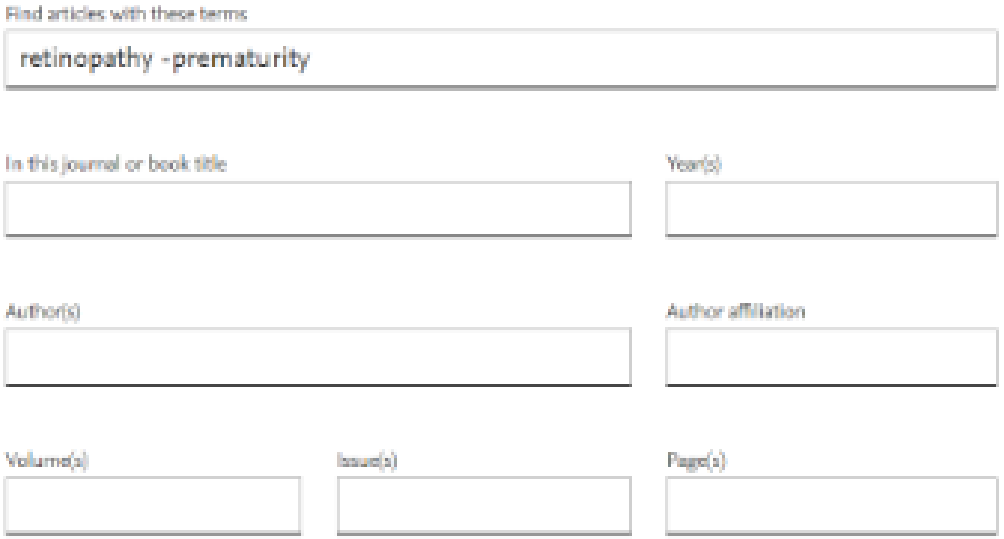
Katharina M. Scherer, James D. Manton, ... Clemens F. Kaminski

View PDF Abstract Extracts Figures Export

Literature search via ScienceDirect – Advanced search

Search tip: None of the available fields are mandatory to an advanced search query. You are simply required to complete at least one field with searchable information.



https://service.elsevier.com/app/answers/detail/a_id/25974/supporthub/sciencedirect/

Literature search via ScienceDirect – Advanced search

https://service.elsevier.com/app/answers/detail/a_id/25974/supporthub/sciencedirect/

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Boolean operators and phrase search

- Boolean operators currently supported include AND, OR, NOT, and the hyphen (or minus symb
- Boolean operators must be entered in all uppercase
- The hyphen (or minus symbol) is interpreted as the NOT operator
  - Example: **`black -hole`** will return results containing 'black', but exclude any instances whe 'hole' appears with it.
- Boolean precedence is as follows:
  1. NOT
  2. AND
  3. OR
- Parentheses can be used when nesting clauses so the grouping is clear and unambiguous
  - Example: Instead of searching **`a OR b AND c OR d`**
    Please use **`(a OR b) AND (c OR d)`**
- Quotation marks can be used to specify terms which must appear next to each other
  - Example: **`("heart attack" OR "myocardial infarction") AND diabetes NOT cancer`**
  - The above example can be expressed more concisely as: **`("heart attack" OR "myocardial infarction") diabetes -cancer`**

Rules

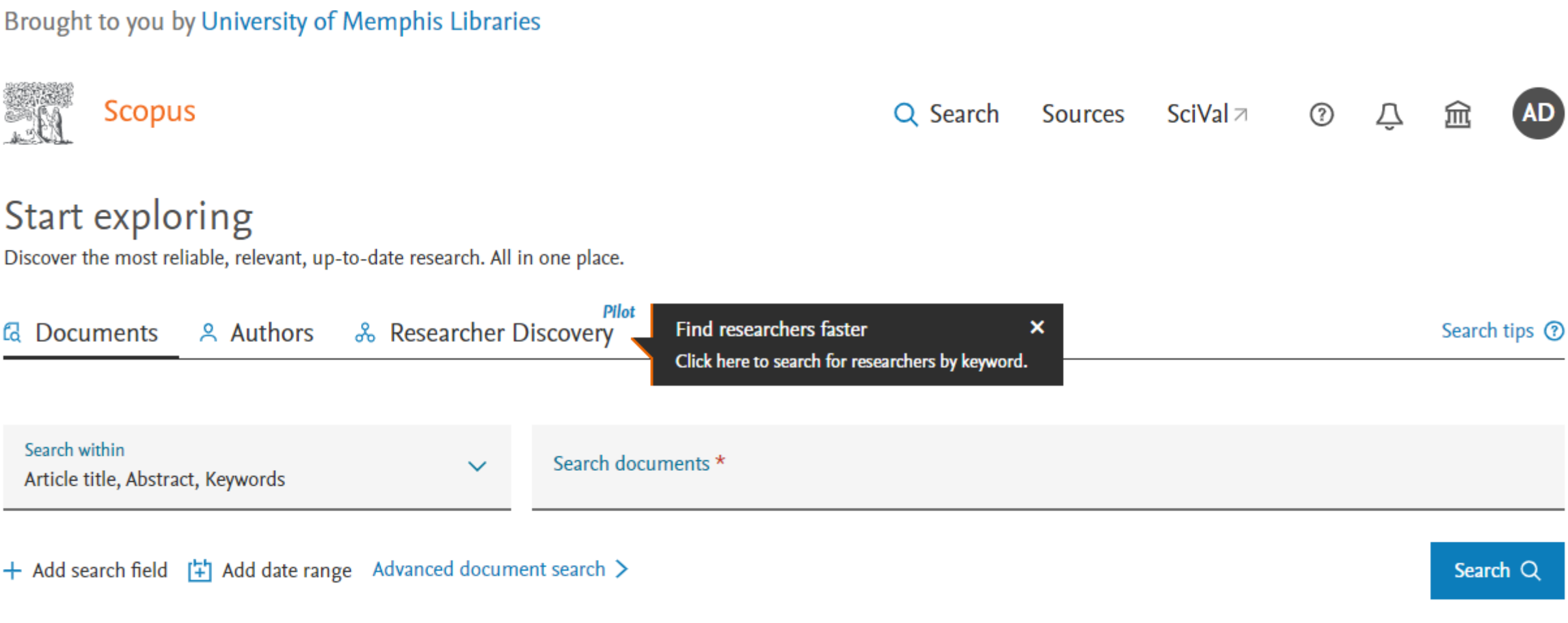
- Punctuation is ignored in a phrase search. The searches **`"heart-attack"`** and **`"heart attack"`** return the same results.
- Plurals and spelling variants are included: **`"heart attack"`** includes **`"heart attacks"`**, **`"color code"`** includes **`"colour code"`**

Literature search via ScienceDirect – Advanced search

Character	Example
Spelling variations	Both British and American spelling variants are supported. A search for *colour* returns *color*, and vice versa
Greek letters and character equivalents	To search the Greek letter Ω, enter *omega*. This matches documents containing the word omega as well as the symbols Ω (uppercase omega) and ω (lowercase omega).
Subscript and superscript	Enter subscripted and superscripted characters on the same line as the other characters. To search for the chemical notation "H_2O," enter `H2O`.
Accented characters	To search for the name `Fürst`, enter `Fürst` or `Furst`.
Non-alphanumeric characters	Characters such as bullets, arrows, daggers, and plus signs are ignored.

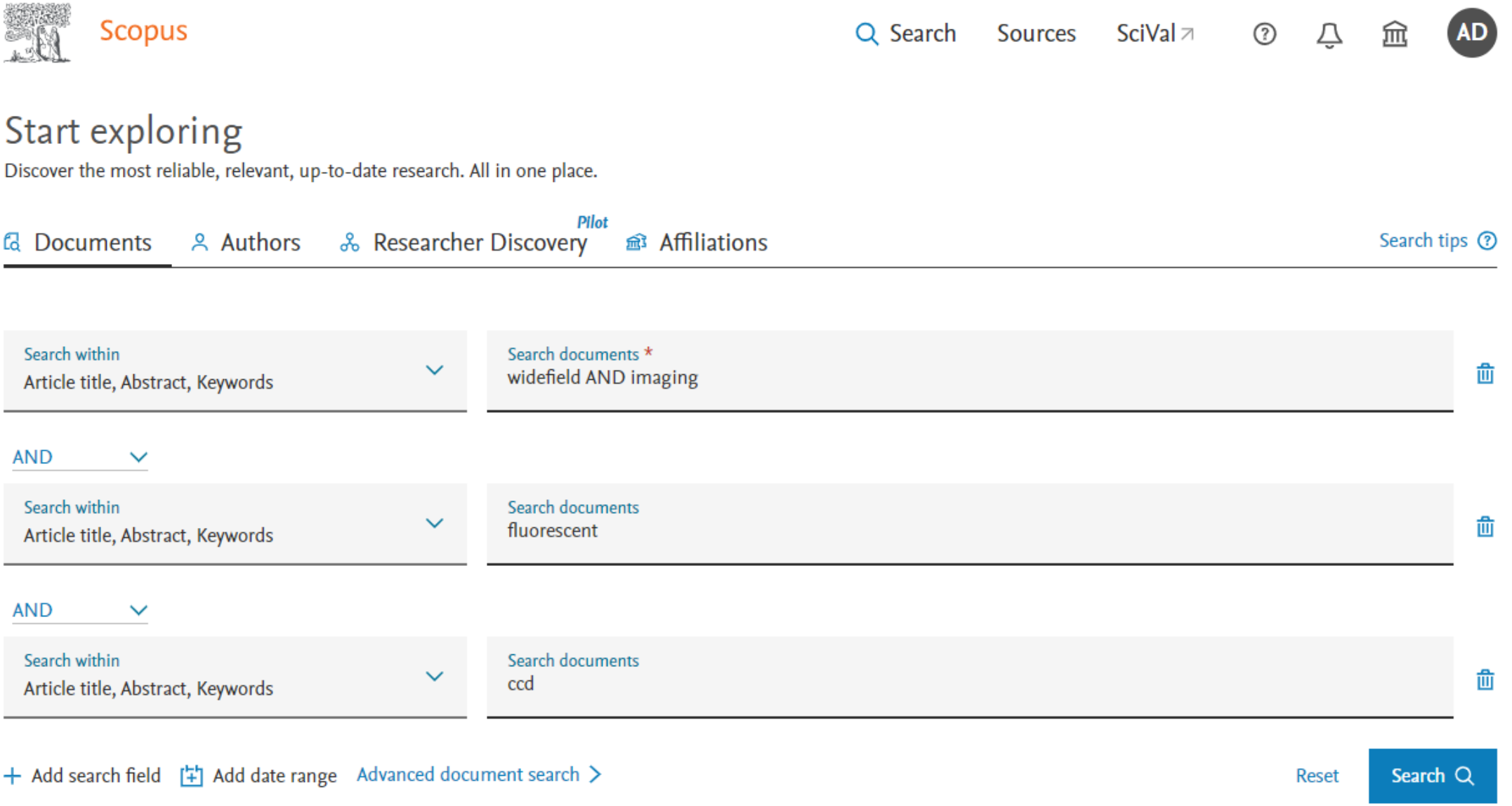
https://service.elsevier.com/app/answers/detail/a_id/25974/supporthub/sciencedirect/

Literature search via Scopus



https://www.scopus.com/search/form.uri?display=basic#basic

Literature search via Scopus



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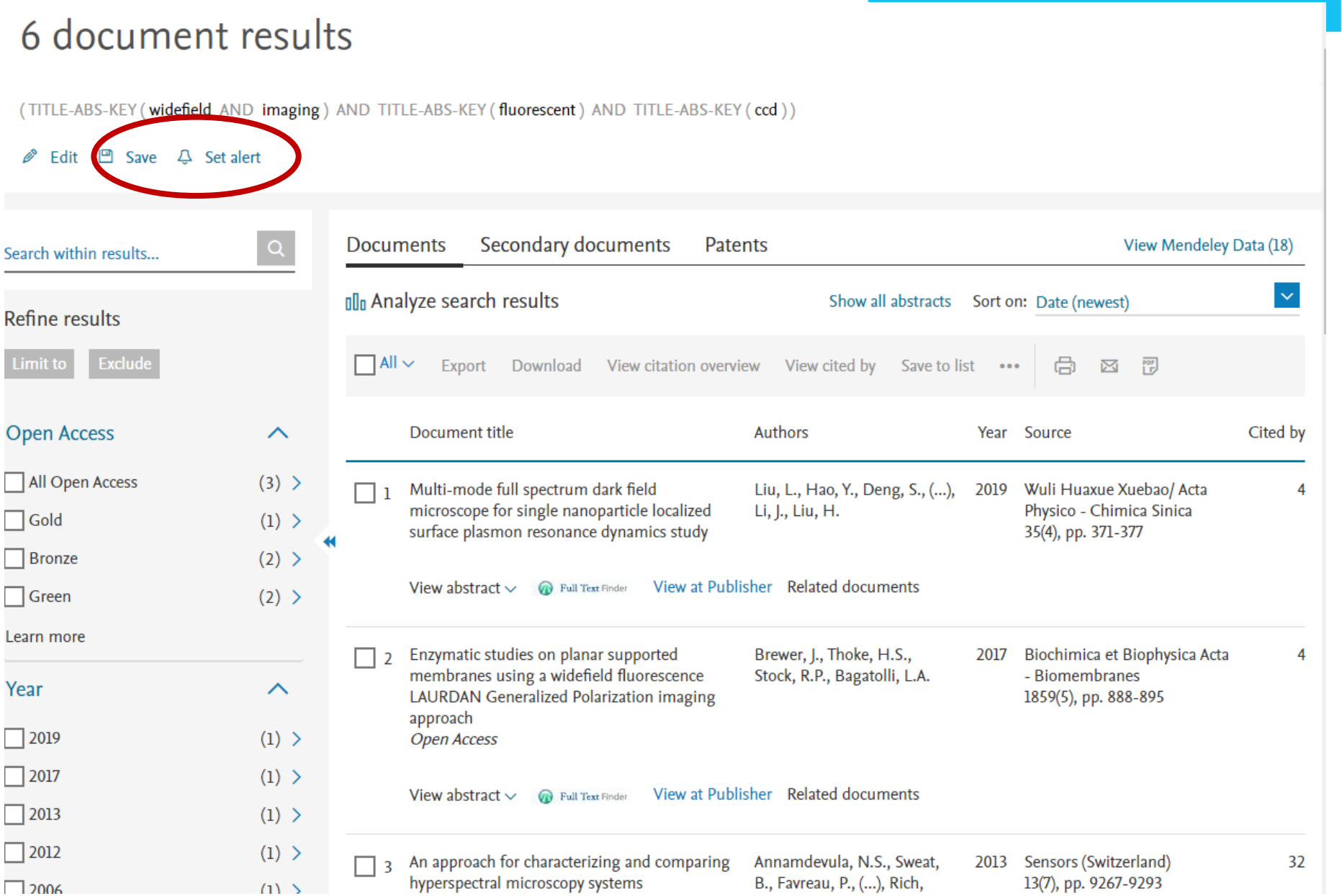
Literature search via Scopus

Refine by:
Year
Article Type
Journal title
Subject Area
Funding Sponsor
Country
Language



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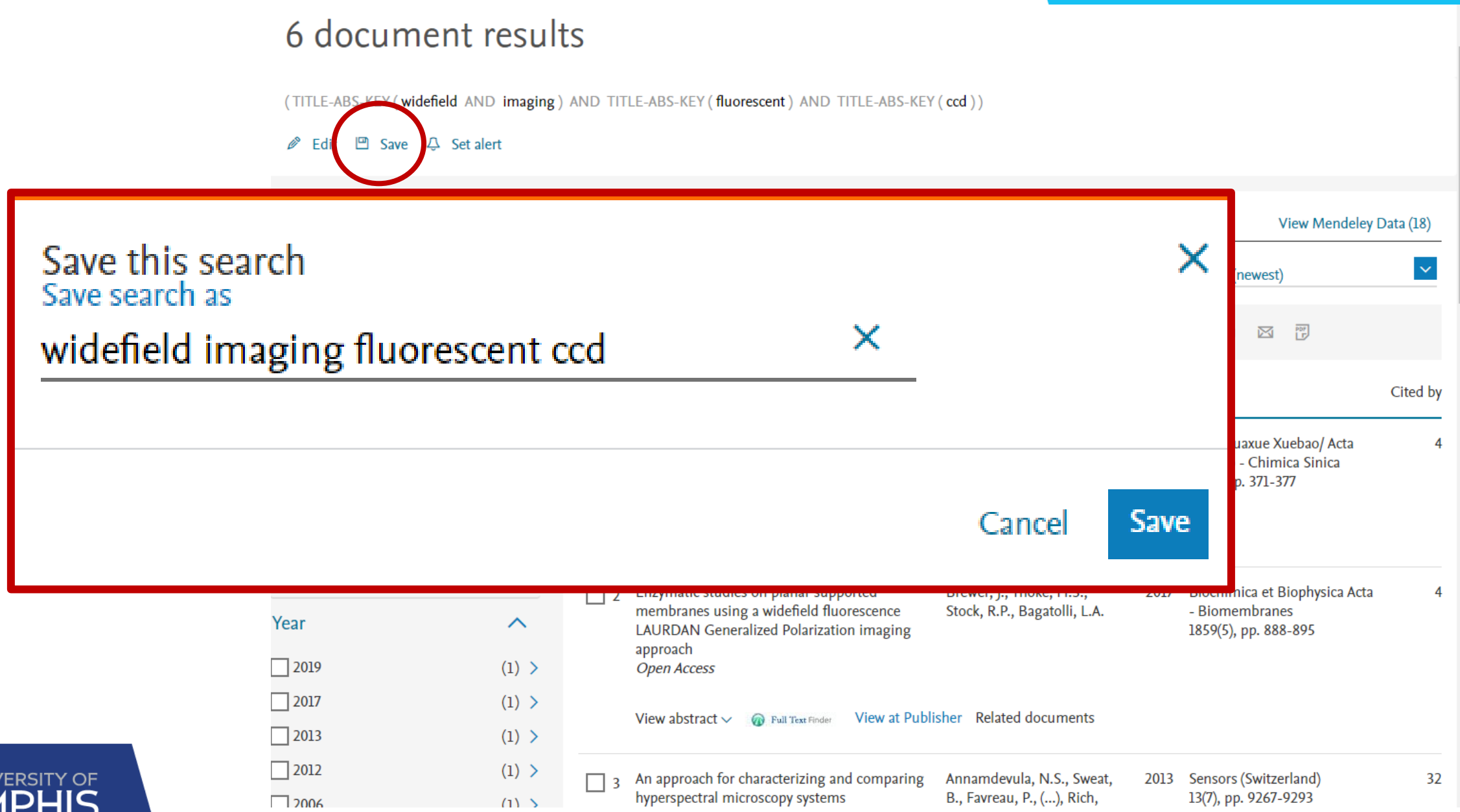
Literature search via Scopus

	Document title	Authors	Year	Source	Cited by
☐ 1	Multi-mode full spectrum dark field microscope for single nanoparticle localized surface plasmon resonance dynamics study	Liu, L., Hao, Y., Deng, S., (...), Li, J., Liu, H.	2019	Wuli Huaxue Xuebao/ Acta Physico - Chimica Sinica 35(4), pp. 371-377	4

Hide abstract ^ Full Text Finder View at Publisher Related documents

In the last few decades, noble metal nanoparticles (MNP) have been widely used as imaging probes, in the field of bio- imaging , due to their localized surface plasmon resonance (LSPR) phenomenon. Compared to fluorescent probes, MNP imaging exhibits high sensitivity and outstanding signal-to-noise ratio, while the particle itself has good photostability; this makes the MNP probe the perfect candidate for long-term imaging . Currently the most popular MNP imaging and analysis method employs a dark-field microscope with a spectroscope. Since most dark-field microscopes use halogen lamp or mercury lamp as their illumination source, the illumination intensity and wavelength spectrum are limited. Both camera and spectroscopy require longer exposure time to collect sufficient scattering signal to generate a reasonable quality image and scattering spectrum. The narrow illumination spectrum also limits the size of the MNP that can be used (larger-diameter MNP tend to scatter in the near-infrared region). Therefore, a high-intensity and wide-spectrum illumination source is urgently needed in MNP imaging . In this study, we custom-designed a multi-mode dark field microscope by using a supercontinuum laser, comprising of a lightsheet illumination mode for widefield imaging and a back focus mode for live spectrum analysis, as its illumination source. The total output of the supercontinuum laser was 2 W. Since it was a coherent illumination source it could be focused by the microscope objective to a near diffraction limit area for sufficient intensity. Moreover, since its wavelength spectrum was between 450 nm and 2200 nm, which covered most of the visible and near infrared region, it made the detection of the large-diameter MNP single particle possible. In the back-focus mode, the supercontinuum laser first passed through an annular filter and then entered the objective from the microscope back port. In the lightsheet illumination mode, the laser was focused by a 400- mm cylindrical concave mirror to create a "sheet" and illuminate the sample from its side. In both the illumination modes, the illumination radiation was blocked from the camera to obtain the dark field illumination effect. By using a multi-mode dark field microscope, we could observe a 30-nm-diameter MNP single particle with a color CCD camera in its lightsheet illumination mode and a spectrum time resolution of 1 ms in its back-focus illumination mode. This custom-designed microscope could not only be used to study the MNP single particle in living cells, but more importantly, its application could also be potentially extended to all the MNP-probe-based cell imaging .

Literature search via Scopus



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Literature search via Scopus

6 document results

(TITLE-ABS-KEY (widefield AND imaging) AND TITLE-ABS-KEY (fluorescent) AND TITLE-ABS-KEY (ccd))

Edit Save Set alert

Set alert

E-mail search alert

If the email address you input belongs to another individual, ensure you have their permission to sign them up for this alert. Your email address will be included on subsequent email alerts.

Search terms

(TITLE-ABS-KEY (widefield AND imaging) AND TITLE-ABS-KEY (fluorescent) AND TITLE-ABS-KEY (ccd)) Edit

* Required fields

Name of alert *

widefield imaging fluorescent ccd

Email address(es) *

adoblasexposito@gmail.com

E.g., j.smith@mail.com, p.smith@mail.com

Separate multiple email addresses by a semicolon, comma, space or enter.

Frequency

Every week on Monday

Status

Active Inactive

Set alert

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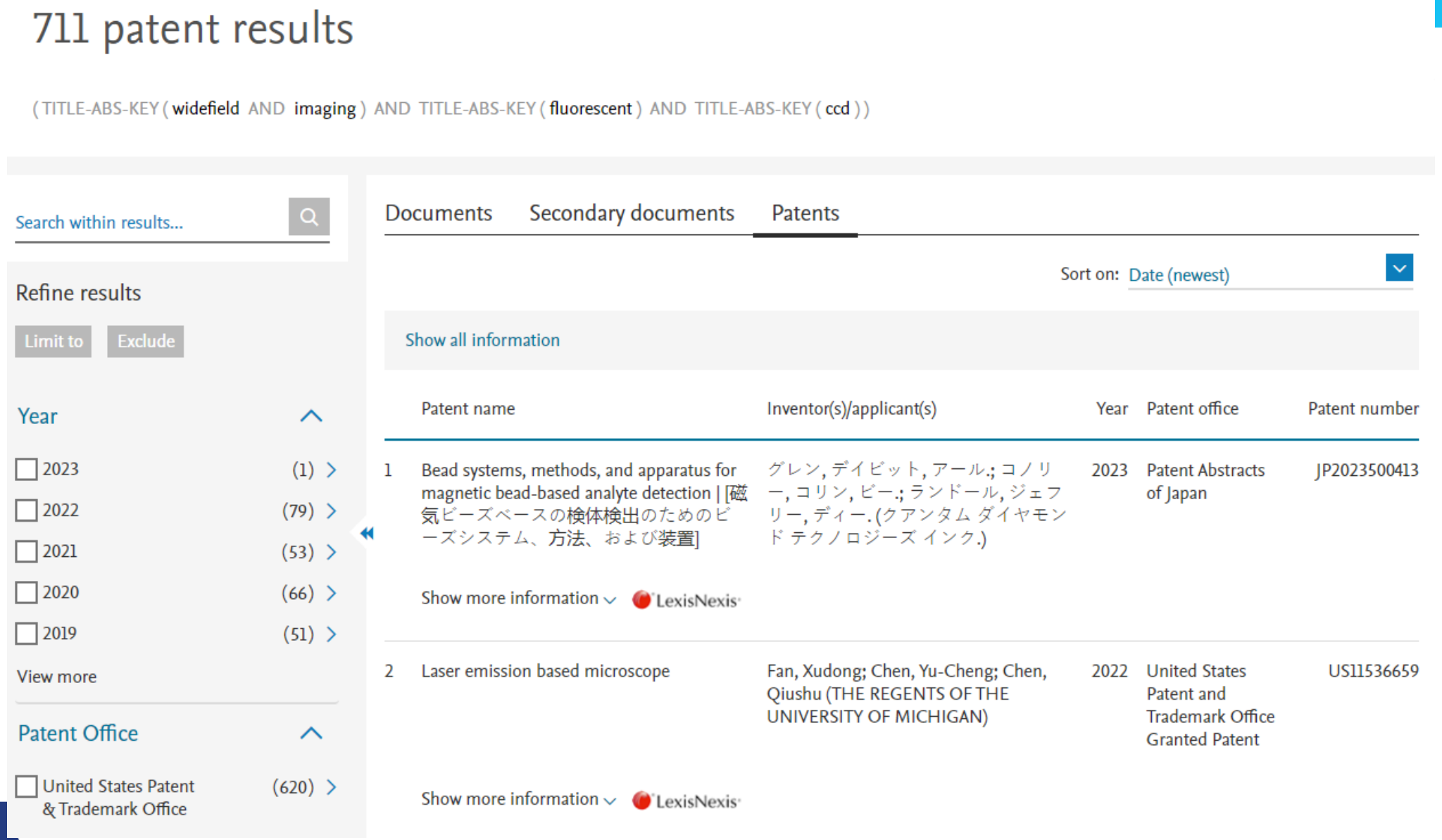
Literature search via Scopus - Patent

Refine by:
Year
Patent Office



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Literature search via Scopus – Additional Tools

(TITLE-ABS-KEY (widefield AND imaging) AND TITLE-ABS-KEY (fluorescent) AND TITLE-ABS-KEY (ccd))

Edit Save Set alert

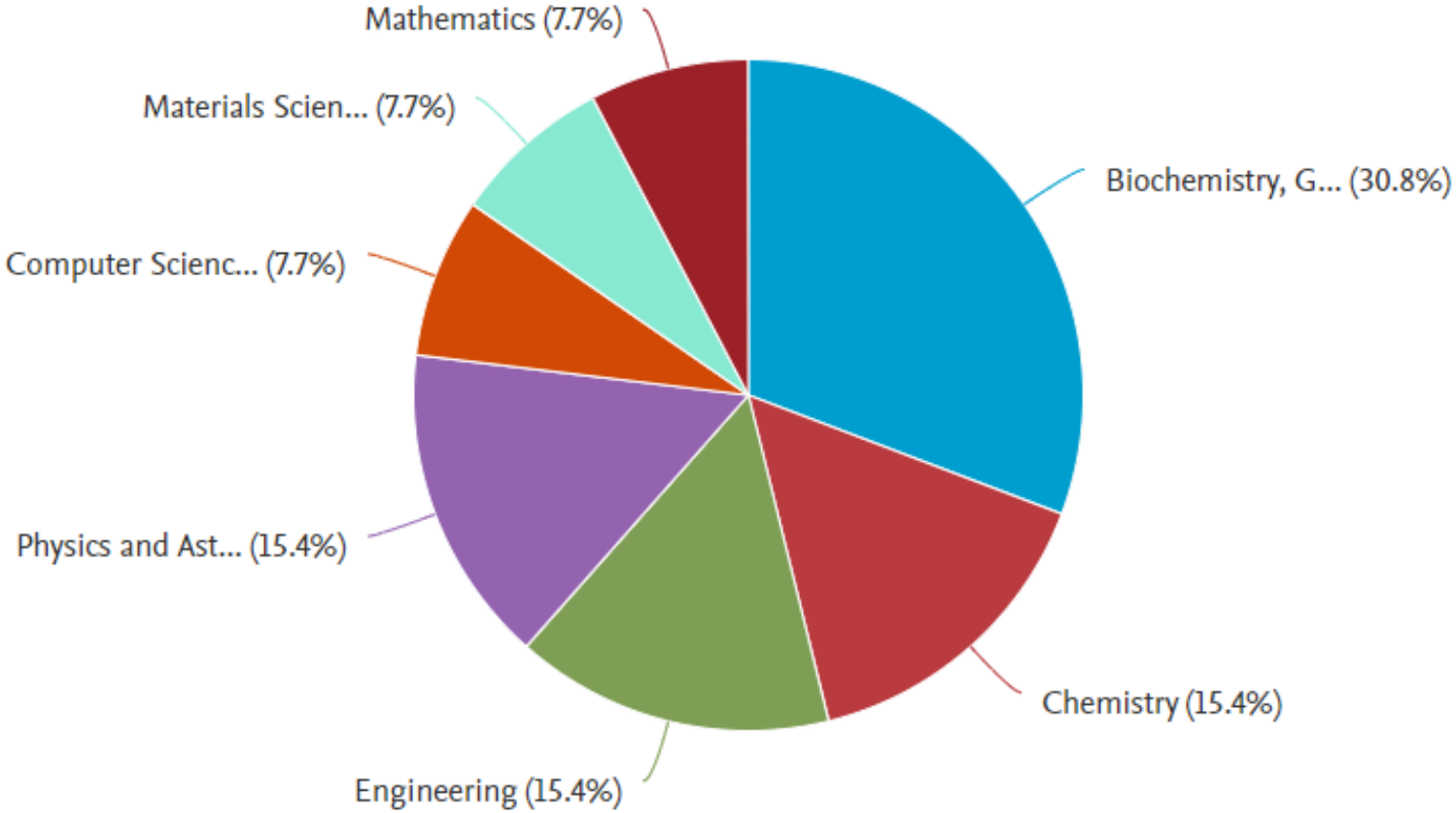
Search within results...

Refine results

Documents Secondary documents Patents

Analyze search results

Documents by subject area



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What is Mendeley?

Mendeley is a desktop and web program produced by Elsevier for:

- ❖ **Managing and sharing research papers,**
- ❖ **Discovering research data**
- ❖ **Collaborating online**

Mendeley is freely available

Mendeley supports any operating system (Windows, Mac OS and Linux)

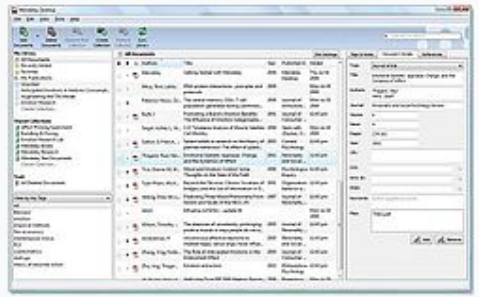
Mendeley has two applications

MENDELEY DESKTOP — References management, Word document

↕ Automatic synchronization

MENDELEY WEB (CLOUD) — Online social media for researchers, Careers/ Funding/Research data

www.mendeley.com



Automatic metadata and reference extraction (Mendeley Desktop)

Original author(s)	Mendeley Ltd.
Developer(s)	Elsevier
Initial release	August 2008
Stable release	1.16.1 / 2016
Operating system	Cross-platform
Available in	English
Type	Reference management software, social software for academic research
License	Proprietary
Website	Mendeley

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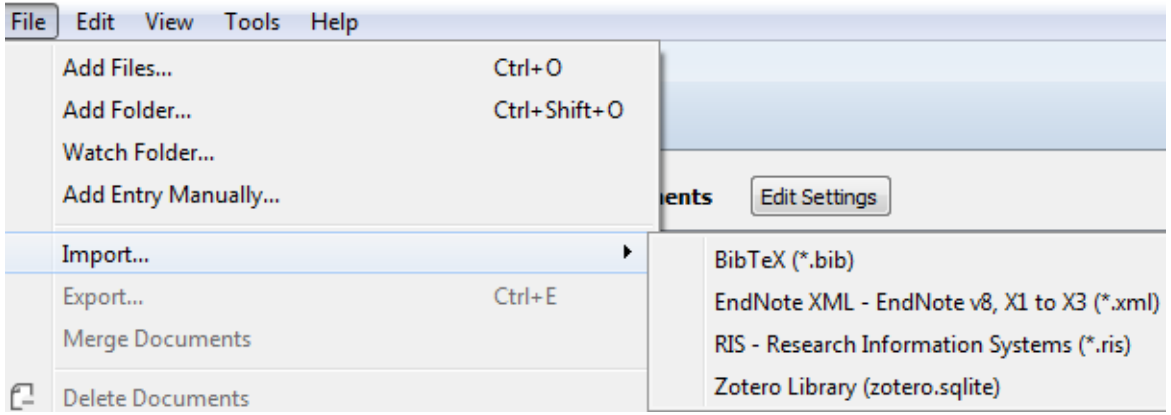
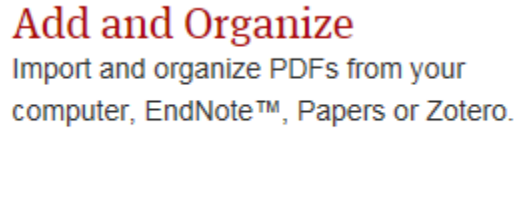
What can one do with Mendeley?

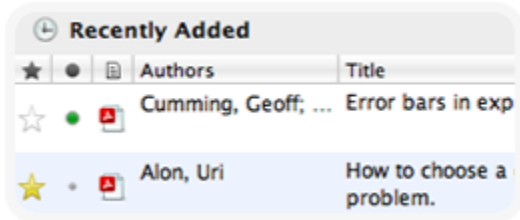
Mendeley's strengths:

- ✓ **Web-based version which is simple to use combine with a desktop version that gives you more features**
- ✓ **Import bibliography from other applications (EndNote, Zotero, …)**



- ✓ **Organize PDFs based on topics/authors/keywords**





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What can one do with Mendeley?

Mendeley's strengths:

- ✓ **Ability to share references with other Mendeley users**

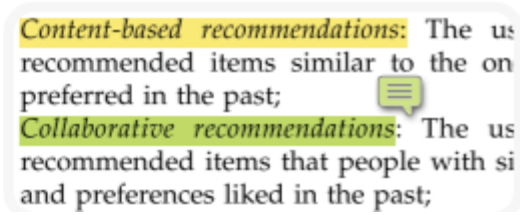
  Create collaborative groups and share papers with notes.
  The group can be completely open or a closed group

  Collaborate
  Connect with colleagues and securely share your papers, notes and annotations.

- ✓ **Ability to store full text PDFs within your library, and to annotate them**

  Make notes, add comments, highlight sentences and save the changes

  Read and Annotate
  Open PDFs and capture your thoughts through sticky notes and highlights.



- ✓ **Ability to create bibliographies using a specific format and 'cite while you write'**

  Reference Manager
  Generate citations and bibliographies in Microsoft Word, LibreOffice, and LaTeX.

What can one do with Mendeley?

Mendeley's strengths:

- ✓ **Virtual cloud**
  Documents are saved in a virtual server which creates a security copy to avoid any loss of information if your computer fails.
  You can access to the cloud using any browser

Backup, Sync and Mobile
Access your papers on the web, iPhone or iPad.

- ✓ **Network and Discover**

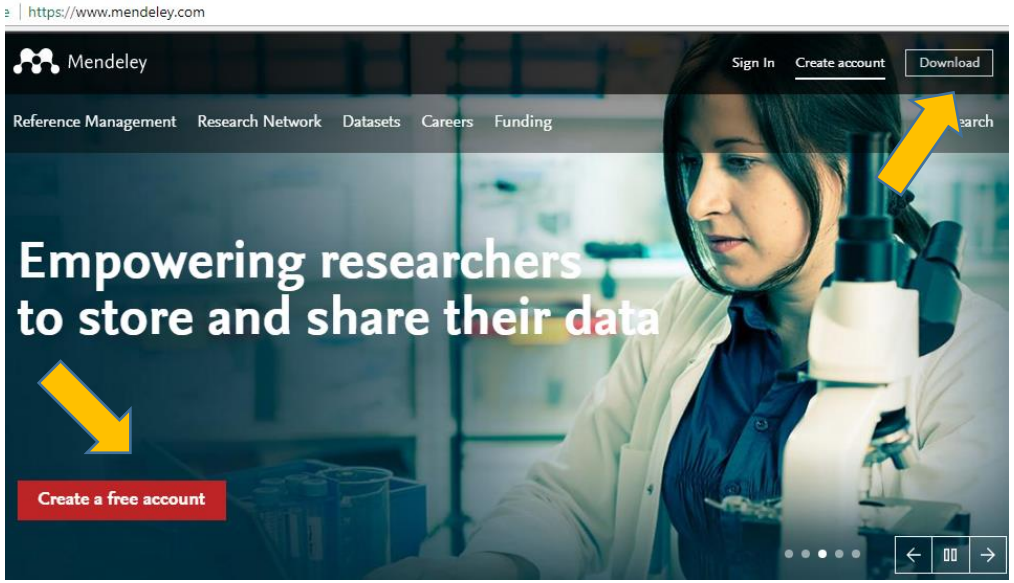
  International social media

Network and Discover
Discover papers, people and public groups.

Get going with Mendeley!

Task 1: Create your own Mendeley account

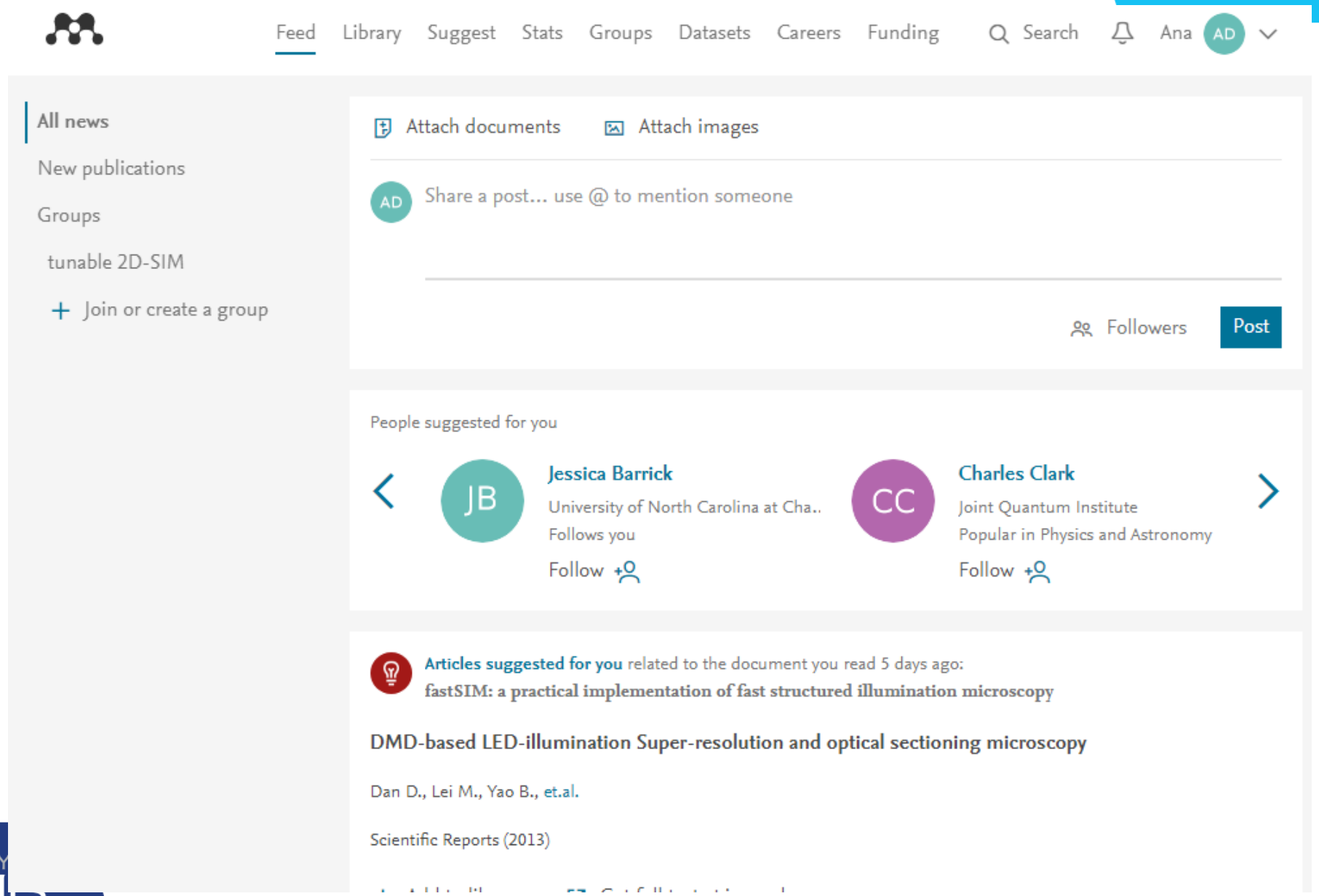
Go to www.mendeley.com and click on **Create account** (top right). Set up your account by entering your details.



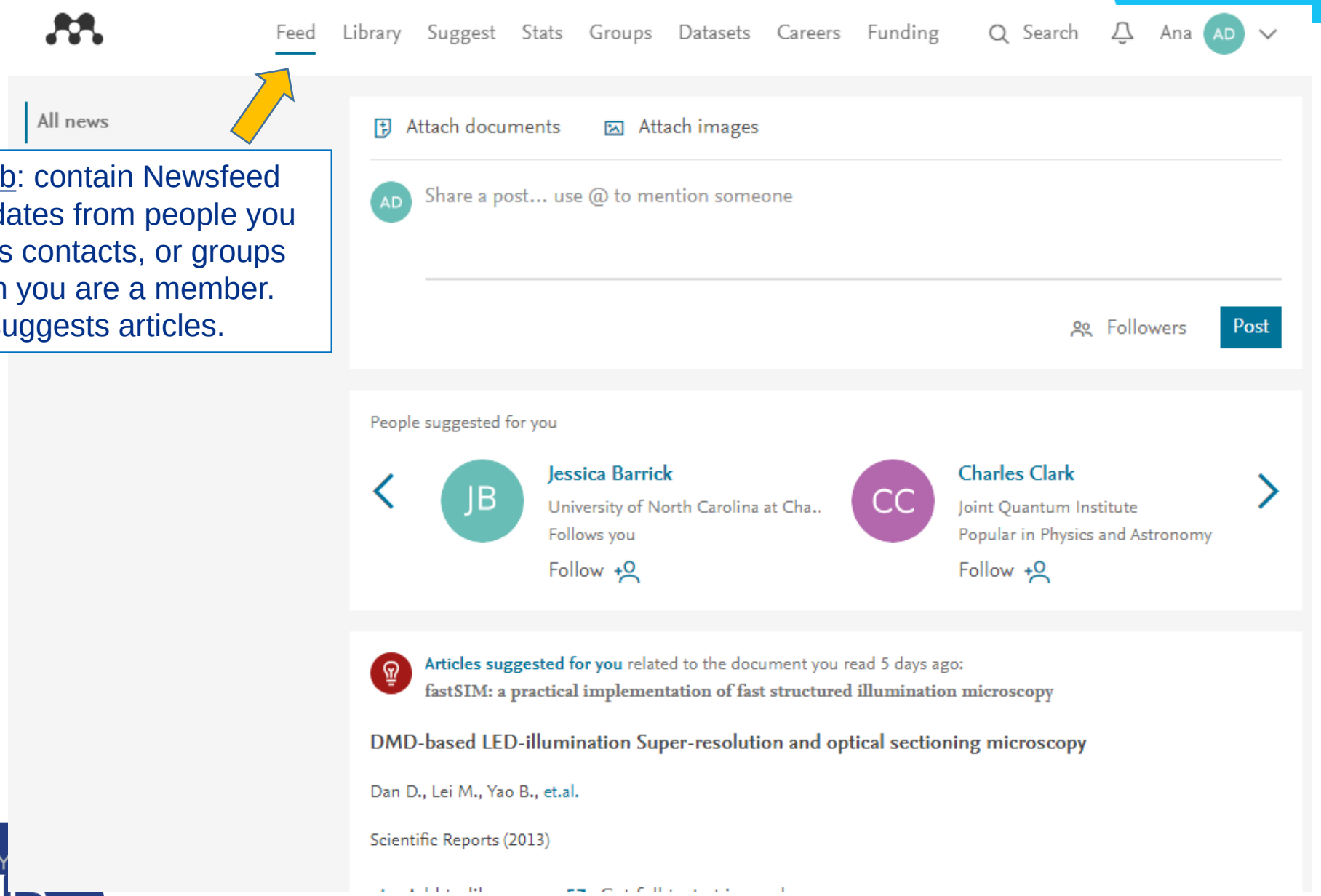
Task 2: Download Mendeley Desktop

Go to www.mendeley.com/downloads and choose the version of Mendeley Desktop for your operating system

In your Mendeley account

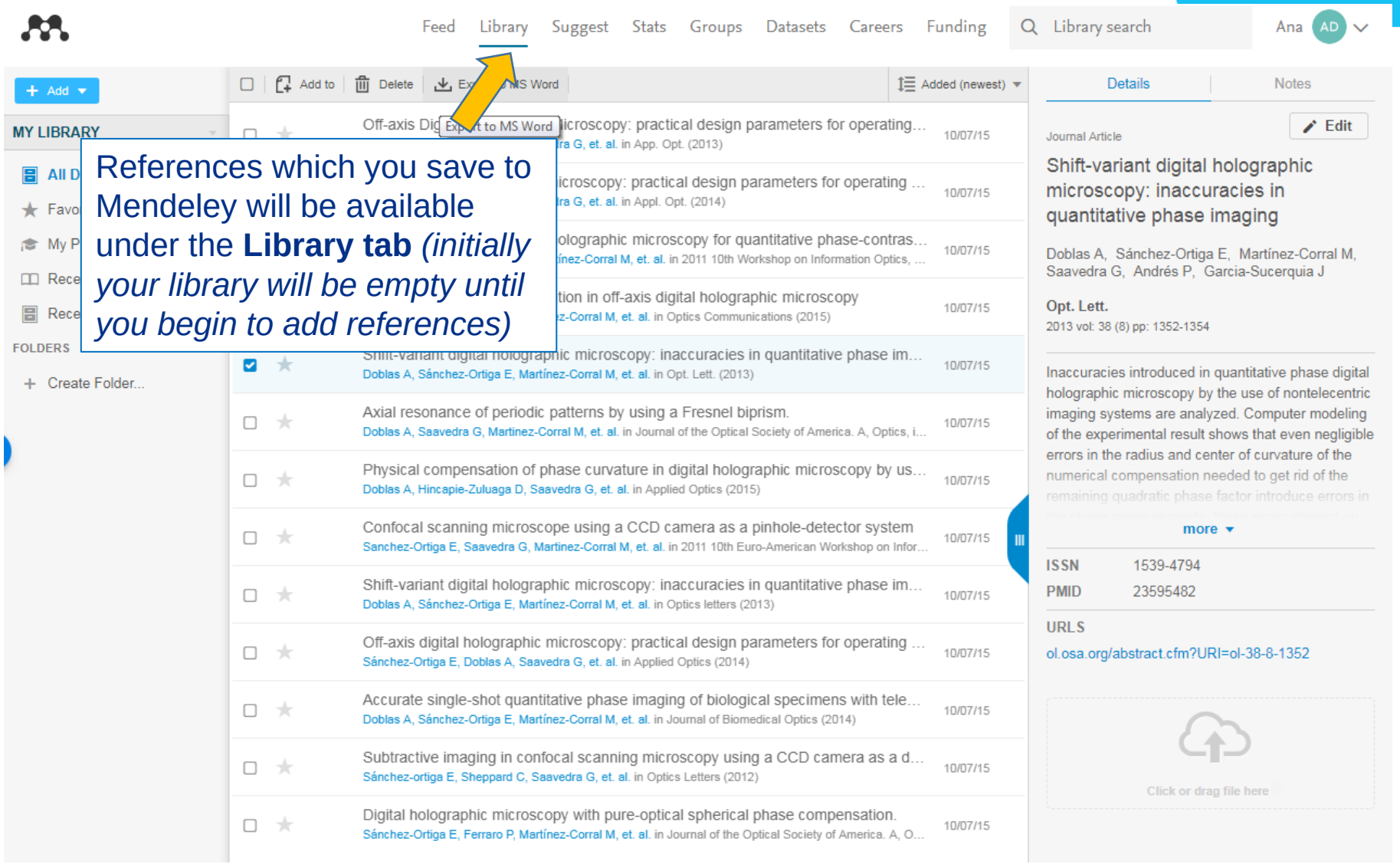


In your Mendeley account



Feed tab: contain Newsfeed and updates from people you name as contacts, or groups of which you are a member. It also suggests articles.

In your Mendeley account

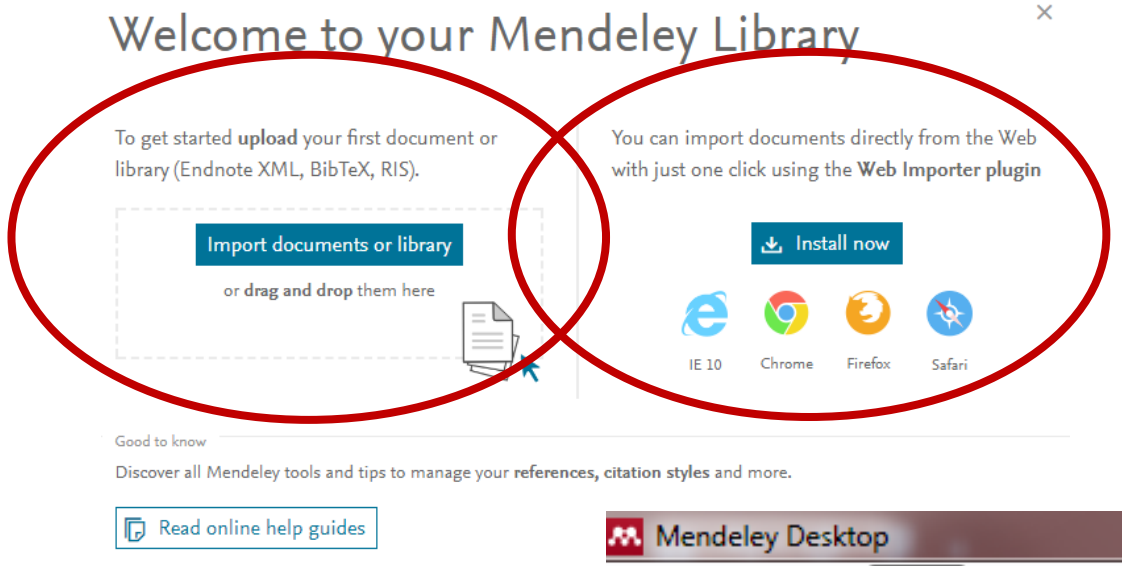


Add references to your Web Library

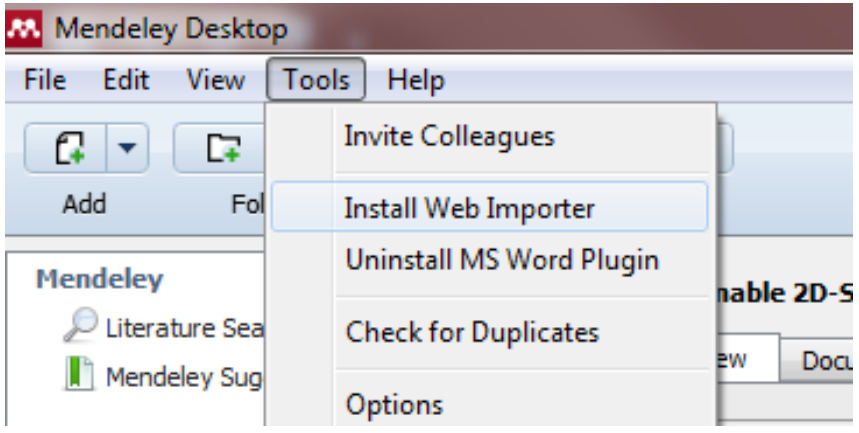
Using the Web Importer to 'capture' references

One of the great features of web-based bibliographic software is being able to quickly 'grab' the reference you're looking at online in a couple of clicks, by installing a web importer plugin or bookmarklet into your browser.

To install the Web Importer, click on the 'Library tab" and you will see an "Install now" option within the welcome box.



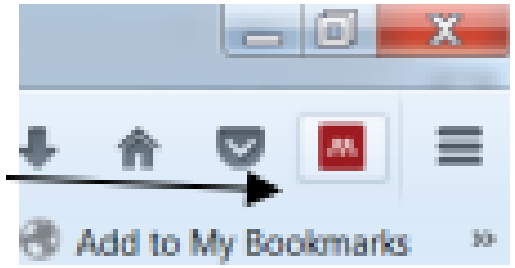
If you have missed this window, you can install it from the **Mendeley Desktop**



Add references to your Web Library

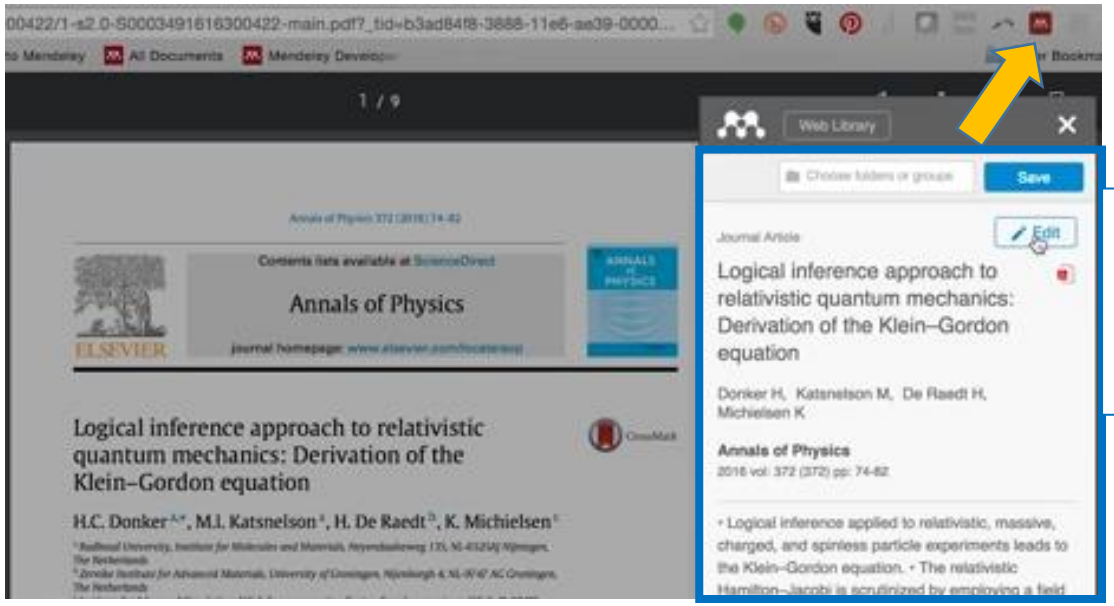
Using the Web Importer to 'capture' references

Once installed, you will see a red and white Mendeley Web Importer button at the top right of your browser.



Now you can import references from all sorts of sites. The Web Importer will scan your current browser window for references and present you with its findings. Note that some reference details might not be complete.

Web Importer works well for:
Google Scholar
PubMed
Medline or *Embase via OvidSP*
Web of Science
Scopus
Journals' websites



Things to check:
Is the record complete?
Has it imported the full text paper (PDF)?

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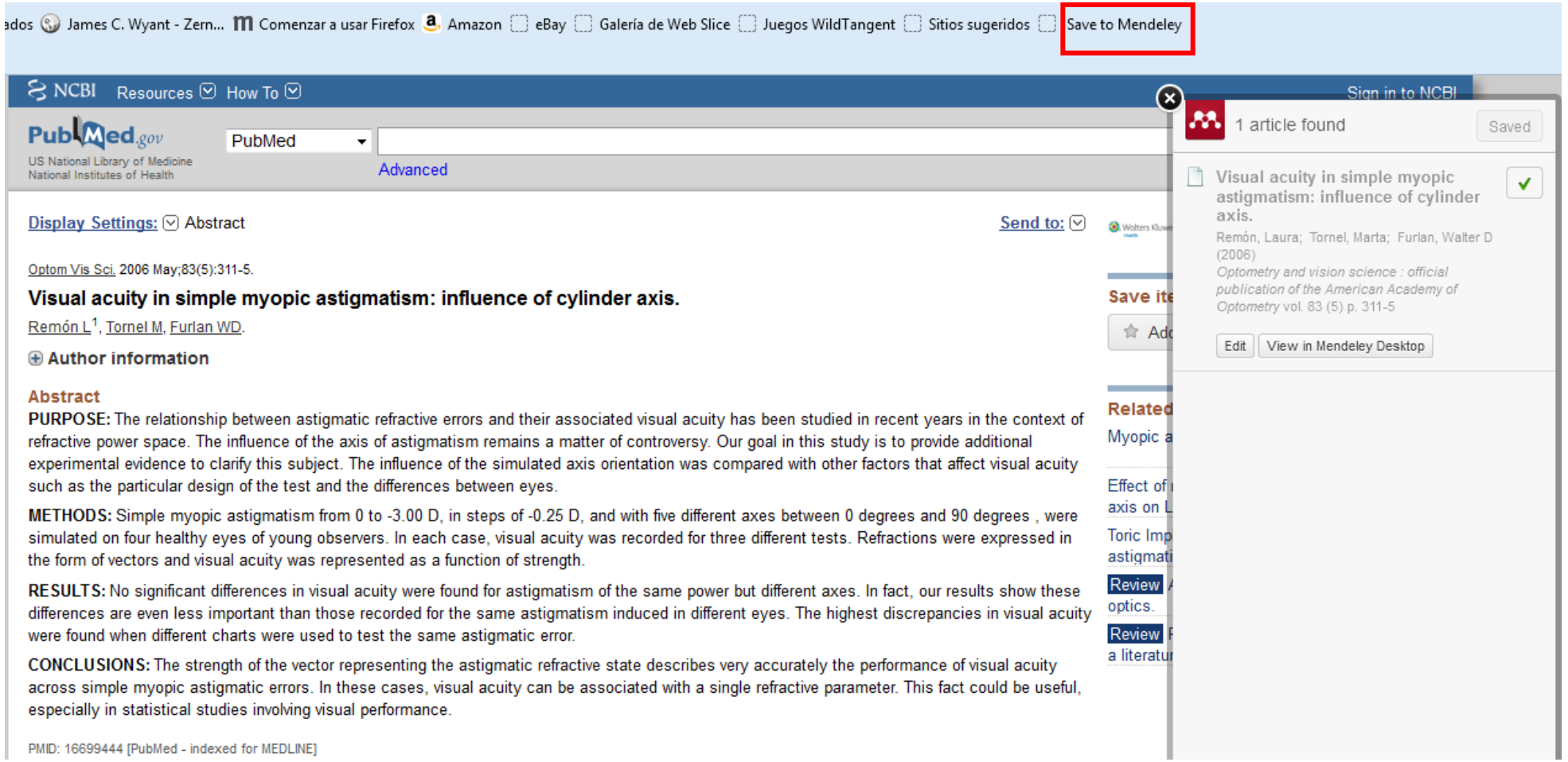
Add references to your Web Library

Using the Web Importer to ‘capture’ references

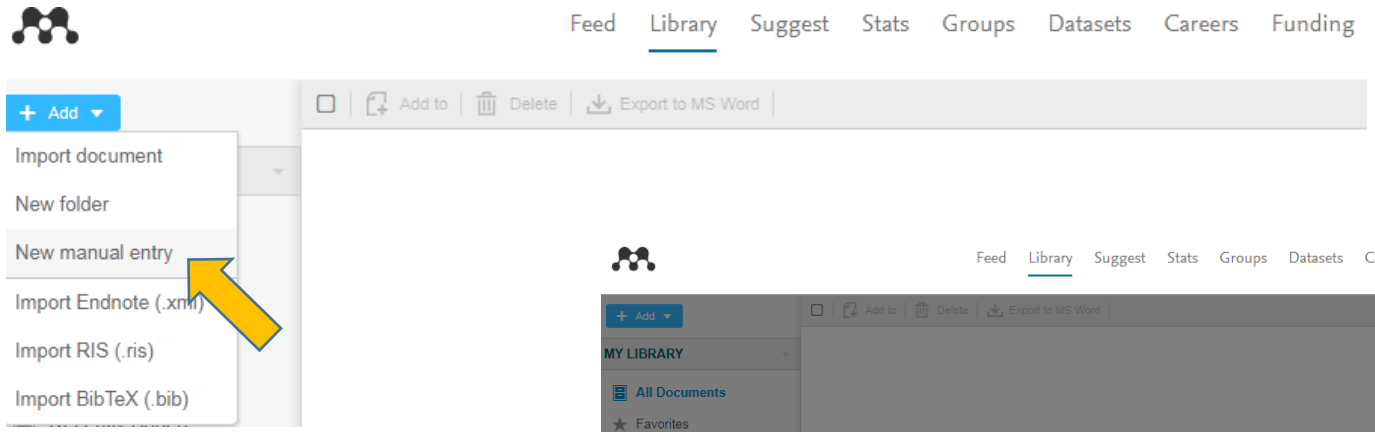
Example



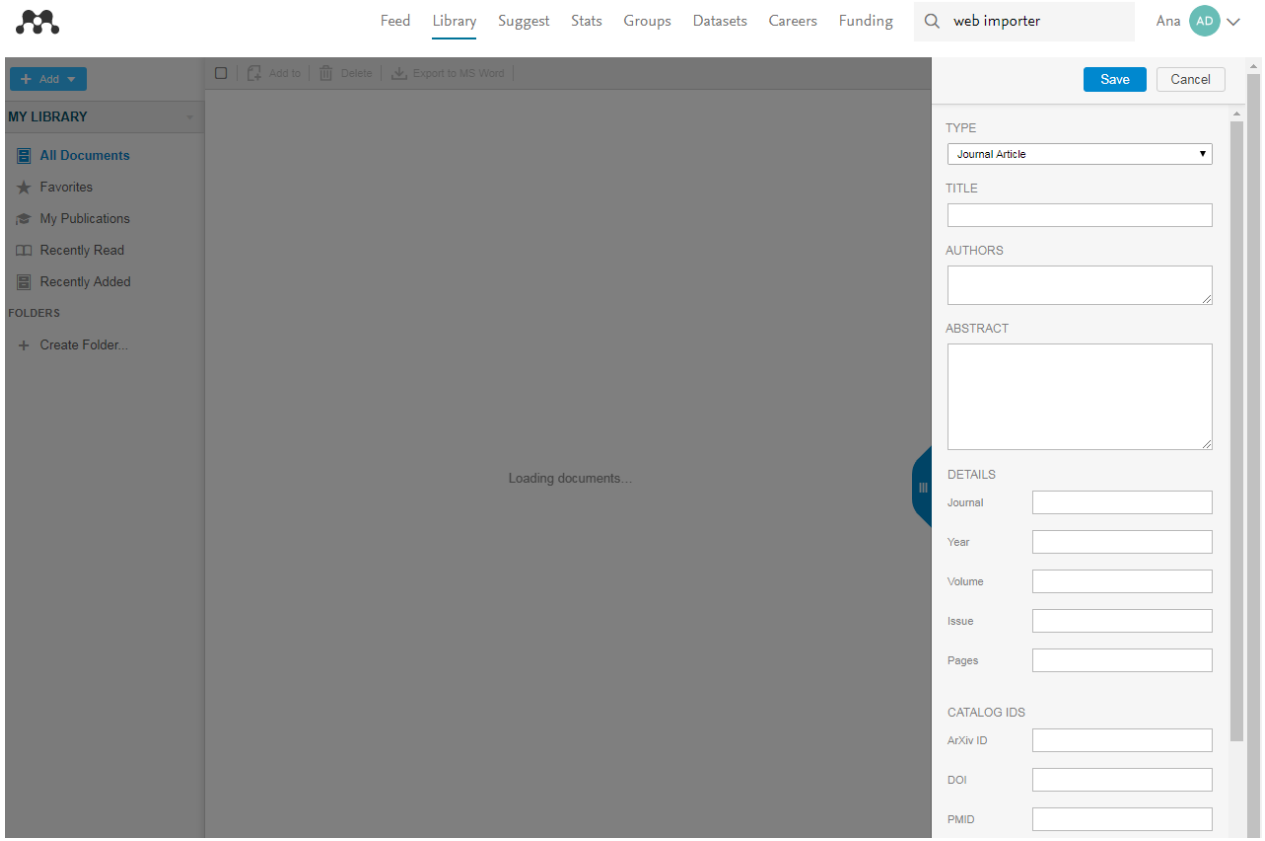
Add references to your Web Library

Manually adding references

You can add details of references manually by clicking on the **Add** button (top left of your library) and then selecting "New manual entry."



A template for you to fill in appears on the right



Add references to your Web Library

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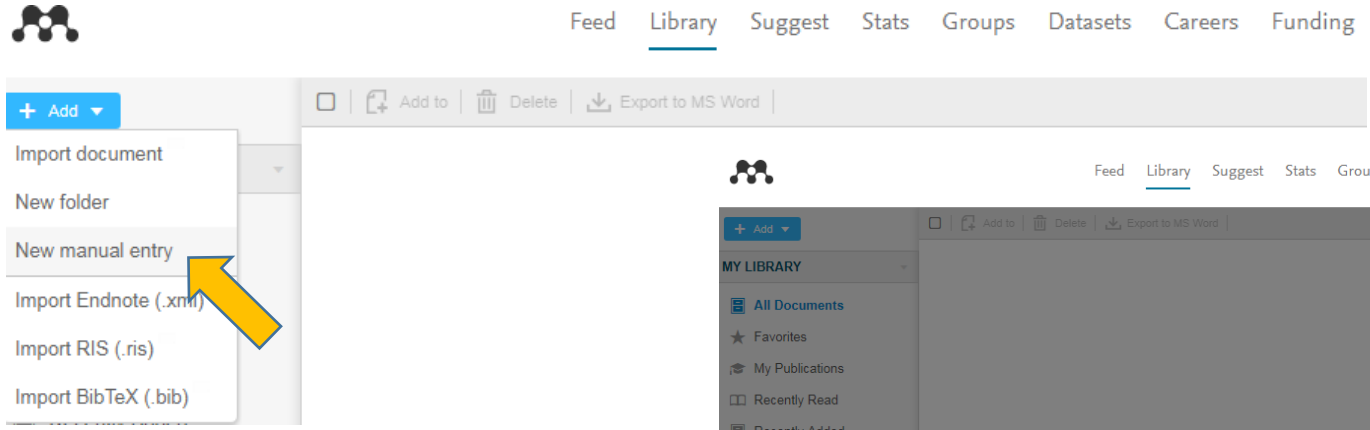
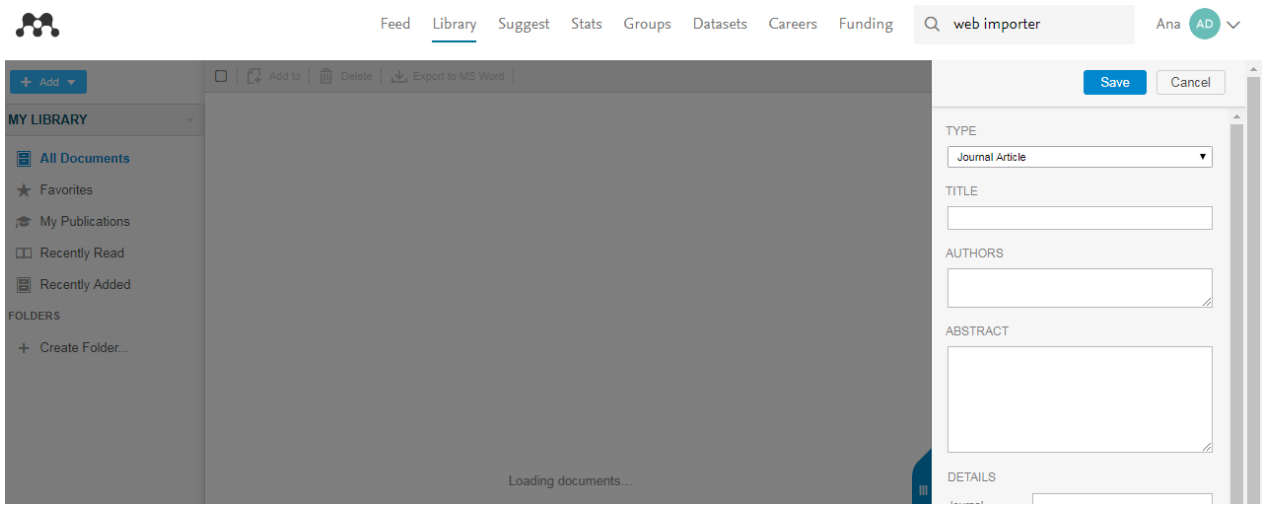
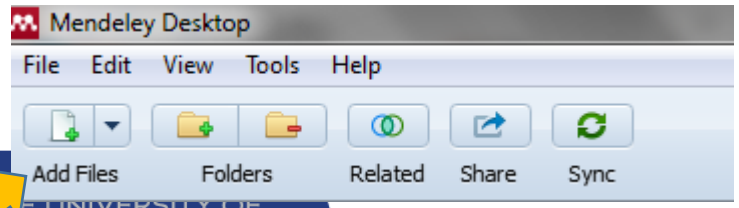
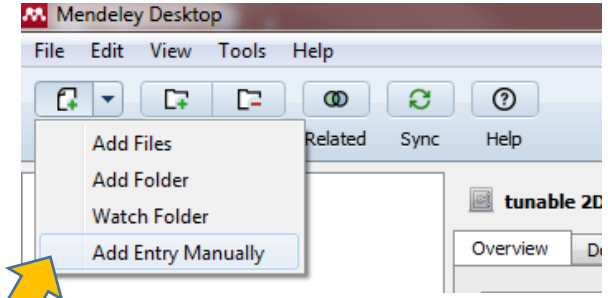


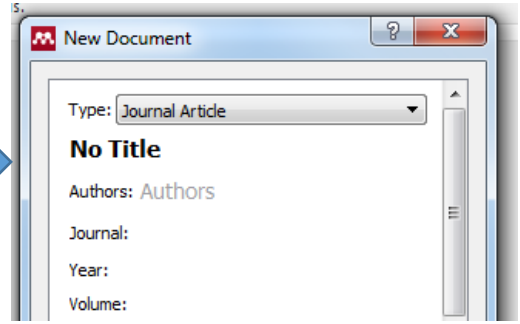
A template for you to fill in appears on the right



This option can also be done using **Mendeley Desktop**. Also a new window will appear to fill the information

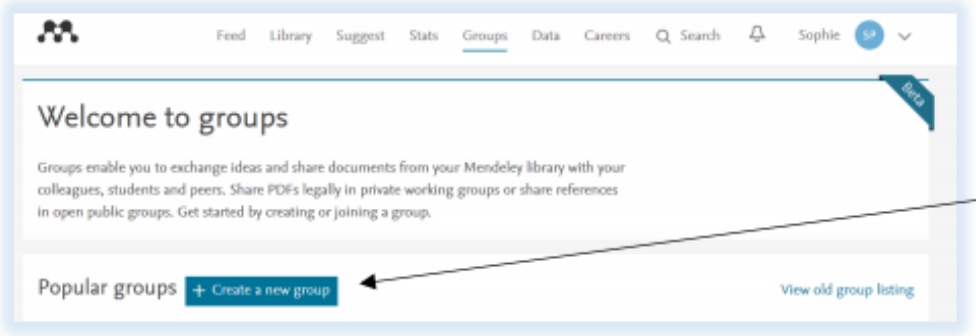




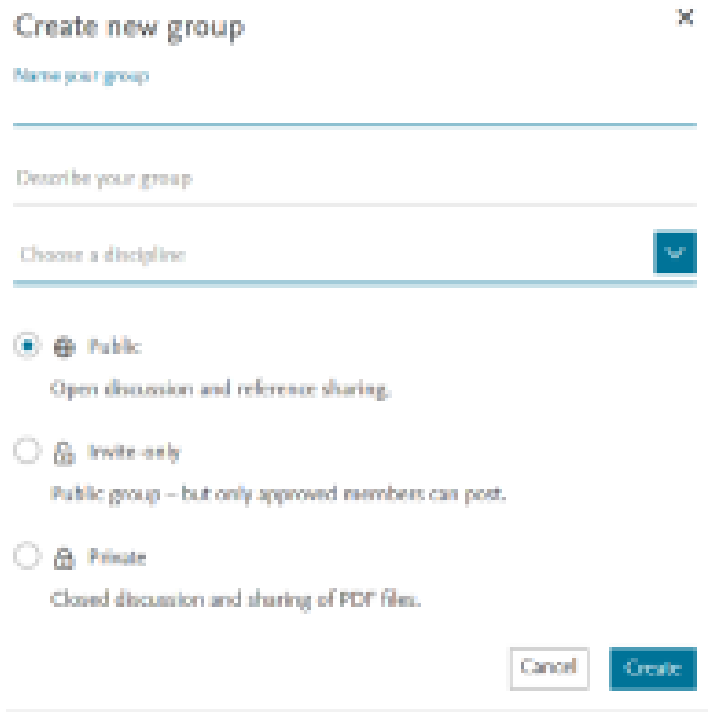


Sharing references and groups

Web-based reference management software means researchers can easily share libraries for a joint project. This is usually achieved by setting up a group within the program and then inviting colleagues to join. In Mendeley you can start your own groups or join existing groups.



You can create a group by going to the **Groups** tab and clicking on **Create a new group**



You can create three levels of groups:

- **Private** – create a private group allowing you to share full text PDFs and notes
- **Invite only** – this group is publically available to view, but only invited members can join and share references. You cannot share full-text PDF files
- **Public** – anyone can join and share references

NOTE: With a free account you can only create **one private or invite only group with a maximum of 3 members**. You can however have as many Public Groups as you like. Once you've made a group, you **cannot change the level of group** from Private to Public, nor vice versa.

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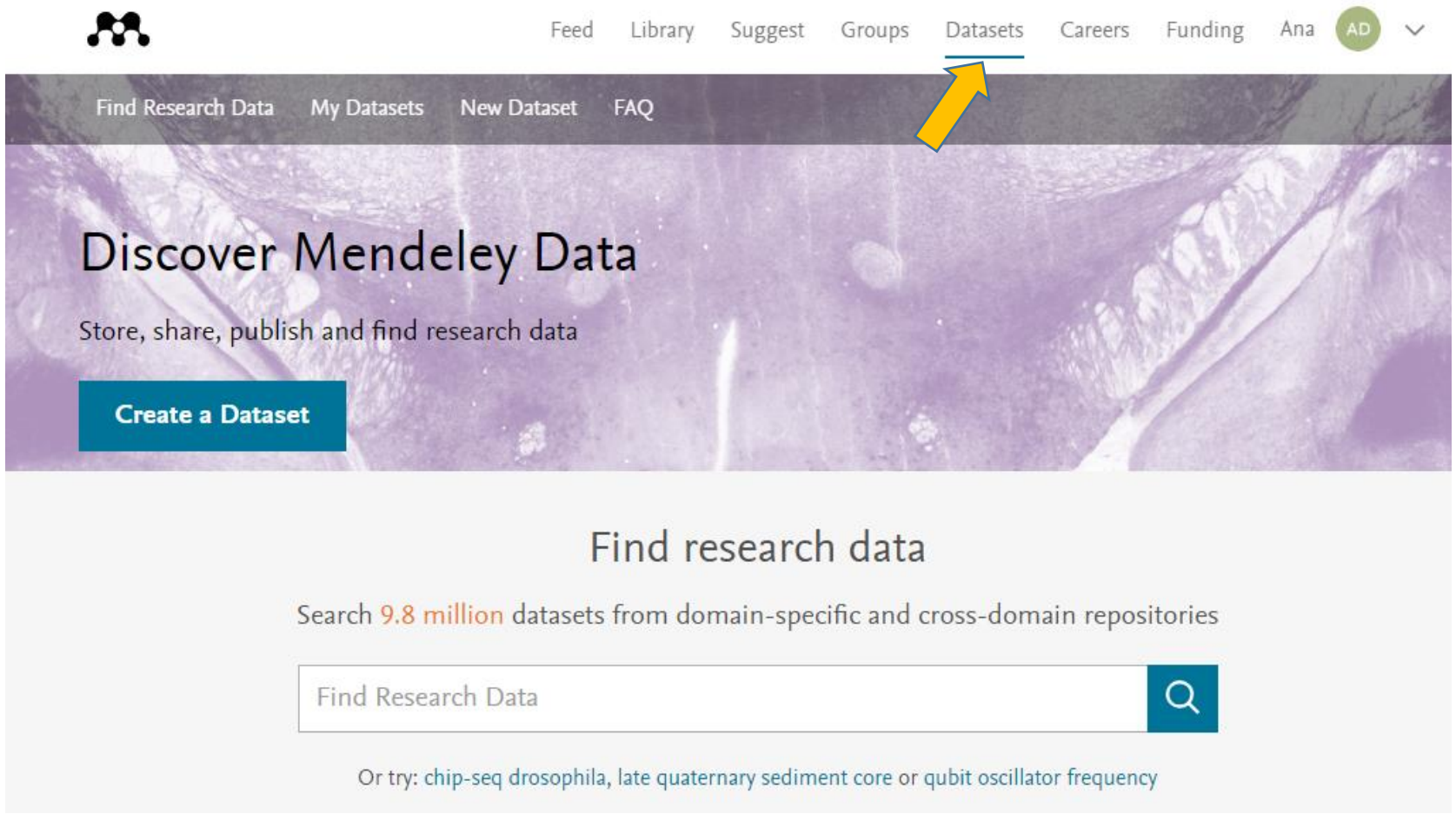
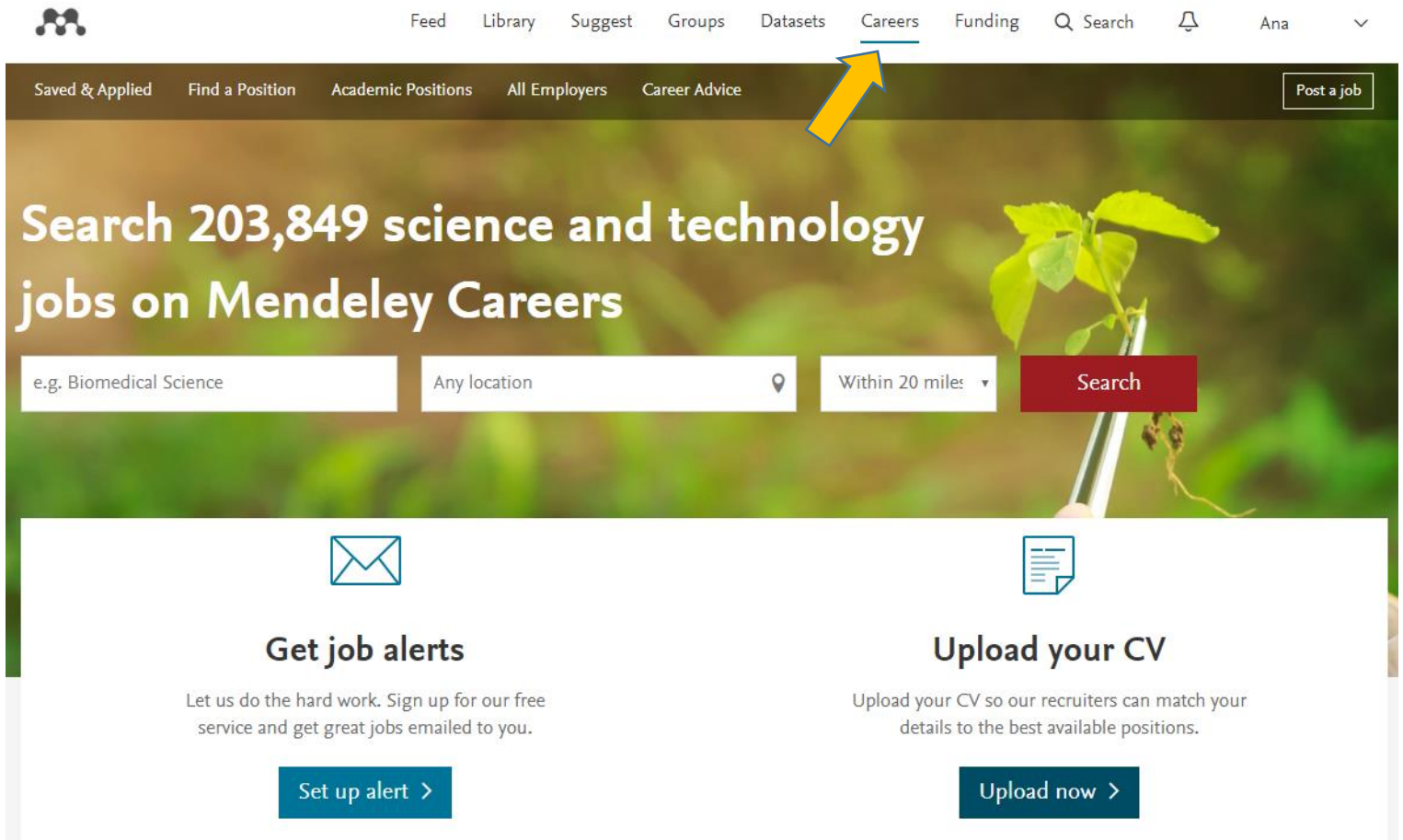
Mendeley Data

For Literature reviews



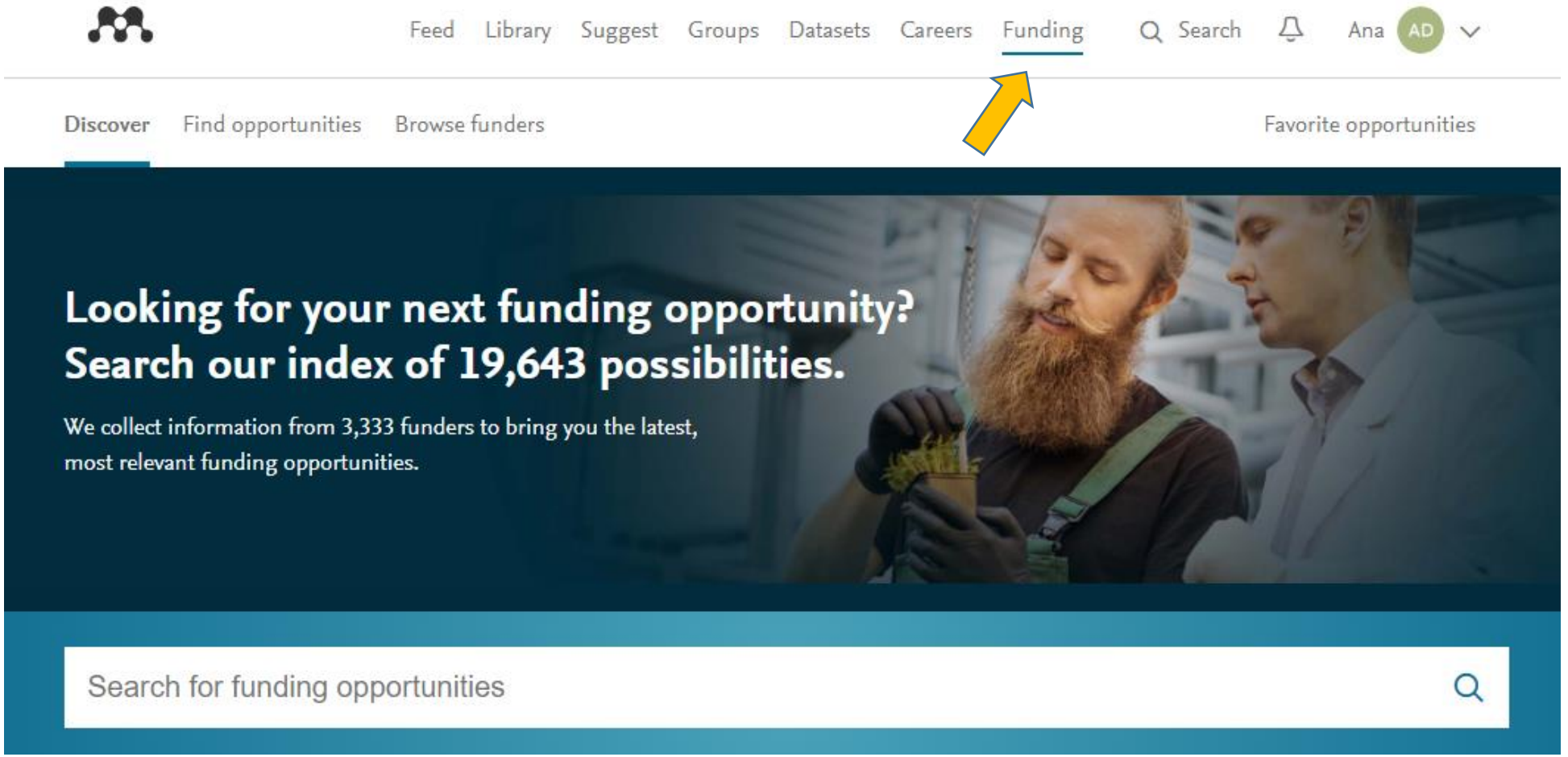
Mendeley Career

For finding a job position



Mendeley Funding

For finding funding opportunities

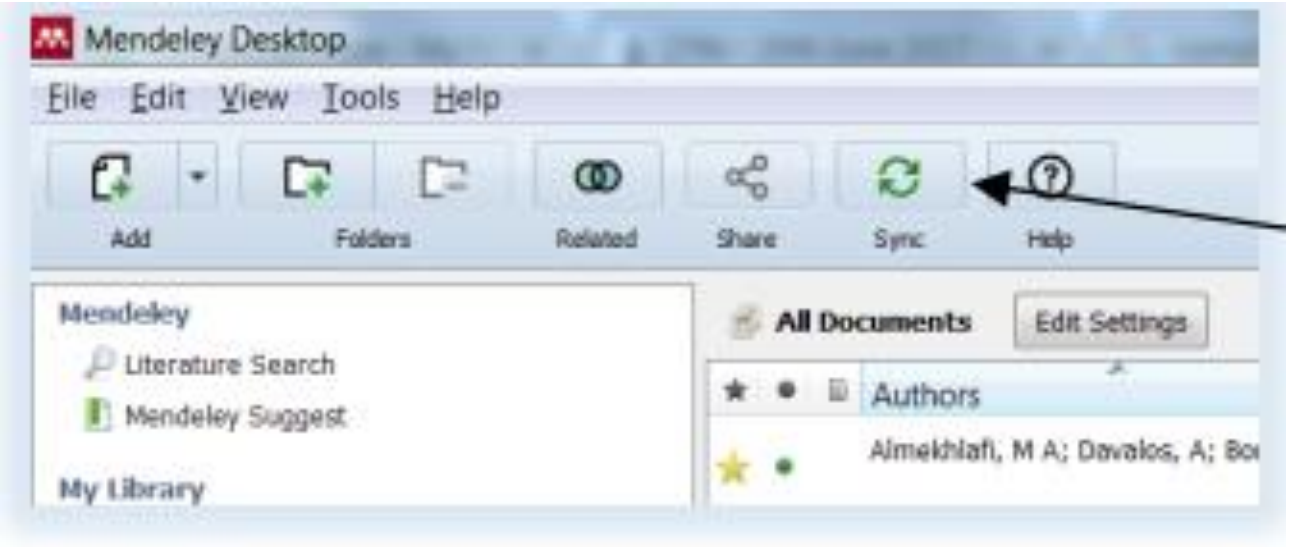


Mendeley Desktop

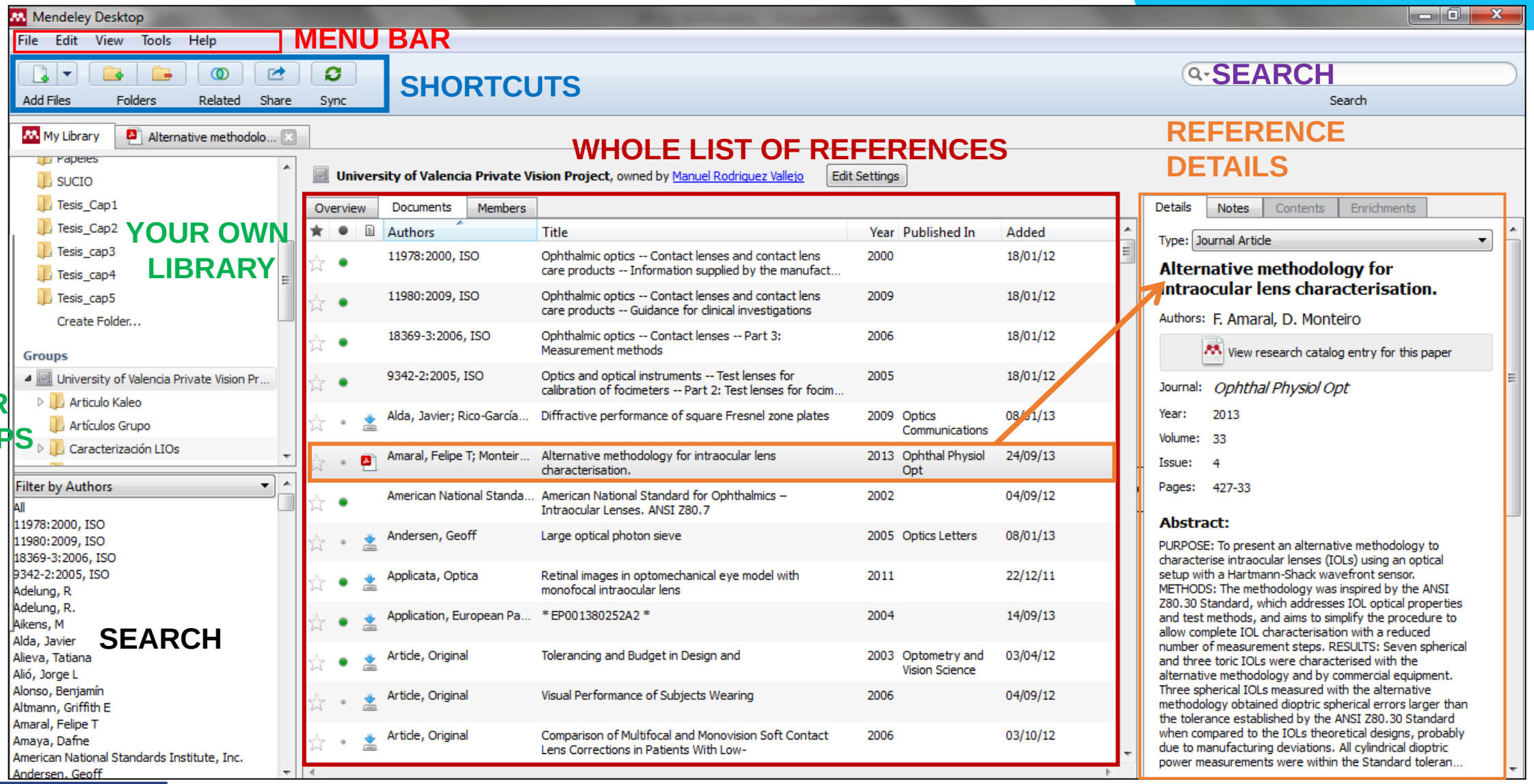
Synchronizing your library

When you first go into Mendeley Desktop, it will automatically synchronize with the Web version and add any new references you have added. If you use the Web version whilst the desktop version is open, you can tell it to synchronize by clicking on the Sync open.

If you make changes in your Desktop Library, it is important to remember to sync your library so that any changes are fully saved.



Mendeley Desktop: Main window



Mendeley Desktop

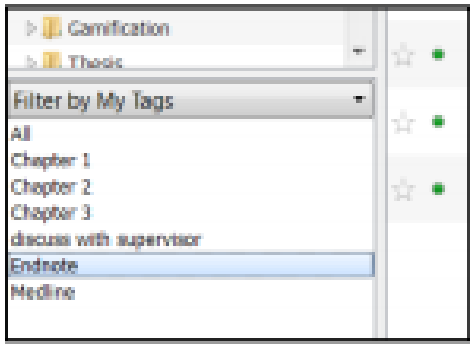
Tagging your library

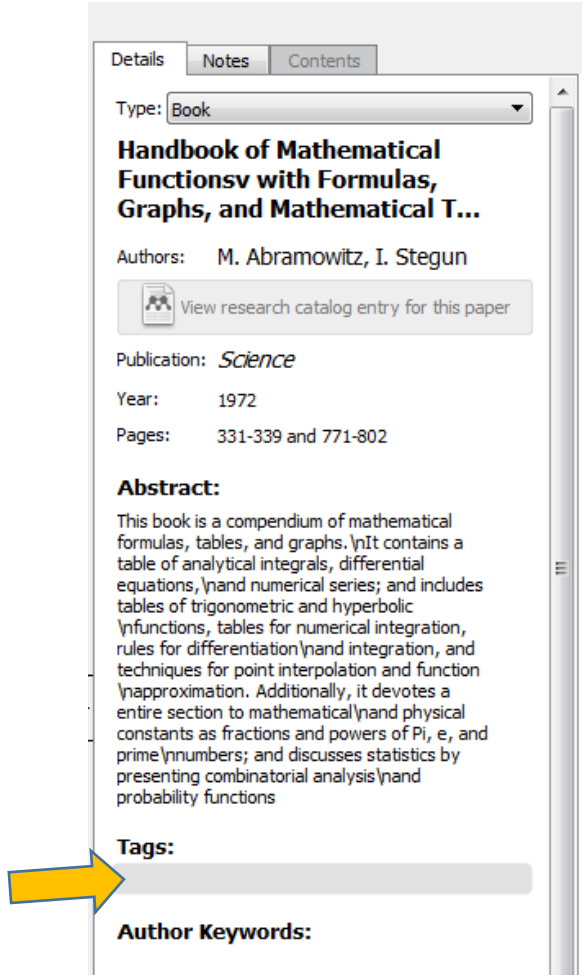
Tagging is a popular way of adding labels to items – this helps describe the content but could also be used to identify the source or intended purpose of particular items.

You can add descriptive tags to records you've added to your library from within the Desktop version by editing the Tags field in the record (Details tab).

You can add tags in the same way in the web version of the library, too.

To search your library for articles with a particular tag, simply choose to "Filter by My Tags" in the left hand drop-down menu and select the appropriate tag





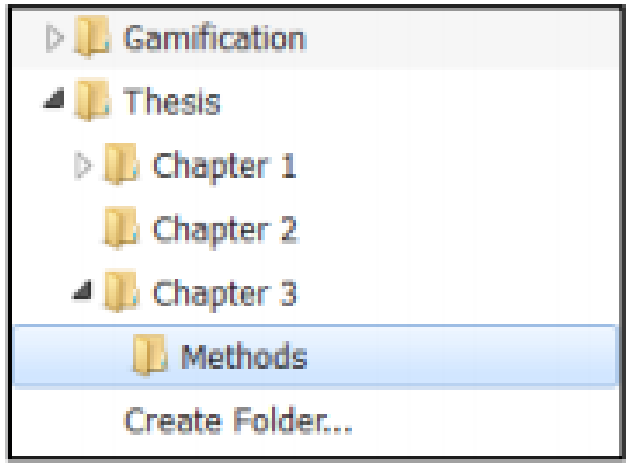
https://www.mendeley.com/download-reference-manager/windows

Mendeley Desktop

Organization of your library

Another way to organize your references is to put them into **Folders**, rather like organizing your files in My Computer, or your emails.

You can ‘drag and drop’ references from ‘all documents’ into a folder. The references will also remain in ‘all documents’ folder – if you removed a reference from a folder, the reference can still be found under ‘all documents.’ Tagging is a popular way of adding labels to items – this helps describe the content but could also be used to identify the source or intended purpose of particular items.



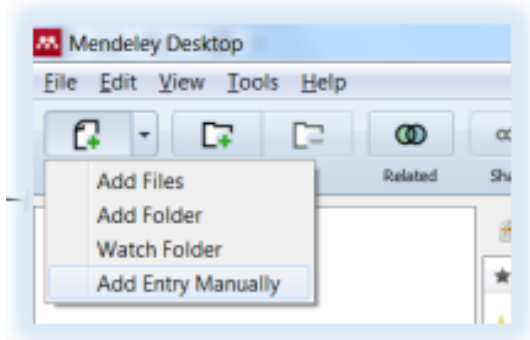
You can build multiple levels of folders in a hierarchical structure (create subfolders)

Note: to keep your references organized, it’s important to ensure you have removed any duplicate references. To use the Mendeley’s tool, select “**All Documents**” (towards the top of the left panel hand panel). Click on the **Tools** menu and select **Check for duplicates**. Sets of duplicates will then be shown. Each set shows what your duplicate documents will look like once merged. Using the checkbox next to the document details in the right-hand panel, you can select the details that you would like to keep from each of the documents. Click **merge** to keep one merged entry in your library, containing the complete document details

Mendeley Desktop

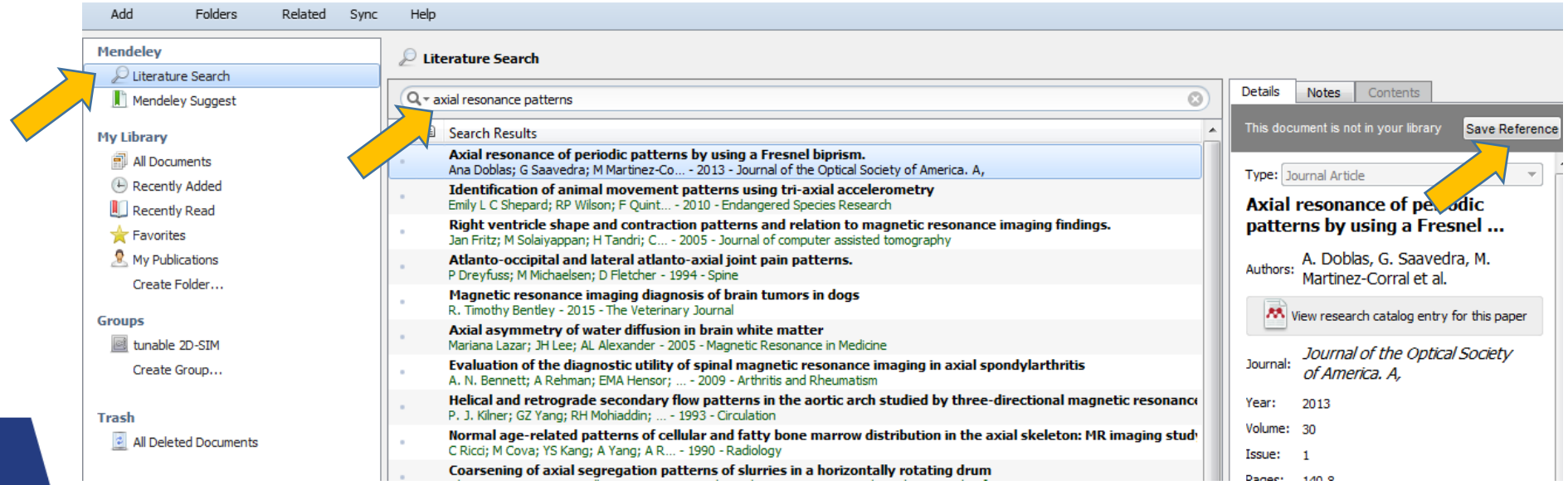
Adding references to your desktop library

- Manually adding references



- Adding a reference from Mendeley's research catalog

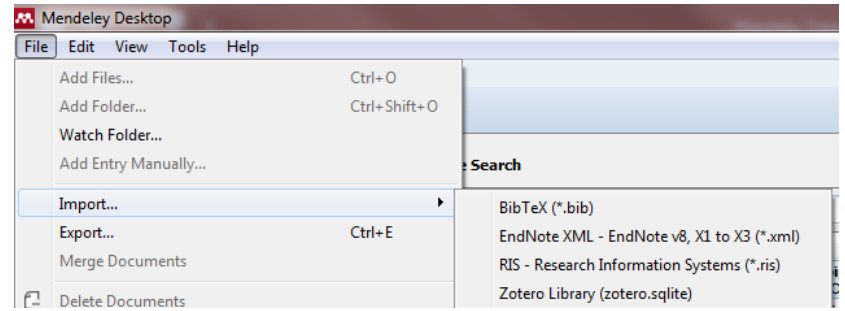
  Use the 'Literature Search' option (left hand side of the screen) to search for articles in Mendeley's research catalog. Click on a reference to view full details in the right-hand panel. From here you can link to the research catalog on the Web, or click on "Save Reference" to add it to your library (you can also 'drag and drop' the reference into the desired folder)



Mendeley Desktop

Adding references to your desktop library

- Adding references from another reference management package (EndNote, Reference Manager, Zotero or BibTeX)
  Go to the **File** menu, then **Import** and select the appropriate option



- Direct export from online databases (recommended when you are working with large numbers of search results)

Scopus	• Select the references you wish to export and click on **Export** • Select **Save to Mendeley.** Your references will be imported into your online Mendeley library. You will need to synchronise your library to see the references in Mendeley Desktop.
Web of Science Core Collection	• Ensure you are in Web of Science Core Collection (the other Web of Science databases cannot be directly exported into Mendeley). • Select the references you wish to export. • From the drop down list at the top of your search results, change the default export option from Save to Endnote online, to **Save to Other File Formats.** • Select the fields you wish to include, change the File Format to **BibTeX** and click Send. **On a personal computer/laptop:** • Choose open and select **Mendeley Desktop** as the application with which to open the file. If this doesn't work then follow the instructions as per those for OvidSP when using Desktop@UCL computers: • Save the Bib file and remember its location. • In Mendeley Desktop go to **File > Import >BibTex** and navigate to the correct Bib file to import the references into your library.
PubMed	• Select the references to export • Select **Send to** then Choose the destination **Citation manager** and click on **Create file.** • **Save the nBiB file** (it may save to your downloads folder). • In Mendeley Desktop go to **File > Import >BibTex** and navigate to the where the PubMed nBiB file was saved. • Change the file type from BibTex to **All supported formats.** This will allow you to locate the NBiB file. • Open the nBiB file.

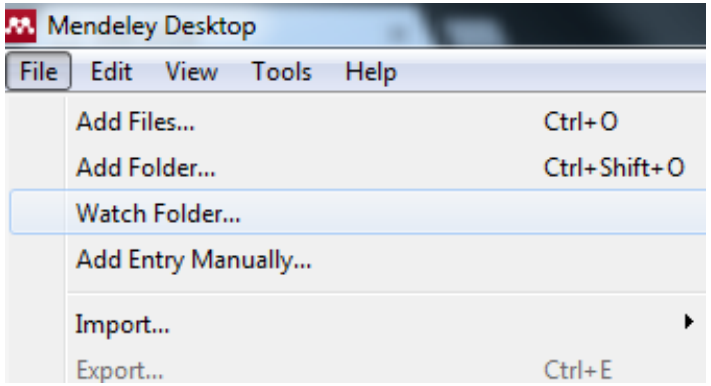
Mendeley Desktop

Adding PDF documents

There are three ways to add the PDFs to your library

- **Drag and drop** – Open up the folder where you have your PDFs and display it so you can see your Mendeley Desktop (or website) library behind it. Click on one of the PDFs and drag it into the references pane of your library.

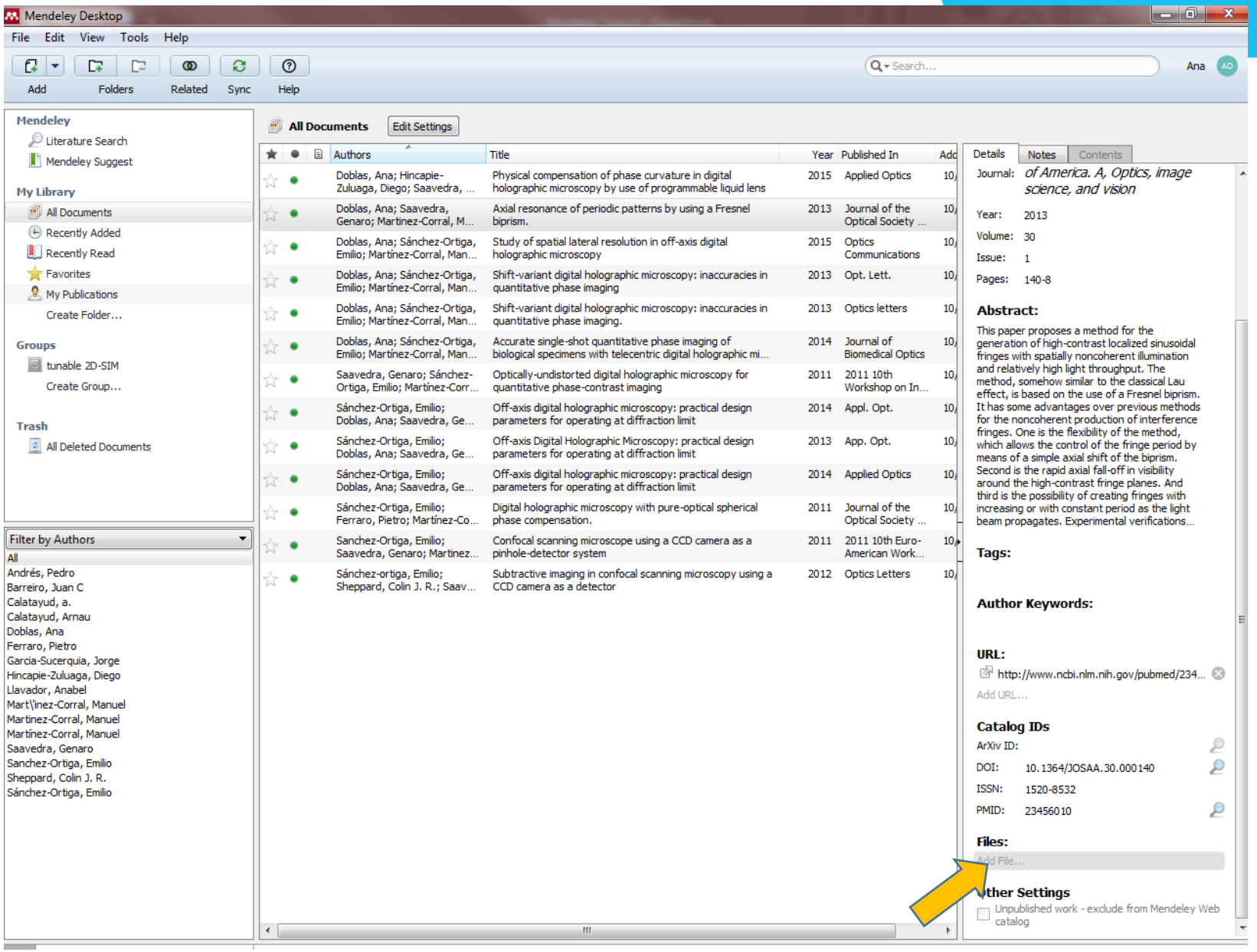
- **Watched folder** – Mendeley Desktop will automatically import all files that you save to a particular folder on your computer. To set this up, go to the **File** menu and select **Watch** folder



- **Add files** – Click on the Add Files button to the top left of the screen and navigate to the folder where the PDF is stored. Select a PDF and click on Open.

Mendeley Desktop

Adding PDF documents

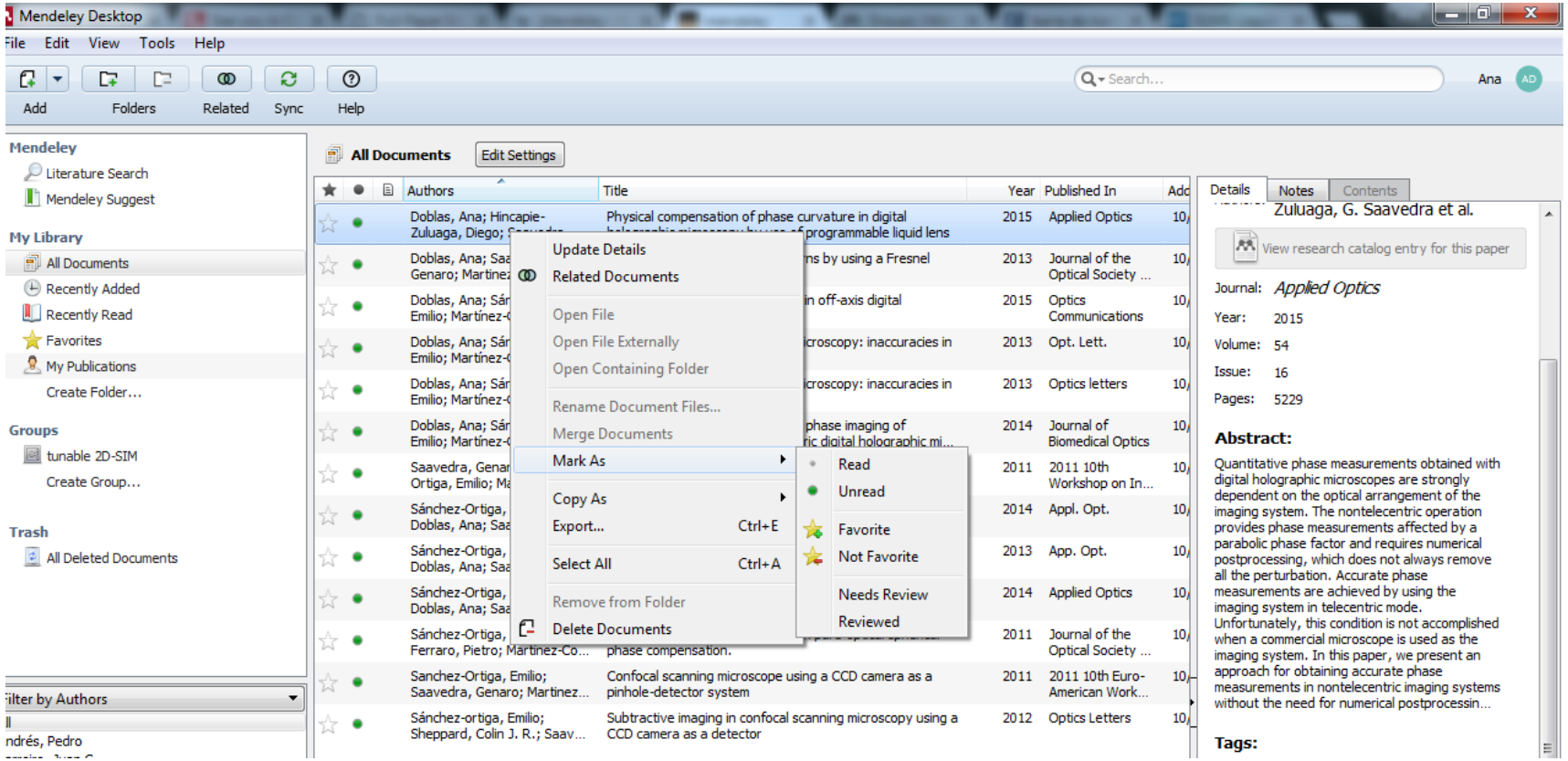


Mendeley Desktop

Label your references

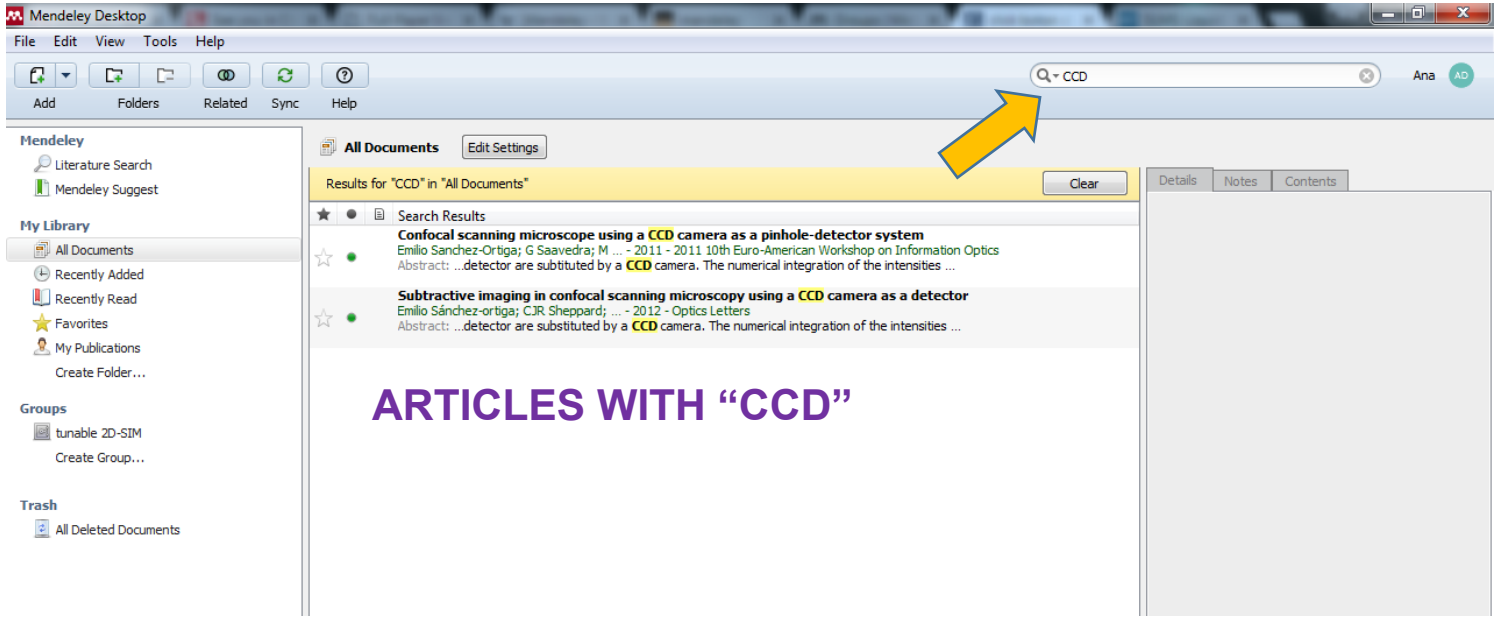
Right-click onto a reference so you can **mark the reference as**

- Read
- Unread
- Favorite
- Not favorite
- Needs Review
- Reviewed



Mendeley Desktop

Keyword search



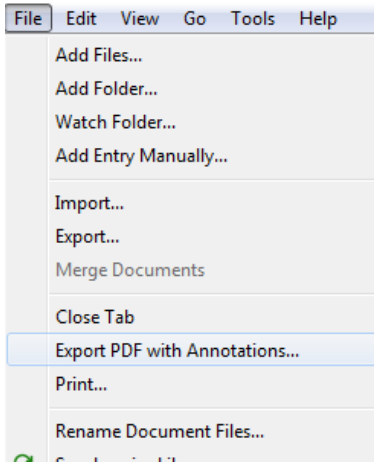
Mendeley Desktop

Work using PDFs

Add comments/notes using **Note** button, **highlight** text.

We can share our notes, for that the PDF should be exported using the option:

File -> **Export with Annotations**



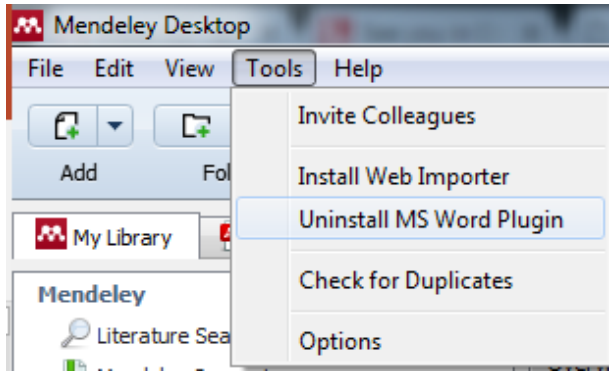
Delete the changes with: **Edit -> Undo**

Cite references and create bibliography

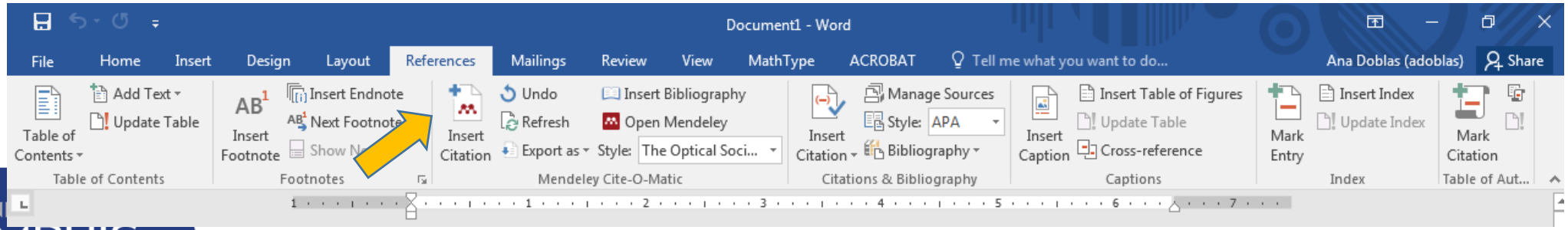
You can use Mendeley to:

- Insert references into a Word document
- Generate a bibliography at the end of your document
- Format a bibliography in the citation style of your choice

When you install Mendeley Desktop on your computer, make sure to install the MS Word plugin



When you use MS Word, Mendeley Cite-O-Matic toolbar appears within the References tab in Word

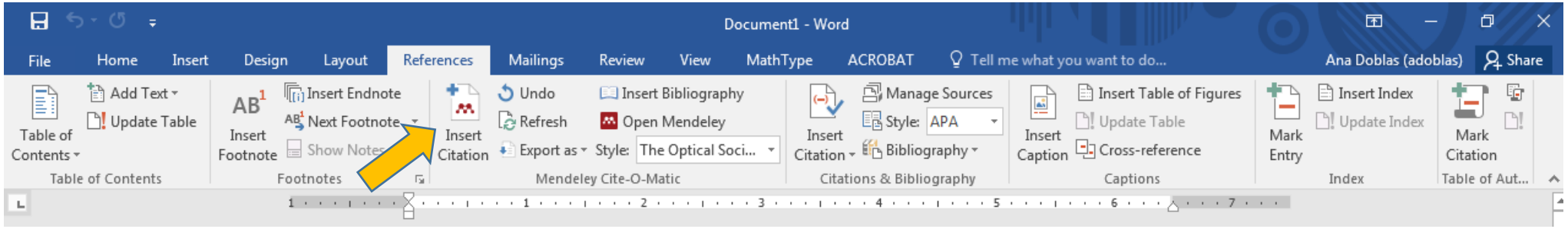


Cite references and create bibliography

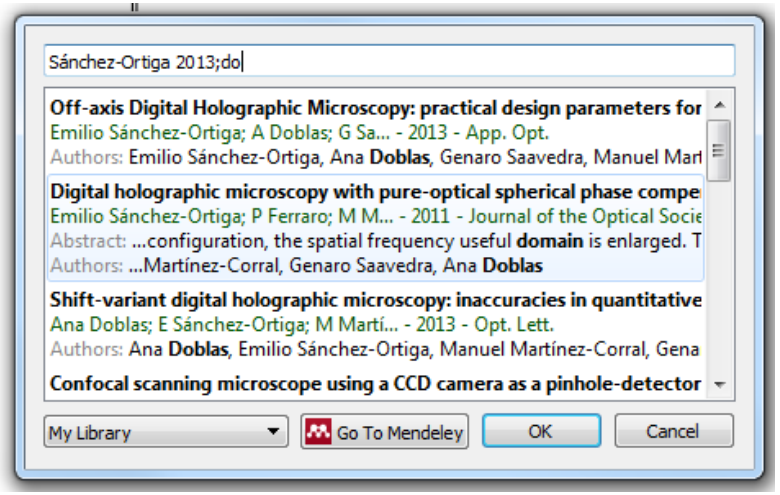
Inserting a citation into a Word document

Method 1: Searching for the reference you would like to cite

Place your cursor where you want your citation to appear in your Word document and click on **Insert Citation**



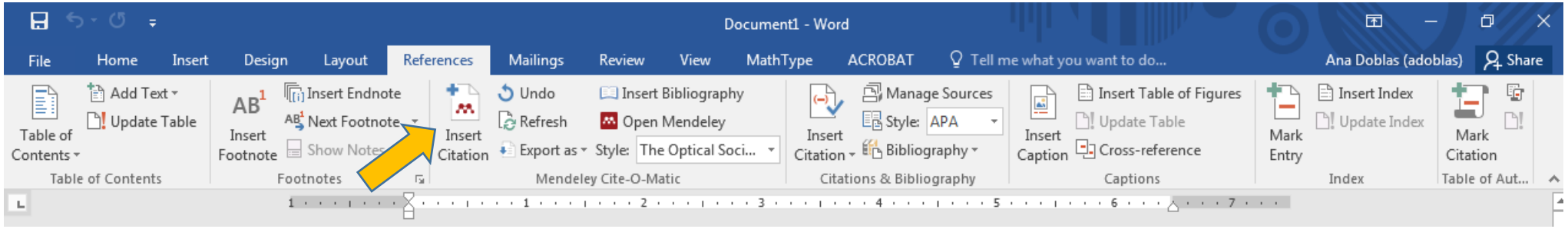
A search box appears. Search for the reference that you would like to cite in your Mendeley database, select it and click OK. The citation will be added to your Word file.



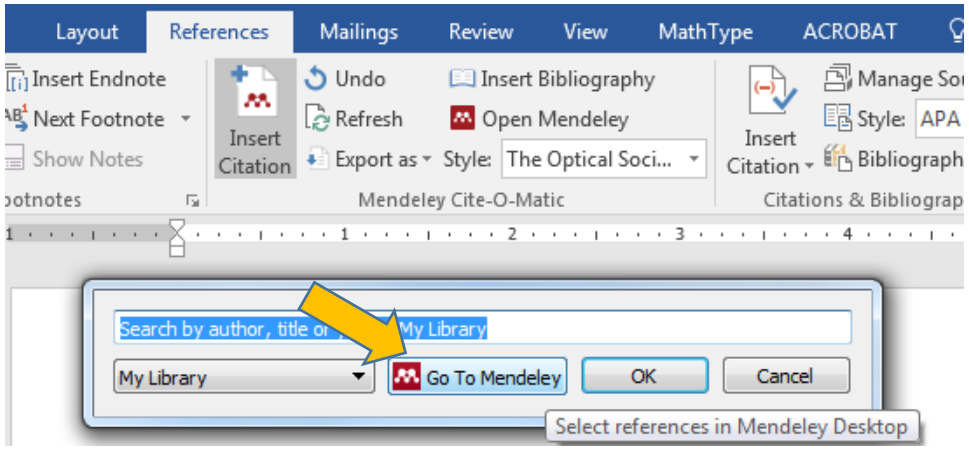
Cite references and create bibliography

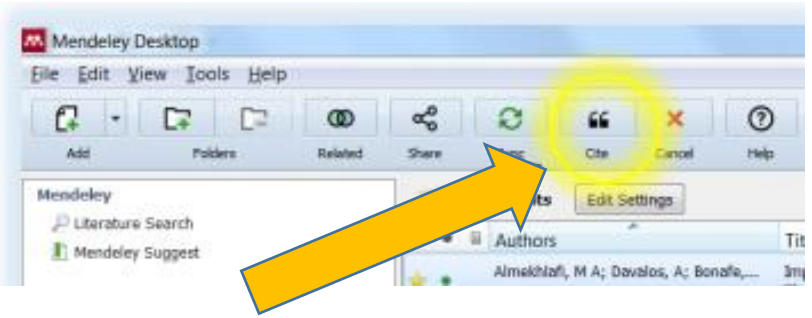
Inserting a citation into a Word document

Method 2: Choose the reference you would like to cite from within Mendeley.
Place your cursor where you want your citation to appear in your Word document and click on **Insert Citation**



Click on **Go To Mendeley** and from within your Mendeley Library, choose the reference or references that you would like to cite. Click on the **Cite** icon





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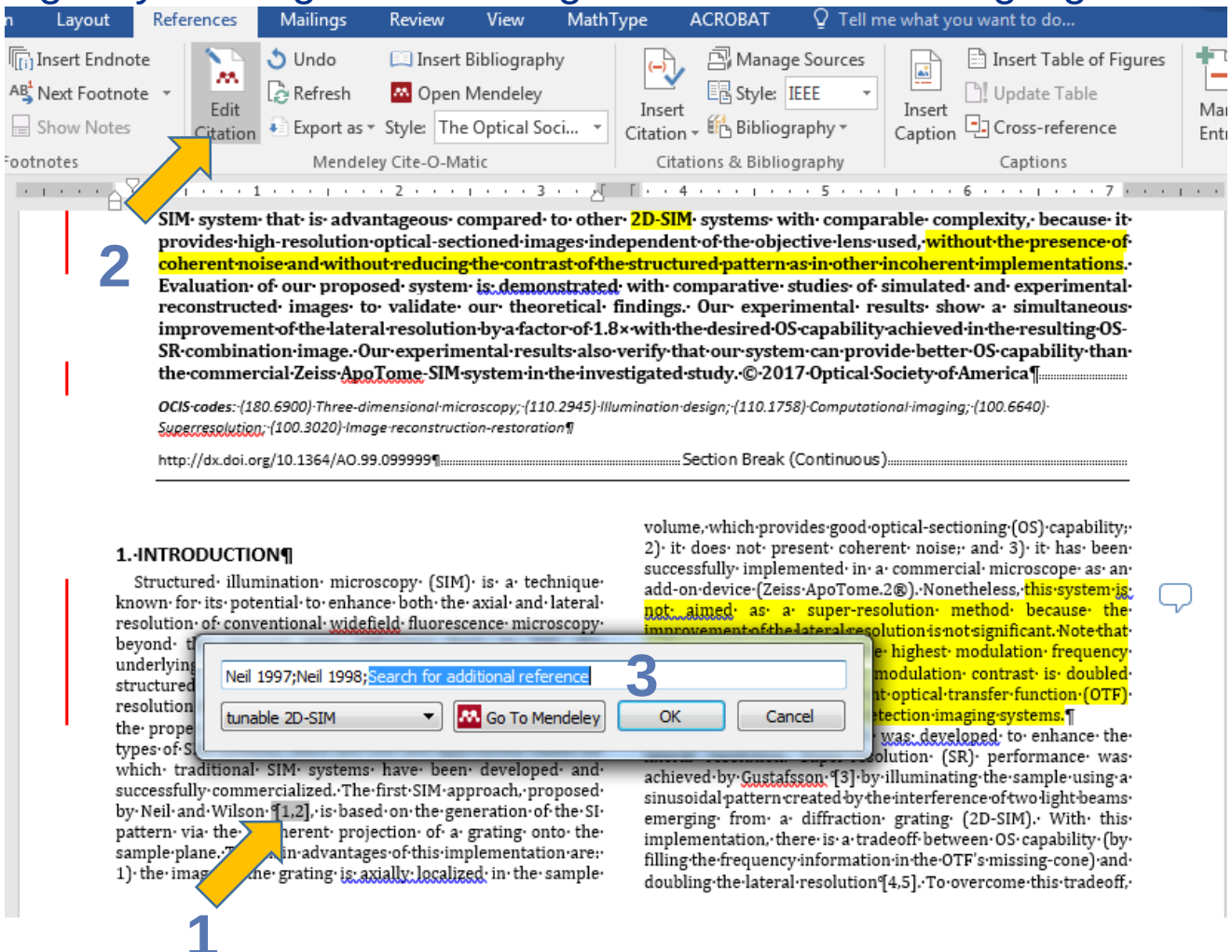
Cite references and create bibliography

Editing citations

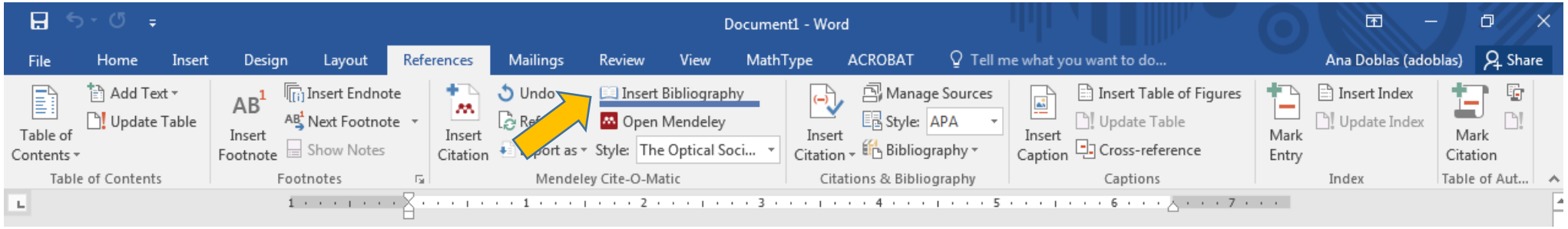
In some situations you may want to edit a citation you've already added, either to correct a reference or to add more detail. To do this, begin by clicking on an exiting citation – it will be highlighted in grey once you click on it



Cite references and create bibliography

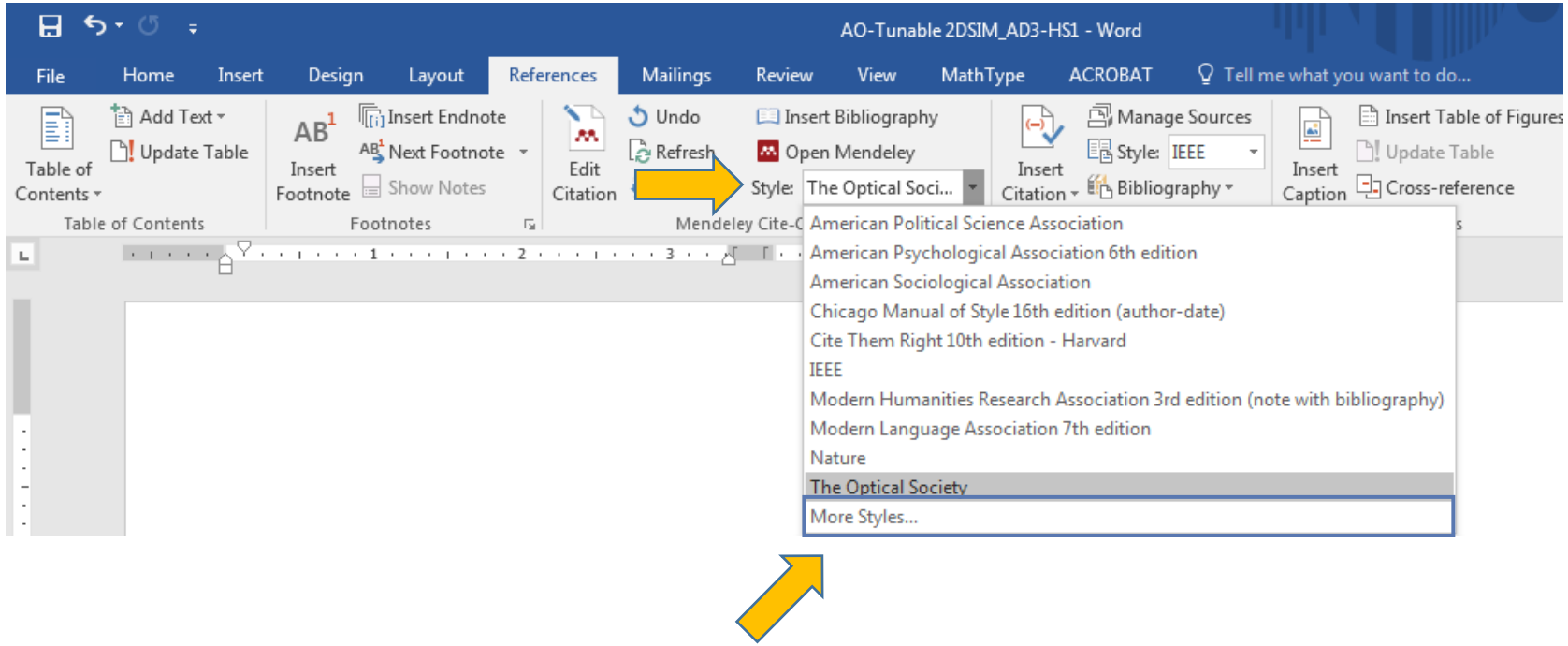
Inserting a reference list or bibliography

Once you have added some citations to your document you can create a reference list based on them. Place your cursor where you would like your reference list to start and click on **Insert Bibliography**



Cite references and create bibliography

Change bibliography style



One may be able to create his/her own style.
In some journals, they already provide their bibliography style to be used in Mendeley

For further information on Mendeley

http://support.mendeley.com Guidance and FAQs on using Mendeley
http://blog.mendeley.com Mendeley blog – useful for information and updates
https://twitter.com/MendeleySupport Mendeley Support (Twitter) useful for service updates

Objective of the session

At the end of the session, students will be able to

1. Understand the importance of literature review 
2. Set automatic Google alerts to track newly published work 
3. Use UofM library resources to search bibliography 
4. Identify Mendeley as a key for bibliography review, sharing, and citation